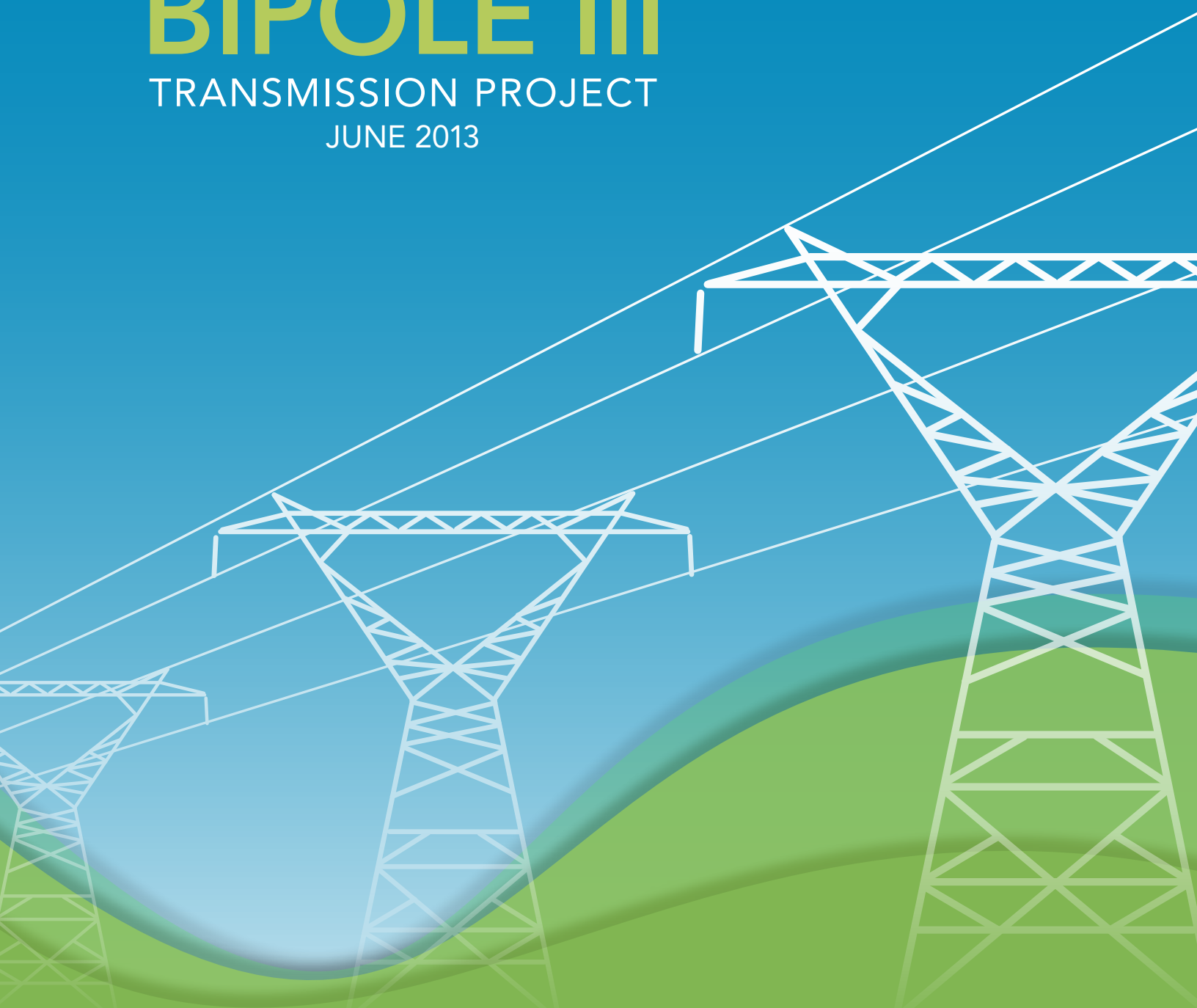


REPORT ON PUBLIC HEARING

BIPOLE III

TRANSMISSION PROJECT

JUNE 2013



Manitoba Clean Environment Commission

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Re: Bipole III Transmission Project

Dear Minister Mackintosh:

The Panel is pleased to submit the Clean Environment Commission's report on the public hearing with respect to the Bipole III Transmission Project.

Sincerely,



Terry Sargeant, Chairperson



Ken Gibbons



Brian Kaplan



Patricia MacKay



Wayne Motheral

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Foreword

In the 2004 report on the Wuskwatim Generation and Transmission project and in the 2005 report on the Red River Floodway Expansion project, the Clean Environment Commission recommended that the Government of Manitoba work with environmental assessment practitioners to develop standards to improve the quality of environmental assessment in the province. This has been restated in every subsequent Commission report.

This has yet to happen.

The Commission realizes that it is not the task of the provincial government to conduct, nor to micro-manage the development of environmental impact assessments for proponents. Nor should it be. But, it is the task of the Government of Manitoba to do whatever is necessary to ensure that potential environmental impacts posed by development are avoided, where possible, and minimized and mitigated, where not possible.

To be able to do this requires that impact assessment be thorough; that analysis be comprehensive; and that conclusions be soundly based.

In the Bipole III Environmental Impact Statement, initially filed by Manitoba Hydro in December 2011, these goals were not met.

In carrying out its mandates, the Commission's primary task is to provide informed advice and sound recommendations to the Minister of Manitoba Conservation and Water Stewardship. To do so, the Commission requires a thorough and comprehensive body of information upon which to base its advice and recommendations.

The most substantive piece in this body of information is the Environmental Impact Statement filed by the Proponent. In the information trail, the EIS is preceded by the Scoping Document, which sets out the parameters for the environmental assessment to be conducted by the Proponent. In the case at hand – the Bipole

III Project – a draft Scoping Document was submitted. Following input from government officials and members of the public, a final version was approved. Had the expectations set by the Scoping Document been met in the EIS, the environmental assessment, and the review of that assessment, would have gone much more smoothly.

The problem was not so much that items identified in the Scoping Document were left out of the EIS. The problem was that the EIS was not well done. As will be discussed throughout this report, the EIS was fraught with problems. To name but a few, these include the flawed methods of choosing valued environmental components (VECs), or of assigning significance to the impact of the Project on the VECs, or of comparing different segments of the route in the process for selecting the Final Preferred Route.

Such substantive problems were compounded by the fact that the EIS was poorly constructed. It is not well-written. It contains many repetitions. There are long sections with no breaks – or a table of contents – to help one go through it. There are inconsistencies between the EIS and the supporting Technical Reports and the draft-Environmental Protection Plan.

For the most part, it was not a problem of a lack of data. There is much, very good background data. However, there is – throughout the document – little, if any, analysis of the data. As a result, it is often very difficult to determine how a conclusion was reached.

This led to the impression that the Proponent wished only to meet minimum standards. Or, as one academic paper notes: “Whereas in theory EIA [environmental impact assessment] is about environmental protection and VEC [valued environmental component] sustainability, in practice it is about project approval.” (Duinker & Greig 2006).

So, why and how did the development of the EIS for Bipole III go so wrong? The Commission is not able to determine this. Did

the Proponent fail to provide clear details to its environmental assessment contractors as to what was needed? Did the fault lie with some of those contractors? The Commission has reviewed other environmental impact statements prepared by or for Manitoba Hydro, which do meet the high standards expected by the Commission. These are environmental assessments well-done and well-presented.

One expert, contracted by the Commission, noted that, as a rule, transmission projects are relatively benign from an environmental perspective and that it should not be that difficult to assess potential impacts. Another expert, brought by a Participant, underlined this, stating that linear projects are among the easiest for which to do a cumulative-effects assessment.

It would have been justifiable for the Commission to reject the EIS as presented and to send the Proponent away to start over. This was proposed by more than one Participant in motions filed with the Commission in August 2012.

As the Proponent was not willing to accept that significant flaws existed in its EIS, it fell to the other parties to ensure that the record of the proceedings – the body of information required by the Panel – was sufficient for sound decision-making.

Overcoming the limitations of the EIS involved:

- The generation of hundreds of Information Requests by the Commission, Participants and government officials; (These are questions posed to the Proponent seeking further information or clarification.)
- 37 days of public hearings – held throughout the province – during which Participants, expert witnesses, members of the public and Panel members challenged the Proponent's conclusions in its environmental assessment;
- An adjournment of 3½ months to allow the Proponent to conduct further assessment of certain sections of the proposed route for the transmission line.

If sufficient explanation had not come through these steps, it was open to the Commission to recommend to the minister that an environmental licence should not be issued for this Project, which would mean not constructing the Project at this time. This would have been the easy out. The Commission is well aware that the Bipole III Project is very important to the economy of Manitoba, both for risk-avoidance and future energy exports.

In the end, the Hearing Panel is satisfied that the record is sufficiently complete for it to offer sound advice to the minister.

The Commission will recommend that an environmental licence be issued to Manitoba Hydro for construction of the Bipole III Project. However, it will also recommend that certain, specific conditions be attached to the licence to ensure that remaining environmental concerns are addressed.

The Commission remains strongly of the view that the practice of environmental assessment in Manitoba must be significantly improved. Having a Proponent file an EIS of poor quality, as with the Bipole III Project, must be avoided in future developments. In this report, the Commission will again be making recommendations aimed at improving the process.

Acknowledgements

As with any hearing process conducted by the Clean Environment Commission, many people made significant contributions. I would like to acknowledge the great work done by these folks. My co-panelists included Ken Gibbons, Brian Kaplan and Patricia MacKay of Winnipeg and Wayne Motheral of Morden. A special thanks is due to the very skilled and dedicated Commission staff: Cathy Johnson, Joyce Mueller and Amy Kagaoan. Our legal advice came from Michael Green and Kelly Dixon. Our report writer was Bob Armstrong. Finally, we were ably supported by a team of consultants and service providers, without whom we would have had great difficulty navigating this process.

Terry Sargeant
Chair
June 2013

Executive Summary

On December 5, 2011, the Minister of Manitoba Conservation and Water Stewardship requested that the Clean Environment Commission conduct public hearings into the proposal by Manitoba Hydro to build the Bipole III Transmission Project. The Commission was asked to review and evaluate both the Environmental Impact Statement (EIS) and Manitoba Hydro's public consultation process for the Project. The Commission was further mandated to provide a recommendation as to whether an *Environment Act* licence should be issued for the Project. Should the Commission recommend issuing a licence, the report was to include recommendations for any appropriate mitigation measures for environmental, socio-economic, and cultural impacts and management of residual effects of the Project. The report was also to contain appropriate recommendations for future monitoring of the Bipole III Project.

Public hearings on the Bipole III Project lasted for 10 weeks, from October 1 to November 22, 2012, and from March 4 to 14, 2013. During this time, the Commission heard a great deal of testimony from Manitoba Hydro's staff and contracted experts, expert witnesses retained by Participants in the hearing process, and interested members of the public. The Commission has considered this evidence, in combination with Manitoba Hydro's Environmental Impact Statement and supporting Technical Reports.

The EIS identified four major concerns about potential environment impacts from the Project: impacts on boreal woodland caribou in northern Manitoba, specifically three caribou herds whose range will be traversed by the Bipole III transmission line, and potential impacts on public safety, travel and transportation, and community services resulting from the large influx of workers to the Gillam area during the construction of the Keewatinoow Converter Station at the northern end of the transmission line. In addition to these previously identified concerns, the Commission heard a variety of concerns about community health impacts resulting from the influx of new workers to the Gillam area, possible impacts on

domestic resource use, including plant harvesting, at several points along the line, increases in access for hunters and predators made possible by the transmission line, and a wide variety of potential impacts on agricultural practices in the areas traversed by the line.

After consideration of the body of evidence, the Commission recommends to the minister that the Bipole III Project be approved for a licence under *The Environment Act*. The Commission recommends that a number of conditions be attached to this licence in order to provide some assurance that the goals of the Bipole III Project can be met without compromising the environment of Manitoba. Some of these conditions refer to prevention or mitigation of environmental effects resulting from construction of the transmission line and other project components. Others refer to monitoring of the effects of the construction, operation and maintenance of the Project, in order to ensure that possible problems can be identified and rectified.

In addition to these licensing recommendations, the Commission has also made certain recommendations for improvements to Manitoba Hydro's consultation, environmental assessment and monitoring activities and for improvements to the processes and protocols governing environmental assessment generally in Manitoba.

These recommendations are issued in response to the many concerns about the quality of the Bipole III EIS expressed by Participant groups, members of the public, experts in the field of environmental assessment, and members of the Commission itself. Manitoba Hydro's consultation activities, particularly with Aboriginal communities, and its methodology for assessing cumulative effects of the Bipole III Project were identified as particularly in need of improvement.

It is the hope of the Commission that an improved process for conducting environment assessment, combined with improvements in the resources and processes for environmental assessment at Manitoba Hydro, will allow hearings on

future projects to occur more smoothly. More importantly, these improvements will help to ensure that Manitobans can be confident that their province's environment is protected, now and into the future.

Chapter One: Introduction

1.1 The Manitoba Clean Environment Commission

The Manitoba Clean Environment Commission is an arms-length, provincial agency established under the authority of *The Environment Act of Manitoba* (1988). Under the Act, the Commission is mandated to provide advice and recommendations to the Minister of Manitoba Conservation and Water Stewardship, and to develop and maintain public participation in environmental matters. In the context of a review process such as that undertaken for the Bipole III Transmission Project (the Project), this means holding open hearings to allow members of the public to challenge the environmental assessment conducted by the Project's Proponent, Manitoba Hydro, and to state their views and opinions to the Hearing Panel.

1.2 The Project

The Bipole III Transmission Project is designed to address the risk posed to Manitoba by the fact that currently more than 70% of Manitoba's electricity is transmitted over a single right-of-way on the Bipole I and II lines. This makes Manitoba's electrical supply vulnerable to catastrophic power failures caused by ice storms, tornadoes, fires or other events that might damage either the transmission lines or the Dorsey station, where electricity from the existing Bipole lines is injected into the provincial transmission system. The Bipole III line is intended to reduce this vulnerability by ensuring that a large amount of electricity can be transmitted to the main population centres by a different route.

The Project will consist of a high-voltage direct-current (HVDC) transmission line originating at the new Keewatinoow Converter Station to be located near the site of the proposed Conawapa Generating Station on the Nelson River north of Gillam and terminating at a second new converter station to be located at the Riel site east of Winnipeg. The Project will also include new 230 kV transmission lines linking the Keewatinoow Converter Station to the northern collector system at the existing 230 kV switchyards

at the Henday Converter Station and Long Spruce Generating Station. Each of the converter stations will require a separate ground electrode facility connected to the station by a low-voltage feeder line. The Bipole III transmission line will be approximately 1,385 km in length and will cross diverse regions of Manitoba from the boreal forest in the north to agricultural areas in the south. Construction is planned to begin in 2013 with a projected in-service date of October 2017.

1.3 The Proponent

Manitoba Hydro is the Proponent for the Bipole III Transmission Project. Manitoba Hydro is a provincial Crown corporation, established in 1961, mandated to provide for the power needs of Manitobans. The utility is overseen by the Manitoba Hydro-Electric Board, which is appointed by the Government of Manitoba and reports to the minister responsible for *The Manitoba Hydro Act*.

1.4 Terms of Reference

On December 5, 2011, the Minister of Manitoba Conservation and Water Stewardship wrote to the Commission requesting that the Commission hold public hearings on the proposed Bipole III Project. The minister included the following terms of reference for the hearing process:

- "To review and evaluate the Environmental Impact Statement (EIS) and the proponent's public consultation process;
- "To hold public hearings to provide an opportunity for the Commission to consider stakeholder and public input as part of the project assessment. The locations of hearings must include Winnipeg, but other locations also should be considered along the proposed route to allow easier access to those members of the public that do not live in Winnipeg but may be affected by the project;
- "To prepare and file a report with the Minister of Manitoba Conversation and

Water Stewardship outlining the results of the review and providing recommendations for the minister's consideration. The report should be filed within 90 days from the date of completion of hearings as per Section 7(3) of the Act.”

The Commission was further mandated to provide a recommendation as to whether an *Environment Act* licence should be issued for the Project. Should the Commission recommend issuing a licence, the report was to include recommendations for any appropriate mitigation measures for environmental, socio-economic, and cultural impacts, as well as recommendations for management of residual effects and for future monitoring of the Project.

The terms of reference did not include conducting assessment of the “need for and alternatives to” (NFAAT) the Project. Nor did it include assessing alternative routes for the line to the east of Lake Winnipeg, through the Interlake, or underwater down the length of Lake Winnipeg.

1.5 The Hearings

Public hearings were held from October 1, 2012, to November 22, 2012 in Winnipeg, Gillam, Thompson, The Pas, Dauphin, Portage La Prairie and Niverville. During these hearings, testimony was given by the Proponent, Participants, Presenters and the public. Following a request issued August 29, 2012, by Manitoba Conservation and Water Stewardship (MCWS) to modify its proposed route for the Bipole III transmission line, the Proponent brought forward three route revisions on October 29, 2012. In order to provide the opportunity for additional public consultation on these revisions, and to allow the Participants the opportunity to analyze these changes, hearings were adjourned on November 22, 2012. The public hearings resumed in Winnipeg on March 4, 2013, and concluded on March 14 and the record closed on March 21, 2013.

1.6 The Report

This report to the Minister of Manitoba Conservation and Water Stewardship presents an overview of the Project and a summary

of the hearings, and provides comments and recommendations on environmental issues of concern as identified by the public, Participants and the Commission. Through this process, the Commission has developed an understanding of the effects of the Project sufficient to recommend to the minister that Manitoba Hydro receive the development licence required under *The Environment Act* to construct the Project as proposed, subject to specific conditions to be attached to those licences.

These conditions address concerns about public health, safety, consultation, mitigation of environmental impacts, and on-going monitoring of these mitigation requirements. These recommendations will be identified as licensing recommendations.

In addition to these, the Commission is also making a number of “non-licensing recommendations”. In the Commission's view, these relate to matters that are important and should be addressed, but are not of a nature to be attached as conditions to the licence. Some are directed at the Province of Manitoba in relation to the process and practice of environmental assessment. Some are directed at Manitoba Hydro for use in future environmental assessments. And others are directed at Hydro for implementation into its environmental management practices for the Bipole III Project.

This report is broken into 14 chapters, covering the licensing and hearing process, the Bipole III Project, the topics raised in the EIS, and the Commission's recommendations to the Minister of Manitoba Conservation and Water Stewardship. Following these chapters will be appendices that include the terms of reference for the hearing process, a list of Presenters and those who provided written submissions, and a glossary of terms.

Because of the great detail in the EIS, the section on environmental effects of the Project will take up a large portion of the report. The section on the environmental effects will be broken into two chapters, one on the bio-physical impacts, and the other on cultural, social and economic impacts. Sections of the report will follow a standard format, in which detailed

information provided by Manitoba Hydro in its EIS, technical reports or testimony during hearings will be presented first. Comments made by Participants and Presenters during the Bipole III hearings will be summarized under the heading “What We Heard.” The Commission’s own views on many of the subjects in the report will be described under the heading “Commission Comment.” Recommendations will follow the appropriate Commission Comment section.

1.6.1 Report’s Scope

Public discussions of Bipole III frequently involve discussion of proposed future Manitoba Hydro generating stations. Although the principles of environmental impact review do include an assessment of cumulative affects – which include the potential for the current project’s effects to combine with those of future projects – this review does not explicitly examine Manitoba Hydro’s planned Keeyask or Conawapa Generating Stations.

It should be noted that the Keewatinoow Converter Station is adjacent to the proposed location of the Conawapa Generating Station, and that the Bipole III Transmission Project, although focused on reliability issues at this time, has been planned with future developments in mind. Furthermore, the current HVDC lines running from northern Manitoba to the Dorsey Converter Station near Winnipeg, Bipole I and Bipole II, do not have the capacity to transmit power from Keeyask. However, a recommendation for the approval of Bipole III does not presuppose approval of these future proposed projects.

Licensing Recommendation

The Commission recommends that:

- 1.1 *Manitoba Hydro be issued an Environment Act licence for the Bipole III Transmission Project, subject to licensing conditions outlined in subsequent recommendations in this report.*

Chapter Two: The Licensing Process

2.1 Needed Licences and Approvals

The Environment Act of Manitoba (1988) sets out the environmental assessment and licensing process for developments such as the Bipole III Transmission Project. The provincial process encourages early consultation by project proponents and provides for public participation at various stages of the Province's review of a project. The *Classes of Development Regulation* (Manitoba Regulation 164/88) classifies projects as Class 1, 2 or 3, generally in accordance with the size and complexity of the project. The Bipole III Project is a Class 3 Development under "Transportation and Transmission," because it consists of "electrical transmission lines greater than 230 kV, and associated facilities" and "transformer stations greater than 230 kV." In order to build the Bipole III Project, Manitoba Hydro requires an *Environment Act* licence. To obtain that licence, the Project must be assessed in accordance with the process outlined in *The Environment Act*.

2.2 Manitoba Review Process for an *Environment Act* Licence

Manitoba Hydro submitted an *Environment Act* Proposal Form (EAPF) together with a draft Environmental Assessment Scoping Document to Manitoba Conservation and Water Stewardship (MCWS) on December 14, 2009. The purpose of the Scoping Document was to suggest an appropriate framework and scope for conducting the environmental assessment of the Project required by *The Environment Act* and for preparing the EIS for regulatory review.

Staff of the Environmental Assessment and Licensing Branch, as well as members of a cross-departmental Technical Advisory Committee (TAC), reviewed the Proposal Form and draft Scoping Document and provided comments. Interested members of the public were also invited to provide their comments and concerns about the Project and its supporting documentation, namely the EAPF and the draft Scoping Document. Interested parties had a 60-day period in which to

provide comments. In response to the comments received from the TAC and the public, the Scoping Document was revised and resubmitted for final review in June 2010.

MCWS approved the revised Scoping Document on June 11, 2010. Thereafter, Manitoba Hydro continued the public consultations and studies which form the basis of the EIS, the filing of which is the next significant step in the process established by *The Environment Act*.

The Scoping Document stipulates that the EIS is to include, at a minimum: a discussion of the regulatory and policy framework; determination of the scope of the Project and assessment; the alternatives considered; a description of the environmental assessment consultation program (EACP); consideration of Aboriginal and local knowledge; a discussion of the environmental assessment process; discussion of the approach for cumulative effects assessment and sustainability assessment; the process for follow-up and monitoring; and the format for preparation of the EIS. Accordingly, the Bipole III EIS includes consideration of the environmental effects of undertakings associated with site preparation, construction, operation and maintenance, and final decommissioning of the associated project components.

Not all developments covered in *The Environment Act* necessarily require an EIS, but the Bipole III Project did, owing to its size and complexity. The EIS for the Project was filed with Manitoba on December 1, 2011. Upon the filing of the EIS, *The Environment Act* mandates that the EIS be accessible for a two-month period, during which interested parties may review the material and provide comment.

The Minister of Manitoba Conservation and Water Stewardship has the discretion to direct that there be a public hearing to review the EIS on such terms as the minister determines. If there is to be a public hearing of a project, it will be held before the Clean Environment Commission. The Commission is required to report to the minister

following such a public hearing and provide recommendations regarding the Project.

2.3 Federal Regulatory Review and Decision Making

The *Canadian Environmental Assessment Act* (CEAA) requires that there be an assessment of the environmental impacts of a project if federal authorities have to make a decision regarding some aspect of the project.

The Bipole III Project was determined by Environment Canada not to trigger any requirement for federal government environmental assessment, as the Project does not traverse federally administered land and does not directly impact navigable waterways or fisheries. Environment Canada confirmed in a March 14, 2012, letter to Manitoba Hydro that a federal environmental assessment was not required. At this time, Environment Canada submitted a list of recommendations to minimize impacts on environmental matters on which the federal government has a specific interest, including migratory birds, species at risk, and protection of wetlands.

2.4 Manitoba and Section 35 of Canada's Constitution

Section 35 of the *Constitution Act* (1982) stipulates that “[t]he existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed.” While Section 35 is not an “environmental” statute, it does require consultation with Aboriginal peoples whose rights may be impacted in some fashion by a project. The process of consulting with Aboriginal peoples in accordance with Section 35 is not a “regulatory process.” The obligation to initiate and carry out consultations with respect to Section 35 is that of the Province and/or of Canada, depending upon the nature of the project under consideration, its location and its ownership.

In the case of the Bipole III Project, the Government of Manitoba is conducting the Section 35 consultations. The Commission hearings played no role in these consultations.

2.5 Role of the Clean Environment Commission

The Commission's role in this regulatory process is to make recommendations on the granting of a licence under *The Environment Act*. In making its determination as to the effects of the Project and recommendations, the Commission relied on the EIS, technical experts retained by the Commission, Participant and public presentations, testimony of expert witnesses, and cross-examination of those experts.

The Commission was required to submit its report within 90 days of the close of the hearings. Should the Commission recommend the granting of a license, the minister must either adopt the Commission's licensing recommendations or provide written reasons for not doing so.

2.6 The Licensing Decision

Ultimately, it is the Minister of Manitoba Conservation and Water Stewardship who will decide whether a licence should be issued under *The Environment Act* for the Bipole III Project. His decision will be based, at least in part, upon the advice and recommendations contained in the Commission's report on the public hearings. In addition, the minister's decision will be informed by the report of the consultations with Aboriginal communities, required under s. 35 of the *Constitution Act* (1982), as well as advice from officials in his department.

Chapter Three: The Public Hearing Process

3.1 Clean Environment Commission

The Panel assigned to conduct the public hearings on the Bipole III Project consisted of Terry Sargeant, (Chairperson of the Panel and of the Clean Environment Commission), Ken Gibbons, Brian Kaplan, Patricia MacKay, and Wayne Motheral.

3.2 Public Participation

3.2.1 Participants

This report uses two terms to describe members of the public who took part in the process: Participants and Presenters.

Participants are groups who were substantially involved in the process. In many cases, Participants took part in the pre-hearing process, during which they analyzed the Environmental Impact Statement and sought further information before the beginning of hearings, and many of them brought their own expert witnesses to the hearings. Many Participants were represented by counsel. Participants were able to ask questions of the Proponent or of each other. In turn, they may also have been asked questions by the Proponent. Many of the Participants received funding through the Participant Assistance Program, in order to help them analyze and assess the impacts of the Bipole III Project and prepare for the hearings. Participants were:

- The Bipole III Coalition
- The Consumers' Association of Canada
- The Green Party of Manitoba
- The Manitoba Métis Federation
- Manitoba Wildlands
- Peguis First Nation
- Pine Creek First Nation

- Sapotaweyak Cree Nation
- Tataskweyak Cree Nation

3.2.2 Participant Assistance Program

Funding for Participants is established by *The Environment Act Participant Assistance Regulation*, which established a Proponent-funded program that ensures that qualifying public organizations have access to resources to participate effectively in hearings of this nature. Typically, Participants use these funds to hire legal counsel and specialists with experience conducting assessments of biophysical and socio-economic impacts, and to pay travel and accommodation expenses for representatives making presentations.

3.2.3 Presenters

Presenters are organizations or individuals who attended and spoke only at the formal hearings. Presenters were allowed 15 minutes each in which to present their views or information.

3.3 The Pre-Hearing

Following the filing of the Environmental Impact Statement on December 1, 2011, the Commission was issued its terms of reference for the Bipole III hearings on Dec. 5, 2011. In February, 2012, the Commission invited Manitobans to apply for funds, under the Participant Assistance Program, to help them participate in the review of the Bipole III Project. The Participant Assistance Committee of the Commission reviewed applications for funding and in May, 2012, recommended to the Minister of Manitoba Conservation and Water Stewardship that allocations be made to organizations for their participation in the Bipole III hearings.

In order to prepare for public hearings into the Project, Participants were able to forward requests for clarification of information in the EIS or for background or pertinent information that had not been included in the EIS and technical reports. Some 650 information requests (IRs) were submitted to, and responded to by, Manitoba Hydro.

During this pre-hearing period, the Commission held two pre-hearing meetings and one motions hearing with Participants and the Proponent. These meetings were held in order to discuss procedure, timing, and the terms of reference for the hearings. During this period, the Commission received clarification from the minister on several matters concerning the terms of reference. These matters concerned the question of alternatives to the western Manitoba route and the review of needs for and alternatives to (NFAAT) Bipole III. These letters of clarification confirmed that the Commission's review would not include NFAAT or the east-west question. Questions also arose during the pre-hearing process regarding the Crown's duty to consult Aboriginal people, as stipulated in Section 35 of the *Constitution Act*. Clarification on this issue confirmed that Section 35 consultations are undertaken by the Crown and are separate both from the Clean Environment Commission hearings, and from the public consultations and Aboriginal Traditional Knowledge processes required of the Proponent of a project.

3.4 The Hearings

Hearings began on October 1, 2012, and ran until November 22, 2012, before adjourning to allow Manitoba Hydro to conduct additional review and consultation. Hearings then resumed March 4 and concluded March 14, 2013. Hearings were held in Winnipeg, Gillam, Thompson, The Pas, Dauphin, Portage La Prairie, and Niverville. Throughout the hearings, the Panel heard evidence from 29 witnesses called by the Proponent and 45 witnesses called by the various Participants. In addition to these witnesses, the Panel heard evidence from 95 Presenters.

CEC hearings follow a formal process. Written submissions and supporting materials are filed as exhibits. Witnesses for the Proponent and the Participants make oral presentation, in an agreed-upon order, summarizing their written submissions. Questioning of witnesses for the Proponent or the Participants proceeds formally and is conducted by the representatives of the Proponent and the Participants. Panel members also ask questions of the witnesses. In addition to hearing oral testimony, the Panel also accepted written submissions.

Chapter Four: Manitoba's Electrical Generation and Transmission System

4.1 System Overview

Electricity in Manitoba is generated and transmitted by Manitoba Hydro, which operates a total of 17 generating stations, 15 of which are hydro electric, and also buys electricity from

the Interlake to the Dorsey Converter Station, northwest of Winnipeg, where it is converted to AC power for use by customers. The Bipole I and II lines run along the same right-of-way for their entire distance. (See Figs. 4.1 and 4.2).

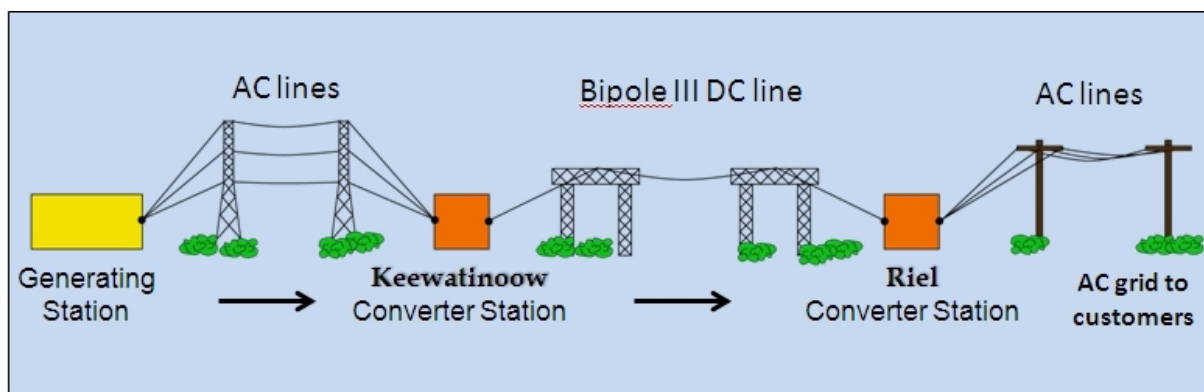


Fig. 4.1 How electricity is transmitted from generating station to home

two wind farms. Manitoba Hydro also builds and operates Manitoba's electrical transmission system. In effect, there are two transmission systems: an AC transmission system, which transmits power at various voltages in the form in which it is used in homes and workplaces, and the DC transmission system, which transmits power from the north, where it is generated, to the south, where most of the users live and work. DC transmission is used to transmit large amounts of power over long distances because it is more efficient than AC transmission.

Most of Manitoba's Hydro's generating capacity is supplied by northern generating stations on the Nelson River. Three large generating stations on the Nelson River – Kettle, Long Spruce, and Limestone – have a total capacity of more than 3,500 megawatts (MW). These three stations represent approximately 70 per cent of Manitoba Hydro's generating capacity. While some of the electricity generated by these northern stations feeds into northern AC lines to power local communities, most of it is converted to DC power at the Radisson and Henday Converter Stations. From there, it is transmitted via the existing Bipole I and II lines through

Because so much of Manitoba's electricity is transmitted over a common right-of-way on the Bipole I and II lines, Manitoba is vulnerable to catastrophic power failures caused by ice storms, tornadoes, fires or other events that might damage either the transmission lines or the Dorsey station. The Bipole III line is intended to reduce this vulnerability by ensuring that a large amount of electricity can be transmitted to the main population centres by a different route.

Manitoba Hydro has AC transmission lines connecting beyond Manitoba to neighbouring provinces and states, which allow for surplus electricity to be sold for export and, when necessary, for electricity to be purchased from other utilities.

When electricity is bought and sold, it is referred to in terms such as kilowatt-hours. A kilowatt-hour is 1,000 watts of power flowing for one hour. To visualize this, imagine 17 60-watt lightbulbs left on for one hour. One megawatt-hour is 1,000 kilowatt-hours. As of 2012, in an average year, Manitoba Hydro produces about 30 million megawatt-hours of electricity. Domestic

consumption within Manitoba uses about 24 million megawatt-hours, and Manitoba Hydro sells the remaining 6 million megawatt-hours outside of the province.



Fig. 4.2 Manitoba Hydro's northern generating stations and major transmission lines

4.2 Lake Winnipeg Regulation and the Churchill River Diversion

Manitoba Hydro manages power production on the lower Nelson River by regulating the level of Lake Winnipeg and diverting water from the Churchill River into the Nelson. These changes to the waterways of northern Manitoba were undertaken in the 1970s in order to ensure a steady supply of water to generate electricity at the Nelson River stations.

The governments of Canada and Manitoba established the Lake Winnipeg, Churchill and Nelson Rivers Study Board in 1971 to investigate the social, economic and environmental aspects of Lake Winnipeg Regulation (LWR), the Churchill River Diversion (CRD) and the

development of the hydroelectric potential of the lower Nelson. In 1970, the Manitoba government issued an interim licence to Manitoba Hydro, under *The Water Power Act*, to proceed with LWR. A supplementary interim licence for LWR was issued in 1972. The level of water in Lake Winnipeg is regulated to provide storage capability and increased flow to the downstream power plants in the winter, when Manitoba Hydro has its peak energy requirements and when ice on Lake Winnipeg limits outflow. The Churchill River Diversion diverts a large portion of the flow of the Churchill River into the Nelson via the Rat and Burntwood Rivers, in order to allow the generation of more power. Construction of the CRD began in 1973 and the CRD became operational in 1977 with flooding of areas around Southern Indian Lake. CRD is operated in accordance with an interim licence dated December 19, 1972, and a second interim licence issued on May 11, 1973.

Flooding and changes in water levels associated with LWR and CRD have had serious long-term effects on local Aboriginal communities and economies. In 1974, the five directly affected First Nations of Nelson House, Split Lake, York Landing, Cross Lake, and Norway House formed the Northern Flood Committee (NFC) to facilitate discussion with Manitoba Hydro and the federal and provincial governments. The June 1975 final report of the Lake Winnipeg, Churchill and Nelson Rivers Study Board recommended certain mitigation measures. In 1977, the five NFC first nations, the government of Manitoba, the Manitoba Hydro-Electric Board, and the government of Canada signed the Northern Flood Agreement (NFA), which was intended to deal with adverse effects resulting from the modification of the water regime that accompanied the development of hydroelectric power in northern Manitoba. In the mid-1990s, Northern Flood Agreement Implementation Agreements were concluded between four of the NFA First Nations, Manitoba Hydro and the governments of Canada and Manitoba to implement the 1977 NFA and to resolve most, although not all, outstanding claims stemming from the CRD and LWR.

The changes in water levels and seasonal flows caused by these major developments

negatively affected many individuals and communities in northern Manitoba. This experience continues to influence attitudes and relationships throughout the region and casts a shadow over Manitoba Hydro developments today.

Why is Bipole III a DC line?

Electricity is generated in hydro electric generating stations by the force of water turning a giant electromagnet. The electricity is generated as AC or alternating current, meaning that the charge alternates from positive to negative, in the form of electrons moving back and forth very rapidly over very short distances. This is the form of electricity used in homes and offices. AC electricity is efficient to transmit over short distances. Over much longer distances, AC has disadvantages. AC lines lose more power through transmission, through the heating up of wires, than do DC or direct current lines. In DC power, the current always has the same charge and does not switch from positive to negative. Most of the electricity generated by the three largest Nelson River dams is transmitted, at present, via DC lines known as Bipole I and II. Because the Bipole III line will transmit DC current, it is necessary to build two converter stations: one to convert the AC current to DC at the northern end of the line, and the other to convert the DC current back to AC at the southern end of the line.

Why is it called Bipole?

In bipole transmission, electrical current, in the form of electrons, flows in a circuit over two transmission lines. The word bipole comes from combining bi (two) with polarity, meaning that a bipole line has two lines, one with each polarity (positive and negative). In Bipole III, one line will transmit electricity (electrons) from the Keewatinoow Converter Station to the Riel Converter Station. The other line completes the circuit by allowing electricity (electrons) to return to Keewatinoow. Essentially, a Bipole line is a very long loop, making a complete electrical circuit. The electricity will not flow if this circuit is not complete, so if for any reason one of the two lines in a Bipole line is not working, the electricity will not flow. This is the reason the Bipole III Project requires the two ground electrodes. Each ground electrode is a large circle of wells dug into the ground through which electric current can be transmitted to return to Keewatinoow from Riel. In effect, the earth itself becomes part of the line, allowing the electricity to complete its circuit.

What is electricity?

Electricity is the result of the movement of free electrons from atom to atom in a substance. When electrons can be made to jump in the same direction at the same time, the result is an electrical current. Electricity, then, is the flow of electrons through material. Some materials, such as the aluminum used in the conductors (wires) in the Bipole III line, contain a large number of free electrons and are therefore said to be good conductors of electricity. Other materials, such as wood, rubber or glass, have few free electrons and are called insulators. That is why glass is used in the insulators between the wires and the towers on the Bipole III line.

How is electricity generated?

Scientists discovered in the early 19th century that by using a magnet it is possible to make free electrons flow in the same direction through a wire, creating an electric current. This is essentially what makes hydroelectric generation possible. The force of water being directed through a generating station turns a giant electromagnet weighing hundreds of tonnes, in a cylinder lined with wires. One generating station may contain ten or more of these giant electro magnets.

Chapter Five: The Bipole III Project

5.1 Bipole III Components

The Bipole III Transmission Project consists of five main components:

- 1) a high-voltage direct current (HVDC) transmission line;
- 2) a converter station in northern Manitoba to convert AC power into DC power for transmission;
- 3) a converter station in southern Manitoba to convert the DC power in the transmission line back to AC power;
- 4) AC collector lines in northern Manitoba to connect the northern converter station with the sources of power; and
- 5) two ground electrodes, one connected to each of the converter stations.

5.1.1 HVDC Transmission Line

A new high-voltage direct-current (HVDC) electrical transmission line will run approximately 1,385 km from a site adjacent to the Nelson River approximately 79 km downstream of the Town of Gillam to a site east of the City of Winnipeg, following a route that will run to the west of Lakes Winnipegosis and Manitoba and around Winnipeg to the south before turning north and west to its terminus. This line will require a 66-metre-wide right-of-way. Transmission towers will be placed approximately every 488 metres along the centre of this right-of-way. Two main tower types, varying in height from 45-47 metres, will be used. In the northern portion of the line, each tower will be supported by four guy wires. (See Fig. 5.1) In the southern portions of the route, self-supporting towers will be used. (See Fig. 5.2) Variations in design will be used depending on whether the line is running straight or curving. Heavier towers are used in places where there is a curve in the line. The conductors (wires) will be suspended from the arms of the towers at such a height to maintain a minimum clearance above the ground of 13.2 metres (13.7 metres at road and rail crossings).

Vegetation will be cleared initially and managed in order to maintain a safe distance between the line and any trees that could come into contact with it. In the portions of the transmission right-of-way where guyed towers will be used, the portion of the right-of-way that will be cleared of tall vegetation will be 62 metres wide. In the portions where self-supporting towers will be used, the cleared portion of the right-of-way will be 45 metres wide. The transmission line will require approximately 1,930 guyed towers and 930 self-supporting towers. Towers are substantial structures, weighing 16,000 kg (for guyed towers) to 30,000 kg (for self-supporting towers). Erecting the towers will require digging/drilling of footings, which may require blasting, and the pouring of foundations.

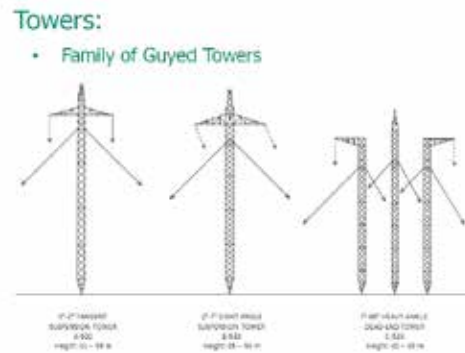


Fig. 5.1 Types of guyed towers

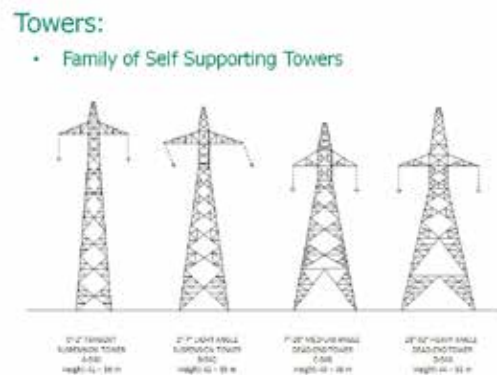


Fig. 5.2 Types of self-supporting towers

The Bipole III line itself will consist of two bundles of three conductors (wires). In addition to these conductor bundles, a smaller wire known as the Optical Ground Protection Wire will connect the peaks of the towers. This wire provides grounding and protection in the event of lightning strike, as well as transmitting communications for control and protection of the line.

Clearing the transmission line right-of-way and construction of the line itself will require the creation of temporary access routes, mostly in northern Manitoba, where the right-of-way goes through territory without convenient access. Construction will also require the creation of borrow pits (locations for collecting gravel and other construction material). Temporary work camps will be created at locations to be identified later along the right-of-way.

5.1.2 Keewatinoow Converter Station

A converter station rated at 2,000 megawatts tentatively named Keewatinoow will be built 79 km from Gillam, adjacent to the Nelson River. It will convert AC electricity generated by northern hydro-electric generating stations to DC.

The 41-hectare converter station site will include a 230 kV AC switchyard, converter transformers, a converter building and solid-state electronic valve groups, and DC switchyard. Switchyards are large arrays of electrical equipment necessary to change the voltage and otherwise regulate the electrical current flowing into or out of a converter station. In addition to the converter building, which will house the electronic equipment used to convert current from AC to DC, the site will have a number of additional buildings for control of the switchyards, storage, emergency response, water treatment, a fire pumphouse and other purposes. Electrical equipment at converter stations such as transformers contains a large amount of insulating oil and so the site will have safeguards to contain any spills that could occur as a result of accident or fire.

Near the Keewatinoow Converter Station will be two large temporary facilities. The construction camp will be built to house up to 600 workers, and will include individual sleeping accommodations,

food services, recreation, storage, rest and first aid facilities. Construction of the Keewatinoow Converter Station will also require building of a construction power station along with a power line running from it to the Keewatinoow Converter Station. This construction power line will run 27 km from the Henday Converter Station. Borrow pits, construction marshalling yards and other facilities will be required for development of Keewatinoow.

5.1.3 AC Transmission Connection to Keewatinoow

New 230kV AC transmission lines will link the Keewatinoow Converter Station with the Henday Converter Station and the Long Spruce Generating Station. These stations will require modifications to accommodate these lines. One 55-km AC line will run from Long Spruce to Keewatinoow and four 27-km AC lines will run from Henday to Keewatinoow, in a common right-of-way that will be between 280 metres and 310 metres wide.

5.1.4 Riel Converter Station

A converter station rated at 2,000 megawatts to be named Riel will be built east of Winnipeg in order to convert the electricity transmitted by the Bipole III line from DC back to AC, to allow it to be used by Manitoba Hydro customers. The Riel site is approximately 110 hectares, located east of the Red River Floodway and north of the Deacon Reservoir. The Riel Converter Station consists of a DC switchyard, converter building, and AC switchyard, in addition to buildings for storage, fire suppression equipment, and control of other electrical equipment. Like Keewatinoow, the Riel station will have protections to contain any spills of insulating oil from the electrical equipment. As Riel is adjacent to the city of Winnipeg, there will be no need for a construction camp.

5.1.5 Two Ground Electrodes

Two ground electrodes will be built – one near each converter station – to permit electricity to return to the ground and complete a circuit. Under normal operations of the Bipole III transmission line, the electrode will conduct very low amounts of current. During some

maintenance or emergency outages, electricity will flow from Keewatinoow to Riel via one of the transmission line’s conductor bundles and will return from Riel to Keewatinoow through the earth, using the two ground electrodes. In these cases, the ground electrodes will conduct an electric current equal to the normal current of the HVDC line.

A ground electrode is a large ring of steel rods buried to below the frost level and embedded underground in a bed of coke (a high-carbon material, usually made from coal). The northern ground electrode will be approximately 800 metres in diameter and will be built in a trench dug three to four metres deep. The total area required for the northern ground electrode site will be 400 hectares. The southern ground electrode will be approximately 400 metres in diameter. The portion of the northern electrode site that will be occupied by the electrode ring and other facilities will need to be cleared. The southern electrode site is currently under agricultural production. Each electrode will require construction of an irrigation system to ensure the right level of moisture in the soil for the operation of the electrode. Each ground electrode will be connected by a low-voltage power line to its converter station.

A low-voltage power line will run approximately 11 km from the Keewatinoow Converter Station to the northern ground electrode site. A low-voltage power line will run from the Riel Converter Station to the ground electrode, which will be located approximately nine kilometres east of the town of Oakbank.

5.2 Bipole III Project Scope

Because it spans such a long distance and includes several individual components, the Bipole III Transmission Project has a substantial footprint and touches on many different parts of the Province of Manitoba. The Bipole III line crosses five of Manitoba’s six ecozones. Starting from the north, these ecozones are the Hudson Bay Plain, the Boreal Taiga, the Boreal Shield, the Boreal Plain, and the Prairie. Within these ecozones are many different types of habitat and land that is used for many different purposes. The following table indicates the length of the Bipole III right-of-way that traverses various

types of land cover (Table 1). A rule of thumb for converting distances of the right-of-way to area is that each 15 km of the 66-metre-wide right-of-way equals approximately one square kilometre (100 hectares).

Table 1. Types of land cover traversed by Bipole III Transmission Line

Land Cover	Length of Transmission line (in kms)
Annual Cropland	256
Forest/Productive Forest	510
Broad Leaf, Sparse	14
Coniferous, Sparse	24
Mixed Wood, Dense	46
Broad Leaf, Dense	55
Broad Leaf, Open	86
Coniferous, Open	140
Coniferous, Dense	144
Grassland/Prairie	262
Herb	23
Grassland	117
Shrub, Tall	122
Wetland	304
Wetland, Treed	90
Wetland, Herb	90
Wetland, Shrub	124
Water	7
Others	48
Developed Land	12
Exposed Land	13
No Data	23

The footprint of the entire Project is approximately 11,000 hectares (or 110 square kilometres), including the land covered by the right-of-way of the Bipole III line, the new AC collector lines, the Keewatinoow and Riel Converter Stations, and the northern and southern ground electrodes and the low-voltage lines that connect these ground electrodes to the converter stations. The transmission line right-of-way, at more than 9,000 hectares, accounts for the largest portion of the Project Footprint (one hectare is almost 2.5 acres). In addition to these essentially permanent features, construction of the Project will require creation of a 600-person work camp near Keewatinoow, with a sewage lagoon, smaller short-term construction camps, which will be located along the right-of-way, and creation of several hundred kilometres of temporary construction access routes.

The Final Preferred Route (FPR) of Bipole III is 1,385 km, with a right-of-way width of 66 meters. Approximately two-thirds of the route, 931 km, is on Crown land, and 454 km is on private land, owned by 436 private landowners. Construction of the line will be broken into eight segments: four in the north, two in the central area, and two in the south.

For guyed towers, used primarily in the north, the footprint is approximately 2,900 square metres (54 metres by 54 metres), which includes the area within the four anchored guy wires that hold the tower in place. For the self-supporting towers, used primarily in the south, the immediate footprint of each tower is approximately 64 square metres (eight by eight metres). This is the area between the four legs and immediately under the tower.

The Bipole III Project requires crossing approximately 365 watercourses – 317 for the Bipole III line, 43 for the AC collector lines connecting to the Keewatinoow converter station, and five for the line connecting Keewatinoow with the northern ground electrode.

The Project will require the clearing of approximately 4,100 hectares of forest vegetation. Of these, 3,355 hectares will be cleared for the Bipole III line while 738 hectares will be cleared for other components.

Chapter Six: Consultation

6.1 Requirements and Guidelines for Consultation

Manitoba's *Environment Act* provides for public consultation in environmental decision making and states that when assessing an application for a Class 3 development, such as Bipole III, the Minister of Manitoba Conservation and Water Stewardship may require the Proponent to carry out public consultation. The Scoping Document for the Bipole III Environmental Impact Statement (EIS), as approved by Manitoba Conservation and Water Stewardship (MCWS) on June 11, 2010, stipulated that the EIS was to include, among other things, a description of the environmental assessment consultation process. The Scoping Document also required that the EIS include consideration of Aboriginal and local knowledge.

Manitoba Hydro states that it intended its Bipole III consultation program to meet or exceed minimum requirements of relevant legislation and to follow accepted industry principles and practices. The guidelines of the Canadian Environmental Assessment Agency (CEAA) were selected by Manitoba Hydro as a standard for public participation and consultation. These guidelines describe eight key elements of meaningful public participation:

- 1) Early notification
- 2) Accessible information
- 3) Shared knowledge
- 4) Sensitivity to community values
- 5) Reasonable timing
- 6) Appropriate levels of participation
- 7) Adaptive processes
- 8) Transparent results

Consultation can be said to serve two major functions for a proposal such as Bipole III. On the one hand, it gives the public, including specific

interested communities, an opportunity to express their views, interests and opinions. On the other hand, it gives the Proponent the opportunity to gather important information to help in planning the Project, including knowledge that will help it to prevent or mitigate environmental impacts.

In discussing consultation carried out for the Bipole III Project, this section of the report will also include Manitoba Hydro's efforts to collect or support the collection of Aboriginal Traditional Knowledge (ATK), defined in the Bipole III EIS glossary as: "knowledge that is held by and unique to Aboriginal people. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal knowledge holders." On a project such as Bipole III, ATK serves both of the roles of consultation referred to above. ATK gathers the viewpoints of Aboriginal communities that may be affected by a project, but it is also a form of research, gathering knowledge about the environment under consideration and the people who live in or depend on the environment. While the views and experiences of many Aboriginal people were gathered through the ATK process, Aboriginal views and experiences were also gathered through many community consultation mechanisms as well.

6.2 Community Consultation

Manitoba Hydro undertook a multi-part consultation program that was designed to inform its environmental assessment.

Consultation timeline

- | | |
|------|---|
| 2008 | Round 1 – Introduction (initiate dialogue, describe project, identify issues and concerns, inform public about EIS process and schedule) |
| 2009 | Round 2 – Site selection (describe changes since Round 1, describe site selection process, obtain information from public about site constraints and routing opportunities) |

- 2009/10 Round 3 – Alternative route selection (present alternative routes, explain how routes were identified, identify issues and concerns for the routes, obtain feedback on the routes)
- 2010 Round 4 – Preliminary Preferred Route (PPR) selection (present PPR, review findings of evaluation of alternatives, obtain input on mitigation)

This program is referred to by Manitoba Hydro as its Environmental Assessment and Consultation Program (EACP). This consultation program took two forms: one in the southern areas and another in northern and Aboriginal communities.

6.2.1 Southern Manitoba

Four rounds of public consultations occurred, providing increasingly focused exchanges of information about the Project as the route selection process narrowed in on the proposed route for the transmission line. Rounds 1 and 2 were focused on identifying stakeholders, providing an introduction to the Project and identifying potential issues and concerns to assist in establishing proposed route alternatives. Round 3 was focused on receiving and reviewing input on three route alternatives to assist in selecting a preliminary preferred route (PPR). Round 4 was focused on confirming the PPR and receiving input on mitigation measures.

6.2.2 Aboriginal/Northern Manitoba

The goals for meetings with Aboriginal and northern communities were similar to the goals for southern consultation. Manitoba Hydro representatives met with leadership and members of First Nations and Northern Affairs communities to discuss and receive input on the Project. Northern Affairs communities are small communities that are not otherwise incorporated as municipalities and are organized under Manitoba's Department of Aboriginal and Northern Affairs. Manitoba Hydro also engaged in meetings with the Manitoba Métis Federation. In addition, Manitoba Hydro directly led workshops for collection of Aboriginal Traditional Knowledge in 19 communities and provided financial support for eight self-directed ATK studies.

6.2.3 Consultation Methods

A combination of notification techniques was used for each round of consultations, with an increased communication focus in Rounds 3 and 4 as alternative routes and the preferred route were identified. Letters were sent to rural municipalities, cities, towns, local government districts (LGDs), First Nations, Northern Affairs community councils, and Aboriginal umbrella groups. Advertisements were taken out in regional and community newspapers. Posters were sent to First Nations and Northern Affairs community councils and to other communities affected by the alternative routes or the preferred route. In some Aboriginal communities, community co-ordinators were used to facilitate community contacts. Radio advertising was used in Rounds 3 and 4 in areas affected by the alternative routes or the preferred route. Email and telephone follow-up was made to specific stakeholders as required throughout the process. In Round 4, a mass postal code notice was sent to addresses close to the Preliminary Preferred Route. As well, in Round 4, a Project Information Line allowed members of the public to call in with questions about Bipole III.

Several kinds of consultation were used in each round. In total about 500 meetings were held, with about 4,500 people participating. Some communities, particularly those west and south of Riding Mountain National Park, which participated in the early rounds of consultation, did not participate in the final rounds as route selection shifted away from their area. In addition to several kinds of meetings, public input was also gathered through letter and email submissions, the Project Information Telephone Line and the Project website. The following kinds of meetings were held:

- **Planning District Meetings:** Because Planning Districts include representatives from partnering municipalities, these meetings were a way to introduce the Bipole III Project to municipal council members and determine routing opportunities and constraints over a fairly broad area. These meetings were held in the early stages of Round 1 and 2.
- **Leadership Meetings:** During all rounds, the study team aimed to meet with the leadership

of First Nations and Northern Affairs communities. These meetings were generally held before Community Open Houses.

- **Aboriginal Umbrella Group Meetings:** Meetings were held in all rounds of consultation with representatives of Aboriginal organizations such as Manitoba Keewatinowi Okimakanak, Swampy Cree Tribal Council, Keewatin Tribal Council, the Southern Chiefs Organization, and the Manitoba Métis Federation.
- **Regional Open Houses:** These open houses were distributed across the Project Study Area, generally in the larger communities, in Rounds 1 and 2. In Rounds 3 and 4, as specific alternative routes were identified, they were held near the proposed routes to target feedback specifically about issues in the immediate area.
- **Community Open Houses:** These open houses were held in First Nations and Northern Affairs communities in Rounds 2, 3 and 4.
- **Municipal Council Meetings:** Once alternative routes were identified, members of the study team met with affected municipal councils in Rounds 3 and 4.
- **Stakeholder Meetings:** These meetings, with organizations such as Keystone Agricultural Producers, the Mining Association of Manitoba, and Manitoba Lodges and Outfitters, allowed for specific concerns to be raised regarding issues such as mining, agriculture, hunting and tourism. Stakeholder meetings occurred in Rounds 2, 3 and 4.
- **Landowner Information Centres (LIC):** These meetings were held in Round 4 along with identification of the PPR. All landowners within one-half mile of the PPR were invited to speak one-on-one with a Manitoba Hydro representative in each municipality that was to be crossed by the PPR. Landowner Information Centres occurred prior to the Regional Open House in an area. During LIC meetings, which generally lasted 15-45 minutes, landowners were asked a series of questions about their

use of their land, farming practices, buildings, or other potential obstructions on the land. Manitoba Hydro contacted 767 landowners who had property within one half mile of the Final Preferred Route (FPR) in a July 2010 mailing. In all, 436 private landowners have property traversed by the route.

- **Key Person Interviews:** KPIs were interviews with selected individuals who had knowledge of a community, including socio-economic details. KPIs were held after the PPR was identified in Round 4. Councils were asked to provide a representative who could provide socio-economic information on the area around the PPR and on the municipality or First Nation as a whole.

6.2.4 Major Issues Raised

A number of key issues were identified and grouped into categories during consultation.

- **East side routing:** Locating the Bipole III transmission line east of Lake Winnipeg dominated the feedback at many open houses.
- **Line length and cost:** This was brought up in meetings both in relation to an east-side route and regarding selection among the three alternative routes proposed in the Project Study Area.
- **Agriculture:** Issues included the impact on farm operations and aerial spraying, concerns that electro-magnetic frequencies (EMFs) would have an impact on Global Positioning System-equipped farm machinery or on dairy cattle, and the amount and method of compensation.
- **Mining:** Industry concerns focused on possible interference with electromagnetic surveys used in mineral exploration, especially in the Thompson Nickel Belt and Flin Flon Greenstone Belt areas.
- **Health and property:** Concerns focused on the effect of EMFs on human health and/ or the effect of the transmission line on the value of residences or property.

- **Wildlife:** Concerns about effects on wildlife focused largely on caribou, moose and migratory birds.
- **Parks, recreation and aesthetics:** Some participants were concerned about the proximity of some of the alternative routes to national or provincial parks, Wildlife Management Areas, and Areas of Special Interest.
- **Economic considerations:** Open house participants expressed interest in potential employment, training or business opportunities. Some referred to a need for a process to ensure that Aboriginal businesses would be able to provide materials or services. Others expressed interest in ownership or revenue-sharing in the Project.
- **Trapping:** Participants at Community Open Houses and Leadership Meetings frequently mentioned concerns about trapping. Some were concerned that snowmobile groups would develop trails along the right-of-way, and that this might affect trappers.
- **Vegetation management and herbicides:** In non-agricultural areas some participants expressed concerns about the use of chemicals in vegetation management and the possible impact on wildlife, waterways, and natural vegetation, especially berries. In agricultural areas, the question of responsibility for vegetation management and weed control under the towers was an issue. Some participants also expressed the concern that the use of chemicals in vegetation management could affect the certification of organic farms along the route.
- **Gathering, hunting, and fishing:** Participants, particularly in the north, discussed the effect on gathering, fishing, and hunting, and the importance of blueberries and medicinal plants. Some asked why Manitoba Hydro does not have a policy for gathering, fishing and hunting similar to the Trapper Notification and Compensation Policy.
- **Enduring community benefits:** Participants frequently expressed a desire for an enduring

benefit from the Project beyond temporary employment during line construction. Some participants felt Manitoba Hydro's planned Community Development Initiative (CDI), which will provide up to \$5 million per year for 10 years to be available to communities near the Bipole III Project for community projects, either does not provide enough compensation or does not last long enough to be significant. Others asked about eligibility of communities for funding through the CDI.

What We Heard: Community Consultation

The Commission heard many presentations from landowners and farmers in agricultural Manitoba who felt consultation had been inadequate. One particular concern was regarding the timing of the Landowner Information Centres set up during Round 4 to provide for consultation with owners of land along the preferred route. These meetings were held for two months, from late August to late October, 2010. As this would be during and immediately after harvest, a busy time for farmers, this may have made it difficult to take part.

The Commission also heard concerns that some representatives of Manitoba Hydro who spoke to land owners about the transmission line presented the Project as a *fait accompli*. Land owners who spoke at the hearings said they were told that they should agree to an easement because the Project was going to be approved no matter what they did. Several commenters characterized Manitoba Hydro or its agent as behaving in a bullying manner in relation to landowners.

6.3 Aboriginal Engagement and Aboriginal Traditional Knowledge

While Aboriginal individuals and communities were involved in all four rounds of the Environmental Assessment and Consultation Program, Aboriginal communities were involved in several other kinds of discussions and consultations related to Bipole III. Manitoba Hydro referred to all of the consultations involving Aboriginal communities, as "Aboriginal engagement." During the public hearing on Bipole III, Manitoba Hydro representatives discussed

four mechanisms of Aboriginal engagement: the EACP process, direct on-going discussions between Manitoba Hydro and specific First Nations, the Crown consultation process, and ATK workshops and studies.

The EACP process involved 26 First Nations, the Manitoba Métis Federation, and 23 Northern Affairs communities in four rounds. These consultations generated a wide range of responses on environmental, social, cultural and economic topics. As part of this process, Manitoba Hydro also met with trappers and trapping organizations, and in these meetings heard concerns of many Aboriginal people.

Direct discussions with individual First Nations within the Bipole III Project Study Area have also been on-going in some cases as a result of previously negotiated agreements. Under the terms of the 2004 Fox Lake Impact Settlement Agreement, Manitoba Hydro has been engaged in bilateral discussions with Fox Lake Cree Nation (FLCN) regarding both the Keewatinooow Converter Station and the Bipole III line. Manitoba Hydro has been consulting with Tataskweyak Cree Nation (TCN) through a process in which the Corporation provides funding for TCN to consult its own members. This process, TCN's preferred approach, led to the development of two reports on route selection and impacts of Bipole III on TCN's Split Lake Resource Management Area (as defined by the 1992 NFA Implementation Agreement) and the broader Split Lake Resource Area.

The Crown consultation is the responsibility of and is being carried out by the Government of Manitoba. The Crown consultation process refers to the obligation, under Section 35 of the *Constitution Act*, to consult with First Nations and Métis communities regarding any effects a development may have on Aboriginal rights. Manitoba Hydro was not part of these consultations, but carried out its own consultation process.

Two programs were developed to gather Aboriginal Traditional Knowledge relevant to the Bipole III Project. These will be discussed in further detail in the following section.

In addition to consultation on routing and environmental impacts, Manitoba Hydro has been engaged with communities near the Bipole III line and converter stations in order to prepare the Environmental Protection Plan. These consultations are intended to identify sensitive sites, plan protection, monitoring and mitigation, and allow communities to review those plans.

ATK – a word on terminology

While the term Aboriginal Traditional Knowledge (ATK) is used by many Aboriginal groups, it is not universally used. Opaskwayak Cree Nation (OCN) prefers the term Aboriginal Ecological Knowledge (AEK) on the grounds that the word “traditional” relegates the knowledge to the past. For the sake of simplicity, this report will use the same term – ATK – for all such reports and processes that seek to capture the living knowledge, experience and values of Aboriginal resource users. The MMF's Traditional Land Use and Knowledge Study (TLUKS) played the same role in the EIS as the self-directed ATK studies carried out by First Nations.

6.3.1 ATK-Gathering Process

Aboriginal communities provided ATK in two ways: through ATK workshops organized by a consultant working for Manitoba Hydro or through self-directed ATK studies funded by Manitoba Hydro. Letters were sent to 49 communities (First Nations, the MMF and Northern Affairs communities) to invite them to take part in ATK workshops. Five First Nations and 14 Northern Affairs communities took part in Hydro-organized ATK workshops. In addition, Manitoba Hydro provided funding for eight self-directed ATK studies to be carried out. Self-directed studies were carried out by Fox Lake Cree Nation, Long Plain First Nation, Opaskwayak Cree Nation, Swan Lake First Nation, Tataskweyak Cree Nation, and Wuskwi Sipihk First Nation, as well as the Manitoba Métis Federation. A self-directed study was carried out by Sapotaweyak Cree Nation later in the process. Communities

participating in Manitoba Hydro's ATK workshops were Baden, Barrows, Camperville, Chemawawin First Nation, Cormorant, Dakota Plains First Nation, Dakota Tipi First Nation, Dawson Bay, Duck Bay, Herb Lake Landing, National Mills, Pelican Rapids, Pikwitonei, Pine Creek First Nation, Powell, Red Deer River, Thicket Portage, Waywayseecappo First Nation and Westgate.

In the ATK workshops, Manitoba Hydro's representatives held 96 interviews in 19 participating communities. Of these, 68 were individual Key Person Interviews and 28 were group interviews with five to 15 people. As part of the ATK workshops, participants mapped knowledge of topics such as plant and animal habitat, fish spawning, and cultural activities onto a series of maps. Interviews were recorded and their content analyzed using a computer program that coded key words to identify themes that were important for the communities and to group responses into categories of knowledge.

6.3.2 Concerns Identified Through ATK

The ATK process generated a list of the most common community concerns regarding Bipole III. These were:

- **Electric and Magnetic Fields (EMFs):** Many participants fear that EMFs will have an impact on human or animal health or will render plants and medicines unusable.
- **Herbicides and spraying:** Many participants fear that chemicals will contaminate cultural resources such as medicinal plants along the right-of-way or beyond and that community resource users may abandon or alter their cultural practices to avoid potential contact with chemicals.
- **Access:** Some participants were concerned about increased access to resources by non-community members.
- **Fragmentation of lands and habitat:** Fragmentation of lands and habitat may reduce the wildlife population available for domestic harvest or as a source of cultural products.

- **The role of the land in preserving history and language:** If landscapes are altered, the passing on of some aspects of traditional knowledge or language may be altered or lost.
- **Employment:** Participants expressed a desire for the Project to generate employment in their communities or spoke about the need to generate more than temporary jobs in clearing the right-of-way or construction of the transmission line.

Throughout the ATK process, participants spoke of the role of activities such as harvesting plants, trapping, fishing and hunting as more than simply economic activities. These activities are essential to passing on culture, language and history and provide important opportunities for families and communities to gather and strengthen ties. Accordingly, an effect on a resource cannot simply be mitigated through financial compensation as its value to the community is greater than its economic value.

6.3.3 Important Areas Identified Through ATK

One hundred and fifty six environmentally sensitive sites (ESS) along the proposed Final Preferred Route (FPR) were described by participating communities as very important. In the Bipole III EIS, the term "environmentally sensitive site" is used to refer to specific areas where special measures will need to be taken during clearing, construction or maintenance in order to protect a valuable or sensitive feature. In addition to identifying ESSs, the ATK process identified five areas where community concerns were particularly high:

- **The Keewatinoow Converter Station site:** The discovery of a possible ancient burial site at the converter station site by Manitoba Hydro's project archaeologist led to creation of a Heritage Resource Protection Plan. There is potential for more such discoveries. Members of FLCN fear that, because of the development of the site, they will need to travel farther to practise subsistence activities such as fishing and plant harvesting and are concerned about the effects of fragmentation resulting from the station.

- **Cormorant Area:** A known petroform site has spiritual importance for communities in the region. There is also concern about the potential fragmentation of resource habitats, which would affect trappers and would have both economic and cultural effects.
- **Red Deer River Crossing:** This area is a bottleneck for route planning, as it contains several cultural and heritage sites, as well as fish spawning sites and locations for harvesting of country foods and medicinal plants.
- **Cowan-Briggs Spur Area:** This is an area of importance for harvesting berries and medicinal plants. Harvesting provides income as well as opportunities for cultural and spiritual practice.
- **Assiniboine River Crossing:** For many communities in the southern region of the Project Study Area, this area has a high cultural value attached to the historic Yellowquill Trail. There is a strong spiritual attachment to this area, which contains known burial and ceremonial sites.

What We Heard: Aboriginal Engagement and ATK

The Commission heard a large number of criticisms of the timing, conduct and results of consultation sessions with the Aboriginal community and with many aspects of the collection and interpretation of ATK.

While the Commission heard calls for more and improved consultation, the Commission also heard that in many communities there is a kind of “consultation fatigue” resulting from years of consultation on the impacts of past Manitoba Hydro activities, the recent Wuskwatim Project, the proposed Keeyask Generating Station, and other activities. Following Manitoba Hydro’s four rounds of EACP meetings, the Corporation held meetings in many communities to discuss the Environmental Protection Plan for the Bipole III Project. As well, Crown consultations with First Nations and Métis communities regarding Aboriginal rights as stated in Section 35 of the *Constitution Act* have been ongoing. Consultation

fatigue makes it challenging to attract participants to a consultation event.

The Commission heard objections to Manitoba Hydro’s decision to include consultation with Northern Affairs communities as part of the Aboriginal consultation process. While the majority of residents in a Northern Affairs community may be Métis or members of First Nations, the villages or towns are not constitutionally recognized as Aboriginal communities. Mayors and councils of Northern Affairs communities are not recognized as representing their communities on issues of Aboriginal rights. Under questioning, the consultant who oversaw the ATK process acknowledged that the traditional knowledge collected from the Northern Affairs communities might better have been labelled “local” knowledge, rather than ATK. This point was repeatedly made during hearings by representatives of the Manitoba Métis Federation. It was argued that, under the Constitution, Aboriginal rights are collective rights, rather than individual rights, and so discussions must be held with the collective representing an Aboriginal community.

During questioning in the hearing, it was revealed that while Manitoba Hydro did consult with Northern Affairs community councils in the largely Métis communities of Camperville and Duck Bay, the Corporation’s representatives did not meet with the Manitoba Métis Federation locals in those communities. In taking this approach, Manitoba Hydro stated that it was following the direction of the MMF, which has specified that communication should be with the MMF head office in Winnipeg and not with individual locals, unless specifically requested by the head office.

The Commission heard a number of criticisms of the way Manitoba Hydro collected or used ATK. Concerns included the way communities were notified about the process, the method and timing of the ATK process, how consultant-led ATK workshops were conducted, and how self-directed ATK studies were summarized in the EIS.

One expert witness testified that Manitoba Hydro’s ability to collect ATK is hampered by

its history in northern Manitoba. Among many Aboriginal communities, there is a legacy of mistrust for Manitoba Hydro as a result of past developments. This history may be one of the reasons nearly half of the communities solicited to take part in ATK workshops did not respond. It was also suggested that sending a letter to a First Nation, rather than paying a personal visit, is not a good way to commence such work. This witness described the methodology for collecting ATK as out of date and culturally insensitive, and stated that more time and trust is needed to be able to obtain and understand Aboriginal traditional knowledge, which can be described as more narrative based and metaphorical than data-driven, analytical European knowledge.

Another concern the Commission heard was with the stage in the overall Bipole III Project at which ATK was used. Mapping of routing constraints occurred very early in the route selection process. Results of ATK studies, which might have identified important environmental or cultural features to be avoided in routing, were not available until later. The ATK workshops were held between October 2009 and late November 2010. Many of the self-directed ATK studies were not completed until 2011 or even later. At least one self-directed study was submitted to Manitoba Hydro too late in the process for inclusion in the EIS. In that case, Manitoba Hydro has stated that the ATK study will be used in developing the Environmental Protection Plan for the Project. The challenge of having access to ATK in a timely manner was raised several times during the hearings and provides the basis for Commission recommendations later in this report.

The many technical reports that provided the data for much of the EIS were also undertaken before the ATK was available. The Commission heard an argument by representatives of FLCN that ATK should be the baseline on which detailed technical studies are built, rather than something that is considered later in the process. Because ATK was not available until later, it did not shape the priorities or approaches for collecting and analyzing data. For example, VECs were selected long before ATK studies and workshops had provided information. As a result, as FLCN has noted, the EIS does not place as much importance on brook trout in the waterways near the Keewatinoo Converter Station as FLCN does.

Both FLCN and York Factory First Nation (YFFN) point to a difference in opinion about caribou as a sign of the conflict between different bodies of knowledge. Manitoba Hydro and MCWS consider the caribou in the area around Gillam and Keewatinoo to be coastal caribou from the Pen Island or Cape Churchill herds, while both First Nations refer to them as boreal woodland caribou. In its written submission to the Bipole III hearings, YFFN presented this disagreement between Aboriginal and Hydro perspectives on caribou as a symptom of the failure of Manitoba Hydro to value the findings of ATK.

The Commission also heard concerns from YFFN regarding the application of ATK in the EIS and what YFFN deemed a failure by Manitoba Hydro to treat ATK as equal in value to that of European scientific knowledge. YFFN called on Manitoba Hydro to show in the EIS how ATK was contributed or solicited, what ATK was considered, which elements of the Project took ATK into account, and how the final design is different as a result of ATK. YFFN also called on Manitoba Hydro to show how ATK will be used in future monitoring and how it will be used to establish a baseline for conditions or help to predict impacts caused by the Project.

Regarding moose, problems arising from the late incorporation of ATK can be seen in the GHA 14 (Moose Meadows) area of western Manitoba. Moose Meadows was not identified in Manitoba Hydro's technical report on mammals as an area of vital importance for moose populations. As a result, Manitoba Hydro planned to traverse the area with the Bipole III transmission right-of-way, until it was directed by MCWS, shortly before the hearings, to avoid Moose Meadows. It was suggested during hearings that if ATK had been incorporated into the planning process much earlier, Manitoba Hydro would have known of the importance of Moose Meadows earlier.

Questions were also raised during the hearings about the quality of some of the ATK workshops. At Pine Creek First Nation (PCFN), for example, 10 members of a First Nation of 3,600 took part and some of those participants do not live in the community. As well, it was suggested that language barriers may have kept some participants from fully understanding what was going on. The Commission did hear, however, that

a translator was available at ATK workshops for every community that requested one.

The Commission also heard concerns about intellectual property and the storage of the ATK. There were concerns about ATK collected for the Bipole III Project being stored with the consultant, when such knowledge was the intellectual property of the individuals or community it came from.

Some representatives of Aboriginal communities recommended against issuing a licence for the Bipole III Project on the grounds of concerns about consultation. Opaskwayak Cree Nation (OCN) recommended that *The Environment Act* licence be denied until OCN has had an opportunity to reconcile outstanding issues with Manitoba Hydro, such as the damage to the Saskatchewan Delta ecosystem caused by the Grand Rapids dam in the 1960s. OCN also recommended that long-term studies of cumulative effects, with First Nations as a party to the process, be a requirement of the licence. As well, OCN called for development of an inclusive engagement process reflecting Aboriginal knowledge for all projects.

The Manitoba Métis Federation also requested that the Commission recommend against issuing an *Environment Act* licence for Bipole III, largely on the grounds that Manitoba Hydro's consultation process did not, in the MMF's view, meet the requirements set out in the Scoping Document for the EIS. The use of Northern Affairs communities for collecting ATK, and the late inclusion of information from the self-directed ATK studies, such as the MMF's Traditional Land Use and Knowledge Study, resulted in a lack of inclusion of Métis and First Nation views in the process. The MMF stated that its input was not included in the discussion of archaeological and heritage sites, and the Métis were not considered as a distinct community with respect to the socio-economic impacts of the Project. The MMF also proposed that, if the Bipole III Project is recommended for approval, Manitoba Hydro be required to enter into legally binding contractual agreements with affected Aboriginal communities regarding mitigation measures.

Commission Comment: Community Consultation, Aboriginal Engagement and ATK

The Commission acknowledges that Manitoba Hydro carried out a large number of meetings, open houses and other consultation events over a very large portion of the province. These efforts began early in the planning process for a west side Bipole III transmission line. It is possible, though, that defining the most likely route for the transmission line earlier would have improved the consultation process. If they had not had to consider communities far to the west of the Final Preferred Route, Manitoba Hydro's staff and consultants might have had more time to devote to communities in areas where it was more likely that the transmission line would be routed. The Commission will discuss this issue further in the next chapter of this report.

As a Crown corporation operating in northern Manitoba, Manitoba Hydro has significant involvement with Aboriginal people and communities. Manitoba Hydro has significant resources devoted to Aboriginal engagement and it is fair to say that the Corporation has moved far beyond the attitude it had to Aboriginal and environmental issues in the 1960s and 1970s.

The Commission acknowledges that Manitoba Hydro began the process of consulting with First Nations and Métis communities early. However, memories of the impact of past Manitoba Hydro activities have affected the relationship between some communities and the Corporation. The Corporation may, as a result, have difficulty attracting participation in consultations when people do not trust Manitoba Hydro. It is also worth noting that Aboriginal consultation in a project such as this is made more complex because of the Constitutional requirement for consultation under Section 35 whenever a project has a potential impact on Aboriginal rights. In Manitoba, these Section 35 consultations are carried out by the Government of Manitoba. The existence of multiple streams of consultation adds complexity and can make it more difficult to gain involvement from the community.

It seems clear that consultation with Aboriginal communities, as well as with the non-Aboriginal population, needs to be modernized. The consultation program was based on the general guidelines for consultation of the Canadian Environmental Assessment Agency (CEAA), which are very general. This created challenges especially regarding consultation with Aboriginal communities and the gathering and use of ATK. No reference appears to have been made to CEAA's Interim Principles considering ATK, which are available from the CEAA website. It is unclear if or how these principles were included in the development of the consultation program. In fact, some of these principles, such as the intellectual property rights of Aboriginal communities to their traditional knowledge, became subjects of discussion during the hearing.

New consultation methods are becoming available that may be better for both the general public and Aboriginal groups. Characteristics of effective consultation processes include: providing information that is comprehensive but not overwhelming, offering a dependable and rational methodology, effectively summarizing technical details and fairly synthesizing information from other sources such as ATK, involving stakeholders earlier rather than in a reactive way, being inclusive of all views and communities, integrating different kinds of knowledge rather than fragmenting information into discipline-defined silos, having a process that achieves goals, and having clear norms of respect in all interactions. Experts in environmental assessment and consultation say an appreciation of the differing environmental views between Aboriginal and European cultures is essential. It was apparent that staff charged with public consultation, although well-intentioned and strongly committed, were not appropriately prepared to undertake Aboriginal consultation using up-to-date approaches.

Despite these problems in consultation, in some cases relations with First Nation communities that were originally strained did improve during the hearing process and show promise for co-operation into the future. On the other hand, many First Nations and the MMF stated that, in their opinion, they were not substantively consulted. Attitudes expressed

by representatives of Aboriginal communities and First Nations and Métis individuals varied. Some were opposed outright to Bipole III. Others stated that they are supportive, so long as their community's needs are met.

To avoid these complications in the future, it is advisable for Manitoba Hydro to modernize its approach to Aboriginal consultation and to develop targeted consultation programs and methodologies that can be used by consultation teams on any and all Hydro projects. This will help to ensure that the Corporation can work effectively with, and listen to, members of Manitoba's First Nations and Métis communities. As Manitoba Hydro modernizes its approach to Aboriginal consultation, it will need a different approach for working with the MMF – a province-wide collective entity representing Métis across Manitoba – than for many individual First Nations, which may have a much more geographically limited area of interest and a less widely distributed population. There are several experts, nationally recognized for their work in this field, many of whom reside in Manitoba, who could be consulted on appropriate public participatory processes. It was stressed by experts and community members who appeared before the Panel, that a productive relationship must be based on trust, which requires open, frequent and understanding interactions. Manitoba Hydro should seek to build trust through redesign of its consultation programs, in consultation with leading experts and representatives of Aboriginal communities.

The factors mentioned above, and others, contributed to challenges in gathering Aboriginal Traditional Knowledge for many of the locations in the Project Study Area. That, in turn, led to much of the ATK that was collected through self-directed community studies arriving towards the end of the process. Some ATK had an impact on site selection. Other ATK will only come into play in developing Environmental Protection and Access Management plans. It is important that ATK be part of a project EIS and not merely something added on in the final stages. The failure to achieve this is unfortunate, because some of the information gathered through self-directed ATK studies was of excellent quality. Participants raised questions about the thoroughness, selection of subjects,

and interpretation of some of the ATK studies carried out by Manitoba Hydro's consultant. They also objected to the way some of the self-directed studies were summarized in the EIS.

It was noted that the ATK information was reviewed by the subject-area experts after the fact. It was unclear if or how the ATK influenced the conclusions on routing or effects. Further, it appears that subject areas were treated in isolation, with little integration to provide an overall picture. It would be more prudent to have ATK and community consultation input before the data collection begins so that studies can be designed to address scientific as well as local user concerns. Resources are available to provide a framework for issues to be considered when dealing with Aboriginal communities. In 2003, Winds and Voices Environmental Services provided a research paper to CEAA outlining a framework for issues to be considered when working with Aboriginal communities. This framework is specifically designed for use under the *Canadian Environment Assessment Act*, but many of the issues it deals with are relevant to any environmental review process and it may help Manitoba Hydro develop new ways of incorporating ATK and Aboriginal concerns into future projects.

Given the importance of bringing ATK and local knowledge to bear on environmental matters and resource development questions, it should be a priority to collect ATK throughout Manitoba. The Province of Alberta has created a useful guidebook on the collection of ATK by Aboriginal communities to aid in environmental planning or in response to requests for resource development (Government of Alberta, 2003). This approach could be a model for the development of ATK studies in Manitoba. ATK databases have been developed in other provinces to assist with planning on a province-wide scale, on a project scale and on a community scale. Having such a database would help a potential proponent to know where, with whom and how consultations should take place at the concept stage of a project, rather than at the final-design stage.

Manitoba Hydro's consultation approach led to problems in the southern, agricultural areas as well. In part this was the result of an over-reliance

on open houses. Open houses may be useful in providing initial, general information, but they are usually one-way information sessions. Though there may be some opportunity for one-on-one discussion during an open house, such contact is limited and members of the public may feel that they are outside their comfort zone. An additional consultation technique, a telephone information line, was also impersonal and was generally used for negative commentary – essentially a forum for complaints. Before the final decisions were made about the line routing, each individual landowner whose property the line was to cross should have been consulted personally. This personal consultation, conducted by personnel who had an understanding of agriculture, might have conveyed a greater level of respect, avoided some misunderstandings, and resulted in the best route possible under the circumstances.

Just as with the Aboriginal communities, the success of consultation in agricultural communities depends on trust. One-to-one interaction and a show of good faith and empathy would help to build trust. The negotiation and communication style used by Manitoba Hydro's land negotiation agent in agricultural areas – as described by several Presenters at the hearing – does not seem likely to build trust. Manitoba Hydro should take note to rectify this as the Project progresses.

Non-licensing Recommendations

The Commission recommends that:

- 6.1 *Manitoba Hydro improve its consultation processes by seeking input from experts, many available in Manitoba, in the field of participatory consultation processes, as well as from representatives of Aboriginal organizations.*
- 6.2 *The Manitoba Government, with Manitoba Hydro, investigate the feasibility of developing an Aboriginal Traditional Knowledge database that could be used in the assessment of potential impacts of future projects related to Manitoba's natural resources.*

Chapter Seven: Route Selection and Assessment Processes

7.1 Overview

Development of the Environmental Impact Statement (EIS) for Bipole III involved several overlapping processes making use of a body of information gathered through the work of a large number of consultants and staff and through several rounds of consultation. A route selection process determined locations for the components of the Bipole III Project based on environmental and technical considerations. Environmental effects assessment considered the effects that construction, operation, maintenance and eventual decommissioning would have on aspects of the biophysical or socio-economic environment, and the significance of those effects. Cumulative effects assessment (described in Chapter Eleven of this report) considered how those effects might combine with effects of other human activity, past, present or future. A brief sustainability assessment examined how the Bipole III Project fits within Manitoba Hydro's and the Province of Manitoba's sustainable development principles and guidelines.

7.2 Development of the Environmental Impact Statement

Manitoba Hydro submitted an *Environment Act* Proposal Form and a draft Environmental Assessment Scoping Document to Manitoba Conservation and Water Stewardship (MCWS) on December 14, 2009. The purpose of this document was to suggest a framework and scope for the environmental assessment. Following comment from the public, from a Technical Advisory Committee (TAC) with representatives from several relevant government departments, and from the Environmental Assessment and Licensing Branch, a revised Scoping Document was submitted in June 2010 and approved by MCWS on June 10, 2010.

The Scoping Document stipulated that the EIS was to include the following:

- discussion of the regulatory and policy framework

- determination of the scope of the Project and assessment
- description of the environmental assessment consultation process
- consideration of Aboriginal and local knowledge
- discussion of the environmental assessment process
- discussion of the approach for cumulative effects assessment and sustainability assessment
- the process for follow-up and monitoring
- the format for preparation of the EIS

The EIS contained an examination and consideration of the potential effects of Bipole III on the physical environment, the biological environment, land and resource use, and socio-economic and cultural conditions.

7.3 Route Selection

Collection of data and stakeholder viewpoints began in 2008, when Manitoba Hydro began its site selection and environmental assessment (SSEA) process for Bipole III. In four rounds of consultation, as described in Chapter Six, Manitoba Hydro acquired information and comments that helped it refine its focus from the very large Project Study Area to the Final Preferred Route described in the EIS. (See Fig. 7.1). It should be noted that despite the use of the word "final" in the phrase Final Preferred Route, additional changes have been made in response both to public feedback and the comments of the Technical Advisory Committee. In this chapter, when the phrase Final Preferred Route is used, it will refer to the route as discussed in the Environmental Impact Statement, filed in December, 2011, and not to the Adjusted Final Preferred Route (AFPR) as discussed in the last two weeks of public hearings in March, 2013 (See Chapter Ten: Route Adjustments).

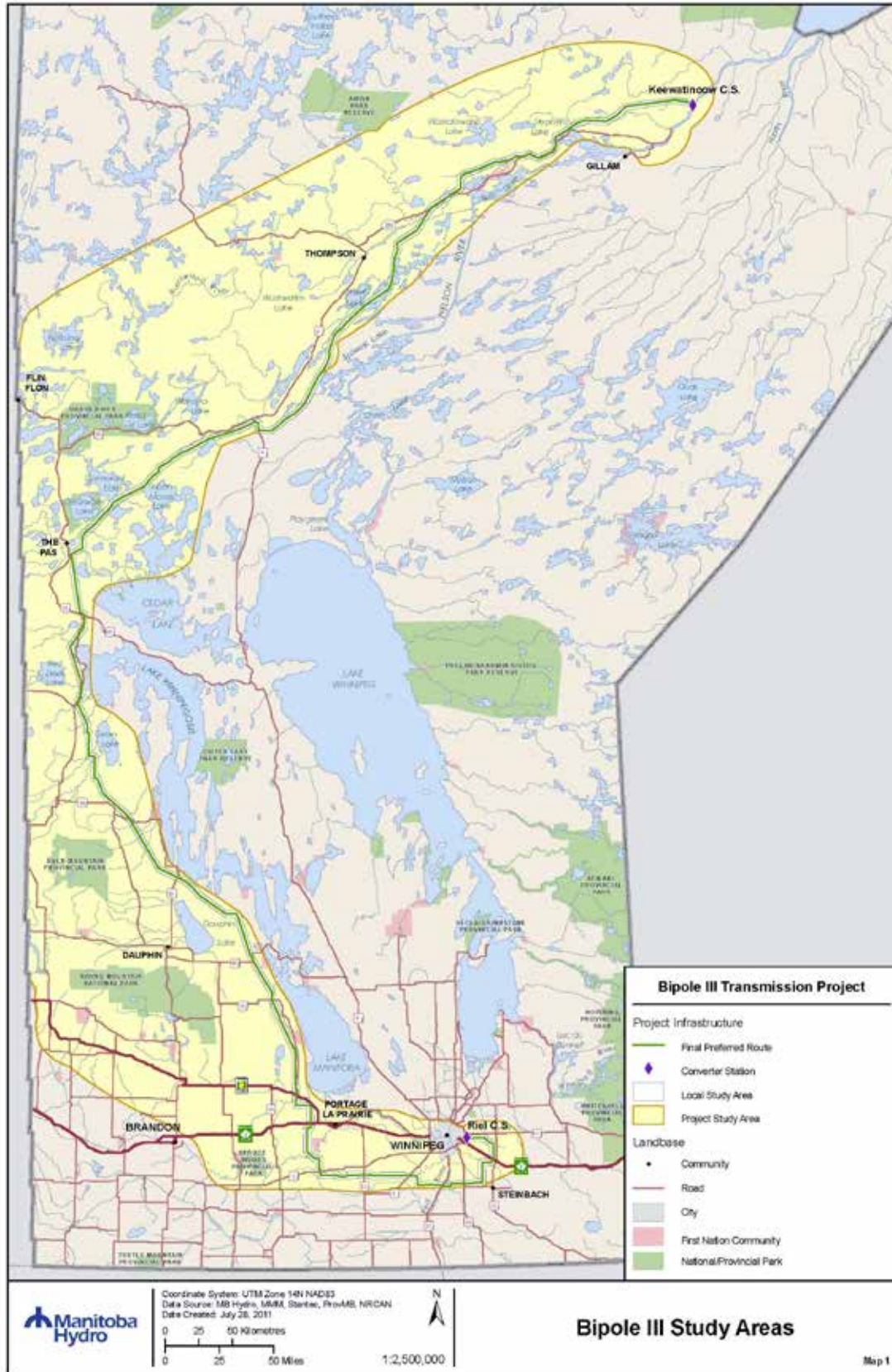


Figure 7.1 The Project Study Area and the Final Preferred Route

Manitoba Hydro's Transmission Licensing and Environmental Assessment Department oversaw the SSEA process and preparation of the EIS, hiring a large number of contractors to carry out consultation, information gathering, research, analysis and process design work. At least 17 different external contractors were hired to prepare 22 technical reports on a wide range of biophysical and socio-economic topics.

Information was gathered for an area covering roughly 20% of Manitoba, or 135,000 square km, crossing five ecozones and seven ecoregions. The Project Study Area constituted a large, crescent-shaped area running from just north and east of the proposed Keewatinooow Converter Station site southwest to the Manitoba border near The Pas. From there, it continued south, taking in all the land between the Saskatchewan border and Lakes Winnipegosis and Manitoba. South of the lakes, the Project Study Area traversed a large area of agricultural Manitoba south of the Yellowhead Highway (Highway 16), crossing the Red River and taking in an area south and east of Winnipeg.

In the initial stage of the SSEA process, environmental information was gathered about the Project Study Area in order to establish the existing condition. Manitoba Hydro created a large database, known as Land Cover Classification Enhanced for Bipole (LCCEB), which was used extensively in the desktop analysis phase in many of the technical reports. LCCEB incorporated Canadian Forest Service data on land cover, plus forest resource inventory data from MCWS, and data on soil landscapes, fire history, wetlands, climate and other subjects.

Research and analysis by the various contractors hired by Manitoba Hydro was undertaken concurrently with the four rounds of consultation and the route-selection process. Typically, the contractors began with high-level examination of the Project Study Area using pre-existing information sources such as government databases. Computer modelling and analysis were carried out to identify areas of potential concern. As the consultation and route-selection processes led to a preliminary preferred route (PPR), in many cases the contractors preparing the various technical reports conducted field research to verify

their models or obtain more focused information on the immediate area around the preferred route, the 4.8 km-wide corridor referred to as the Local Study Area. While this was occurring, the ATK process, described in Chapter Six, was also ongoing from 2009.

In order to identify a preferred route, Manitoba Hydro developed three alternative routes, A, B and C, designed to avoid biophysical and socio-economic constraints such as cities and towns, First Nations reserves, national and provincial parks, protected areas, critical habitat, and other features. (See Fig. 7.2). At this stage, the study team also identified technical, or engineering, constraints, such as waterbodies wider than 500 metres, areas of steep terrain, widespread areas of permafrost or deep peatland, and crossings of other transmission lines. Other engineering constraints affecting route planning were the need to maintain separation from the existing Bipoles I and II right-of-way and the desire to reduce the number of heavier, and more expensive, towers needed to support curves or angles in the transmission line. Study activities included field work, collecting information for a Geographic Information System (GIS) database, consulting aerial photographs, consultations with MCWS, and low-level flights over the alternative routes to identify constraints such as houses and farm buildings. In addition to the various community and public consultations, meetings were held with forestry and mining companies, the Mines Branch, and Ducks Unlimited. Using information from consultations and from data-gathering, Manitoba Hydro identified several bottlenecks, where large numbers of constraints, such as protected areas, First Nations lands and heritage resources limited routing opportunities. The route-planning team also identified opportunities for routing the transmission line along existing or abandoned transmission line rights-of-way, adjacent to other linear disturbances such as roads, highways or railroads, or through pasture or marginal agricultural land instead of higher-value agricultural land. Unoccupied Crown lands were also viewed as an opportunity for routing at this stage.

Of the three alternatives, Route A took the path farthest to the west and was the longest, at 1,485 km, while Route B remained the farthest to

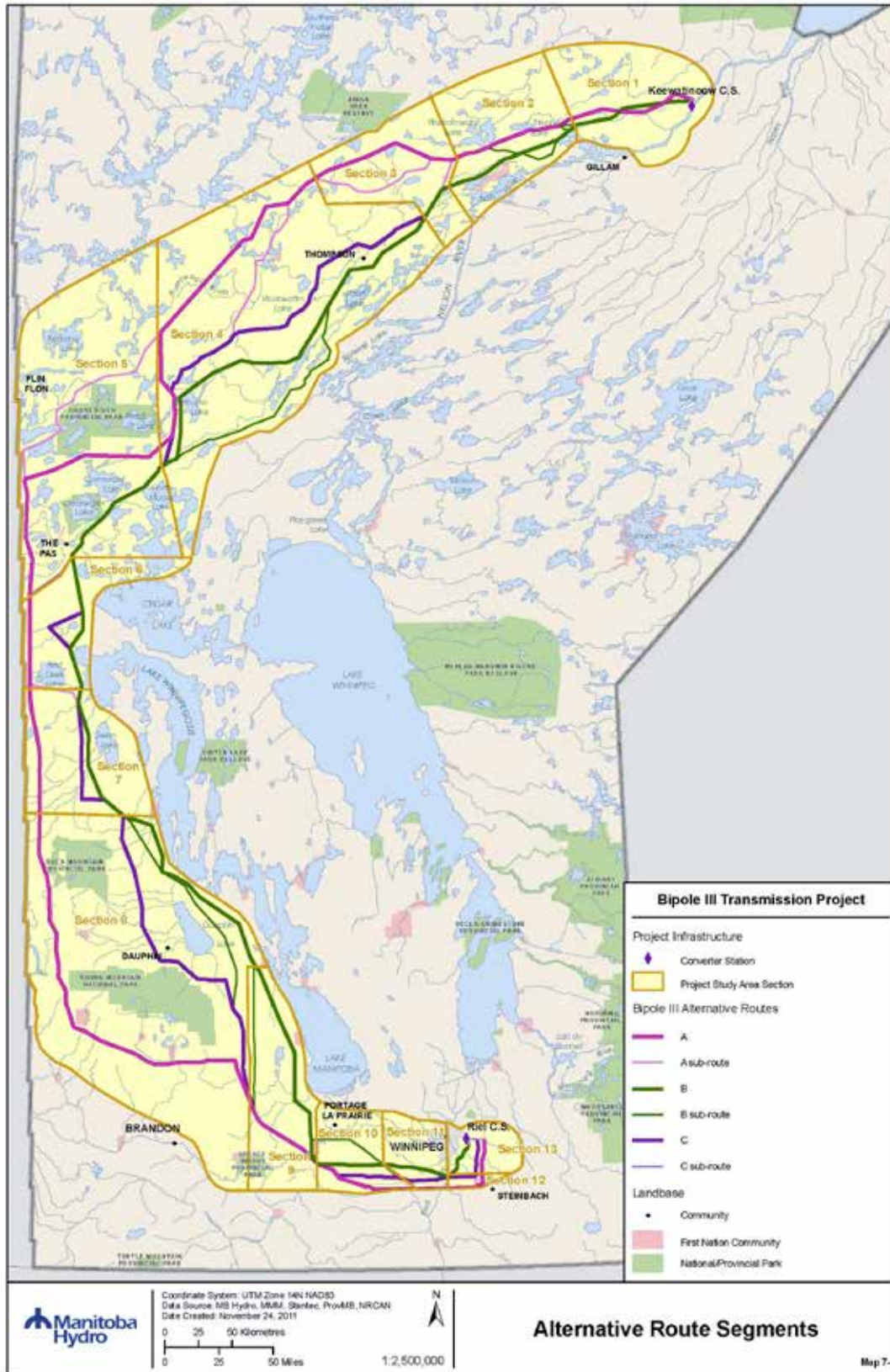


Figure 7.2 Alternative routes within the Project Study Area

the east and was the shortest, at 1,290 km. Route C largely followed a central path between A and B and was 1,350 km. Once the three alternative routes were selected, Manitoba Hydro conducted a third round of consultation with the three routes marked as three-mile (4.8 km) wide corridors.

During the first stage of the SSEA process, as Manitoba Hydro was identifying constraints in routing the transmission line, certain bottlenecks were identified, where large numbers of constraints made routing particularly difficult. One such area was around The Pas and Opaskwayak Cree Nation (OCN). Immediately north of The Pas and OCN is Clearwater Provincial Park and Saskeram Wildlife Management Area. East and northeast of the two communities is the Tom Lamb Wildlife Management Area. To the south of the communities are the Bog Boreal Woodland Caribou range and the proposed Summerberry and Red Deer Wildlife Management Areas. Another bottleneck was found further south between Red Deer Lake and Lake Winnipegosis. Treaty Land Entitlement lands exist along the Red Deer River and the shore of Lake Winnipegosis in this area, as do a cottage subdivision and a small provincial park. Another bottleneck was identified around the crossing of the Assiniboine River, where the Whitemud Wildlife Management Area, pivot irrigation systems and heritage resources restricted opportunities for routing the line.

To select among the three alternative routes, Manitoba Hydro developed a Route Selection Matrix (RSM), which allowed for evaluation of 27 biophysical, socio-economic, land use, engineering and stakeholder-response factors. The RSM was also designed to incorporate ATK. It should be noted that the RSM incorporated information available up to April 2010. Self-directed ATK studies, undertaken by Fox Lake Cree Nation, Long Plain First Nation, the Manitoba Métis Federation, Opaskwayak Cree Nation, Swan Lake First Nation, Tataskweyak Cree Nation, and Wuskwi Sipiik First Nation, were not submitted to Manitoba Hydro until March to October 2011. An eighth self-directed ATK study was completed later by Sapatawayak Cree Nation. As well, while some of the ATK workshops conducted with 19 other First Nations and Northern Affairs communities had been carried

out by early 2010, many were not completed until October of that year. As a result, little of the ATK was available for consideration at the time of route selection.

In the RSM, the Project Study Area was split into 13 sections. For each section, the three alternative routes, as well as variations of the three routes, were assessed using either a three-tier or four-tier scoring system. In all, 63 route segments were analyzed using the RSM. Engineering/technical concerns and several of the socio-economic or biophysical categories were assessed using a ranking of low, medium or high concern. A four-tier ranking (low, medium, high, and very high concern) was used for culture and heritage and for several biophysical factors in which potential effects on protected species and habitats were identified. Each of these criteria was independently assessed by a specialist, such as a botanist, forester, biologist or agricultural consultant. Stakeholder responses from consultations with Aboriginal communities, municipalities, stakeholder groups and the general public were assessed to give segments a rating of poor, fair or good, and ATK was incorporated into the RSM in order to emphasize concerns brought to light by those ATK workshops that had been carried out by this time.

This process of section-by-section consideration led to the creation of the Preliminary Preferred Route (PPR). In the fourth round of consultation, Manitoba Hydro met with communities, stakeholders, landowners and the general public to gather feedback on the PPR. This round of consultation led to 57 requests for local route changes, of which 23 led to changes in the route. The resulting route became known as the Final Preferred Route (FPR). (See Fig. 7.1).

What We Heard: Route Selection

The Commission heard Presenters and expert witnesses who referred to Manitoba Hydro's route selection process as subjective and not transparent. The use of unclear categories was said to have made it difficult to understand the rationale for some decisions. At other times, Manitoba Hydro appeared to make implicit value judgements in its decisions about routing opportunities and constraints.

Aboriginal organizations argued during hearings that the interpretation of unoccupied Crown lands as a “routing opportunity” contained an implicit assumption that these lands are less valuable. The Panel heard from a number of individuals and groups, especially from Aboriginal resource users, who objected to this assumption. Unoccupied Crown lands may be important sites for hunting, fishing, or gathering berries or medicinal plants. These activities have both a material value as a source of food and medicine and a cultural/social value as an opportunity for families and communities to spend time together and to pass on cultural knowledge and language. The concern was expressed that, in some areas, Manitoba Hydro chose to route the transmission line through unoccupied Crown land because there was no need to pay landowner compensation in these areas.

The Commission heard a detailed critique of the route selection process as it pertained to agricultural regions. Among the concerns brought forward were: Manitoba Hydro’s criteria for routing through agricultural regions may be inconsistent with the criteria used in other provinces; Manitoba Hydro’s agriculture consultant did not have new aerial photographs for designing routes; and, at some point in the route selection process, the agricultural consultant’s recommendations appear to have been over-ruled. Participants said it was not clear what the criteria were for applying many of the ratings of low, medium or high in the RSM. Nor was it clear who made these rankings. For example, it appears that Manitoba Hydro’s agricultural consultant favoured route alternative B in agricultural Manitoba from the Yellowhead Highway to the Riel Converter Station site. The Route Selection Matrix, however, shows identical ratings for the agriculture category for all alternative routes in southern Manitoba.

It was also unclear how scores were assessed to obtain a valid comparison between routes. In some cases one route alternative consisted of a single section of transmission line while the others combined two subsections. The grounds for comparing one longer section with two shorter sections were unclear. The following detailed maps of the route selection options for specific sections of the line will illustrate some of these challenges.

One example is line section 10, south of Portage La Prairie. In this section the FPR followed segment C26 and a subsegment labelled A18C25. The RSM, combining 27 factors, gave C26 the lowest (best) score of 11. Adding the scores for subsegments A18C25 (19) and C26 (11) gives a composite score of 30. This compares to the alternative B25, which had a score of 19. (See. Fig. 7.3).

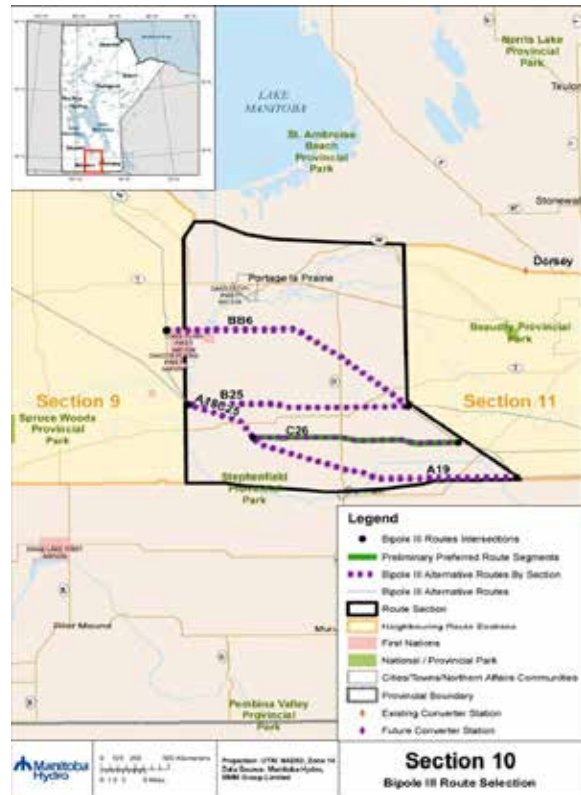


Figure 7.3 Route selection options, Section 10

Another illustration of the uncertainties around route selection is found in section 13, the final section of the line, terminating at the Riel Converter Station. Alternative A23 had the lowest (best) score of 12 in the RSM and was selected for the Final Preferred Route. (See Fig. 7.4). Alternative B28 had a score of 22 on the RSM. However, because of the way the alternative sections line up, B28 is able to connect directly from Section 11 to 13, without the need for a section 12. The A route, on the other hand requires a Section 12, consisting of two subsections (A21, with a score of 13, and A22, with a score of 12).

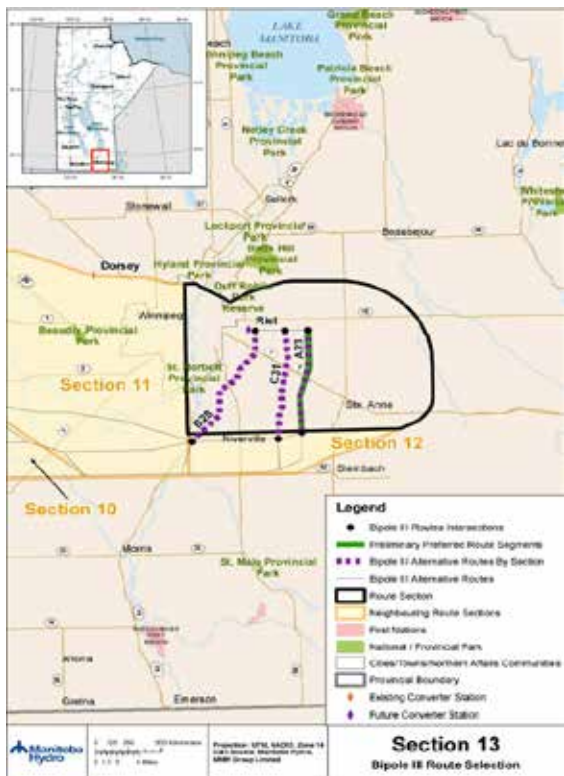


Figure 7.4 Route selection options, Section 13

It was, therefore, unclear if the numerical rating scores assigned to each subsection should be added together to compare them to the alternative routes in that section. It was also unclear if for some sections a less-than-ideal route was selected in order to line up with more optimal selections on the adjoining sections.

Another concern in agricultural areas was that Manitoba Hydro appeared to use the same categories to route the transmission line throughout the province. Thus, in agricultural regions of southern Manitoba, forestry and resource use (a category that refers to hunting and trapping) were still categories in the route selection process, even in areas where there are no forests or traplines. It is unclear if this had any influence on the selection of a preferred route, though, as the alternative routes in agricultural regions typically had the same low ratings for these categories.

Commission Comment: Route Selection

Manitoba Hydro's Site Selection and Environmental Assessment (SSEA) process

appears to have been cumbersome, unclear and open to subjectivity and these problems may have begun with the decision to consider such a large area for Bipole III. While it is legitimate to begin with a large study area for such a project, Manitoba Hydro's Project Study Area, taking in approximately 20% of Manitoba's surface area, was exceptionally large. The decision to select three potential routes running through this large study area meant that consultations and information gathering needed to cover a very large area. In some respects, this may have been a waste of effort and prevented more detailed consultation and research work from being done where it was needed. For example, one of the routes selected, Route A, was some 100 km longer than the FPR and ran through more unfragmented habitat and near more protected and environmentally sensitive areas. Time spent studying and consulting on Route A, which was obviously the worst possible choice, might have been better spent conducting more detailed work in the area where the FPR was chosen. Consideration of a range of options is good decision making, but there needs to be some rational basis for presenting each of the options.

It is worth noting that, though the Project Study Area was large, it did not include the Bipoles I and II corridor. Study of Bipoles I and II would have provided a relevant comparison for the possible effects of Bipole III on such concerns as bird-wire strikes, the expansion of white-tailed deer range, predator movements, and animal avoidance of the right-of-way.

Once three alternatives were identified, the site selection process was flawed by a combination of subjectivity, lack of clarity and false precision. The Route Selection Matrix, for example, contained 23 different criteria, plus four categories for public responses and a mechanism for applying findings from ATK. These 28 factors were used to generate numerical scores for routing alternatives for each line segment. But there are numerous questions to be asked about how this process was carried out. In other cases the start or end points for alternatives differed, and potential impacts were transferred from one line segment to another. These situations created "apples and oranges" comparisons between sections.

The route-selection process lacked transparency in many ways. There were very few measurable thresholds that might allow one segment to be compared objectively with another. The scores attached to each of the criteria appear simply to be judgement calls. Another example of a concern about clarity was the inclusion of a category entitled “Core Communities” as a measure of the potential for alternative segments to fragment habitat. Eventually the meaning of this criterion was explained; route planners were comparing whether areas of specific kinds of habitat intersected by the Bipole III line were more or less intact than in the surrounding ecodistrict. Using such a term, unfamiliar to practitioners in the environmental assessment field, rendered the EIS less clear.

The potentially invalid comparisons between alternative segments combined with the lack of objective criteria for the scores generated for each criterion mean that the final, combined numerical scores for the alternatives cannot be relied upon. Because of the lack of clarity and the potential for subjectivity, it was unclear where environmental reasons influenced route selection and where technical and cost considerations, such as the desire to avoid using costly angle towers, took precedence.

These challenges in route selection became especially acute in agricultural areas. In southern Manitoba, the Route Selection Matrix still included 23 criteria – with agriculture counting as only one – even in areas where virtually all land is farm land. Because of the lack of objective comparisons in the Route Selection Matrix charts, it is difficult to know why Manitoba Hydro chose the route it did in agricultural areas, and especially why it appears to have over-ruled the judgement of the consultant hired to prepare the Agriculture Technical Report.

The Commission is aware that other route selection techniques are in use in Canada and elsewhere that employ quantifiable analysis of routing constraints and opportunities. These other techniques also allow for the results of public consultation to be quantified and used in the route selection process. Manitoba Hydro should investigate ways of applying techniques of this type in site selection processes for future transmission lines and other developments.

Non-licensing Recommendations

The Commission recommends that:

- 7.1 *Manitoba Hydro develop a more streamlined, open and transparent approach to route selection, making more use of quantitative data.*
- 7.2 *Manitoba Hydro, in future, invite the potentially affected public and communities, including First Nations and the Manitoba Métis Federation, to participate in the selection of alternative routes and route selection criteria as well as in identifying baseline studies.*

7.4 Data Gathering

As the route selection process was moving toward the FPR, the initial desktop studies of the natural and human environment, combined with input from the consultation process, led to selection of specific biophysical and socio-economic features that could be affected by the Project. These were features deemed important by Manitoba Hydro’s technical team and/or by the public. They were designated as Valued Environmental Components (VECs), aspects of the biophysical or socio-economic environment that were considered important and could be used for measuring the effects of Bipole III. Impacts of the Project were assessed by examining potential effects on these VECs. Some VECs, such as water quality, were selected because of their importance to all aspects of life in the region. Others were selected because of particular cultural or economic value. Still other VECs, such as specific animal species, were selected because they can act as representatives or measuring sticks for environmental impact for a broad range of species or habitats. At this stage in the process, 67 VECs (46 biophysical and 21 socio-economic) were selected. Detailed discussion of these VECs is provided in Chapters Eight and Nine.

Once the FPR was established at the end of Round 4 in 2010, the project team assessed the state of the existing environment along the transmission line and at the locations of the converter stations and ground electrodes, based on data collected in 2009 and 2010. This assessment was made using a combination of existing scientific and socio-economic literature that had been collected and synthesized,

information provided through research activities including field studies, and information gathered through ATK and local knowledge.

Once the potential effects of the Project on the VECs were assessed, the process focused on measures that could mitigate these effects. Mitigation of effects can be carried out through avoidance of the effect, minimizing the effect or compensating for adverse effects. Avoidance of the effect is considered the preferred method of mitigation. Manitoba Hydro sought to avoid effects through route selection and project design methods. Minimization of effects involves steps taken to limit the degree, extent, magnitude or duration of adverse effects. Compensation, including landowner and trapper compensation, is applied to remedy unavoidable adverse effects.

What We Heard: Data Gathering

Several Presenters and Participants were concerned that Manitoba Hydro had been over-reliant on desktop research and on aerial observations. Individuals spoke of the need to walk the line in order to assess the environment. One specific question that arose concerned the use of aerial surveys to count animal tracks. It was suggested that the tracks of American marten are so small that they are hard to distinguish from other animals from the ground, let alone from an airplane.

Commission Comment: Data Gathering

The Commission has many concerns regarding the selection of VECs. One is that the selection of VECs shifts the emphasis away from habitat disturbance and fragmentation. Instead of looking at a specific species, it would be better to quantify the disturbance to the kind of habitat used by that species and others. In other words, the focus should be on the ecosystem, not just on a small number of components of the ecosystem. Another concern is that there were simply too many VECs. With 67 VECs, including 21 individual bird species, the EIS was long and repetitive. If the same potential environmental effects and mitigation measures apply for a large number of VECs, the reader of the EIS will read the same paragraph again and again. Furthermore, the rationale for selecting many VECs was

unclear. Some of the VECs, such as the beaver and mallard, are numerous and adaptable and unlikely to be affected by such a development. Some of the VECs, such as the northern prairie skink, are found in the larger Project Study Area, but not in the Local Study Area adjacent to the FPR. Others, such as three species of butterfly (the Dakota, ottoe and uncas skipper) and the burrowing owl, are not found in the Local Study Area, the Project Study Area, or even in Manitoba. If a locally extirpated species, such as the ottoe skipper, is chosen as a VEC merely as a proxy to represent a certain kind of habitat, would it not be better to select that kind of habitat as the VEC? The use of such a large number of VECs, including some of such dubious relevance, points to the possibility that VECs were chosen in order to yield a large number of impacts that could be assessed as “not significant.”

The selection of such a large Project Study Area may have influenced the collection of data. It meant that planners had to rely a great deal on “desktop” resources, such as existing studies, databases and aerial photos, in their route planning and initial assessments. Site-specific studies in the field, often referred to as “ground-truthing”, only occurred later in the process, in cases where they were conducted. The early reliance on desktop studies was a concern for many Participants and Presenters, who stated that environmental assessment requires people on the ground, not just in an airplane or in front of a computer.

7.5 Assessment Approach

After considering the environmental effects of the Bipole III Project and the potential mitigation measures, Manitoba Hydro then sought to assess the significance of any residual effects. Residual effects are those effects that remain after mitigation has been applied. The process used eight factors to characterize the significance of residual effects:

- Direction or nature of effect refers to whether the effect is positive or negative.
- Magnitude of effect is the predicted degree of disturbance, ranging from small (no measurable effect or below established

thresholds of acceptable change) to large (easily observable or exceeding the established threshold of acceptable change).

- Geographic extent ranges from Project Site/Footprint (confined to right-of-way or work site) to Local Study Area (including communities within three kilometres of the Project) to Project Study Area (affecting the wider regional area around the Bipole III Project).
- Duration of effect ranges from short-term (up to five years), to medium-term (up to 50 years) to long-term (more than 50 years).
- Reversibility refers to the potential for recovery from an adverse effect. An effect that is reversible during the life of the Project or upon decommissioning of the Project is considered reversible. An irreversible effect is one that continues even after decommissioning.
- Frequency of predicted effects ranges from infrequent (once or seldom during the life of the Project), to sporadic (occurring occasionally but without a predictable pattern) to regular/continuous (occurring continuously or at regular intervals during the life of the Project).
- Ecological importance is the ecological context of the biophysical VEC, including sensitivity to disturbance and capacity to adapt to change, rarity, uniqueness, fragility

and importance to scientific study. VECs with low ecological importance are not rare or unique, are resilient to change, of minor ecosystem importance and limited scientific importance. VECs with moderate ecological importance have some capacity to adapt, are moderately or seasonally fragile, and are somewhat important to the function of their ecosystem or to science. VECs with high ecological importance are protected or designated species, fragile with low resilience, and important to science.

- Societal importance is the societal context of socio-economic VECs, including sensitivity to disturbance, capacity to adapt to change, and the value that individuals and communities place on elements of the environment. VECs with low societal importance have no formal designation and were not identified through consultation, ATK or regulatory guidance as important for well-being. VECs with moderate societal importance are protected regionally or locally and were identified through consultation, ATK or regulatory guidance as being somewhat important to the economic, social or cultural well-being of individuals. VECs with high societal importance are protected internationally, nationally or provincially.

Significance was then assessed using a matrix that considered the duration, magnitude and geographic range of the effect, to determine whether an effect was “significant”, “potentially significant” or “not significant.” (See Fig. 7.5). To

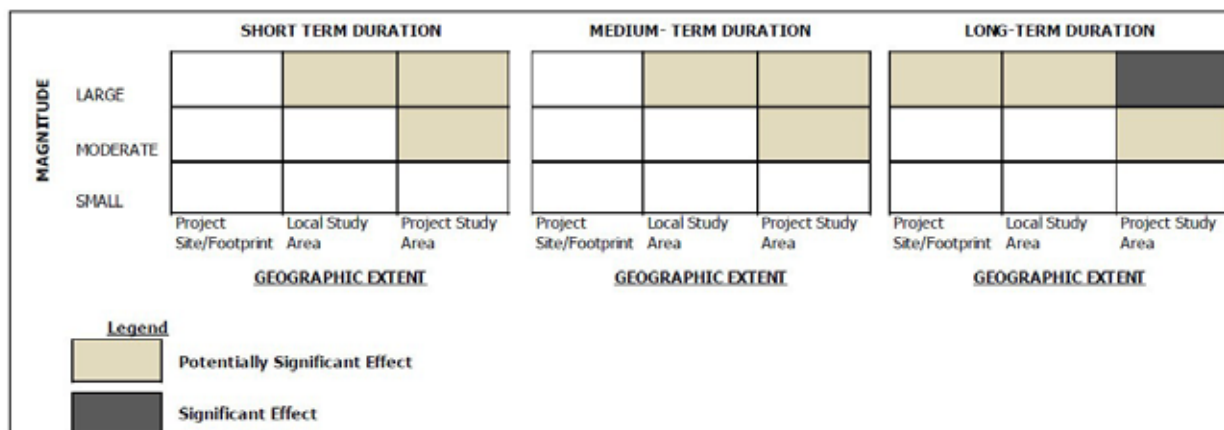


Figure 7.5 Matrix for determining significance

be considered significant, an effect needed to have a high score in all three of duration, magnitude and geographic range. Effects with a long-term duration, large magnitude, and geographic extent that reached beyond the Local Study Area and into the Project Study Area were deemed to have a significant residual effect. On the other hand, if an effect had a large geographic extent and large magnitude, it would still only be considered potentially significant if it was deemed to be only of medium-term duration.

Following the assessment of the significance of effects on VECs, the cumulative effects assessment (CEA) was carried out. (See Chapter Eleven for more information.) The EIS also described a proposed Environmental Protection Plan, which includes monitoring the effects on the physical, biological and socio-economic environments arising from the Project. (See Chapter Twelve for more information.)

What We Heard: Assessment Approach

Regarding Manitoba Hydro's process for assessing significance of impacts, the Commission heard some very serious criticism. Significance is assessed using three criteria: duration, magnitude, and geographic extent. Each of these criteria can be assessed in three ways: short-term, medium-term or long-term for duration; small, moderate or large for magnitude; and site/ footprint, Local Study Area, or Project Study Area for geographic extent. This then means that there are 27 different possible combinations of impact assessment for any given VEC. However, only one of those combinations (long-term, large magnitude, Project Study Area in extent) leads to an assessment of a significant impact.

Further contributing to the possibility of under-assessing significant impacts is that the definition of long-term is particularly long. Only impacts that are expected to last for 50 or more years qualify as long-term impacts in the Bipole III EIS. Impacts lasting from five to 50 years are considered medium term. As a result, then, a large impact on a VEC, extending across the entire Project Study Area (representing one fifth of Manitoba's area) that was expected to last 40 years would only be considered "potentially significant." The Commission heard that EISs in

many other jurisdictions use a different definition of long-term. Examples were given of pipeline and oilsands developments in which the definition of a long-term impact is anything longer than 10 or 20 years.

The Commission also heard an expert witness who testified about the need for a human health risk assessment as part of the EIS. Another witness called for a community health impact assessment, which would take into consideration a number of social and systemic effects that are often not taken into account in an EIS. This witness said that conducting such an assessment would require baseline data on a wide range of health matters, including stress and mental well-being, provision of health care and public safety, in order to be able to monitor potential impacts of the Project. In response to concerns about the potential impact of the Bipole III Project on broad health issues, Manitoba Hydro stated that a health impact assessment was not required because there was "no pathway to effect." The Commission heard that health impact assessments are now required for many EISs in Canada.

Commission Comment: Assessment Approach

The Commission finds Manitoba Hydro's assessment approach lacking in objective data and impact thresholds that could provide justification for the determination of significance of effects of the Project on VECs. The use of a VEC-centred approach rather than a more encompassing ecosystem approach for environmental assessment resulted in a confusing and cumbersome way of addressing the issue. Although some species, such as moose and caribou, require special consideration, by and large it would have been much more informative and effective to address the impacts on an ecosystem or habitat basis. The inclusion of a detailed fragmentation analysis should have been an important part of the assessment. Approaching the assessment in this way would also have been more in keeping with an Aboriginal worldview.

The decision to define significant impacts only as those with negative effects lasting 50 years or more and extending beyond the Local Study Area and into the Project Study Area limited the

potential of any effect to be deemed significant. The Commission considers that any effect that is likely to be felt for the lifetime of the Bipole III transmission line should be considered essentially permanent.

It appears at times from reading the EIS that Manitoba Hydro's approach to environmental assessment of the Bipole III Project was not to find potential impacts, but to find ways of showing that there will be no impact. The use of undeveloped Crown land as a routing opportunity was inconsistent with the purpose of environmental assessment. All potential routing, whether on public, private, developed or undeveloped land, should come under the same level of assessment and be screened based on a set of values that include economics, ecology, and culture and heritage.

Throughout the EIS, decisions and conclusions are often unexplained or appear to be based only on opinion. Reading the EIS in combination with the Technical Reports and the ATK reports – especially the self-directed ATK reports carried out by individual First Nations and the Manitoba Métis Federation – reveals many inconsistencies. Important elements in these reports were not always incorporated in the EIS.

Although the EIS was difficult to work with and had gaps in information, the Commission found that Manitoba Hydro's staff were helpful and professional in responding to a very large number of information requests, as well as providing information through expert testimony during the hearings and through undertakings (commitments made during the hearings to provide additional information). These processes clarified some aspects of the Project and filled a number of information gaps, so that eventually the Commission felt that there was sufficient information to make recommendations regarding this Project. The Commission would like to encourage a more open, co-operative approach from Manitoba Hydro, so that in future it will not take such a long time to gain this understanding.

The Commission notes that many of the comments and recommendations regarding improvements in the environment assessment process that were made in the report on the

Wuskwatim Generation and Transmission Projects (Manitoba Clean Environment Commission 2004) are still valid.

Non-licensing Recommendations

The Commission recommends that:

- 7.3 *Manitoba Hydro undertake route selection and environmental assessment based on an ecosystems approach, rather than just on individual Valued Environmental Components (VECs). This would make the process more in keeping with Aboriginal worldviews of the interrelationship between people and the environment.*
- 7.4 *Manitoba Hydro discontinue using undeveloped Crown land as a default routing option without appropriate assessment of the impact on ecological, traditional or cultural values of those lands.*

Chapter Eight: Effects Assessment (Biophysical)

8.1 Overview

Manitoba Hydro assessed the impact of Bipole III by gathering information about 67 indicators, known as valued environmental components (VECs). These are aspects of the biophysical or socio-economic environment that are considered valuable and that could be affected by Bipole III. These VECs were grouped broadly into 46 biophysical VECs and 21 socio-economic VECs. Within each of these broad categories, the VECs were grouped in smaller, related sub-categories. In examining effects assessment for the Bipole III Project, this report will present the information and ideas presented on a VEC basis. For ease of reading, this report will break environmental effects into two chapters: one for biophysical VECs and the other for socio-economic VECs. During the hearings there was considerable debate on some VECs, while others resulted in little or no discussion.

In the field of environmental assessment, VECs are chosen to measure environmental impact for several reasons. Some VECs are especially vulnerable or are listed for protection by regulatory bodies. Other VECs act as umbrellas in that by limiting impacts on them, protection is provided to a variety of other natural, social, or cultural aspects of the environment. Selection of VECs allows for data gathering on and analysis of specific aspects of the impacts of construction and operation of the Bipole III Project.

8.2 Significance of Effects

After describing potential effects and steps to be taken to prevent or mitigate effects, Manitoba Hydro described the residual effects – the effect on the VEC after mitigation measures have been taken – as either “not significant,” “potentially significant” or “significant.” None of the 67 VECs was described by Manitoba Hydro as having a “significant” effect from the Bipole III Project.

Manitoba Hydro determined significance by considering the magnitude, duration, and geographic extent of the effect. The intent was to

screen out very localized, small, short-term effects and focus on VECs with the potential for more serious, widespread or long-lasting adverse effects. Some VECs were determined to be affected only in the immediate Project Footprint, along the right-of-way or at the site of one of the converter stations. Others were determined to have an effect that extended beyond the Project Footprint and into the Local Study Area, the 4.8 km-wide strip of land centred on the right-of-way. A small number were determined to have effects that extend beyond the Local Study Area and into the Project Study Area, the larger crescent-shaped area that included large portions of northern, western and southern Manitoba.

One biophysical VEC, boreal woodland caribou, was identified as having the potential to experience residual effects extending into the Project Study Area.

Two biophysical VECs, surface water quality and fish habitat, were determined to expect large-magnitude adverse effects confined to the immediate area around the Keewatinooow Converter Station. The EIS determined these impacts to be “not significant” because their geographic extent is limited to the Project site and is medium-term.

Nine biophysical VECs are expected to experience moderate-magnitude effects from the Project after mitigation. These are: soil productivity, terrain stability, American marten, northern leopard frog, plains spadefoot, red-sided garter snake, northern prairie skink, ottoe skipper, and uncas skipper. With the exception of American marten, all of these potential effects were either confined to the Project Footprint or considered to be of short duration. The effect on American marten was considered both to be of moderate duration and to extend beyond the Project Footprint and into the Local Study Area.

8.3 Biophysical VECs

8.3.1 Terrain and Soils

A number of factors resulting from construction or maintenance of the Bipole III Project have the potential to affect terrain and soils.

Soil compaction, caused by the movement of vehicles and equipment, or storage of materials and placement of structures, reduces soil productivity. Activities that disturb or expose soil surfaces or concentrate water drainage can cause erosion. Sandy soils are particularly susceptible to wind erosion, whereas clay or loam soils are more susceptible to water erosion. Movement of vehicles and equipment, stripping and grading of work areas, and excavation and trenching of foundations can result in soil mixing. This soil mixing can result in a loss of soil capability when a nutrient-rich surface soil is mixed with stony or saline subsoil materials. Herbicide residues can affect soil productivity. Removal of tree canopy, low vegetation or forest litter can result in increases in soil temperature, which can lead to drier soils, or to loss of permafrost. In permafrost areas, reducing the amount of permafrost through compacting soil, clearing or removing vegetation, or removing seasonally thawed soil can cause permafrost degradation. This can reduce the stability of terrain, leading to slumping, changes to drainage patterns, and increases in greenhouse gas release. The creation of steep slopes can initiate or accelerate mass wasting, a term for the downhill movement of soil under the influence of gravity. Mass wasting can lead to more sediment in surface water or loss of vegetation. Removal of surface material and bedrock during construction or creation of gravel pits will lead to a reconfiguration of the surface in places, and can lead to the potential for destabilization of steep slopes and an increase in erosion and fish mortality. Loss of unique terrain and soil features, such as beach ridges or salt flats, reduces landscape integrity and can thereby result in a loss of biodiversity or landscape aesthetics.

VEC - Soil Productivity

In northern Manitoba, clearing and construction of the line in winter will reduce effects on soil productivity. Topsoil from

construction sites and borrow pits (excavations for gravel or fill material) will be stripped and stockpiled so that it can be replaced after construction, in order to minimize damage from soil mixing.

Of the 585 km of the Bipole III right-of-way that runs through agricultural Manitoba, approximately 42.5% is on agricultural land with a capability rating of Class 1 to Class 3, amounting to 1,810 hectares. Class 1 to 3 soils are the most productive in Manitoba. Soil compaction resulting from construction may reduce productivity on the transmission line right-of-way. To the extent that the line forces farmers to manoeuvre around towers while operating agricultural equipment, there will be further losses of productivity from soil compaction adjacent to the towers.

Manitoba Hydro intends as much as possible to construct the transmission line in southern Manitoba at times that will reduce the risk of compaction and erosion. In areas prone to compaction, construction during dry periods will reduce the impact. In areas prone to wind erosion, construction during moist periods will reduce the impact. After construction, where it is required, sites will be graded and disced or deep-ploughed to alleviate compaction and remove ruts. Manitoba Hydro avoids large-scale use of herbicides and has significantly reduced the use of herbicides that linger in the soil.

Despite these and other measures, there will be some negative effects on soil productivity and terrain stability – which the EIS characterizes as small to moderate and medium- to long-term – throughout the Bipole III Project Footprint.

VEC - Terrain Stability

Avoidance of steep terrain when determining the locations of transmission towers will reduce the impact on terrain stability. As much as possible, construction will avoid undercutting slopes, modifying slopes to create steep angles, or removing vegetation on sloped terrain, especially near waterways. Borrow pits will not be located near steep slopes. When they are no longer in use, borrow pits will be contoured to allow for functional drainage and a stable profile. In order to reduce the degradation of permafrost, Manitoba

Hydro will avoid burning slash on permafrost soils adjacent to the Keewatinooow Converter Station and northern ground electrode sites. During construction, workers will avoid stripping through organic layers on permafrost-affected soils in order to prevent degradation of permafrost.

What We Heard: Terrain and Soils

A presentation by Swan Lake First Nation (SLFN) stressed that the Final Preferred Route (FPR) crosses steep slopes that are prone to erosion as it crosses the Assiniboine River. Some of the soils in this section are also at risk of wind erosion. SLFN has stated that it is concerned that Manitoba Hydro is underestimating the risk of erosion and mass wasting. The Commission also heard a reference to large borrow pits from previous projects in the Gillam area that have been left as “moonscapes.” Some Participants said the lack of detail on potential locations of borrow pits made it difficult to comment on their impact on soil and terrain.

Commission Comment: Terrain and Soils

Reclamation of borrow pits is an important requirement to protect terrain and soils, and also to protect water resources and fish habitat. Properly contouring these pits and returning the topsoil to them must be carried out when they are no longer in use.

Licensing Recommendation

The Commission recommends that:

8.1 Manitoba Hydro reclaim and replant borrow pits as soon as they are no longer in use for the Project.

8.3.2 Air Quality and Climate

Air quality impacts result from burning slash (woody debris from line clearing) during construction, dust caused by vehicle traffic, waste incineration at construction camps, and the operation of the converter stations.

Climate-related impacts of the Bipole III Project result from the greenhouse gas emissions from manufacturing of construction materials and use of vehicles during construction, operation

and maintenance, as well as from greenhouse gas released as a result of changes to the landscape.

VEC - Air Quality

Increases in vehicle traffic during construction will increase both vehicle emissions and dust, affecting local air quality. Manitoba Hydro’s EIS outlines plans to pile and burn slash, which will also affect local air quality. Winter construction along the right-of-way will reduce dust impacts.

VEC - Climate

The Bipole III Project is expected to generate the equivalent of 923,000 tonnes of CO₂ from construction and maintenance during the life of the Project. The two largest components of this are the manufacturing of materials for the Project, particularly aluminum, and the clearing of land for the right-of-way. The impact of clearing the right-of-way on greenhouse gas is estimated by calculating the difference in carbon capture between forested land and cleared land, as well as by calculating the carbon released by burning slash. By way of comparison, Manitoba’s transportation sector releases seven million tonnes of greenhouse gas per year.

What We Heard: Air Quality and Climate

The Commission heard testimony that a project such as the construction of Bipole III will release a variety of chemicals of potential concern into the air through the operation of diesel equipment and burning of slash. Nitrogen dioxide, carbon monoxide, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and particulate matter are among the emissions that could affect air quality. The Commission heard that recent scientific research has indicated that a forest fire can produce 57 different VOCs, including highly toxic compounds such as dioxins. Burning slash would then potentially produce the same VOCs. While Manitoba Hydro has proposed winter-time burning to reduce forest-fire hazards, the Commission heard that burning in winter may result in these substances not being dispersed effectively if the burning occurs during a time of very stable atmospheric conditions. While these substances have a potential impact on air quality,

some of them also have a potential impact on people who consume fish, wildlife or vegetation that has received elevated levels of these substances through the environment.

The Commission did not hear specific estimates of the amount of NO, SO, VOC, PAH and particulate matter that could be released as a result of construction of Bipole III. The comments on these substances were made in the context of an argument in favour of a human health risk assessment that would include monitoring of air quality.

Commission Comment: Air Quality and Climate

The Commission is concerned that burning large amounts of vegetation could have localized effects on air quality, especially in places where the transmission line is close to residences. Given that the plan is to clear vegetation during the winter, this burning could take place during times of stable high pressure systems, which would reduce the opportunity for winds to dissipate the smoke. In addition to smoke from burning slash, equipment exhaust and dust would also have some localized effects on air quality.

Licensing Recommendation

The Commission recommends that:

8.2 Manitoba Hydro minimize burning of slash, by using chipping and mulching as the preferred method of disposal.

8.3.3 Groundwater

Projects can potentially affect groundwater by reducing aquifer productivity, and thereby the amount of water available for other users, or affecting groundwater quality through changes to turbidity, pH, trace elements or other factors.

VEC - Aquifer Sustainability

During construction of the Keewatinooow Converter Station, a maximum of 600 workers will be housed at the camp. Their water requirements, plus the requirement for water for fire suppression, will require pumping 2.5 million litres per day from the aquifer. This may create a

measurable effect as far as three kilometres away, but given the distance of the site from the nearest community that is not expected to have an impact. The northern ground electrode will also require a water source to keep the soil moist and allow for conductivity of electricity.

VEC – Aquifer Quality

Groundwater quality could be affected by spills during construction or operation, drilling for foundations of towers during construction, operation of the construction camp sewage lagoon, the leaching of chemicals from the high-carbon coke used in the ground electrodes, or the use of herbicides during maintenance.

Drilling foundations for towers along the transmission line has the potential to result in contact with saline artesian aquifers, which could affect aquifers used for drinking water if the waters come in contact. Manitoba Hydro has an emergency response plan in place to seal wells and pump water to prevent such contamination.

The construction camp sewage lagoon is the subject of a separate licence application to Manitoba Conservation and Water Stewardship (MCWS). The aquifer at Keewatinooow is protected by 60-80 metres of clay and silt material that has low permeability. The Riel Converter Station site will be connected to City of Winnipeg water and waste, so there is no anticipated effect on aquifer productivity or groundwater quality.

Use of herbicides is governed by a process in which Pesticide Use Permits are issued by MCWS. This process sets out application rates, how and when herbicides are to be used, and where they may not be used, such as environmentally sensitive sites. Application of herbicides is carried out by licensed applicators.

Material leaching from the buried coke at the ground electrode sites may include metals such as aluminum, manganese, nickel and vanadium (leaching refers to the process in which chemicals are dissolved in groundwater – the dissolved chemicals are known as leachate.) Experiments at the northern ground electrode site found that metal concentrations in the soil were sometimes elevated, but that existing organic materials

in the soil such as peat likely took up some of the leached metals. There is the potential that some of the chemicals in the coke could migrate down to the groundwater and then seep into the Nelson River. To address this, the coke used in the ground electrode will be tested before use for potential contaminants and irrigation of the site will be conducted only in dry conditions and not beyond what is needed to maintain saturated soil conditions. At the southern ground electrode site, an impermeable clay layer and an upward hydraulic gradient protect the groundwater from leachate.

Spills during construction and operation are the subject of management plans to contain run-off. The converter stations will be built to provide containment for any spills of insulating liquids or other materials or for containment of contaminated water used in fire-fighting.

8.3.4 Aquatics

The Bipole III transmission line and AC collector lines cross approximately 360 watercourses. These include the Burntwood, Saskatchewan, Assiniboine, and Red Rivers and numerous smaller rivers and streams flowing into the Nelson River, Lakes Winnipegosis and Manitoba, and other smaller lakes. In addition to these crossings, construction access routes will require approximately 125 stream crossings.

At least 82 species of fish are found in the Project Study Area. Construction and operation of the Bipole III Project could affect surface water and fish habitat in a number of different ways. Loss of riparian vegetation (vegetation along the water's edge) can damage both water quality and fish habitat. Vegetation aids in stability of banks, reduces erosion and contributes nutrients to streams and lakes. Removing vegetation can increase sediment in water, reduce cover for fish and lead to increases in water temperature.

Erosion and sedimentation can occur as a result of construction and the resulting removal of vegetation near watercourses. Increased suspended sediments in water can decrease the penetration of light in the water, decreasing photosynthesis. Sediment can bury aquatic invertebrates or render habitats unsuitable for species of invertebrates,

reducing available food for fish. Sedimentation can also result in the loss of spawning habitat or reduced spawning success. Suspended sediments in the water can also decrease feeding success of fish and clog their gills. Direct loss or alteration of fish habitat occurs when a water body is filled in and can happen as a result of construction activities within a water body.

Some materials used in the Bipole III Project are harmful or toxic to fish if they reach waterways. Coke leachate, mentioned above under Aquifer Quality, contains material that is hazardous to fish. Construction of concrete foundations for transmission towers near a water body could lead to concrete or concrete wash water reaching the water body. Uncured or partly cured concrete has a high pH and is toxic to many aquatic animals, including fish.

Construction of some portions of the Project, such as the ground electrodes, might require isolating the construction area and maintaining downstream flows if there is flowing water at the site at the time of construction. This would temporarily block fish passage in small watercourses.

The federal Department of Fisheries and Oceans has operational statements establishing procedures for many aspects of construction to prevent impacts on water quality and fish habitat. These address matters such as overhead line construction, timing of in-water construction, and temporary stream crossings.

VEC - Surface Water Quality

Surface water is one of the components of the VEC Fish Habitat, but is also treated in the EIS as a separate VEC. Typically, any activity that impacts surface water will impact fish habitat, and vice versa.

VEC - Fish Habitat

Fish habitat was assessed for each watercourse crossing along the route. Of the crossings, 86 were rated as important, 216 were rated as marginal (based on being only temporary streams or supporting limited fish diversity) and 58 were rated as not fish habitat. Eight of the important fish

habitat sites were also rated high sensitivity, based on the quality of the habitat in combination with eroding and unstable banks. For these sites, specific plans for erosion and sediment control will be developed. Access routes used during construction of the transmission line will also require approximately 125 temporary stream crossings.

All stream crossings will be treated as environmentally sensitive sites (ESS). An ESS is a location along the Project Footprint where special measures will need to be taken to protect some sensitive biophysical or socio-economic resource. Where possible, installation of the transmission line over water courses and bogs will be done during frozen conditions, crossings of streams will be perpendicular and the line will avoid unstable features. Buffer zones will be used around stream crossings in which trees will be removed by hand only and shrubs will be left with their root systems intact.

The EIS outlines steps to prevent contamination of water bodies by the buried coke in the two ground electrodes, the mixing and pouring of concrete during construction, and spills of fuel or insulating oil at construction sites or the sites of the two converter stations.

The Keewatinoow Converter Station site is located as close as 35 metres away from Goose Creek. Construction of the station will require filling in an unnamed intermittent tributary of Goose Creek, rated marginal fish habitat.

Measures to reduce the impact of borrow pits on water quality and fish habitat include locating pits away from streams and water bodies, preventing sediment-laden runoff from reaching adjacent streams, and not excavating borrow pits below the water table.

Once the line is in operation, vegetation management will be conducted in a way that leaves root systems intact in riparian areas and minimizes disturbance of stream banks. Slash will be piled well above the high water mark so that it doesn't enter into the watercourse.

What We Heard: Aquatics

Potential effects on water quality and fish habitat caused by removal of vegetation, herbicide

use, accidental fuel spills and other actions are a concern in many northern and Aboriginal communities. Many Aboriginal resource users are particularly concerned about the potential for herbicides used in vegetation management to wash into neighbouring waterways and thereby affect water quality and fishing. While many Aboriginal communities are concerned that removal of vegetation would lead to erosion, and thereby harm water quality and fish habitat, there is also a concern that removal of vegetation along the right-of-way could lead to increased water flow, and hence flooding.

Fox Lake Cree Nation (FLCN) members expressed concern about the impact of grey water from the Keewatinoow construction camp sewage lagoon entering the Nelson River. They also have expressed concern about clearing for stream crossings in Fox Lake territory. Among the streams and rivers are Goose Creek, near the Keewatinoow Converter Station, and the Limestone River, both of which are described as important brook trout habitat. FLCN representatives said that the absence of any mention in the Bipole EIS of cold-water seeps (springs flowing directly into a water body) in the area's rivers is a serious flaw, as these are important to brook trout.

Fish spawning areas were mentioned several times. Opaskwayak Cree Nation (OCN) resource users expressed concern about the potential for impact on spawning areas within the Ravensnest trapline zone, near the north end of Kelsey Lake, which is near the right-of-way. Resource users from Pine Creek First Nation (PCFN) spoke to the Commission about fish spawning in the 12 creeks and rivers that flow into the community, all of which will be crossed by the transmission line.

Swan Lake First Nation expressed concern for both surface water and groundwater resources. SLFN noted that Manitoba Hydro's technical report on ground water indicated that the aquifer in the area is moderately sensitive to contamination from drilling for tower foundations or from accidental fuel spills. Regarding surface water quality and fish habitat, SLFN expressed concern about the potential for erosion to affect the Assiniboine River, noting that Manitoba Hydro's technical report observed that the

Assiniboine River's west bank at this point on the FPR is actively eroding and susceptible to further erosion. Increases in suspended solids in the water would reduce visibility and increase sediment deposition, which could have an impact on aquatic life in the river. SLFN specifically expressed concern that the EIS states that the federal Department of Fisheries and Oceans will not be involved in monitoring the stream crossings on the transmission line.

Regarding the potential impact of borrow pits on surface water and fish habitat, several Participants in the hearings expressed concern that the locations of these pits are not identified in the EIS. Without knowledge of where the pits will be, Participants said they could not assess their impact on the environment.

The Commission heard concerns from Pine Creek First Nation that dealt not just with water quality but with water quantity. At the time of the hearings, PCFN was saturated due to heavy precipitation and high levels on Lake Winnipegosis. Members are concerned that any additional water flowing into the community as a result of clearing of the right-of-way for the Bipole III transmission line may exacerbate that problem.

In response to this concern, the Commission heard a presentation on a study conducted by Manitoba Hydro that modelled potential increases in water flow resulting from clearing the line in the area of Pine Creek First Nation. The Bipole III right-of-way will cover approximately 0.1 % of the watershed of the rivers and creeks flowing into PCFN. Clearing forest increases the rate at which rain and snow melt flow through the watershed. The research team for the watershed study created a model based on weather data, stream flows and land cover to estimate the potential increase. Using a theoretical worst-case scenario, the additional water flow in the three rivers that flow into Lake Winnipegosis at PCFN would be in the range of 0.004 cubic metres per second each. This level of increased flow would be barely detectable in the field, the Commission heard. As shrubs and small trees regenerate on the right-of-way, the effect of increased run-off would be further diminished. Representatives of PCFN were concerned that even such a small increase could make a difference, given the high water levels on

Lake Winnipegosis and the amount of water in PCFN.

Commission Comment: Aquatics

The Commission believes that the protection and mitigation measures designed to protect water bodies will, if they are followed stringently, protect fish habitat and water quality. Buffer zones along all watercourses crossed by the transmission and collector lines will prevent erosion. Stringent rules to prevent fuel spills and other rules, such as those preventing the dumping of concrete wash water, will also protect water quality and fish habitat. Manitoba Hydro's vegetation management plans are expected to encourage the growth of low shrubs and small trees, which will also ensure that the right-of-way does not harm any of the water resources and fish habitat it crosses or runs near. Monitoring and adaptive management (see Chapter Twelve: Environmental Protection, Monitoring and Management) are essential to ensure that these protective measures are followed and to respond to any unexpected incidents or unforeseen effects.

8.3.5 Terrestrial Ecosystems and Vegetation

The term "terrestrial ecosystems" refers to the complex interacting systems that include all land plants, animals and their environment within a particular area, while "vegetation" refers to the general cover of plants on the landscape. The Bipole III EIS contains two VECs within this grouping: plant species and communities of conservation concern, and grassland/prairie areas. Potential effects of the Bipole III Project on terrestrial ecosystems and vegetation, as described in the EIS, are:

- **Modification of vegetation adjacent to the disturbance zone:** Removing vegetation and creating new forest edges as a result of clearing of the right-of-way may lead to windfall or blowdown along the new forest edge. Increased sunlight at the forest edge may change the microclimate adjacent to the right-of-way and lead to a decrease in species that prefer shaded or moist habitat and an increase in species that prefer dry conditions.

- **Changes in vegetation diversity:** Where currently there may be several strata of vegetation – tree canopy, tall shrub, low shrub and ground vegetation – clearing of the right-of-way will lead to a long strip of ground vegetation and low shrubs. In areas such as the Keewatinoow Converter Station, construction camp, construction power station and borrow sites there will be complete removal of vegetation.
- **Invasive and non-native plants:** Invasive plants are defined as those that out-compete native plants when introduced outside of their natural environment, while non-native plants are defined as any plants growing outside of their natural distribution. Both categories of plants are often referred to as weeds. Construction equipment and vehicles can introduce the seeds of non-native and invasive plants, such as purple loosestrife. Construction-related ground disturbance can increase the possibility of weeds being introduced. Construction materials such as gravel and fill can also carry plant seeds. To limit the spread of invasive and non-native plants, construction and maintenance will take place during the winter, equipment will be washed and inspected before working in a new site, and construction materials (gravel) will be taken from clean sources.
- **Increased access:** Clearing of the right-of-way and creation of new access routes to the right-of-way can increase access to sensitive areas. This may result in more people, especially from outside the neighbouring community, picking berries or other plants. Access management plans will be developed for the Project and will consider means to limit access to areas deemed important for plant harvesting by Aboriginal communities.
- **Wildfire risks:** Clearing of the right-of-way can cause new risks of wildfire if slash left from construction or vegetation management is left to accumulate and provide a fuel source. Increased access resulting from the clearing of the right-of-way or construction of access routes may also lead to more opportunity for human-caused fires. Another potential impact related to fire is that the existence of the Bipole III line may disrupt the natural cycle of forest fires. The right-of-way itself may act as a firebreak or provide access for forest fire-fighting crews.
- **Dust:** Dust resulting from increased traffic and construction can affect adjacent vegetation. Dust on leaf surfaces can reduce the plant's ability to take up carbon, change its rate of photosynthesis, or slow its growth. To limit dust, construction and maintenance in many areas will be carried out in winter. As well, water or approved dust-suppression agents will be used to reduce dust.
- **Herbicides:** Spraying of herbicides during transmission line maintenance can affect desirable plant species as well as undesirable species. Studies have shown that herbicide-sprayed rights-of-way are less dense and have a smaller number of perennials, particularly showy wildflowers. To reduce the impact of herbicides, clearing of the right-of-way and other sites will be done by mechanical means or by hand. Herbicide use during maintenance will be governed by the appropriate provincial regulations and landowners will be contacted for permission before herbicides are used on private land.
- **Fragmentation:** Clearing the 66-metre right-of-way will cause fragmentation of vegetation communities by breaking intact large patches of habitat into smaller patches, isolated from each other. Habitat fragmentation is also a measure of cumulative impact (See Chapter Eleven: Cumulative Effects Assessment), in that patches of various kinds of habitat become divided into smaller pieces as a result of other impacts, including forestry, transmission lines, and roads. As part of its route-selection process, Manitoba Hydro employed a measure of fragmentation, referred to as “core communities.” In comparing the various route alternatives, Manitoba Hydro’s study team assigned scores based on how intact the “core communities” were along each of the route sections. Manitoba Hydro provided a section-by-section description of habitat fragmentation along the FPR that focused on the number and size of habitat

patches that would be crossed by the Bipole III line. Manitoba Hydro, in selecting its route, generally attempted to avoid areas of relatively intact habitat. One way of avoiding habitat fragmentation was to have the transmission line run adjacent to existing linear features, such as roads, transmission lines and railways. Approximately 52% of the Bipole III line runs adjacent to such existing disturbances. There are some sections of the line, however, where the right-of-way will cross through relatively undisturbed habitat areas. One of these is near the northern end of the line, where the line will cross some unfragmented areas of coniferous forest. In total approximately 45% of the Bipole III right-of-way traverses upland forest or shrub. In all, this amounts to approximately 41 square km, or 4,100 hectares of forest and shrub that will be disturbed. In addition to habitat fragmentation arising from clearing the right-of-way for the transmission line, there is the potential for habitat fragmentation to be caused by clearing to create access routes for line construction. The EIS states that 44 such temporary access routes will be required. Fragmentation of habitat caused by access routes is reduced in areas where existing roads and trails can be used and increased in areas where new access needs to be created. North of Red Deer Lake and Swan River, the Bipole III line moves through areas with relatively few existing access routes and large areas of contiguous forest. South of Red Deer Lake and Swan River, where the line traverses forest, it mostly does so in areas where there is moderate density of access and the line intercepts fewer areas of contiguous forest habitat. South of the town of Mafeking, the right-of-way frequently crosses highways, and so little new access will be needed.

The items listed above are ways that a project such as Bipole III can have an impact on many aspects of terrestrial ecosystems and vegetation. Below are Manitoba Hydro's observations about effects on the specific VECs in this category.

VEC - Plant Species and Communities of Conservation Concern

Species of conservation concern are those that exist in low numbers and help to preserve diversity of species. Their distribution is often restricted and some are protected federally or provincially or are listed in the Manitoba Conservation Data Centre as uncommon to very rare. Species of conservation concern have been identified along the FPR, at the northern ground electrode site, along the northern collector right-of-way, at the construction power station site, and at the Keewatinoow Converter Station site. For example, snow willow, a listed species of conservation concern, will be removed from the Keewatinoow Converter Station site. However, it is also found in unaffected areas near the converter station site. In all, some 44 locations along the FPR or in the Local Study Area have been identified as containing species and communities of conservation concern.

Steps to reduce impacts on species of conservation concern include carrying out construction in winter, minimizing disturbance to the herb and shrub layer where species of conservation concern have been observed, using existing access routes as much as possible, and marking locations of species of conservation concern with flagging tape prior to construction, so they can be avoided.

VEC - Grassland/Prairie Areas

Historically, grassland ecosystems covered a large part of Manitoba, but only a few undisturbed natural grassland areas remain today. Native grasslands are also important because they may include federal or provincial species of concern. Thirteen plant species that are listed as protected have the potential to occur in the southern portion of the Bipole III Project Study Area where native grasslands occur. About nine hectares of dry upland prairie occur within the southern portion of the right-of-way. These grasslands have the greatest variety of native plants compared to other grassland habitats in the Project Study Area. As well, about 755 hectares of grassland that is considered agricultural pastureland will be affected by the right-of-way.

Impacts on native grasslands will be minimized by carrying out construction during the winter months, minimizing disturbance to soil and vegetation in dry upland areas, removing trees in grasslands using methods that reduce disturbance, using existing access routes as much as possible, and reducing the amount of tree clearing where trees do not pose a threat to operations of the transmission line.

Non-VEC Plant Communities

The Bipole III Project has the potential to affect other plants and plant communities that were not identified as VECs, including upland forest vegetation, riparian habitat, bogs, fens, and marsh habitats. The EIS lists a number of steps to reduce impacts on non-VEC plants and plant communities, including steps similar to those for the two vegetation VECs: winter construction, using existing access routes, and minimizing vegetation disturbance. Other methods include: planting or seeding with native species to reduce risk of erosion; limiting removal of trees to the right-of-way, with the exception of danger trees; felling trees so that they drop into the right-of-way and minimize damage to other vegetation, using a buffer of 30 metres for lakes, ponds and streams; when a buffer zone will be disrupted, doing so in winter; where riparian areas will be disrupted, developing a revegetation plan; working in wetlands in winter; using construction mats for non-winter work where wetlands may be affected; and managing storm water runoff to reduce potential for erosion.

What We Heard: Terrestrial Ecosystems and Vegetation

Members of Tataskweyak Cree Nation told the hearing that the Bipole III Project will cause considerable fragmentation within their traditional territory. The transmission line will traverse 215 km of the Split Lake Resource Management Area (RMA) and an additional 16.6 km of the broader Resource Area and will cross 11 TCN registered traplines. In addition to that, a portion of the AC collector lines runs through the Split Lake RMA, and the remainder of the collector lines, plus the Keewatinoow site, ground electrode and other facilities are within the Resource Area. As a result, TCN stated that they will be the community most affected by Bipole III.

The Commission heard specific concerns regarding plant species and plant communities of conservation concern regarding the section of the Final Preferred Route that crosses the Assiniboine River. Nine listed species of conservation concern were identified by Swan Lake First Nation along the preferred right-of-way in the area near the Assiniboine River. To prepare its assessment of the FPR, SLFN conducted a botanical survey of seven kilometres of the FPR spanning the Assiniboine River. The survey found approximately 200 plant species, nine of which are considered rare in Manitoba. The Commission heard that 95% of the plants have some kind of traditional use.

The Commission heard concerns that because locations of access routes and borrow pits were not identified in the EIS, it was difficult to assess their impact on terrestrial ecosystems and vegetation, particularly on fragmentation. As well, Participants said a better understanding of the impact on fragmentation might have been possible if the Bipole III EIS had studied the impact of Bipoles I and II.

Commission Comment: Terrestrial Ecosystems and Vegetation

The Commission believes that one of the issues included under this category, fragmentation, is one of the most important environmental effects of Bipole III and should have been examined in greater detail and with greater clarity. Instead of focusing just on the two VECs in this category, the EIS should have provided clear and easily understood measures of the increased fragmentation of vegetation communities that would have resulted from the Project. Measures of fragmentation, such as kilometres of linear disturbance per square kilometre, would have allowed Participants in this process to gain a greater understanding of the amount of fragmentation that would result from this Project. A better understanding of the fragmentation caused by this Project would have been possible if Manitoba Hydro had provided more detail on construction access routes, including estimates of the number, length and width of such routes. It is understood that these access routes for construction are intended to be temporary, but there is danger that once they are cleared it will be difficult to keep people from using them. In this case, they will continue to

fragment forests, grasslands and other vegetation areas. Overall, the attempt to follow existing linear disturbances as much as possible – including the Hudson Bay Railway, Highway 6, and the Wuskwatim transmission line – reduces the amount of fragmentation.

Another of the terrestrial ecosystems and vegetation concerns, increased wildfire risk, can be addressed in part by a commitment to burning slash as little as possible. Chipping and mulching slash will help to reduce the risk of a great accumulation of fuel for forest fires.

8.3.6 Mammals and Habitat: Ungulates

Three main categories of potential impacts on mammals were identified: mortality, habitat alteration, and sensory disturbance. Three factors could increase mortality: overharvesting due to increased access, increased mortality due to improved predator mobility along the right-of-way or access routes, and decreased reproductive capacity as a result of disturbance or displacement. Habitat alteration includes three kinds of impacts: potential loss or change of habitat, potential loss of functional habitat caused by loss of forage or edge effects, and potential loss of important or unique habitat components such as mineral licks, calving areas, dens or reproductive habitat. Sensory displacement refers to the loss of functional habitat that results when animals avoid an area because of noise and human activity.

One of the main potential impacts of a transmission right-of-way is the potential for increased harvest as a result of enhanced or new access. This may result in increased poaching or increased hunting success. Linear developments, such as transmission lines and access routes, allow for increased access by predators into formerly remote habitat. Female caribou with calves are less tolerant of disturbances than other ungulates and are more likely to avoid disturbances. Caribou calves are vulnerable to predation and any environmental change that forces females into less secure calving habitat may increase calf mortality.

VEC - Coastal and Barren Ground Caribou

The northern portion of the Bipole III line and the site of the Keewatinoow Converter Station

are in habitat that is periodically occupied by coastal caribou from the Pen Island and Cape Churchill herds. The area also is occasionally occupied by barren ground caribou from the Beverly and Qamanirjuaq herds. Migrations of coastal caribou south into the region around Keewatinoow vary, with data indicating that few coastal caribou migrated into the area in 2009 but large numbers did so in 2010.

VEC - Boreal Woodland Caribou

Boreal woodland caribou are designated as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the *Species at Risk Act*. They have also been listed as Threatened under Manitoba's *Endangered Species Act*. The Bipole III FPR intersects three ranges of boreal woodland caribou, out of the 11 caribou ranges within the Project Study Area. These ranges are, from north to south, the Wabowden, Reed Lake, and Bog ranges.

Boreal woodland caribou are found in relatively small numbers and spread over relatively large ranges in mature coniferous forests where there are few other ungulates (moose or deer) to attract predators. They exhibit solitary behaviour during calving and calf-rearing, which is thought to be a predator-avoidance adaptation. They have a low natural population growth rate, in part because, unlike other ungulates, female boreal woodland caribou do not give birth to twins. Boreal woodland caribou across Canada show population declines when there is increased disturbance in their environment.

The FPR will intersect only 8.86 km of the Reed Lake caribou range, running parallel to the Wuskwatim transmission line near the eastern edge of the range. The FPR crosses 84.23 km of the Bog range. For the Wabowden range, Manitoba Hydro initially put forward an FPR that crosses 94.16 km, and later submitted an adjusted FPR that crosses 85.3 km. Within the Bog range, the FPR bisects winter core use and intersects three per cent of high-quality calving habitat. The adjusted FPR in the Wabowden range avoids winter core use areas and intersects three per cent of high-quality calving habitat.

Data from population monitoring that included collared animals in ranges within the

Project Study Area indicated low mortality among adult female woodland caribou. Data also showed a high pregnancy rate among female caribou. However, all the boreal woodland caribou herds in the study area had very low recruitment rates (a term referring to the rate at which young animals survive to maturity), indicating high mortality among calves. Accordingly, any activity that could lead to an increase in predation may have a significant effect on boreal woodland caribou.

Among the chief concerns for boreal woodland caribou is that the transmission line right-of-way and construction access routes may provide greater access for predators (wolves and black bears) into caribou habitat. Radio collaring and aerial surveys of wolves were conducted in 2010 and 2011 to determine the minimum density of the wolf population and the extent of range covered by wolf packs. Aerial observers spotted 58 wolves in 2010 and 83 wolves in 2011 in a survey area extending north and east from Cormorant and North Moose Lake almost to Split Lake. This area is reported in the Mammals Technical Report as greater than 39,000 km², while Chapter 6 of the EIS describes it as 17,000 km².

A related concern is that the removal of tree cover along the right-of-way will lead to regeneration of grasses and shrubs which will provide food for prey animals such as moose, deer, hares and rodents and thus attract predators. The possibility that the right-of-way may allow white-tailed deer to expand their range further north into caribou habitat may also lead to an increase in predator populations. White-tailed deer are not native to Manitoba, and only arrived in the southern part of the province in the late 19th century. Since then, they have gradually been expanding their range in Manitoba. The danger of white-tailed deer moving into caribou habitat is not confined to the possibility that this will encourage an increase in wolf populations. White-tailed deer may also carry a parasite known as brainworm, which is fatal to other ungulates. Manitoba Hydro's experts dismissed this as a danger.

Sensory disturbance caused by construction and maintenance along the right-of-way, as well as any post-construction access by snowmobilers and hunters, is another potential impact on caribou. Results from tracking collared caribou indicated

that transmission lines may act as a barrier which the animals will be reluctant to cross.

One of the major concerns about environmental effects on caribou is that their populations are more vulnerable because of their very low recruitment rates. Recruitment rates for caribou are commonly half of the recruitment rate for moose. This means that while moose have the potential to recover fairly quickly from a decline, caribou do not. Overall, caribou in the study area are declining in population.

Monitoring of woodland caribou herds within the study area reveals that recruitment rates for these herds are considerably lower than the recruitment rate for populations in Alberta or Saskatchewan. The Bog and Wabowden caribou herds had recruitment rates of 0.07 and 0.08 respectively (meaning seven and eight calves respectively per 100 animals in the herd). This compares to average recruitment rates of 0.17 in Alberta and 0.28 in Saskatchewan. The EIS did not contain data on population or recruitment for the Reed Lake herd. Research has shown that the caribou in these Manitoba herds had a high pregnancy rate, common for all woodland caribou, and that the average adult survival rate for six Manitoba herds was 0.88, higher than that reported in Alberta. The combination of high pregnancy rate, relatively high adult survival rate and declining population suggests that predators are killing large numbers of young caribou.

The Commission heard reference to scientific studies indicating that a population of caribou may decline years after disturbance of habitat. Research in northern Ontario indicates that the population of caribou declines as much as two decades after forest harvesting. One of the reasons for the lag time may be that it takes some years for populations of moose to increase in response to new growth in the logged areas. It then takes some time for wolf populations to increase in response to the increases in moose. Once wolf populations have increased, there may be greater predation on caribou in the area.

Manitoba Hydro plans to limit effects on caribou through winter construction, maintaining natural low tree cover along the right-of-way in the Wabowden and Bog ranges, controlling

access to the right-of-way, and conducting line maintenance in the Wabowden range using helicopter access in order not to create more vehicle/snowmobile access. Firearms will not be allowed in work camps in order to prevent hunting by project workers.

What We Heard: Caribou

Most of the material brought forward about caribou came directly from Manitoba Hydro's consultants who had been hired to study the effects on ungulates. A great deal of valuable information was obtained through questioning of these experts by Participants. Questions raised during the IR process prompted Manitoba Hydro to produce a more rigorous supplemental report on caribou.

One additional issue about caribou that was brought forward by Participants concerned a disagreement between Manitoba Hydro and MCWS on one hand and Fox Lake Cree Nation on the other as to which caribou species are found in the Gillam/Keewatinoow Converter Station area. Manitoba Hydro's EIS refers to the caribou in the area as barren ground and coastal, mostly from the Cape Churchill and Pen Island coastal caribou ranges. The Pen Island coastal caribou range extends eastward into Ontario. The Cape Churchill coastal caribou range extends northward towards Cape Churchill. Coastal caribou are genetically similar to the boreal woodland caribou, but are generally differentiated from boreal woodland caribou by their migratory behaviour, use of taiga/tundra transition forest, and group calving and post-calving behaviour in the tundra along Hudson Bay. The Keewatinoow area is also occasionally visited by barren ground caribou from the Beverly and Qamanirjuaq herds, which extends into Nunavut.

Fox Lake Cree Nation asserts that there are also boreal woodland caribou in the Gillam/Keewatinoow area which remain year-round rather than migrating with the coastal herds. According to Fox Lake, Manitoba Hydro's technicians refer to these as "summer resident" coastal caribou rather than boreal woodland caribou. York Factory First Nation stated that its representatives have consistently advised Manitoba Hydro of the presence of boreal

woodland caribou in the Lower Nelson River area along the Final Preferred Route.

Commission Comment: Caribou

The Commission is concerned that, given the marginal status of many caribou herds in Manitoba, any disturbance may be harmful. The decision to adjust the Final Preferred Route in the Wabowden area is therefore a positive step. This route adjustment reduces impacts on caribou by avoiding important winter range and running adjacent to existing linear disturbances. However, the Commission is concerned for the overall future of caribou in this part of Manitoba, given the very low recruitment rate revealed in the research. The Commission is also concerned about gaps in data, such as the lack of information on the recruitment rate for the Reed Lake herd. This lack of data is particularly problematic, given that a greater percentage of the Reed Lake range has been disturbed than any of the other caribou ranges in the Bipole III Project Study Area. It is worth noting, though, that the Bipole III transmission line intersects only a small amount of the Reed Lake range.

Another concern is that recruitment rate results were only available for two to three years for only two of the herds directly affected. The national recovery strategy for woodland caribou (Environment Canada 2012) indicates that monitoring for at least five years is required to confirm a trend. Manitoba Hydro indicates that it will continue to collar caribou in the vicinity of the line until 2015. With a collar life of three years, these caribou will be monitored until 2018, which will effectively only be until the construction is completed. If there is no new information from collars after 2018, it is not clear how the success or failure of mitigation measures will be measured. Woodland caribou in the vicinity of the line need to be closely monitored well into the operational stage of the line, to determine the long-term and cumulative effects on their populations. A 25-year monitoring plan should be put in place.

In addition, monitoring of the effects of human-induced disturbance is required at a regional scale. The herds directly affected by the Bipole III transmission line cannot be treated in isolation from the regional caribou populations,

including other caribou ranges farther from the Bipole III line. Data collected on the three herds identified must be integrated with the data collected in relation to the Wuskwatim transmission line and by MCWS in the region to provide a full picture of the effects of Bipole III and other human-induced impacts on woodland caribou in the area.

An issue of major concern regarding the effect of Bipole III on caribou is increased predation. The right-of-way provides a travel lane that enters areas of caribou range that were previously difficult to access. Both wolves and moose, the major prey species for wolves in the area, use transmission line rights-of-way for travel. Wolves do not usually seek out caribou, as caribou are typically thinly scattered across their habitat, but will prey on caribou when they are available. If wolves come upon them while hunting moose, caribou could then be preyed upon opportunistically. Although wolves were not included as a VEC, some data were collected on their populations and movements in relation to prey populations. Data, however, were limited. The Commission was advised by its own expert, supported by questions raised by a Participant's representative, that Manitoba Hydro's estimated wolf population density was much lower than estimates in other areas of North America with similar conditions. The limited data call into question the conclusions regarding the impact of wolf predation on caribou population sustainability. Additional and more-intensive sampling and monitoring of wolf population densities and movements are required to more accurately determine the effect of wolf predation on caribou populations.

The Commission also believes that much more information is needed regarding the relationship between caribou and black bears, specifically whether or not predation by bears is one of the factors contributing to the very low recruitment rate. A research program conducted over a number of years in caribou ranges within the Project Study Area, using collars on (or otherwise electronically tracking) bears and/or studying bear scat for evidence of caribou predation would help to resolve some of this uncertainty.

Another issue of concern for caribou is the spread of white-tailed deer populations northward. The Bipole III right-of-way will provide a travel route into areas that were previously unsuitable for deer. The establishment of deer populations may provide additional prey for wolves, increasing the possibility of wolves opportunistically preying on caribou. With the overlap of white-tailed deer and caribou ranges, there is also a risk of the spread of brainworm, a fatal disease for moose and caribou, but not for white-tailed deer. Given this concern about white-tailed deer, it would be helpful to know whether the Bipoles I and II corridor had an effect on white-tailed deer range. The Commission believes that the Bipole III right-of-way vegetation should be managed to prevent the spread of white-tailed deer populations and the right-of-way should be monitored with the use of trail cameras to detect occurrence of deer. The prevalence of brainworm should also be monitored in white-tailed deer populations occurring near the Bipole III right-of-way.

Research is also required to resolve questions about the status of the caribou in the area of Keewatinooow. Are these caribou boreal woodland caribou, as Fox Lake Cree Nation, York Factory First Nation and Tataskweyak Cree Nation believe? Or are they Pen Island caribou that summer in this area rather than joining in the migration to the coast with the rest of the Pen Island herd?

The Commission was encouraged late in the hearings to see a list of what Manitoba Hydro referred to as enhanced mitigation measures. These measures, designed to limit access to the right-of-way and allow the growth of trees in environmentally sensitive areas along the right-of-way, should be employed in places where the right-of-way passes through important caribou habitat. If monitoring indicates a continuing adverse effect from the Bipole III line, it may be necessary to develop additional enhanced mitigation methods.

VEC – Moose

Moose prefer habitat with young growth in the form of shrubs and bushes and are known to favour areas that are regenerating after logging or fire. Forest clearing during the construction of the

transmission line is therefore not expected to limit habitat available to moose. Sensory disturbance during construction of the transmission line, collector lines and Keewatinoow Converter Station and northern ground electrode may cause moose to leave the immediate area for a period of time.

The primary potential effect for moose is increased mortality as a result of access by both humans and wolves along construction access routes and the right-of-way. There is also the possibility that expansion of white-tailed deer range will introduce the brainworm parasite into moose populations. Steps to limit effects on moose include developing plans to limit access to the right-of-way. As well, Manitoba Hydro will carry out surveys before construction to determine the location of mineral licks and develop specific protection plans for them. Manitoba Hydro will also prohibit firearms at work camps, which may prevent some increase in hunting that would result from the influx of workers into an area.

In order to assess effects of the Bipole III transmission line, Manitoba Hydro developed a model of high-quality moose habitat that included areas of tall shrubs and young forests. According to the model, high-quality moose habitat includes all tall shrubs in the mid-boreal and aspen parkland ecoregions, as well as all forest stands and tall shrubs between 10 and 60 years of age for the rest of the Project Study Area. Clearing of the right-of-way will remove 22 km² of high-quality moose habitat, representing approximately two per cent of such habitat within the entire length of the 4.8 km-wide Local Study Area.

The Bipole III line will run through a number of areas in western Manitoba where moose populations have declined substantially in the last decade. Population numbers presented for the Duck Mountains area point to a long-term trend. In 1993, there were 3,209 moose recorded in the Duck Mountains. That number had decreased to 2,008 in 2007 and 1,349 in 2010. GHA 14 and 14A saw an even more pronounced decline in moose number since 1992, dropping from 2,450 to 148. The closure of moose hunting in several GHAs has caused some rebound in moose numbers since 2010, but under questioning by one of the participant groups, Manitoba Hydro's moose consultant admitted that that he would have expected the numbers to rebound more.

Manitoba Hydro conducted subsequent aerial surveys in December 2012 while preparing its supplemental filing on the adjustments to the FPR in three sensitive areas. These surveys indicated that moose were more likely to be found in or near areas that fit Manitoba Hydro's model of high-quality moose habitat and areas of disturbance such as transmission lines, recently logged areas and roads. Such a finding provides some validity to the model of high-quality habitat contained in the EIS.

As part of their supplemental environmental assessment on the route adjustments, Manitoba Hydro analyzed moose population trends and habitat and considered studies of wolf predation. Manitoba Hydro's experts testified that there is little evidence to suggest that habitat, predation or disease is responsible for the drop in moose populations in western Manitoba. With an observed ratio of 56 calves per 100 cows and assuming a standard cow survival rate of 90% (the common average in other provinces and territories), moose populations should be increasing in the area. After producing evidence that ruled out wolf predation, winter tick and disease as causes, Manitoba Hydro's experts argued that the only remaining explanation for the population decline is unlicensed hunting. In comparison to the effect of hunting throughout the entire region, the effect of a relatively small amount of new access along the Bipole III transmission line is likely to be insignificant, they concluded.

What We Heard: Moose

Many Presenters who were members of First Nations or the Manitoba Métis Federation spoke about their concern that the Bipole III line could put pressure on moose populations through disturbance, increased access for predators, increased presence of disease, or increased access for hunters. These concerns were particularly acute regarding the western Manitoba region from the Duck Mountains and Porcupine Hills to south of The Pas. These regions have recently experienced pronounced drops in moose populations, leading to hunting closures in several Game Hunting Areas (13 and 13A, 14 and 14A, 18 and 18A, B and C). Several Presenters said that moose is the most sought-after game animal, so any impact on moose populations would have an

effect on people who incorporate wild game into their diets.

Several individuals who hunt in western Manitoba said moose that live in the Porcupine Hills will need to cross the Bipole III right-of-way when they move to lower elevations to escape heavy snows. Crossing the right-of-way may expose them to greater risk of predation and hunting. Manitoba Hydro responded that there is no scientific evidence for such a migration and aerial surveys conducted in January 2011, December 2012 and February 2013 do not support this hypothesis.

While Manitoba Hydro's habitat model shows that only a small amount of high-quality moose habitat will be affected by Bipole III, concerns were expressed that the model had not been statistically validated. It was suggested that the failure of the model to identify the area in GHA 14 known as Moose Meadows as important to moose may be an indication that the model itself is flawed. Aerial surveys looked for density of moose tracks and ranked regions qualitatively (high, medium, low) rather than providing detailed numbers of moose. It was also pointed out that aerial surveys were multispecies and only one survey prior to December, 2012, was south of The Pas in the region where moose populations are most at risk. As well, the aerial track surveys were conducted in 2010 to compare three alternative routes; only a portion of one of the aerial surveys overlapped with Manitoba Hydro's Final Preferred Route. Presenters called for more baseline data on moose populations.

Presenters were also concerned about the evidence of the ability of moose populations to rebound in the absence of hunting. Moose populations may already be stressed by the phenomenon known as "winter tick" in which large numbers of ticks feed during the winter on moose, leading in some cases to loss of hair, weakness and death.

Presenters also disputed the statement that moose prefer disturbed habitats where small bushes and new growth are plentiful. The Commission heard evidence that in western Manitoba, moose prefer aspen forests with a dense understory of hazel. Another habitat

that is important to moose is relatively open coniferous forests with hazel in the openings. As well, old-growth balsam fir-dominated forests are important. These forested habitats provide more protection from hunting than cleared habitats do. In the late winter, when moose can overheat because they still have thick winter coats during a time of increasing temperatures, forest cover is also important to moose to prevent overheating.

The need for a better measure of fragmentation was also brought up in relation to moose. Research in the Alberta oilsands and foothills regions shows that habitat loss and fragmentation lead to declining populations of moose. It was suggested that fragmentation affects moose populations because the animals stop using small patches of habitat that have been cut off by disturbances.

The Commission also heard concerns that opening more forest land through the Bipole III right-of-way and access trails may provide white-tailed deer with an opportunity to extend their range further north. Concerns about possible effects of increased white-tailed deer populations on moose are the same as those for the effects on woodland caribou.

Commission Comment: Moose

The Commission understands the concerns of First Nations and Métis resource harvesters, and others, who have seen moose population drop dramatically in the last several years in western Manitoba. Government and all stakeholders must be involved in continuing efforts to monitor the health of the moose population and to bring their numbers back.

The Commission believes that over-hunting is a major contributor to this decline in moose numbers. As a result, any development that allows for easier access into moose habitat has the potential to frustrate efforts to help the moose recover. Moose are often attracted to recently cleared areas, where they browse on the new growth. If the right-of-way for Bipole III is easily accessible for hunters, this may lead to increased pressure on moose populations. For this reason, it is important that mitigation, vegetation management, access management and

other plans be focused on reducing access to the right-of-way. Vegetation buffers that will reduce line of sight along the right-of-way, and enhanced mitigation methods that will allow for vegetation to be left to grow higher, will help moose cross the right-of-way without being seen by hunters or by predators. MCWS recognized that access was a major issue for both caribou and moose, which led to the request for re-routing (See Chapter Ten: Route Adjustments). It is important that the Department, especially the Wildlife and Ecosystem Protection Branch, be actively involved in choosing and assessing access routes and mitigation measures, as they affect moose and caribou.

The Commission is also concerned about the potential for the Bipole III line to be used by white-tailed deer, which could affect moose both by encouraging the growth of the wolf population and increasing the risk of infecting moose with brainworm.

VEC – Elk

The FPR intersects elk habitat in some areas of western Manitoba, although it avoids the areas with the greatest number of elk (Riding Mountain and the Duck Mountains). As with caribou and moose, potential effects could include increased access along the right-of-way by wolves and hunters, the spread of white-tailed deer infected with the parasite brainworm, and some avoidance by the elk during construction and maintenance activities.

Commission Comment: Elk

The Commission notes that the route selected for Bipole III largely avoids the main areas of elk habitat in Manitoba.

Licensing Recommendations

The Commission recommends that:

- 8.3 *Manitoba Hydro continue collaring and monitoring population status and movements of the three affected boreal woodland caribou herds for at least 25 years following the start of Bipole III construction.*
- 8.4 *Manitoba Hydro provide all information gathered on boreal woodland caribou to Manitoba Conservation and Water Stewardship to be included in any regional analyses.*
- 8.5 *Manitoba Hydro conduct studies on black bear population, distribution and predation on boreal woodland caribou in caribou ranges within the Project Study Area.*
- 8.6 *Manitoba Hydro expand and enhance studies on timber wolf population, distribution and predation within the Project Study Area.*
- 8.7 *Manitoba Hydro obtain approval of the Wildlife and Ecosystem Protection Branch of Manitoba Conservation and Water Stewardship for the design and management of access roads and trails for the Bipole III Transmission Project in known caribou or moose range.*
- 8.8 *Manitoba Hydro obtain approval of the Wildlife and Ecosystem Protection Branch of Manitoba Conservation and Water Stewardship in the design and implementation of mitigation measures for the Bipole III Transmission Project in known caribou and moose range.*

Non-licensing Recommendation

The Commission recommends that:

- 8.9 *The Manitoba Government and Manitoba Hydro monitor white-tailed deer distributions and prevalence of brainworm along the Bipole III transmission line.*

8.3.7 Mammals and Habitat: Furbearers

VEC - American Marten

The primary effect of Bipole III on American marten will be habitat loss. Marten prefer mature coniferous forests and generally avoid wide openings in forests caused by clearing. Marten are found in the northern portions of the project area, with 66% of marten habitat in the project area found in the Hayes River Upland region and another 24% in the Mid Boreal Lowland region. Although concentrations are highest in the northern regions, marten are also found in the Boreal Plains ecoregion near the Porcupine, Duck and Riding Mountain areas.

Based on the model developed by Manitoba Hydro for marten habitat, the FPR will intersect approximately 93 km of high-quality marten habitat (defined as coniferous or mixed wood forests at least 60 years old), resulting in the clearing of less than 7 km². Small amounts of marten habitat will also be affected by the clearing of the AC collector lines leading to Keewatinooow. There will also be some short-term displacement of marten as a result of sensory disturbance during construction. For all furbearers, one of the potential impacts of the Bipole III Project is increasing access for trappers.

VEC – Beaver

The beaver is widely distributed and abundant within the Bipole III Project area. Clearing of forest may affect some beaver colonies in the vicinity of the line by reducing the amount of material that is available for the building of dams and lodges. Winter clearing and construction activities could result in damage to dams and draining of beaver ponds, which may lead to mortality. Removal of aspens, which are a favoured source of food and building material, could also affect beaver colonies. Beaver may avoid an area during construction, but they are tolerant and highly adaptable. The measures designed to protect waterways, such as leaving vegetation buffer zones when the transmission line crosses a waterway, are expected to aid in the protection of beaver habitat.

VEC – Wolverine

The wolverine is listed by COSEWIC as a Species of Special Concern in Manitoba. Wolverine are solitary and have large home ranges, preferring undisturbed areas.

No dens were found during planning for the Bipole III Project. However, it is anticipated that dens could be located in areas where clearing and construction will occur. Clearing of the right-of-way in the north will occur in winter when den sites are inactive. Controlling access to the right-of-way may help reduce the effect of sensory disturbance on wolverine.

Commission Comment: Furbearers

The Commission sees the impact of the Bipole III line on furbearers as a consequence

of habitat fragmentation. This is particularly the case where the right-of-way runs through boreal forest areas that are habitat for the American marten. Concerns have been raised that marten will be unlikely to cross a 66-metre right-of-way. As a result, then, the right-of-way may divide populations and become a barrier to travel, causing populations to become isolated.

Manitoba Hydro has conducted a pilot study of the impact of the Wuskwatim transmission line on trapping in the Snow Lake area. One of the observations in this study is that furbearers stay away from the vicinity of the line during construction but return soon after construction ends. Another observation is that the larger furbearers, such as lynx, fox and wolf, travel on and across the right-of-way, but no evidence was available that indicated that smaller furbearers, such as marten, fisher and weasel, used or crossed the right-of-way. Continuing and enhancing this study would provide valuable information about a full range of species, as would carrying out a study of furbearer activity and trapping before and after construction of the Bipole III line, possibly with a comparison to furbearer activity and trapping along comparable reaches of the Bipole I and II lines. The use of trail cameras, directed at varying heights, could help to determine activity along the right-of-way by furbearers.

Licensing Recommendation

The Commission recommends that:

8.10 Manitoba Hydro expand and enhance the furbearer pilot study to include areas along the Bipole III right-of-way.

8.3.8 Birds and Habitat

The Bipole III Project Study Area is rich in bird life. Of 400 bird species identified in Manitoba, 371 have ranges within the Project Study Area, and 218 of these are seasonal breeders. Fourteen of these are listed provincially or federally as Threatened or At-risk. Because of the diversity of bird life and the many different habitat requirements, Manitoba Hydro's EIS assessed effects on a large number of bird VECs. While some bird VECs were selected because of their conservation status, others were selected in part because they act as indicators of the health of a specific community.

Over the length of the Bipole III FPR, 134 environmentally sensitive sites (ESS) for birds have been identified, including point sites such as a great blue heron rookery, and larger areas such as migration corridors. The portion of the FPR with the greatest concentration of potential effects on birds is in the area from Cormorant Lake to the Red Deer River, where the route will pass through the Tom Lamb Wildlife Management Area and the planned Summerberry and Red Deer WMAs. This area contains sensitive wetland and riparian (shoreline) habitat, a large number of species at risk, a large concentration of waterbird colonies, and a relatively high density of waterfowl that use the area for nesting or staging (gathering in preparation for migration).

Three main categories of potential impacts on birds were identified: mortality, habitat alteration, and sensory disturbance. Causes of potential increased mortality are: collisions with machinery or with transmission wires; increased hunting of waterfowl, other waterbirds and upland game birds; nest loss due to construction or maintenance during spring nesting season; and increased brood (nest) parasitism or predation. Habitat alteration refers to loss or change of habitat along the transmission line right-of-way or at other project components. Sensory disturbance can include avoidance of habitat due to clearing or maintenance activities or disruption of bird movements due to the presence of humans, machinery and structures.

Bird-wire strikes are one of the most common forms of non-hunter mortality for birds, particularly for those with short wings and large bodies. Visibility, time of day, weather conditions and the age of the bird are all factors contributing to wire strikes. Location of a transmission line on a migration corridor increases the risk of wire strikes.

Clearing of the right-of-way may result in the destruction of some nests. Most birds nest in spring, though, so limiting clearing activities to the winter reduces the risk of damage to nests.

Transmission lines may increase predation by birds of prey by providing them with perching sites on the towers that offer a good vantage point over the right-of-way. An increase in brood

parasitism may occur if the clearing of the right-of-way allows for increased access by birds such as the brown-headed cowbird, which lay their eggs in the nests of other birds. Clearing of the right-of-way may also increase access by hunters, especially to populations of upland game birds and waterfowl.

Changes to the habitat along the right-of-way are expected to favour birds that prefer edges of habitats and grassland/shrub habitats. Habitat fragmentation – the breaking up of undisturbed habitats into smaller fragments as a result of development – may have a negative effect on bird species that prefer undisturbed interior habitats.

Sensory disturbance may lead birds to abandon a nest or leave an area. Noise may lead to increased predation, as birds may have their ability to hear approaching predators impaired, and it may affect bird species that rely on calls and songs. Physical presence of people, towers, and machinery may make some birds change their patterns of movement. The gap in the forest caused by the right-of-way may also be a barrier to movement, as some bird species are reluctant to cross an opening. This effect may be heightened for some birds at the wide (310 metre) right-of-way for the AC collector lines.

A wide range of measures are planned to avoid or mitigate adverse effects: including carrying out construction outside nesting season, searching for and placing buffers around nesting sites, and maintaining the right-of-way in a way that encourages shrubby vegetation and discourages access that could lead to sensory disturbance or increased mortality.

Manitoba Hydro has committed to several follow-up measures both to assess the impact of Bipole III on birds and to respond should negative effects occur. Manitoba Hydro will monitor and report on birds killed by collisions with vehicles along the right-of-way and collisions with the transmission line. Manitoba Hydro will also monitor cases of birds electrocuted by perching along the line and increases in predation, especially predation of sharp-tailed grouse at their lek sites (sites for mating displays), as a result of birds of prey using the towers as perching sites to observe prey. Adaptive management strategies

may include reducing speed limits along the line to limit bird-vehicle collisions, placement of more bird diverters on the transmission line where bird-wire collision have been reported, and using perch deterrents to prevent birds from being electrocuted and to prevent birds of prey from perching on towers near sharp-tailed grouse leks.

Waterfowl and Waterbirds

VEC - Mallard

VEC - Sandhill Crane

VEC - Yellow Rail

In this grouping, mallards were chosen to be an indicator of birds associated with wetlands, sandhill cranes are an indicator of sparsely treed spruce or tamarack peatlands, and yellow rails are an indicator of birds associated with sedge-dominated wetlands and other wetland birds. As well, the yellow rail is listed under the *Species at Risk Act* as a Species of Special Concern.

Waterfowl and waterbirds account for a large portion of deaths caused by collisions with power lines. To prevent these, bird diverters will be placed at environmentally sensitive sites such as wetlands. To reduce the risk of damaging nests, clearing of the right-of-way during construction and vegetation management near wetlands during operations will be restricted during the April 1- July 31 period. Buffer zones along waterways, in which vegetation will be left standing, will reduce effects on waterfowl and other waterbirds. Searches for yellow rail nests will be undertaken prior to spring or summer construction. If any construction overlaps with sensitive time periods for yellow rails and if any nests are found, setback distances will be applied.

Colonial Waterbirds

VEC – Great Blue Heron

VEC – Least Bittern

The least bittern is listed as a Species of Special Concern under the *Species at Risk Act*. Like waterfowl, colonial waterbirds account for a large portion of deaths due to collisions with power lines. For this reason, bird diverters will

be used in environmentally sensitive sites (ESS), such as wetlands, which may reduce the rate of collisions by colonial waterbirds. Clearing of the transmission line will occur mostly after the fall migration and before spring, reducing the possibility of damaging nests. Any construction taking place in spring and summer will be in dry areas, reducing the risk to waterbird nests. Construction of the transmission line will alter a small amount of least bittern and great blue heron habitat. Sensory disturbance from clearing, construction and maintenance could interfere with breeding, nesting and daily movements. To prevent that, buffers of 200 meters will be placed around heron colonies from April 1 to July 31 and 100 metres from August 1 to March 31. Searches for least bittern nests will be undertaken prior to spring or summer construction that overlaps with a sensitive time for the birds and setback distances of 400 metres will be applied to least bittern breeding areas.

Birds of Prey

VEC - Bald Eagle

VEC - Ferruginous Hawk

VEC - Burrowing Owl

VEC - Short-eared Owl

Bald eagles were selected as an indicator of birds associated with mature northern and western riparian forest. The three other birds of prey are listed under the *Species at Risk Act*: the ferruginous hawk as Threatened, the burrowing owl as Endangered, and the short-eared owl as a Species of Special Concern.

Bald eagles, ferruginous hawks and short-eared owls are migratory, so winter clearing and construction will not cause sensory disruption. Some habitat disruption will occur as a result of the clearing of the transmission line right-of-way for all three species. Ferruginous hawks are particularly susceptible to human disturbance. Construction activities in summer could cause them to abandon nests or alter their movements. Birds of prey that fly at high speeds can be susceptible to collisions with power lines. At certain environmentally sensitive sites (ESS), such as the crossing of the Red River, bird diverters will

be used, which may reduce the rate of bird-wire collisions.

During clearing of the right-of-way, trees containing large stick nests will be left undisturbed until they are unoccupied in order to reduce mortality from nest destruction. If unoccupied nests must be destroyed, artificial nesting structures will be provided (but only in places that are not sensitive sites for other bird species such as grouse). Buffers of 200 metres will be maintained around eagle and osprey nests from April 1 to July 31 and 100 metres from August 1 to March 31. Project activities will be restricted during bird breeding and brood rearing season from April 1 to July 31. Searches will be undertaken for ferruginous hawk and short-eared owl nests prior to spring or summer construction and setbacks will be put in place if nests are present. Construction will be prohibited within 1,000 metres of ferruginous hawk nests for 45 days after hatching in order to minimize disturbance. As the burrowing owl is considered to be extirpated in Manitoba, the Project is not expected to have any effect on them

Upland Game Birds

VEC - Sharp-Tailed Grouse

VEC - Ruffed Grouse

Sharp-tailed grouse are an indicator of birds associated with grassland, shrubland and forest mosaics. Ruffed grouse are an indicator of birds associated with deciduous and mixed-wood forest.

Mortality of grouse could increase as a result of increased access for hunters. Predation could also increase as raptors use the transmission towers as a place to perch and watch for prey. Grouse are not migratory, so they may be disturbed by clearing, construction and maintenance activities along the right-of-way. Upland game bird habitat will be disrupted by the clearing activities, though in some cases the altered habitat created by the right-of-way could improve breeding and nesting opportunities.

Mitigation measures include the prohibition of hunting by project staff while working and the restriction on firearms in work camps; restricting project activities during the breeding

and brooding season months of April 1 to July 31; establishing setback distances around sharp-tailed grouse leks (clearings in which they perform mating displays); decommissioning access routes leading to the right-of-way; placing bird diverters on the transmission line at environmentally sensitive sites (ESS) such as leks; and placing perch deterrents on transmission towers near leks in order to reduce predation by birds of prey.

Woodpeckers

VEC - Pileated Woodpecker

VEC - Red-Headed Woodpecker

Pileated woodpeckers are an indicator of birds associated with mature mixed-wood forest. The red-headed woodpecker is listed as Threatened under the *Species at Risk Act*.

Alteration of forest habitat, including the removal of dead standing trees that woodpeckers use for nesting, will have some effect on woodpeckers. Some woodpecker species are migratory and so would not be affected by sensory disturbance caused by winter clearing, construction and maintenance. Other species do not migrate, and so would be affected.

To reduce the impact on woodpeckers, dead standing trees will be maintained where possible. Danger trees near the right-of-way will be topped, rather than removed, to reduce the loss of habitat. Clearing of trees with roost cavities will be limited to daylight and preferably in fall to minimize disruption of nesting sites. Searches for red-headed woodpecker nests will be carried out prior to construction during any sensitive time for the birds and setback distances will be applied if nests are found. Vegetation management will be limited in areas where red-headed woodpeckers could occur in order to limit the impact during nesting season (April 1 to July 31).

Songbirds and Other Birds

VEC – Common Nighthawk

VEC – Whip-poor-will

VEC – Olive-Sided Flycatcher

VEC - Loggerhead Shrike

VEC - Sprague's Pipit

VEC - Golden-Winged Warbler

VEC - Canada Warbler

VEC - Rusty Blackbird

All of the birds in this category of VECs are listed under the *Species at Risk Act* as Threatened, except for the rusty blackbird, which is listed as a Species of Special Concern, and the loggerhead shrike, which is listed as Endangered/Threatened. Olive-sided flycatchers are an indicator of birds associated with northern and western wetland and early successional habitats (such as those that develop after a fire).

Effects of the Bipole III Project on these songbirds vary depending on their habitat requirements and adaptations. Habitat alteration will affect some songbirds more than others. The common nighthawk will have more habitat affected by the northern AC collector lines than the transmission line right-of-way. Many of these songbirds, such as the olive-sided flycatcher and Canada warbler, favour shrubs and edge habitats and may experience some improvement in habitat when clearing of the right-of-way converts forest to shrub. The Sprague's pipit nests on the ground and so would be susceptible to damaged nests during maintenance. As well, it are susceptible to brood parasitism by brown-headed cowbirds, as are golden-winged warblers and Canada warblers. Ground-nesting birds are vulnerable to increased predation by racoons and skunks as a result of improved predator mobility along the cleared right-of-way.

Mitigation measures for songbirds include restricting project activities during the breeding and brood-rearing months from April 1 to July 31; searching for nests prior to spring or summer construction if it coincides with a sensitive time

for the birds; establishing setback distances from any nests found (ranging from 100 metres for rusty blackbirds to 400 metres for loggerhead shrikes); and avoiding night-time activities during the nesting season, which could disturb common nighthawks and whippoorwills. Where feasible, Manitoba Hydro also plans to protect golden-winged warbler habitat by using selective spraying for vegetation management on the southern portion of the right-of-way.

What We Heard: Birds and Habitat

The Commission heard concerns about the potential for collisions with the Bipole III line to kill birds as they are migrating or staging in preparation for migration. The Bipole III line crosses the Mississippi Flyway, an important migration route used by 40% of North American migratory birds. While birds typically fly at higher altitudes than the Bipole III line during their migration, when they are staging they fly at lower altitudes. Staging is the process by which migratory birds begin to gather in larger flocks in preparation for migration. There were also concerns that the bird diverters planned by Manitoba Hydro to ward birds off from striking the transmission lines are not fully effective. Bird diverters will be used on the transmission lines themselves at key locations such as river crossings where large numbers of birds are expected. Concern was raised about the Optical Protection Ground Wire, a thinner single wire running from tower to tower above the level of the power lines. Although Manitoba Hydro plans to use smaller bird diverters on the Optical Protection Ground Wire, the concern is that, being a thinner wire, it may be a hazard to birds.

Manitoba Hydro reports that the rate of bird strikes with power lines varies from 0 to 18 per kilometre per year and that bird diverters can produce a 50-80% reduction in mortality. One Participant cited a study of a power line in North Dakota with a much higher mortality rate, although it was countered that that particular power line was built directly through an area of sensitive habitat. The point was made by some Participants that a better assessment of the possible effects of bird strikes would have been possible if Manitoba Hydro had included studies of bird strikes along Bipoles I and II.

Commission Comment: Birds and Habitat

The Commission believes that the Bipole III Project likely poses little risk to bird populations, beyond a relatively small amount of habitat loss for some forest-dwelling birds and some risk of bird-wire collisions. Manitoba Hydro appears to be taking pro-active steps in its plans to use bird diverters at areas where the line traverses important bird habitat. The intention to monitor bird-wire collisions and install more bird diverters as needed is laudable. The EIS contains a large number of mitigation methods to be used, especially during construction, to reduce the impact on birds. Vegetation management techniques that are less invasive (spot application of herbicide, rather than use of a bulldozer with a shear blade to remove all vegetation) will also be less disruptive to birds in that it will not destroy ground nests. As in other areas of this report, the Commission believes that monitoring and adaptive management are essential to ensure that plans are followed and that unexpected incidents and unforeseen consequences can be dealt with.

Although mitigation and monitoring plans to protect birds are well thought out, the Birds and Habitat section of the EIS was also one of the sections in which the shortcomings of the EIS's approach became evident. The focus on individual-species VECs, instead of on ecosystems or habitats, meant that there was a great deal of repetition in this section, as effects and mitigation measures for 21 different bird VECs were discussed. Some of the birds selected as VECs were of doubtful relevance. For example, the burrowing owl is extirpated in Manitoba and so could not possibly be affected by Bipole III. As well, the inclusion of the mallard, a bird so numerous, opportunistic and adaptable that it will nest in a backyard pond, was puzzling.

8.3.9 Amphibians and Reptiles

Manitoba has 15 species of amphibians, 12 of which are found in or near the Project Study Area, and eight species of reptiles, all of which are found in or near the Project Study Area. Five amphibian and reptile species were selected as VECs based on their distribution within or close to the right-of-way; status as listed under COSEWIC, the federal *Species at Risk Act* (SARA) or Manitoba

Endangered Species Act (MESA); and sensitivity to disturbance, population change or habitat loss or alteration.

VEC - Plains Spadefoot Toad

The plains spadefoot toad is protected under Manitoba's *Wildlife Act*, though not listed under COSEWIC or MESA. It has a strong affinity for sandy soils, resulting in limited breeding opportunities, and is vulnerable to alteration or destruction of suitable habitat. An isolated population of plains spadefoot toads occurs near the Dauphin Lake area. Because the plains spadefoot's distribution only intersects with a small portion of the right-of-way, potential effects of the Bipole III Project are limited to this area. The spadefoot may be vulnerable to disturbance, vegetation removal, and vehicular traffic in these areas. To minimize these impacts, Manitoba Hydro will conduct construction, including tower installation, during the fall or winter, outside of the peak breeding period of June 1 to August 15 or will maintain buffers around breeding habitat. Buffers of 30 meters will be placed around suitable breeding habitat, within which disturbance, vegetation removal, and traffic will be limited. Tree removal within buffers will be carried out using methods that minimize disturbance to soil and ground cover. Maintenance activities in wetlands will occur in winter, outside of the peak breeding season, and buffers around suitable breeding and wetland sites will be retained during line maintenance.

VEC - Wood Frog

VEC - Northern Leopard Frog

The wood frog is found throughout Manitoba and is considered a good representative of forest-dwelling frogs and toads. It has been found to be sensitive to habitat fragmentation. The northern leopard frog is listed by COSEWIC as a Species of Special Concern. Its hibernation sites are limited and it is the only frog or toad species listed federally or provincially as At Risk in Manitoba.

For both of these frogs, potential impacts include the clearing of the right-of-way, direct mortality from vehicles, habitat loss, and ground vibrations during the overwintering stage. Both species may also be affected by continuing

recreational use of the right-of-way. As well, the two frog VECs are both found at the Keewatinooow Converter Station site and will be affected by habitat loss and disturbance at that site. For both species, Manitoba Hydro plans to minimize effects by carrying out construction and right-of-way maintenance in the fall or winter months, outside of breeding season. Where possible, a 30-metre buffer will be placed around identified breeding or wetland areas along the right-of-way in which disturbance, vegetation removal, and vehicle traffic will be limited and removal of trees will be carried out using methods that reduce disturbance to soil and ground cover.

VEC - Red-Sided Garter Snake

Though not listed as Threatened or a Species of Conservation Concern, red-sided garter snakes were considered as a VEC because their overwintering den sites (hibernacula) are vulnerable to disturbance. Garter snakes may be affected by damage to their hibernacula during construction, especially where blasting of sloping bedrock is required in installing the towers. As well, increases in vehicle traffic along the right-of-way may cause direct mortality. In order to reduce the effects on garter snakes, Manitoba Hydro intends to avoid habitat suitable for hibernacula while placing towers, and to place a 200-metre buffer around hibernacula, within which blasting, ground disturbance, vegetation removal, and vehicle traffic will be limited. If it is not possible to avoid installing a tower in an area of hibernaculum habitat, installation will occur during the summer months, when the hibernacula are not active, or summer field investigations will be carried out before the tower placement is determined to make sure it does not interfere with a hibernaculum. Removal of trees at such areas during construction and maintenance will be performed in a way that minimizes ground disturbance.

VEC - Northern Prairie Skink

The northern prairie skink is listed as Endangered by COSEWIC and is protected under Manitoba's *Wildlife Act*. It is Manitoba's only lizard and only endangered or threatened reptile or amphibian. It is associated with isolated sandy-soil prairies and is vulnerable to habitat loss and disturbance.

The northern prairie skink's range was not found to overlap the right-of-way and individuals were not observed during field studies. However, suitable sandy-soil habitat does occur along the right-of-way in the St. Claude/Assiniboine River area, potential skink tracks were seen during field studies, and ATK interviews noted potential for skinks along the right-of-way. If the transmission line right-of-way does intersect with areas where skinks occur, potential effects on the skinks could include changes to vegetation, noise, vehicle emissions, vehicle collisions, ground vibrations, dust, spills, light pollution, and the encroachment of invasive species such as leafy spurge.

Because of the low-growth nature of sandy soil habitats, complete clearing of the right-of-way is likely not required in these areas. As well, Manitoba forest management guidelines recommend year-round buffers around native-grass meadows and a 30-metre setback is recommended for plant species at risk. Further steps to reduce the impact of the line on skinks include maintaining a 100-metre buffer around sandy-soil habitats, within which disturbance, vegetation removal, and vehicle traffic will be limited, ensuring that towers are at least 200 metres from any observed skink nests, and avoiding skink habitat as much as possible during construction. Because of the low-growth nature of these areas, minimal vegetation management is expected to be required.

Commission Comment: Amphibians and Reptiles

This is another area in which the selection of VECs raised questions. While consideration of the prairie skink was important during the route selection process, once a route that avoided skink range was chosen, it became apparent that the right-of-way would not have an effect on them. However, the route does unavoidably cross waterways that are occupied by snapping turtles, which have been of Special Concern to COSEWIC since 2008 because of their late maturity, low recruitment, and susceptibility to human disturbance. Snapping turtles ought, therefore, to have received some attention in the EIS.

As with many VECs, minimizing the effect of the Bipole III Project on specific habitat types is the best way to minimize the effect on

specific species. Carrying out construction on the transmission line in the winter, when reptiles and amphibians are hibernating, will help to reduce the impact on these VECs. For the frog VECs, protection of wetlands is the best way to protect these VECs. Adherence to rules regarding buffers around breeding habitat will help to protect both wood frogs and leopard frogs. Routing away from northern prairie skink habitat has largely taken away concerns about potential effects on this species. Manitoba Hydro plans to place a buffer around known garter snake hibernacula. The use of local knowledge to identify any such hibernation sites would also be helpful.

8.3.10 Terrestrial Invertebrates

Manitoba has 11 species of terrestrial invertebrates that are identified as At-Risk by COSEWIC, SARA or MESA. Eight of them are associated with fragmented sandy-soil habitats. Three species of skipper – a kind of butterfly – were chosen as terrestrial invertebrate VECs. Potential habitat for the three VECs is found within the Bipole III right-of-way in southern Manitoba.

VEC - Dakota Skipper

The Dakota skipper favours wet to moderately moist tall-grass prairie. It is listed as Threatened by COSEWIC, SARA and MESA. It has been found in seven isolated areas of Manitoba but in 2002 field studies it was found only at two sites: in the Interlake and in southwestern Manitoba near the town of Griswold.

VEC - Ottoe Skipper

The ottoe skipper favours short-grass prairie, usually on dry prairie hillsides and pastures. It is listed as Endangered under COSEWIC and SARA and Threatened under MESA. The last documented sighting of the ottoe skipper in Canada was in the late 1980s and it is possible that the species is extirpated in Canada.

VEC - Uncas Skipper

The uncas skipper favours dry, upland, mixed-grass prairie and sandy prairie and does not occur in true tall-grass prairie. It is listed

as Endangered under MESA but not listed by COSEWIC or SARA. There are no recent records of the presence of the uncas skipper in Manitoba and it may be extirpated in the province.

As it is unlikely that there are any of these three VEC species along the right-of-way, project effects are unlikely. Measures to protect sandy-soil prairie habitat may reduce potential impacts on any of these VEC species, should they be present along the Bipole III right-of-way.

Commission Comment: Terrestrial Invertebrates

The invertebrates section of the EIS provided perhaps the best illustration of the shortcomings of the species-specific VEC approach. Three invertebrates – the Dakota, ottoe, and uncas skipper – were chosen for analysis. Of these, two are likely extirpated in Manitoba and another has not been found within the Project Study Area in more than a decade. It would have been better to focus on reducing impacts to the habitat types that support these particular invertebrates (respectively, moist tall-grass prairie, dry short-grass prairie and dry mixed-grass and sandy prairie). Precise measures of the amount of fragmentation that these habitats would be subjected to would have provided a more useful way of assessing the impact on invertebrates, and indeed on other organisms.

Chapter Nine: Effects Assessment (Socio-economic)

9.1 Significance of Effects

Manitoba Hydro assessed the socio-economic impact of the Bipole III Project using 21 valued environmental components (VECs), grouped in a number of major categories. After examining potential impacts, as well as methods to be used to avoid or mitigate these impacts, the EIS applied the same technique to assess the significance of these effects as it did with biophysical effects. Effects were assessed for magnitude, duration, geographic range, and reversibility. They were then described as either “not significant,” “potentially significant” or “significant.” To be assessed as “significant” an effect needed to be of large magnitude and long duration and extending into the larger Project Study Area. No socio-economic effects were identified as “significant.”

Three socio-economic VECs, community services, travel and transportation, and personal safety, are expected to experience “potentially significant” effects. They were assessed as experiencing moderate negative effects that would extend beyond the Local Study Area, primarily in the Gillam and Fox Lake Cree Nation (FLCN) area. The effects on these VECs were considered short-term or short- to medium-term, as they would be felt only during construction of the Keewatinoow Converter Station.

Four other socio-economic VECs are expected to experience moderate negative effects after mitigation: private forest lands, designated protected areas and the Protected Areas Initiative, domestic resource use, and aesthetics. Of these, one (private forest lands) has a potential effect limited to the immediate Project Footprint (the area directly occupied by the Final Preferred Route (FPR) and other Project components). Protected areas, domestic resource use, and aesthetics were deemed to experience an effect only within the Local Study Area. On the basis of the limited range of these effects, they were deemed “not significant.”

9.2 Socio-economic VECs

9.2.1 Land Use

VEC - Land Tenure and Residential Development

The Bipole III transmission line was routed to avoid, as much as possible, passing close to residences. However, one rural residence is located within 100 metres of the line and will need to be purchased. As well, 18 residences are between 100 and 200 metres from the line, and 12 residences are between 200 and 270 metres. The Riel Converter Station site is on land that was already owned by Manitoba Hydro prior to the Bipole III Project. Construction of the southern ground electrode will require purchasing one full section of land, including two residences.

Manitoba Hydro’s position is that the presence of transmission lines does not significantly affect residential property values. This is based on a variety of studies of property values, including annual property value monitoring undertaken in the area of East and West St. Paul, where Manitoba Hydro has 500 kV and 230kV transmission lines.

VEC - Private Forest Lands

The Bipole III line will have a direct impact on three out of 837 woodlot management plans registered by Manitoba Agriculture, Food and Rural Initiatives (MAFRI) and the Manitoba Forestry Association (MFA). The right-of-way will intersect, and require the clearing of, just over 21 hectares of these three private woodlots, amounting to 4.7 per cent of a total of 453 hectares.

Approximately 19 hectares of shelterbelts will be affected within the agricultural area of Manitoba, south of Mafeking. Some of these shelterbelts are oriented at right angles to the route of the transmission line, so only a 66-metre wide portion of the shelterbelt will need to be cleared. Others are oriented along the right-of-way and so

they will need to be removed for the entire length of the overlap. In addition to the shelterbelts impacted by construction of the transmission line, two shelterbelts will be affected by construction of the Riel Converter Station and southern ground electrode.

VEC - Aboriginal Lands (Reserve Lands and Treaty Land Entitlement Lands)

No existing First Nations reserve lands are crossed by the Final Preferred Route (FPR) of the Bipole III line. The transmission line passes close to several areas of land acquired through the Treaty Land Entitlement (TLE) process (which allows First Nations to acquire land to make up for shortfalls in the land they were entitled to under the terms of treaties) or through acquisition of Crown land. Fox Lake Cree Nation (FLCN) has identified the Keewatinoow Converter Station site as a TLE parcel, which will be the subject of discussion between Manitoba Hydro and FLCN. Opaskwayak Cree Nation (OCN) has identified a TLE area along the route, which will be subject to discussion between Manitoba Hydro and OCN. The right-of-way is adjacent to parcels of land owned by Sapotoweyak Cree Nation (SCN) and Wuskwi Sipihk First Nation (WSFN). For other First Nations, the Bipole III transmission line runs across Crown or private land in areas where they might otherwise wish to acquire land as part of the TLE process.

The line also passes through the Community Interest Zone (CIZ) of several First Nations. CIZs are areas of temporary protection adjacent to a First Nation's main reserve, intended to restrict development on land adjacent to the community until the First Nation has completed its TLE process. The transmission line passes through the CIZ of Fox Lake Cree Nation, Tataskweyak Cree Nation, Sapotaweyak Cree Nation, and Wuskwi Sipihk First Nation. Further south, the transmission line runs within approximately three kilometres of reserve lands of Sandy Bay, Ebb and Flow, Long Plain and Swan Lake First Nations.

What We Heard: Aboriginal Lands

A submission from York Factory First Nation (YFFN) pointed out that the Bipole III EIS failed to note the First Nation's resource use area. The

Commission heard that YFFN has a TLE parcel on the north shore of the Burntwood River at its confluence with Split Lake, bordering Provincial Road 280. This TLE parcel is relatively close to the Bipole III FPR and the Commission heard that YFFN has a right to select 29,173 acres of TLE land.

Wuskwi Sipihk First Nation (WSFN) in particular pointed out that the right-of-way nearly adjoins some parcels of their reserve land, making WSFN the First Nation closest to the right-of-way.

Peguis First Nation (PFN) has a notice area where it is to receive right of first refusal for any Crown land becoming available for sale or lease. This notice area extends south to Dugald, to the east of Winnipeg, near the Riel Converter Station. In bringing this issue forward, representatives of PFN reminded the Commission of their First Nation's history, which included a reserve in the Selkirk area which was moved early in the 20th century to the current central Interlake location.

VEC - Designated Protected Areas and the Protected Areas Initiative

In planning the Bipole III Project, Manitoba Hydro assessed protected areas, according to the level of protection given them, using four tiers from high to low. The top tier, in terms of protection, consists of national and provincial parks and ecological reserves. The next tier is areas designated as Areas of Special Interest (ASI). ASIs are areas that are under consideration for permanent protection because of their unique ecological features, and may include ecological reserves, wildlife management areas, park reserves, forest reserves, community pastures or other Crown lands. The next tier is wildlife management areas (WMAs) and forest reserves. Finally, community pastures and Crown lands form the lowest tier.

Manitoba's Protected Areas Initiative seeks to permanently protect an adequate sample of all the landscapes that represent the biodiversity of Manitoba's natural regions. The network of protected areas is selected based on what are known as "enduring features." Enduring features are identified through soils and geological landforms, under the assumption that biological

diversity is a product of the varied long-term features in the landscape.

The FPR crosses one Area of Special Interest under the Protected Areas Initiative: ASI 114, Stephens Lake. Stephens Lake is a large ASI where four different natural regions meet, and it spans the transition from boreal forest to tundra, containing species from both zones. Within Stephens Lake ASI the Bipole III right-of-way will cross two moraines that have been described as rare enduring features.

The route also comes close to two provincial parks: Clearwater Lake and Red Deer River. Both of these parks have boundaries within the 4.8 km-wide Local Study Area, though neither is crossed by the right-of-way. Where the transmission line is closest to Clearwater Lake Provincial Park, the existing railway line and Wuskwatim transmission line are between the FPR and the park. The line will be visible from Red Deer River Provincial Park, a small roadside rest stop on Highway 10.

The FPR also comes close to a planned addition to the Lake Winnipegosis Salt Flats Ecological Reserve, which protects an area of salt flats to the east of Highway 10 on the southwest shore of Overflow Bay on Lake Winnipegosis. While the ecological reserve will not be crossed by the right-of-way, it is within the 4.8 km planning corridor for the transmission line. A sensitive salt water spring that feeds the salt flats is also 1.3 km from the right-of-way. In order to ensure that the salt spring is not damaged, it will be marked and avoided during construction and operation, with a 50-metre buffer around the spring.

The right-of-way also crosses two WMAs, which are established under *The Wildlife Act* for management, conservation and enhancement of wildlife. WMAs have a variety of levels of protection and some are permanently protected from resource extraction and are part of Manitoba's protected areas network. The northern end of the FPR crosses 14 km of the Churchill WMA, the province's largest WMA, near the Keewatinooow Converter Station site. Northeast of The Pas, the FPR crosses 50 km of the Tom Lamb WMA. The Tom Lamb WMA includes a large part of the Saskatchewan River Delta and is an important breeding area for waterfowl

and provides habitat for furbearers, moose, wolves, and black bears, as well as feeding and occasional nesting sites for bald eagles. In this area, approximately 20 km of the FPR will parallel existing developments such as the railway, highway and an existing 230 kV AC transmission line.

Southeast of the Pas, the FPR crosses two proposed WMAs. It runs through approximately 46 km of the proposed Summerberry WMA, 17 km of which will have protected status. The FPR follows an existing transmission line right-of-way through this area. Approximately 30 km south of The Pas, the right-of-way will pass through the proposed Red Deer WMA, a landscape of bogs, fens, and freshwater and saltwater marshes that is extensively used by the Bog herd of boreal woodland caribou. The Bipole III right-of-way will cross approximately 27 km of this new WMA. In addition to crossing these WMAs, the FPR also comes close to the Steeprock, Weiden, Langruth and Whitemud WMAs, and runs along the edges of community pastures (Crown or municipal lands used primarily for grazing) at Lenswood, Alonsa and Langruth. The line also crosses 15 km of the Swan-Pelican Provincial Forest Reserve, east of the town of Lenswood and south of Swan Lake. The Swan-Pelican Provincial Forest is an area set aside for the primary purpose of forest harvesting.

In order to mitigate or minimize effects on protected areas, Manitoba Hydro plans to locate towers, where possible, to reduce adverse effects. In order to minimize disruption within areas of enduring features, construction will occur only in the winter, and there will be no activities such as construction of access routes or establishment of new borrow pits off the right-of-way.

VEC - Infrastructure

The VEC Infrastructure refers to railways, pipelines, aqueducts, municipal drains, communication towers, and airports and airstrips that could potentially be affected by the Bipole III Project. The potential impact on roads and highways resulting from increased traffic during construction and maintenance is discussed under the heading of Travel and Transportation.

Two private airstrips, the first two kilometres from the transmission line in the RM of Hanover,

and the other 1.6 km from the line in the RM of Springfield, may be affected by the transmission line. A review of the FPR by Transport Canada indicated that there are no registered aerodromes or float plane bases near the preferred route.

Manitoba Hydro has been and will continue to be in consultation with agencies responsible for infrastructure crossed by the transmission line. Manitoba Hydro will work with these agencies to ensure that construction and maintenance activities do not disrupt infrastructure operations. The Riel Converter Station is located near the City of Winnipeg's Deacon Reservoir and on land that currently drains through the Bebeau drain. Potential issues related to dust, surface drainage, groundwater and wastewater treatment were dealt with through site planning and environmental protection guidelines developed earlier as part of the Riel Reliability Improvement Project.

VEC - Agricultural Land Use and Productivity

The agricultural portion of the route for Bipole III is approximately 585 km. Approximately half of the route in agricultural regions (293 km) passes through annual cropland, including tame hay and forage, with the rest of the route in agricultural Manitoba crossing uncultivated

pasture land, native hay and wetlands. Within the area of annual cropland, the placement of the towers will remove an estimated 17.8 hectares completely from production, based on 586 towers, each removing 0.03 hectares of land. Manitoba Hydro estimates that each tower will impact cultivation to some extent on approximately half an acre, or 0.22 hectares, meaning that Bipole III will have some impact on cultivation on approximately 131 hectares of annual cropland. (See Fig. 9.1). Free-standing towers will be used in agricultural Manitoba, so there will be less area interfered with as a result of the absence the guy wires used to support guyed towers. The total area of the right-of-way in agricultural Manitoba amounts to 39 square km, or 3,900 hectares. However, impacts on aerial spraying and some other farm practices will be felt beyond the right-of-way.

In planning the route in agricultural regions, Manitoba Hydro used a ranking system, from highest to lowest, of agricultural constraints on route selection: dwellings and farm yards; intensive livestock operations; lands under irrigation and with irrigation potential; row crop areas; intensive annually cropped areas; tame forage areas; mixed farming areas with some cultivated land; native pasture and hay lands; and lands with limited or no agricultural use.

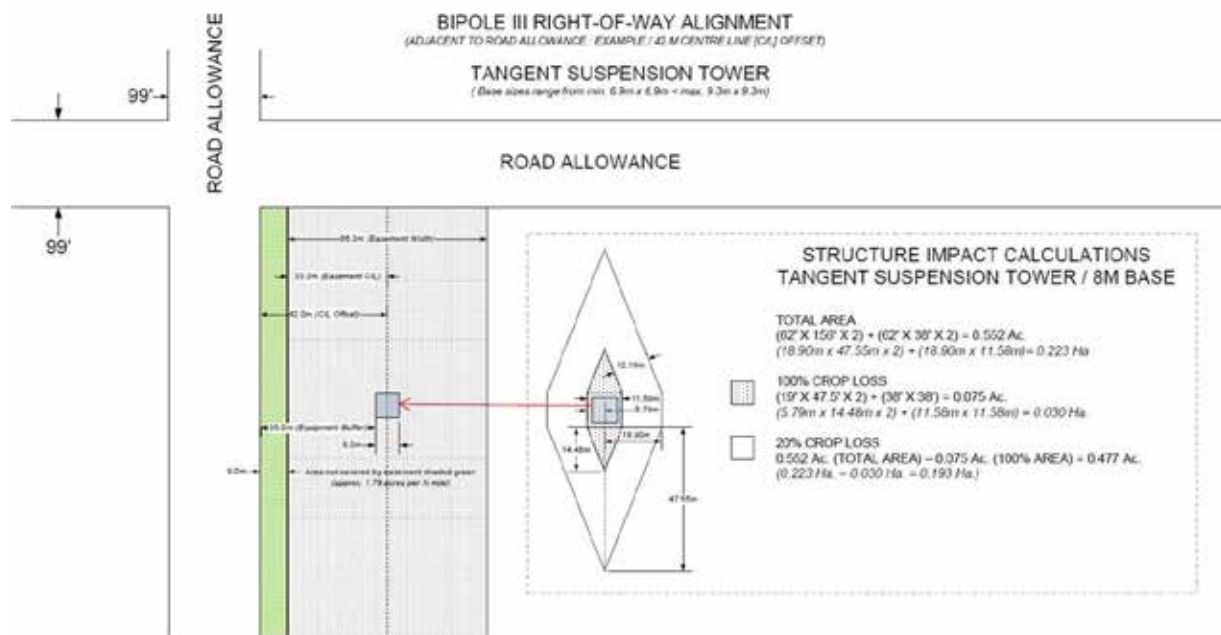


Fig. 9.1 Partial and complete crop-loss areas around towers

Agricultural constraints were not the only factors influencing route selection in agricultural regions. In some areas, landowners and representatives of rural municipalities recommended that Manitoba Hydro select a route that would run through community pastures in order to avoid higher-value farmland. Manitoba Hydro, however, chose not to run through community pastures, in part because they involve the federal government and Manitoba Hydro wished to avoid triggering a federal review under the *Canadian Environmental Assessment Act*. As well, community pastures are of interest to Manitoba's Protected Areas Initiative because they preserve some native prairie habitats.

Manitoba Hydro sought to minimize diagonal routing through intensively cropped areas, but used diagonal routing in agricultural areas that are used primarily for hay or pasture land. Manitoba Hydro also sought to minimize dividing of farm management units. This led route planners to seek to route the transmission line as much as possible along road alignments. However, for safety and reliability reasons, it was determined that the transmission towers could not be located on the property line itself between a farm field and the road allowance. Placing the tower on the property line would leave it vulnerable to collisions with vehicles and would result in the transmission line possibly overhanging the road under windy conditions. Therefore, the initial decision was made to place the towers 33 metres into the field. As that 33 metres would be too tight a space to turn some large pieces of farm equipment, Manitoba Hydro made plans to locate the towers 42 metres into farm fields south of the Yellowhead Highway, which is roughly the border between farmland that is largely hay and pasture and intensively cropped farmland.

In the portion of the transmission line running through agricultural Manitoba, approximately 250 km of the FPR was on a diagonal alignment, 230 km was placed in fields and running parallel to road allowances or field edges, and 105 km was placed along the half-mile line (the centre line dividing a section of land). The FPR was designed to avoid, as much as possible, passing within 100 metres of farm buildings. The closest farm building to the final preferred route is 75 metres away and in total, 16 farm buildings are within 150 metres.

Impacts of the Project on agriculture include:

- removal of land from production
- field severances
- inconvenience and increased costs to farmers
- interference with pest control
- interference with irrigation systems
- restricted aerial spraying
- property damage
- displacement of residences and farm buildings
- health and safety concerns for humans and livestock

For landowners whose property is crossed by the right-of-way, Manitoba Hydro has proposed to purchase easements at a price of 150% of the market value of the land. In addition, compensation includes a one-time lump sum Structure Impact Payment for each tower located on land classified as agricultural and Ancillary Damage Compensation for damage to crops and operations caused by construction. These payments are intended to compensate for the additional costs and continuing effects on agricultural operations. Manitoba Hydro has provided an example of the projected land compensation. Assuming that a one-mile right-of-way is being acquired across farmland with a market value of \$1,300 per acre, the compensation for the easement itself would be \$51,168 (the area of the easement in acres, 26.24, times 150% of \$1,300). If four towers were to be needed in that one-mile section of right-of-way, the landowner would also receive \$60,000 in structure compensation (\$15,000 per structure). Total compensation would then be \$111,168. In agricultural Manitoba, the FPR has immediate effects on 540 landowners, crossing their property or running along their property on the half-mile line.

The Riel Converter Station will be built on land that has already been purchased by Manitoba Hydro. Manitoba Hydro will purchase a full section of land to build the southern ground electrode. The portion of this site where the ring

will be the located will be taken permanently out of production, but the remainder of this section can remain in agricultural production.

What We Heard: Agricultural Land Use and Productivity

Although Manitoba Hydro's route selection process sought to minimize impacts on agriculture, agriculture was one of the most contentious subjects during Clean Environment Commission hearings.

The Commission heard numerous presentations from people who were concerned about the potential effects of the Bipole III transmission line on agriculture. Presenters included farmers and members of farm families who attended hearings held in Portage la Prairie, Niverville and Winnipeg, as well as expert witnesses who spoke about concerns regarding their specific areas of expertise.

The majority of Presenters addressing agricultural concerns focused on the potential effects of the transmission line on farm operations. Presenters expressed concerns that the towers may become an obstacle to farm machinery, resulting in higher costs, lower yields, and wasted inputs. Many Presenters also expressed the concern that safety factors may force aerial spraying operators to avoid farm fields near the transmission line, resulting in reduced yields.

A key issue in agricultural areas is Manitoba Hydro's assessment of the edge of road allowances as the least harmful placement for the transmission line, which led to the decision to place towers 42 metres into the field. Although this distance was chosen to provide more room for farm machinery to manoeuvre, many Presenters at the hearings said that this change in plans did not solve the problem. The Commission heard evidence that in other provinces one priority in locating power lines is to place them along property lines in agricultural areas. Transmission towers placed on property lines cause the least disruption to farming because there is no need to manoeuvre all the way around them. Evidence was put forward that locating the Bipole III line along the half-mile line in each section would be less disruptive than placing towers 42 metres into fields along road allowances.

Much of the discussion regarding the effect on agriculture focused on the potential of the transmission line to obstruct activities such as the movement of farm equipment, aerial spraying, and irrigation.

Obstructions to farm equipment

The Commission heard many concerns about the challenge of manoeuvring around the transmission towers with farm equipment. As farms have become larger, the economies of scale have led to ever-larger farm machinery. Modern tractors commonly pull seeding or spraying implements that are 100 feet wide or even wider. Many farmers suggested to the Commission that even larger farm equipment is likely to be used during the life of Bipole III, so that a 42-metre space between the tower and the edge of the field may not be sufficient in the future.

The challenge of manoeuvring around towers raises several other concerns. In turning an extremely wide seeder or sprayer around an obstacle, the portion of the seeder or sprayer that is closest to the obstacle will move much more slowly than the portions at the far end (just as the outside edge of a ceiling fan moves more rapidly than the inside). If seed, fertilizer or herbicide is being applied at a constant rate by the farm implement, the inside portions of the curving path will receive an excess application. This is both a waste of costly inputs for the farmer and a potential source of excess nutrient run-off. Turning around the towers is expected to have an impact on soil productivity as well, because it will cause greater compaction of the soil near the towers. Essentially, the area immediately around any such obstacle becomes an agricultural "dead zone," while nearby areas have some productivity, but at a reduced level.

Another challenge raised by in-field tower placements would be the effect on manure application. The current technology for application of manure injects it in liquid form directly into the soil. The machinery that does this is attached by a long, flexible hose, known as an "umbilical," to a manure storage tank. Any obstruction in the field, such as a transmission tower, would be an obstacle. Farmers were concerned as well that an obstruction in the field such as a tower could cause areas of overlapping

application of manure, which could violate their manure management plans and lead to fines. In response, Manitoba Hydro representatives said they have been assured that Manitoba Conservation and Water Stewardship would take that into consideration when taking samples to follow up manure management plans.

Aerial spraying

The Commission heard that aerial spraying may be affected for as much as 1.6 km (one mile) from the transmission line. Virtually all farmers, the Commission was told, employ aerial spraying at least in some years. It is an especially useful tool during years when the ground is too wet for tractors to pull spraying equipment over the fields. If farmers were unable to have their fields sprayed from the air, they would need to wait until the ground was dry enough for ground operations. In such a case, spraying might be done too late to be effective, and in extreme cases might be impossible. As a result, weeds, diseases and other crop pests could reduce yields substantially. The Commission heard that some farmers will be affected in this way even if they do not have towers on their own land. As a result, they will feel the effect of Bipole III without the compensation payment for a tower on their land.

Irrigation

Avoiding irrigated land was a priority in routing the line through agricultural regions. The Commission heard, however, that with changes in climate, crops and agricultural practices, Manitoba may have a growing amount of irrigation in the future. Placement of the transmission line has a substantial potential impact on irrigation systems that use a central pivot. Placing the towers on an alignment 42 metres into the field, instead of on the half-mile line, may cause more interference with central pivot irrigation.

Other agricultural concerns

Many Presenters also expressed concerns about the potential financial impact of the transmission line. One concern is that landowners will be responsible for additional liability insurance to protect them in the event that they or their employees damage one of the transmission line towers. Given the size of agricultural

equipment and the nearly 24/7 nature of modern farming, there is the risk that farm equipment will strike and damage a tower. As a result, landowners may need additional insurance, which adds a new cost to their operating expenses. One farmer testified that an additional \$5 million in liability insurance would cost \$176 per year. In response to this concern, Manitoba Hydro representatives said cases of landowners being held responsible for damage are extremely rare and would only arise if there were clear negligence. Manitoba Hydro has had one claim involving damage to Bipoles I or II, and in that case it involved farm machinery striking a guy wire. The Bipole III towers will be self-supporting in agricultural regions, so there will be no risk of striking guy wires.

A small number of livestock and dairy farmers raised the issue of “stray voltage,” a phenomenon in which livestock, particularly dairy cows, can receive mild shocks from coming into contact with farm equipment (such as milking machines). These Presenters were concerned that the transmission line could have the same effect for their animals. Manitoba Hydro’s position is that stray voltage only results from AC transmission lines, in cases of poorly grounded equipment, and will not be a factor with a DC transmission line.

Some Presenters expressed concern about the health and safety effect of working in close proximity to the transmission line. These Presenters were concerned about health effects of passing underneath the transmission line numerous times in the course of harrowing, fertilizing, spraying, seeding, harvesting, and other farming operations.

There was a broad consensus among Presenters that the compensation being offered for the impact to farming operations and land value was not sufficient. Presenters objected to the amount of compensation offered and to the fact that it was being offered as a one-time payment only. While many Presenters at the hearings said they did not want the transmission line to cross their property under any circumstances, many of them also said that if the line must cross their land they would want annual compensation.

The impact of the transmission line on land values was also an issue for owners of farm

property, as for some other owners of land in proximity to the proposed route of Bipole III.

Commission Comment: Agricultural Land Use and Productivity

The Commission was impressed not just with the depth of feeling of Presenters who were concerned about agricultural impacts but by the large number of agricultural issues they brought forward and the detailed discussion of the issues.

Probably the most significant issue for many was Manitoba Hydro's plan to route the line 42 metres into farm fields along road allowances. This decision in many cases increases the impact on agriculture, resulting in more lost productivity and more complexity in farm operations, given that large equipment will need to be manoeuvred around the towers. The Commission can accept the position of Manitoba Hydro that running the line on the edge of the field immediately beside roadways, as some Presenters suggested, would pose unacceptable safety risks. The Commission also notes that Manitoba Hydro did agree to move the line further into fields than the past practice of 33 metres, in order to accommodate today's larger farm equipment. However, it is significant that those who spoke at hearings very much preferred the use of a half-mile line rather than placement of the transmission towers 42 metres into fields. Although attendance at a public meeting does not provide a scientific sampling of opinion, the Commission is of the view that, for the most part, moving to the half-mile line makes eminent sense. While this may not be the choice for all farmers, it does point to the need to allow an opportunity for farmers' voices to be heard on this question.

Route planning appears to have created some unacceptable impacts on individual landowners. The Commission heard from one landowner who said that because Manitoba Hydro's route planners had sought to avoid one residence the line had shifted into an in-field placement for several miles, crossing seven quarter sections on his farm. This kind of disproportionate impact could be avoided in many cases if Manitoba Hydro were to work with the consensus of landowners along a particular stretch of line. And if, in such cases, it is necessary for the line to make a detour into a field in order to avoid a residence, it may

be necessary to make a second turn in order to return to a less-disruptive alignment. The Commission understands that angle structures are more expensive and Manitoba Hydro has understandably attempted to reduce the number of avoidable turns in the line. But in some cases, avoiding the use of an additional angle structure results in an unacceptable impact on a small number of landowners.

The Commission understands as well that the presence of the Bipole III line could affect farmers whose lands are not traversed by the line if it limits their ability to conduct aerial spraying of crops. During hearings, Manitoba Hydro acknowledged that ancillary damage payments are available to people who have been affected by the transmission line, whether or not it is on their property. This may become a significant issue, especially during very wet years when many farmers are unable to spray on wet fields. One particular area where this could be an issue is near the Red River, where land is divided into long, narrow river lots. In such areas, some landowners may find that very large parts of their farms will be off-limits for aerial spraying.

The Commission heard many comments that the compensation offered by Manitoba Hydro is insufficient. While the compensation offered is relatively generous now, the concern is, in part, that increased land values, commodity prices and operating costs in the future will make today's compensation insufficient. Many farmers said as well that they would prefer to have an option for annual payments. While this would cause some administrative workload for Manitoba Hydro, it is not unreasonable that a corporation that handles hundreds of thousands of monthly bills should be capable of handling a few hundred annual payments. The Commission has heard that in other industries, such as pipelines, and in other provinces, such as Alberta, annual payments are provided to landowners for easements.

Several other comments referred to the style of negotiations. Presenters said that the company hired by Manitoba Hydro to conduct negotiations did so by presenting the Bipole III Project as inevitable or by threatening expropriation. The company also called to book meetings with landowners on the same day as the Commission hearing in Niverville,

which is insensitive at best, if not presumptuous. This is not an approach that works to gain public trust and goodwill. It is also questionable whether the consultant informed landowners of their right to independent legal advice.

Licensing Recommendations

The Commission recommends that:

- 9.1 *Manitoba Hydro, through consultation with local landowners, ensure that its routing and tower placement generate the least possible impact on agricultural operations, unless clear and compelling reasons exist to depart from such routing.*
- 9.2 *Manitoba Hydro provide an option for annual payments, where compensation is paid for agricultural losses due to the Project.*
- 9.3 *Manitoba Hydro undertake the following specific route changes:*
 - *Map 92 – Section 34-8-6E to 36-8-5E – place the line on the East-West ½-mile line.*
 - *Map 88 – move the north/south stretch of the line ½ mile to the east in Sections 7-7-1E to 31-7-1E; or to the west through Sections 12-7-1W to 36-7-1W.*
 - *Map 86 – Section 3-8-4W – turn north at the ½-mile line in the middle of this section.*
 - *Map 85 – Section 6-8-6W – turn north at the ½-mile line in the middle of this section.*
 - *Map 84/85 – Section 6-8-6W to Section 6-8-8W – the FPR is situated 42 metres north of the E/W ½-mile line. This is not acceptable. Place the line on the ½-mile line. There is a house, in SW 5, about 150 metres south of this line, shielded by thick tree growth. If more space is required between this house and the transmission line, then a short (no more than ½ mile) jog is to be taken to avoid the house.*
 - *Map 82 – Section 1-11-9-W to Sec. 24-11-9W or 25-11-9W – place the north/south stretch on the ½-mile line.*

- *Map 79/80 – Sec 7-13-8W to Sec 12-13-10W to Sec 13-14-10W to Sec 36-14-10W – place the east/west and north/south stretches on the ½-mile line.*
- *North of Sec 36-14-10W – if the FPR crosses cropland, it should be on the ½-mile line.*

These changes should require very little additional environmental assessment. Where necessary, Manitoba Hydro is to conduct this under the direction of MCWS. Given the Commission's view that Manitoba Hydro may not have consulted with all affected farmers along the route, it is recommended that, prior to making the specific changes recommended above, Manitoba Hydro consult with all affected farmers to seek consensus or majority support for moving the line from roadsides to the half-mile line. The Commission is cognizant that there may be differences of opinion among farmers. We expect Manitoba Hydro to consult directly with all involved farmers. If no consensus can be reached, majority will rule. Straight stretches are to remain straight.

Non-Licensing Recommendations

The Commission recommends that:

- 9.4 *Manitoba Hydro, to the extent possible, place towers for the Projects so as to minimize impacts on agricultural operations where routing is alongside an existing transmission line.*
- 9.5 *Manitoba Hydro place towers for the Project in or immediately adjacent to the grass swales along the field side of drains, where routing is along existing drains.*

9.2.2 Resource Use

VEC - Commercial Forestry

The Bipole III transmission line crosses six of Manitoba's 10 Forest Sections (a series of large area classifications for the management of forest resources). Two of these Forest Sections, Churchill River and Highrock, are only traversed for very short lengths of the transmission line. The four Forest Sections that are traversed for long distances are Nelson River, which covers land

from north of Lake Winnipeg to east of Split Lake; Saskatchewan River, which includes land from the Saskatchewan border to Lake Winnipeg, roughly between Cedar Lake and Grass River Provincial Park; Mountain, which includes land between the Saskatchewan border and Lakes Winnipegosis and Manitoba, between Cedar Lake and the south border of Riding Mountain National Park; and Aspen Parkland, which includes most of agricultural Manitoba south of the Interlake and Riding Mountain and west of the Sandilands area. The northern portion of the Bipole III line, the Keewatinow Converter Station, northern ground electrode, and AC collector lines are within the Non-Commercial Forest Zone, where lack of merchantable timber and distance to processing facilities mean that there is essentially no commercial forestry potential.

These Forest Sectors have a total of more than two million hectares of productive forest on Crown land, divided between softwood (72%) and hardwood (28%). They also have nearly 700,000 hectares of productive forests on private lands, about 96% of which are hardwoods.

The Bipole III Project will affect 2,187 hectares of Crown-owned productive forest and 586 hectares of privately owned forest land. Project activities such as clearing of the right-of-way will reduce by approximately 0.1% the amount of standing timber in the Forest Management Units through which the transmission line passes. Manitoba Hydro will be responsible to pay MCWS for loss of commercial forests.

The VEC Commercial Forestry refers to productive forest land, high-value forest lands, and forest research sites that may be affected by the Bipole III Project. Route selection avoided any impact to forest research sites, although three such sites are located near the transmission line. The term “high-value forest sites” refers to areas that have been reforested after earlier harvest. They are referred to as high-value sites because of the investment of time and resources that has gone into reforestation. The right-of-way will require clearing of more than 125 hectares of these high-value forest sites.

The right-of-way will permanently remove

land from the forest land base. Loss of forest lands leads to a reduction in the sustainable harvest level and in the annual allowable cut (AAC). For most Forest Management Units (FMU), sub-units of Forest Sections, the reduction in AAC resulting from the Project will be less than 1%. Overall, the Project will cause the AAC to be reduced by approximately 0.09% for hardwoods and 0.14% for softwoods. The Project effect will be a loss of just over 2,100 cubic metres per year of merchantable timber, compared to a total AAC of approximately 1.85 million cubic metres per year of timber. FMU 10 in the Mountain Forest Section, where harvest levels are fully committed, has the largest impact from Bipole III. In FMU 10, the AAC for softwoods will be reduced by 1.28%.

A related impact will be on holders of Forest Management Licences awarded to Tolko Industries Ltd. and Louisiana Pacific Canada Ltd. In the Tolko Industries area (FML #2), Bipole III will result in 1,165 hectares of productive forest land being withdrawn. In the area of the Louisiana Pacific Forest Management Licence (FML #3), Bipole III will withdraw 465 hectares. Forest Management Licences stipulate a maximum amount of land that can be withdrawn from the forest land base over a 10-year period. If the withdrawal limit is exceeded, Manitoba must provide the FML holder with alternative sources of equal quality and cost or must provide compensation. The Bipole III-related loss of forest land base will amount to 5.4% of the withdrawal limit for FML #2 and 28.3 % of the withdrawal limit for FML #3.

Local use of forest resources by Aboriginal people may also be affected by clearing as a result of the Project. As a result of ATK processes, Manitoba Hydro has learned of important locations for harvesting of wood, especially for fuel. These locations will be treated as environmentally sensitive sites in the Environmental Protection Plan for the Project.

Mitigation and protection measures for the forestry VEC include salvaging merchantable timber from right-of-way clearing and making non-merchantable timber available for local communities; disposing of all woody vegetation in order to prevent infestations of sawyer beetles; rehabilitating all disturbed areas such as borrow

pits, access routes and marshalling yards that are not required for operation and maintenance of the Project; washing all equipment before transportation to clearing and construction sites in order to minimize the spread of invasive species; disposing of elm trees immediately by burning or chipping; and carrying out construction, operations and maintenance activities within the Project Footprint in order to minimize damage to adjacent forest.

VEC - Commercial Fishing

The Bipole III transmission line crosses some medium to large rivers where commercial fishing occurs, including the Burntwood, Saskatchewan, and Overflowing rivers, as well as some where commercial bait fishing occurs, including the Red and Saskatchewan. The transmission line also runs near several large lakes where commercial fishing occurs.

Potential impacts to commercial fisheries include:

- habitat degradation
- the effect of erosion or pollution on surface water quality
- increased exploitation of resources as a result of increased access

Plans for protecting water quality (as described in Chapter Eight), including establishment of buffers around watercourses, are also intended to protect fish resources.

The presence of a large workforce during construction can lead to increases in recreational fishing. Manitoba Hydro plans to restrict fishing at the construction camp and Keewatinooow Converter Station Site. Manitoba Hydro will work with communities to develop Access Management Plans that address concerns about increased access to resources made possible by the Bipole III right-of-way. In many places, where the line runs adjacent to existing roads or transmission lines, increased access will be minimal.

VEC - Mining and Aggregates

The route selection process for the Bipole III Project sought to avoid crossing mining leases

where the Project could interfere with operations or exploration. However, the Adjusted Final Preferred Route crosses 35 mining claims and four mineral exploration lease areas. Many of these mining claims (28) are in an area near Wabowden where the route crosses the Thompson Nickel Belt.

One of the impacts of the Bipole III Project on mining is that the magnetic field generated by the line will have an impact on the accuracy of electro-magnetic surveys used in mineral exploration. Manitoba Hydro's analysis of electro-magnetic fields generated by the transmission line suggests that it could affect some measurements for 8 to 10 km on each side of the line, leading to a shadow or blackout effect of 3 to 6 km. Mitigation methods for this effect include encouraging mining companies to conduct surveys before the construction of the Bipole III line, applying filters during processing of electro-magnetic surveys to remove extraneous magnetic noise, and using survey methods that are less susceptible to interference.

In an effort to reduce the impact on mining exploration, Manitoba Hydro initially chose an FPR that resulted in traversing a large portion of unfragmented habitat in the Wabowden caribou range. Following input from the Technical Advisory Committee, Manitoba Hydro selected an Adjusted FPR that avoided unfragmented caribou habitat by following existing disturbances. This change increased the potential for disruption of mineral exploration in parts of the Thompson Nickel Belt.

In addition to the mineral claims and exploration areas, the transmission line crosses 10 commercial quarry lease areas and several aggregate deposits of varying potential economic quality. To reduce potential impacts on the mining and quarry industry, Manitoba Hydro will provide claim and licence holders with information on clearing, construction and maintenance schedules, and where necessary place towers to reduce interference with operations.

VEC - Trapping

The Final Preferred Route crosses 41 registered traplines as well as one open trapping zone north and east of the Duck Mountains and

special trapping area districts of Summerberry and Easterville. In addition to these traplines, the Keewatinoow Converter Station is on one registered trapline and the AC collector lines leading to the Keewatinoow Converter Station cross three additional traplines. Clearing the 66-metre right-of-way will have an impact on trapping by removing habitat of fur-bearing animals such as marten and fisher. It may also impact trapping by allowing access, particularly by snowmobilers, to traplines.

Manitoba Hydro has a Trapper Notification and Compensation Policy to provide compensation to holders of registered traplines whose lines are affected by construction of transmission facilities 115 kV or greater. This policy is intended to cover damage to equipment, buildings and trails used for trapping as well as loss of trapping during clearing and construction and reductions in trapping resulting from disturbance of animals.

The Trapper Notification and Compensation Policy has two main components. In the notification component, Manitoba Hydro meets with trappers during the site selection process or after an EIS has been filed to collect trapping information and Aboriginal traditional knowledge. Representatives meet with trappers and local fur councils to talk about the Project and identify locations of cabins, trapping access trails, and environmentally sensitive sites. Prior to the beginning of construction, Manitoba Hydro seeks to sign an agreement on compensation with each trapper. Compensation covers replacement of or improvement to any lost or damaged equipment, buildings, or access trails on the trapline. It also covers loss of trapping revenue, based on the average trapping revenue from the trapper's best three years in the previous 10 years, plus an amount for other losses, such as lost hunting opportunities. The amount of compensation is based on the percentage of a trapline that is within a disturbance zone that extends five kilometres on each side of the transmission line. Trappers are compensated for five years: one year for the clearing of the transmission line, one year for construction of the transmission line and three years for wildlife to adapt to the changed environment. The three-year adaptation period is based on the assumption that animals will

adapt to changes in the environment and return to an area within that time. The Commission heard that a study of wildlife adaptation to the construction of the Wuskwatim line near Snow Lake has demonstrated that animals often adapt in less time. Some respondents in ATK interviews said furbearers are likely to return to a cleared area once vegetation is re-established or that furbearers have been seen on or crossing existing rights-of-way. Other respondents raised concerns that in the case of other transmission lines animals still avoid the area. Marten, the most frequently trapped furbearer, were referred to as particularly unlikely to cross a cleared right-of-way.

While Manitoba Hydro works to come to an agreement with trappers regarding compensation, if an agreement is not reached Manitoba Hydro may still proceed with its plans. The Commission heard that in the case of the Wuskwatim transmission line, Manitoba Hydro came to agreements with 38 out of 39 affected trappers within the Wuskwatim disturbance zone.

Manitoba Hydro's ATK process gathered information about the effects of past developments on trapping and concerns regarding the Bipole III Project.

One of the challenges in addressing impacts through compensation for trappers is that trapping is not simply an economic activity. Few Manitobans trap as their main source of livelihood. For most trappers, the activity is a cultural one, a way of maintaining contact with the environment and a way of passing on culture and language.

What We Heard: Trapping

Many respondents were concerned that the right-of-way would provide greater access to snowmobiles, leading to more vandalism and damage to trappers' equipment and cabins. Other respondents said that trappers themselves may use the right-of-way to reach new trapping areas.

The FPR crosses one registered trapline near Thicket Portage that is used by a school and community trapping and cultural education program. The Commission heard that the program, for which students receive school credit,

has had a substantial effect on improving school attendance and reaches students who are at risk of failure in a traditional classroom. Students in the program learn CPR, boat and firearm safety, and how to trap furbearers and prepare furs. In addition to learning about trapping, students in the program set nets, catch and clean fish, hunt game and birds, and prepare meat. The Commission heard community members say that it is important for youth to learn about their traditional way of life through programs such as this.

There are also concerns that the right-of-way could affect a similar trapline near Opaskwayak Cree Nation (OCN). The Elk trap line has been designated by OCN and the Opaskwayak Educational Authority as an outdoor classroom for teaching traditional practices and knowledge. A portion of this trapline has recently been disturbed by the Wuskwatim transmission line and elders and resource users believe this has caused a decline in marten and fisher populations. This has led to concerns that Bipole III, which passes through a portion of the northwest corner of Elk trapline, will disrupt trapping further.

The Commission heard concerns that while the Trapper Notification and Compensation Policy benefits trapline holders, it may not help people who trap in open or special trapping zones. This concern was emphasized by Pine Creek First Nation.

The Commission also heard from trappers who were concerned that the right-of-way for the transmission line might become a part of Manitoba's snowmobile trail network. When there is little snow in southern Manitoba, snowmobilers will travel all the way to The Pas. Allowing the right-of-way to become an established snowmobile route would cause more disturbance, both for furbearers and for big game animals.

Commission Comment: Trapping

The Commission considers Manitoba Hydro's policy on Trapper Compensation and Notification to be a fair-minded attempt to reconcile the needs of Manitobans for electricity with the livelihoods and cultural traditions of Manitoba's trappers and their communities. This policy is an example of the improvements that

are possible when the Corporation listens to stakeholders and acknowledges their experience. It is important to remember, though, that trapping is not simply an economic activity. It is also an important cultural practice and means of passing on community knowledge to the next generation. As such, compensating trappers for their financial loss does not make up for the cultural losses when a development impacts trapping. The Commission also believes efforts must be made, where necessary, to ensure that such educational programs are not disrupted by the Bipole III Project.

Non-Licensing Recommendation

The Commission recommends that:

9.6 Manitoba Hydro make best efforts to accommodate the continuation of educational programs on community traplines that are affected by the Project.

VEC - Wild Rice Harvesting

The FPR passes close (100 and 300 metres) to two lakes that have been identified for wild rice harvesting. One lake, south of the junction of Highways 10 and 60 and east of Plummer's Marsh, has a development licence for wild rice. The other, Montreal Lake, near The Pas, has a production licence. In both cases, access via the right-of-way could increase the potential for over-harvesting of the resource.

VEC - Recreation and Tourism

The VEC Recreation and Tourism includes the impact of the Bipole III Project on lodges, outfitting, fishing, hunting, and recreation sites and trails. Hunting and fishing for food by Aboriginal people is referred to under the heading of Domestic Resource Use.

Four lodges that offer guiding, fishing and hunting services are located within 10 km of the FPR, the closest being 2.3 km from the right-of-way in the RM of Mountain. Another lodge is 4.5 km from the FPR on the south shore of Clearwater Lake. Two other lodges or resorts are approximately 8 km from the line on Cormorant Lake.

Twenty Game Hunting Areas (GHAs) are intersected by the line and 99 outfitters operate in these GHAs. Manitoba Hydro expects that winter construction, occurring during the season when licensed hunting is closed, will minimize impacts on recreational hunting and outfitting. Hunting and fishing by Project personnel at work sites will be prohibited and firearms will not be allowed in work camps.

Many of the rivers and streams crossed by the line are fished recreationally and could be impacted by habitat degradation, impacts to water quality as a result of erosion or pollution, and increased exploitation of the resource as a result of increased access. The prevention and mitigation measures listed for the VECs Water Quality and Fish Habitat – including buffers around the watercourses – will reduce impacts on recreational fishing. Where access resulting from the new right-of-way becomes an issue, Manitoba Hydro will work with communities to develop Access Management Plans.

No cottage subdivisions are within 0.8 km of the line, but the route does cross three quarter-sections of encumbered Crown land where two remote cottages and one recreational lot are located. The FPR crosses five quarter-sections of Crown land where four campgrounds and one fish camp are located.

What We Heard: Recreation and Tourism

The Commission heard from one landowner in the vicinity of The Pas who expressed concern that the existence of the Bipole III transmission line on her family's property could preclude any future decision to develop a tourist lodge.

During the final week of hearings, the Commission heard that the Bipole III transmission line will run through the allocation areas for two licensed hunting outfitters who work in the Thompson area, with the potential to disrupt business during the years of clearing and construction. The outfitters are seeking compensation for their expected loss of business, similar to the compensation that exists for trappers who will be affected by transmission line construction. During the hearings, the Commission heard that a similar program

does not exist for outfitters and that claims for compensation for losses will be dealt with by Manitoba Hydro on a case-by-case basis after the loss occurs and based on proof of the loss.

In at least one case, the transmission line will reduce the number of accessible bait sites that the outfitter currently uses for licensed bear hunting. In addition to the loss of bait sites, which take time and effort to establish, the outfitter said the presence of construction in the area will detract from the wilderness experience his hunting clients expect. As a result of this, we heard that one outfitter has already substantially reduced the number of clients he has booked for the next three years.

A representative of the Manitoba Lodges and Outfitters Association observed that outfitters pay a fee to the Manitoba government for the right to lead hunts in a specific area and argued that outfitters and trappers have the same right to use wildlife resources. Manitoba Hydro's Trapper Notification and Compensation Policy acknowledges that line construction affects the behaviour of wildlife and provides for compensation for five years to cover construction and the time it takes for wildlife to adapt. A similar approach should be used, he argued, for outfitters whose allocated areas will be affected by line construction.

Commission Comment: Recreation and Tourism

The Commission believes that the concerns of outfitters regarding Bipole III are legitimate. Licensed outfitters may be affected by both construction and on-going operations and maintenance, if they restrict the ability to lead hunts in a particular area or affect the satisfaction of paying clients. Compensation for documented losses caused by the Bipole III Project is, therefore, reasonable.

Licensing Recommendation

The Commission recommends that:

9.7 Manitoba Hydro ensure that affected outfitters are fairly compensated for any documented losses attributable to the Bipole III Transmission Project.

VEC - Domestic Resource Use

Construction of the Bipole III transmission line and the Keewatinoow Converter Station and its associated facilities will cause temporary or permanent disturbances in domestic resource use, including hunting, fishing, and harvesting berries, plants and other resources.

Construction disturbance along the transmission line and at the converter station is expected to cause some wildlife that are sensitive to noise and activity to move away temporarily from the area. Habitat change resulting from the clearing of the right-of-way will have a longer-term effect. Those animals that require forest cover will lose habitat immediately along the right-of-way, while those that use open habitats may be attracted to the right-of-way.

Increased access resulting from the right-of-way may cause increased pressure on populations of game animals and fish. As well, the growth of the community of Gillam will lead to increased numbers of recreational hunters, anglers, and other outdoor recreation users. Manitoba Hydro expects Gillam to double in size in the years ahead as a result of the Bipole III Project and proposed Keeyask and Conawapa generating stations.

Nineteen locations of traditional plant gathering and berry picking will be affected by the FPR. The area of potential gathering being affected by the right-of-way is 760 hectares. The ATK process identified more than 80 plant species along the right-of-way that are used for traditional purposes. Important traditionally used plants include Seneca root, sweetgrass, sage, bog cranberry, cloudberry, choke cherry, pin cherry, blueberry, and Saskatoon berry.

Many specific measures are planned to reduce impacts on domestic resource use.

- Firearms will be prohibited in construction camps and workers will be limited from leaving the camp to harvest resources.
- At Keewatinoow, an Access Management Plan will be developed to allow existing resource users to access the construction area to the extent that is safe and practical.

- Most transmission line clearing and construction will occur in winter and, when not in winter, disturbance will be minimized in areas where Aboriginal plant use has been identified through ATK.
- Existing trails, roads and cutlines will be used for access where possible.
- Access controls will be used, such as ditching and retiring access roads along Provincial Trunk Highway 6 and in other locations where there is potential for substantial increases in use.
- Cleared timber that is non-salvageable will be made available, where practical, to local communities for fuel wood.
- Manitoba Hydro will work with communities to identify important resource-use sites.
- Where the issue of increased access is important to a community, Access Management Plans will be developed.

What We Heard: Domestic Resource Use

The Commission heard from many resource users who harvest wildlife, fish, berries, and other plants near the planned Bipole III right-of-way. One area of particular concern is referred to as the “Berry Patch,” near the villages of Cowan and Briggs Spur between Highway 10 and Swan Lake. This area is known for extensive patches of blueberries and other plants and has been a gathering place for generations. The Commission heard from a number of resource harvesters who remembered entire families coming to the Berry Patch for weeks at a time to pick berries for personal use and for sale. These berry-picking gatherings were and are an important social gathering for communities and extended families. Many Métis and First Nations families from communities throughout western Manitoba make use of this resource-harvesting area.

Resource harvesters also expressed concern about the clearing of the right-of-way and use of chemicals in maintaining it. The Commission heard that the perception of contamination in country food sources, whether or not there is

scientifically established contamination, can have a significant impact on food and nutrition. Through the perception of contamination, resource development projects can lead to a shift from a traditional Aboriginal diet to a southern diet, leading to increases in diabetes and cardiovascular disease. Similar concerns were expressed elsewhere along the route of the transmission line. Many users of traditional medicines are concerned that the use of chemicals or the presence of power lines affects the safety or the effectiveness of plants. Pine Creek First Nation (PCFN), as well as others, asked why Manitoba Hydro pays compensation for loss of productivity on agricultural land, but not for loss of berry and medicine harvesting.

A concern at many places in the Project Study Area was that increased access by non-community members may put extra pressure on the resource. Members of Fox Lake Cree Nation (FLCN) expressed the concern that growing numbers of newcomers to the Gillam region will lead to increased pressure on populations of fish and wildlife and on other resources. In their presentation to the hearings, representatives of FLCN said three decades of uncontrolled hunting and fishing by construction workers has contributed to the depletion of brook trout and sturgeon from a number of local rivers and streams. FLCN's plan for future management of resources in the region calls for new resource officers, representing FLCN, and limits on harvesting by outsiders.

Increased access by outsiders was also a concern regarding harvesting of berries and other plant resources and hunting of moose in western Manitoba. In much of this area, moose hunting has been prohibited because of very substantial drops in population. Several hunters who spoke during hearings expressed the concern that the clearing of the right-of-way may hinder efforts to allow moose populations to recover by increasing access, for both humans and wildlife predators. The Commission heard that this area is particularly important to Manitoba's Métis community. The area was referred to as the "breadbasket" of the Métis, because it has traditionally been a source of food. It was stressed as well that the western Manitoba region is not just used by Métis who live in the area, but is a

hunting and resource-harvesting destination for Métis from many other parts of Manitoba. The Manitoba Métis Federation's Traditional Land Use and Knowledge Study (TLUKS) described in detail the importance of resource harvesting to many Métis. Among the 49 subjects interviewed in the MMF's TLUKS, 85% said they consumed country food at least once per week and 24% said they did so four times per week or more. Given the importance of moose to domestic resource use, many of the discussions the Commission heard regarding the VEC Moose, also applied to the VEC Domestic Resource Use.

Commission Comment: Domestic Resource Use

One of the central issues for many resource users is the possibility that the Bipole III line will increase access to resources. This is especially a concern in the area of the Cowan-Briggs Spur Berry Patch. As with many of the wildlife VECs, access management will be of central importance in order to reduce the impact on people who pick berries and other traditional foods and medicinal plants. In the GHA 14A/19A area, which includes a portion of this popular plant-harvesting location, Manitoba Hydro's Adjusted Final Preferred Route as discussed in detail in March, 2013, may actually increase the potential for access to resource-harvesting areas. It is in part for that reason that the Commission believes the Final Preferred Route is likely to have less of an environmental effect in this area (see Chapter Ten: Route Adjustments).

Another domestic-resource-use issue is the use of herbicides. The Commission believes that careful spot applications of herbicide are a less disruptive way of managing vegetation along the right-of-way than mechanical means. Nevertheless, the Commission is aware that many Aboriginal communities view herbicides with suspicion. In some areas of heavy use of plant resources, vegetation clearing will need to be done entirely by hand. In other sections of the line, occasional appearances of plants that are harvested will need to be marked so that, with appropriate buffers, there will be no spraying adjacent to the berries or other plants. Areas that have been sprayed will need to be marked with signs.

Licensing Recommendations

The Commission recommends that:

- 9.8 *Manitoba Hydro conduct vegetation clearing for the Bipole III Project by hand in identified environmentally sensitive sites related to traditional plant harvesting.*
- 9.9 *Manitoba Hydro provide a buffer between herbicide application areas along the Bipole III right-of-way and identified environmentally sensitive sites related to traditional plant harvesting.*
- 9.10 *Manitoba Hydro post areas that have been actively herbicided along the right-of-way in the vicinity of identified environmentally sensitive sites related to traditional plant harvesting.*

9.2.3 Economy

VEC - Economic Opportunities

The VEC Economic Opportunities is defined to include jobs, business opportunities, training, and enduring benefits.

Construction of the Bipole III transmission line, including clearing, will require five years to complete. Construction of the AC collector lines will require four years. Transmission line employment is expected to total 4,819 person years (one person-year is defined as 3,120 hours of work in one year, based on a theoretical 10-hour day and six-day work week).

In the north, line clearing and construction will be carried out in the winter months – November to April – so transmission line construction employment will be seasonal. Clearing the line will require 15-40 workers for each of the eight line segments. Numbers of workers required will fluctuate with the stage of the Project. During line construction, at peak periods as many as 200 workers will be needed per segment. For the AC collector lines, workforce requirements are estimated at 20 to 150 workers during the period of clearing and construction.

Construction at the Keewatinoow Converter Station will continue year-round for approximately five years, with a peak of

approximately 350 non-management workers. Supervisory and management staff will add approximately 20% to the total of workers at the site. In addition to these workers, smaller numbers of workers will be required for upgrades to the Long Spruce and Henday switchyards and the construction of the northern ground electrode. Construction associated with the Keewatinoow Converter Station, including the northern electrode and upgrades to the Long Spruce and Henday switchyards, is expected to generate approximately 920 person-years of employment, not including contractor supervisory and management staff and Manitoba Hydro staff.

The Riel Converter Station near Winnipeg will require five years and a peak of approximately 350 craft workers, generating a total of 640 person-years of employment at the converter station and the southern ground electrode, not including contractor supervisory and management staff or Manitoba Hydro staff. The Riel station requires less labour largely because it does not require the extensive site preparation that is needed for the remote Keewatinoow site.

Once fully operational, the Keewatinoow and Riel stations will require an estimated 42 and 45 staff respectively, with additional contract workers needed during station maintenance periods. Operation and maintenance of the transmission line and the AC collector lines will require approximately 11.5 full-time persons per year on average over the life of the line.

Clearing and construction of the transmission lines will be subject to a collective agreement, called the Transmission Line Agreement, which allows Manitoba Hydro to include hiring preferences in tender specifications. Manitoba Hydro will expect contractors to promote the participation of Manitoba businesses, northern Manitoba businesses and northern Manitoba Aboriginal businesses for the Project. Contractors will also be required to give preferences in hiring to Aboriginal and local residents. Manitoba Hydro will negotiate contracts for clearing of the right-of-way with First Nations communities. Construction of the Keewatinoow station will be carried out under the Burntwood Nelson Agreement, a no-strike, no-lockout bargaining agreement that covers all major hydro

projects in the north. The BNA sets out hiring preferences, as well as provisions for recruitment, referral, placement, training, and retention of northern Aboriginal workers.

Manitoba Hydro participated in a pre-project training initiative for the Wuskwatim and proposed Keeyask projects called the Hydro Northern Training and Employment Initiative from 2002 to 2010. This initiative provided technical training courses for occupations in truck driving, heavy equipment operation, carpentry, cooking, catering, security, plumbing, crane operation, welding, ironworking, business support, and computer systems maintenance. The initiative trained an estimated 2,600 Aboriginal residents of northern Manitoba. Continuing training is carried on in a program at the Radisson Converter Station near Gillam to provide pre-placement training for northern residents to prepare for various trades needed in generating and converter stations. Ten positions are available each year for northern residents to learn about various trades and receive academic upgrading, if necessary, to enter apprenticeship programs. The 10-month program, described as having an approximately 85% success rate, has been in place for approximately 12 years. As of fall 2012, approximately 36 Manitoba Hydro employees in the Gillam area were from Fox Lake Cree Nation.

In addition to job opportunities in line clearing and construction, business opportunities exist for local companies to provide fuel, accommodations, food services, trucking, and equipment rental during construction of the Bipole III Project.

For northern Manitoba residents as a whole, Manitoba Hydro estimates Bipole III construction labour income at \$64.5 to \$96.8 million. For northern Manitoba Aboriginal residents, construction labour income estimates range from \$48.4 million to \$80.7 million. The estimate of the Aboriginal portion of the labour income is based in part on Manitoba Hydro's experience during the Wuskwatim project. Total direct Bipole III construction employment for northern Manitobans is estimated at 1,141 person-years to 1,574 person-years. For northern Manitoba Aboriginal workers, the estimate is 866 person-years to 1,357 person-years.

Manitoba Hydro has also developed plans for a Community Development Initiative (CDI) for the Bipole III Project, which will disperse \$4-5 million per year over 10 years to communities near the Project. These funds will be available for community development projects that benefit a broad segment of the community. It is intended that approximately 60 First Nations, Northern Affairs community councils, rural municipalities, towns and cities will be eligible for this funding. This initiative will begin making payments to communities upon regulatory approval of the Bipole III Project.

What We Heard: Economic Opportunities

The Commission heard that First Nations in southern and central Manitoba want to ensure that their members also have the opportunity to work on the Bipole III Project and would like some assurance of local hiring preferences. As well, some First Nations have raised the issue of equity participation in the transmission line, similar to partnerships developed for the Wuskwatim generation station and the proposed Keeyask generation station.

The terms of the Community Development Initiative raised some concerns as well. Swan Lake First Nation (SLFN) noted that it is not included among the communities eligible for CDI funds on the grounds that the main SLFN reserve is beyond the boundary of eligibility. However, SLFN's Indian Gardens reserve is only a few kilometres from the FPR. The Manitoba Métis Federation raised the point that Métis throughout Manitoba have a strong attachment to the western Manitoba region, but only those living in communities near the FPR will be able to benefit from CDI funds. The suggestion was also made that the CDI process and decision-making needs to be made transparent.

Commission Comment: Economic Opportunities

The Commission believes that construction of the Bipole III transmission line will have only a modest economic benefit for most communities, as the construction of the line will be seasonal and temporary. While Manitoba Hydro has agreements in place to give employment priority

to members of northern Aboriginal communities, and northern residents generally, on projects in the north, the Commission believes that efforts should be made elsewhere to make sure that local residents gain employment from clearing and construction work. This should particularly be the case in the western and central Manitoba area, where the Bipole III line will pass close to a large number of First Nations and Northern Affairs communities.

A more substantial economic benefit is possible at the Keewatinoow Converter Station, where construction will continue for several years. Manitoba Hydro's training programs in preparation for the Wuskwatim and Keeyask generating station, combined with a training program for operational staff held at the Radisson Converter Station, have prepared more residents of northern Manitoba for well-paid skilled occupations on projects such as Keewatinoow. Ancillary work, such as security and catering, will also create opportunities for local residents.

9.2.4 Services

Under "Services", the Bipole III EIS assessed the impacts of the Project on two VECs: Community Services (referring to emergency, health, and social services) and Travel and Transportation (including the impact on traffic and transportation services). Although there are potential effects on both community services and travel and transportation along the length of the transmission line and in the area of the Riel Converter Station, the greatest impacts will be felt in the vicinity of the Keewatinoow Converter Station.

VEC - Community Services

During the initial phase of construction at Keewatinoow, workers with moderate to serious injuries will need to be taken to Gillam for emergency care, using an ambulance based at the camp. Once the main construction camp is built, it will have a first-aid building, so only more serious injuries or cases of multiple injuries will require patients to be taken to Gillam Hospital. These emergency visits, plus medical appointments by construction workers, may lead to longer waiting times and the need for more medical staff at the Gillam Hospital.

A large influx of construction workers to the Keewatinoow Converter Station camp may strain current policing services. Possible sources of increased workload for police include accidents resulting from increased traffic between Gillam and the Keewatinoow site, impaired driving by workers travelling to and from Gillam, actions by workers while in Gillam, and emergency calls for police to come to the construction camp. If any of these were to occur while police from Gillam were being dispatched to neighbouring communities, such as Bird or Ilford, it could exceed the resources of the Gillam detachment. Manitoba Hydro intends to reduce the likelihood of this happening through the following measures:

- reducing leisure visits to Gillam by workers
- transporting workers to and from the construction site to avoid the use of personal vehicles
- training camp security staff to deal with impaired driving and intoxication
- a camp behaviour and disciplinary policy to discourage disruptive behaviour
- rigorous enforcement of impaired driving laws and regulations

A number of factors will limit leisure visits to Gillam. A lounge and recreational facilities at the camp, combined with long work days and the 91-km distance, will limit workers' trips to Gillam. Workers will not be allowed to use company vehicles to travel to Gillam for recreation. There will be a shuttle provided to transfer incoming and outgoing workers to and from Gillam airport, so there will be no need for most workers to bring private vehicles to the camp. Entry and exit at the camp will be controlled through a staffed security gate.

The impact of Keewatinoow construction on housing in Gillam will be limited by the distance of the construction site from Gillam, the long shifts, and the low-cost alternative of camp accommodation. As a result, few construction workers are expected to choose to find housing in Gillam.

During construction of the transmission line, workers will be housed in temporary construction

camps located along the line, or where feasible, in suitable accommodations in local communities. Because construction activities are temporary and short-term in any one location, increased demand on community services and policing will be short-term.

Commission Comment: Community Services

The Commission understands the concerns of many northern residents regarding the influx of temporary workers and new residents to the Gillam area during construction of the Keewatinoow Converter Station. Those concerns include the possibility that existing services for health care and policing will be overwhelmed. Should the Gillam RCMP post require extra resources because of the increase in traffic and population, it may be necessary for Manitoba Hydro to fund additional police. The same may also apply for health care resources.

VEC - Travel and Transportation

As with community services, the greatest potential impacts to travel and transportation will be felt in the area near the Keewatinoow Converter Station.

During peak construction of the Keewatinoow station, worker and truck traffic on PR 280 is expected to increase traffic by 20 to 30%. On PR 290, which runs from the Long Spruce generating station to the Conawapa access road and also provides access to the community of Bird, traffic is expected to more than double during the peak of construction. There will be regular shuttle buses to take workers to and from the Gillam airport. Although measures will be taken to discourage off-hours visits from the camp to Gillam, Manitoba Hydro expects some traffic to occur. Transportation of equipment and materials by truck for construction of the converter station will be minimized by use of rail transport. Manitoba Hydro expects the vast majority of equipment and materials to be transported by rail to the Henday railyard and taken by truck along the Conawapa access road to the construction site. These goods transported by rail will include such items as the 14 converter transformers, which weigh 256 metric tonnes each. Transporting these heavy loads by rail will involve specially scheduled

slow-moving trains and consultation with regulatory agencies and authorities to minimize disruption to transportation.

Construction of the Keewatinoow Converter Station will also put additional demands on air travel to and from Gillam. This could lead to fewer seats being available on flights for local residents and straining the resources of the Gillam airport. Recent improvements to runway lighting and other upgrades have made the airport capable of handling increased traffic, although some increase in staffing and additional airport parking may be needed. To ease demand created by the increase in workers, Manitoba Hydro plans to fund a regular charter flight through Calm Air. This approach was used during construction of the Wuskwatim generating station, with Manitoba Hydro funding a weekly charter between Winnipeg and Thompson.

Construction of the Bipole III transmission line will lead to temporary increases in traffic along roads used to transport workers, materials and equipment. A number of highways and roads will experience an increase in traffic, including PTH 6, PR 391, PR 280, PTH 10, PTH 50, PR 248, PR 261, PR 268, PR 271, PR 287, PR364, PR 373, PR 384, and PR 596. Of these, PTH 10, between PR 60 and PR 268, will carry volumes in excess of its design capacity. This section runs from Birch River to the north, past Mafeking, Dawson Bay, and Sapotaweyak Cree Nation. PTH 10 already carries volumes in excess of its design capacity in one section and Manitoba Infrastructure and Transportation is planning to update older sections of this highway as part of its Manitoba Highway Renewal Plan. Manitoba Hydro and Manitoba Infrastructure and Transportation also identified 45 locations along PR 280 that required improvements, such as widening and shaving curves. These upgrades are scheduled to begin during the summer of 2013, although some were carried out in the fall of 2012 during regular maintenance.

Construction of the Riel Converter Station will increase traffic on PR 207 and PTH 15, but is unlikely to exceed acceptable design capacity. Recent upgrades to PTH 15 are expected to alleviate some of the concerns regarding increased traffic.

What We Heard: Travel and Transportation

The Commission heard a number of concerns about traffic and road safety, especially from members of Fox Lake Cree Nation and Tataskweyak Cree Nation. Concerns were in part prompted by past experience, when major construction led to increases in traffic, and subsequent accidents on the roads. One witness spoke of a fatal hit-and-run accident. Other witnesses expressed concern about impaired driving.

While many such concerns were focused on Gillam and the portions of PR 280 and PR 290 that run past Bird, the Commission also heard traffic concerns about PR 280 between Thompson and the Gillam area. Representatives of Tataskweyak Cree Nation said PR 280 is badly rutted and very dusty as a result of heavy traffic.

Commission Comment: Travel and Transportation

While Manitoba Hydro expects that flying workers in and out of Gillam will minimize the amount of additional highway traffic generated by Bipole III, the Commission believes some increase is still inevitable. Workers who live in northern Manitoba will likely drive back and forth between their homes and the work camp at beginning and end of their work weeks, generating increased traffic. Manitoba Hydro expects to use the railway to deliver construction supplies and equipment to the Keewatinoow Converter Station site, but rush orders and “just in time” delivery systems will likely result in some increase in truck traffic. If the identified upgrades along PR 280 between Thompson and Gillam are carried out in the summer of 2013 as planned, this will help to reduce the impacts of additional traffic. Any increase in traffic may make additional dust-control measures on this gravel highway necessary for comfort, safety and air quality. Monitoring of traffic increases will be needed to identify any other issues that may arise, affecting safety, efficiency and comfort.

9.2.5 Personal, Family and Community Life

Three VECs were selected in the area of

personal, family, and community life: Public Safety, Human Health, and Aesthetics.

VEC - Public Safety

As with community services and travel and transportation, the principal concerns regarding public safety focused on the construction of the Keewatinoow Converter Station and its effects on the nearby community. This concern grows out of experiences that have occurred in the past as a result of construction in the area. Members of Fox Lake Cree Nation (FLCN) recall incidents of racism and violence and impacts felt by vulnerable community members, especially women and youth. FLCN members are concerned that such interactions could again lead to harassment, racist comments, enticement to alcohol or drugs, sale of drugs, physical abuse, unwanted pregnancy, or other harmful effects. In the past, these incidents occurred when workers would visit Gillam during leisure time and would come into contact with FLCN members. A related concern is that an influx of construction workers to the Gillam region and increased disposable income among community members who work on the Bipole III Project would lead to increased availability of drugs and to gangs bringing drugs into the community. The fear exists that a rapid influx of outsiders, especially young, male outsiders, can create a kind of boomtown environment, complete with alcohol, drugs, and violence.

Manitoba Hydro’s plans to have recreational facilities and a lounge at the construction camp, combined with the 91-km distance of the camp from Gillam, may result in fewer visits by construction workers. There may be more visits in the early phase of the Project, when workers are staying in a start-up camp without all the amenities. Strategies to reduce worker travel between the camp and Gillam, as described above under the VEC Travel and Transportation, include not permitting the use of company vehicles for leisure trips to Gillam, and using a shuttle bus to take workers back and forth between the camp and the Gillam airport. These may help to minimize worker interactions with the community. Manitoba Hydro also plans cultural awareness training for all workers that includes discussion of the effects of past interactions.

Under the 2009 Fox Lake Cree Nation Keeyask Adverse Effects Agreement, Manitoba Hydro will fund a crisis centre and wellness counselling program in Gillam as well as a program to provide counselling, education, and other support to help FLCN members to take advantage of opportunities at Keeyask. These programs may help with mitigation of problems arising from Keewatinoow construction as well.

As there is uncertainty regarding how much and what kind of interaction there will be between workers and community members, Manitoba Hydro has committed to a monitoring and adaptive management program that will require tracking and reporting of incidents on a monthly basis. Manitoba Hydro has committed to working with FLCN to determine a mechanism for tracking such incidents.

Public safety concerns resulting from construction of the transmission line are minimal, as the work will be temporary at any given location. The right-of-way itself will be an active construction site and so access will be limited to those who are working there.

VEC - Human Health

The VEC Human Health includes potential impacts on health resulting from noise, vibration, dust, electro-magnetic fields (EMFs), and herbicides. At the locations of the two converter stations and along the transmission line, human health concerns focus on noise, dust, herbicides, and EMFs. The Bipole III EIS does not discuss air quality resulting from burning of material in reference to this VEC.

Noise and dust generated during construction of the transmission line and AC collector lines will be temporary and intermittent and largely confined to isolated areas. In addition to machinery noise, there will be noise generated by implosives used to splice the transmission conductors. At the two converter station sites, construction noise and dust will be generated throughout the construction period. Prior to use of implosives for splicing conductors, advance notice will be given to local authorities such as Fox Lake Cree Nation, the Town of Gillam, the RCMP, Manitoba Conservation and Water Stewardship,

the RM of Springfield, and the City of Winnipeg. At both sites, Manitoba Hydro will apply dust-control measures as needed.

Operation of both the transmission line and the converter stations will produce varying levels of noise. Operation of the transmission line will produce electrical discharges known as corona discharges, which can produce audible noise of up to 39 decibels within the right-of-way. Operation of the converter stations will produce continuous noise from the transformer units. Manitoba Hydro expects that this noise will be limited to 55 decibels when measured at any point on the property of the Keewatinoow station or 50 at any point on the property of the Riel station.

Manitoba Hydro does not use herbicides to clear the right-of-way, but does plan to use them in managing vegetation once the line is operating. Herbicides are to be used in accordance with a licence issued by MCWS. Policies regarding herbicide use are discussed in Chapter 12: Environmental Protection, Monitoring and Management.

Operation of the transmission line and the converter stations will produce electro-magnetic fields (EMFs) at levels below the recommended exposure limits of national and international scientific bodies. The World Health Organization and other international agencies have concluded that there are no known adverse health effects associated with AC EMFs or the EMFs produced by DC lines. In Canada, the Federal Provincial Territorial Radiation Protection Committee Working Group has concluded that there is insufficient evidence to show that exposure to EMFs from power lines can cause adverse health effects such as cancer.

Power lines produce both electric and magnetic fields. Electric fields diminish in strength with distance from the source and are shielded by objects such as trees, shrubs and walls. Magnetic fields diminish in strength with distance from the source but are not shielded by objects such as trees, shrubs or walls. DC electric fields are produced naturally by electrical storms or the static electricity that is produced by walking across a carpet or by static cling. These natural

electric fields are stronger than the electric field that would be experienced underneath the Bipole III transmission line.

Magnetic fields are produced by battery-operated appliances, electrical railways used in many transportation systems, and other electrical products, as well as naturally by the earth. The earth's natural geomagnetic field in Manitoba is roughly the same as the upper estimate for the magnetic field immediately underneath the Bipole III line. Many artificial sources of magnetic fields, from battery-powered appliances to electric commuter trains, produce much more powerful magnetic fields.

International regulatory agencies have proposed limits for human exposure to both DC electric fields and magnetic fields. Recommended limits for continuous exposure to DC electrical fields for the general public are in approximately the same range as the measurable electrical field immediately under the Bipole III line. Recommended limits for magnetic fields are thousands of times higher. Continuous exposure means exposure to that level of electric or magnetic field with no time limit.

VEC - Aesthetics

Because of the height of the towers (54 metres), the Bipole III line will in places be a clearly visible mark on the landscape. In planning the route of the transmission line, Manitoba Hydro sought to avoid aesthetic impacts as much as possible by avoiding First Nation reserve lands, communities, lodges, parks, and rural residences. The Bipole III line, however, will have an aesthetic impact on a number of residences. Manitoba Hydro will offer to buy out one rural residence that is located within 75 metres of the route.

What We Heard: Personal, Family and Community Life

A principal issue in the area of personal, family, and community life concerned the growth of the town of Gillam. Manitoba Hydro expects that the town may double in population over the next 10 to 15 years. Concerns were expressed that an influx of new residents could lead to a shortage of housing for existing residents. Currently a

land-use planning committee with representatives from the town of Gillam, Fox Lake Cree Nation and Manitoba Hydro is working to develop a new subdivision with approximately 70 lots. Over the next 20 years, Manitoba Hydro believes it will need approximately 180 lots and FLCN will require 150 to 200. The Town of Gillam has indicated that it will require 100 lots, including a new trailer court.

The Commission heard arguments that resource developments have a variety of impacts on human health as a result of socio-economic changes. The influx of workers, many of them lone males, can lead to higher rates of alcohol and drug use, sexually transmitted disease, violence, and injury. The influx of new workers and activity can reduce social cohesion in a community and lead to higher stress levels and lower mental well-being. These arguments did not make predictions about the impact of Bipole III on these aspects of health. Rather, they were made in the context of calling for a Community Health Impact Assessment that would include a baseline study of many health indicators in the Project area, especially near the Keewatinooow Converter Station. Another area of potential human health impact that the Commission heard was not fully addressed by the EIS concerned the potential for health problems at work camps to spread to communities. Intestinal and respiratory illnesses can spread in the environment of high-density living at a work camp and workers can then take these illnesses back home with them or to the neighbouring community, where the elderly and young are most at risk.

On the subject of aesthetics, the Commission heard a discussion that directly connected aesthetic concerns with mental health concerns. In discussing the cumulative changes that have occurred in their traditional lands since the beginning of Manitoba Hydro's activities on the Lower Nelson River, representatives of Fox Lake Cree Nation referred to the concept of "solastalgia." Solastalgia is a kind of psychic or existential distress caused by environmental damage. While the changes in the FLCN's territory are by no means only aesthetic, there was also an aesthetic component to many of their presentations to the Commission. Community

members spoke of the loss of the sound of the Kettle Rapids, the loss of clarity in the water, the hum of converter stations, and borrow pits in the Gillam area that are still “moonscapes.”

Participants and Presenters from western Manitoba presented photographs depicting views, such as a landscape view of the Porcupine Hills that would be affected by the Bipole III line. The visual impact of the Bipole III transmission line was also frequently mentioned in agricultural Manitoba. Many rural landowners and residents who made presentations to the Commission, especially during hearings in Portage La Prairie and Niverville spoke of not wanting to see the towers through their front window every day, or of the Bipole III line affecting their quality of life.

Commission Comment: Personal, Family and Community Life

The Commission understands the concerns that many northern Manitoba residents have regarding the influx of temporary workers and new residents and the possibility of a “boom town” atmosphere in the Gillam area. The Commission believes that changes in approach taken since the construction of the Nelson River dams in the 1970s and 1980s will minimize this risk. Workers who fly into Gillam and are taken directly to the construction camp will have little opportunity to interact with the community. Lack of private vehicles and the provision of recreational amenities at the camp, combined with its distance from Gillam, will limit off-duty time in town. Despite these positive steps, any major change to the make-up of a community’s population, temporary or permanent, can be disruptive. The Commission believes that it will be important for a local committee, with representation from FLCN, the Town of Gillam and Manitoba Hydro, to keep track of any concerns that arise from interactions between local residents and temporary workers.

On a long-term basis, operations and maintenance of the Keewatinoow Converter Station will contribute to the growth of Gillam by creating new, continuing employment. The Commission is encouraged by efforts undertaken by Manitoba Hydro, the Town of Gillam and FLCN to develop new housing and health and

community services to accommodate this growth. It is important that the arrival of new residents does not distort the market for or reduce the supply of housing available to those currently living in and around the community.

An influx of temporary residents and the expected permanent increase in population in Gillam raise questions about the potential impact on community health. Rapid growth and change can cause stress, which in turn contributes to mental and physical illness. Increased income can create inequality or fuel unhealthy behaviours such as substance abuse. The presence of a large number of workers living in close quarters at a construction camp can lead to outbreaks of infectious disease or gastrointestinal illnesses. An influx of population can lead to an increase in sexually transmitted diseases. For all of these reasons the Commission agrees that a community health assessment should be carried out in the Gillam area. Carrying out such an assessment now, prior to the bulk of the Bipole III Project, would create a baseline for community health against which the results of the Project could be measured. This baseline would then be available for use in the event that future proposed projects, such as Keeyask or Conawapa, are developed.

Regarding concerns of health effects from herbicides or chemical contamination, the Commission believes that following proper plans and protocols will prevent risk to human health. Environmental protection plans and safeguards exist to prevent contamination by fuel spills during construction or by spills of the insulating oils and other chemicals used in equipment at the Keewatinoow and Riel converter stations. Spot use of herbicides during maintenance, if conducted within the terms of provincial licences, poses no risk to human health. Although the Commission acknowledges that some Manitobans are concerned about theories that EMFs from transmission lines can be harmful, ultimately decisions need to be made on the basis of international scientific consensus, and the scientific consensus is that there is no evidence for these concerns about EMFs.

Regarding aesthetic impacts, the Commission believes that Manitoba Hydro must acknowledge that they are legitimate concerns. The Bipole III

transmission line will be a permanent mark on the landscape. The Commission heard concerns about the aesthetic impact from members of Aboriginal communities and from residents of southern Manitoba agricultural communities. In planning the precise locations of towers, Manitoba Hydro should work with local communities to minimize the visual impact as much as possible. Vegetation management can also lessen aesthetic impact if a healthy new growth of shrubs and small trees is encouraged on the right-of-way. In the future, Manitoba Hydro should conduct a visual impact assessment while planning transmission lines.

Licensing Recommendation

The Commission recommends that:

9.11 Manitoba Hydro conduct a community health assessment of the Gillam area prior to the commencement of construction of the Bipole III Project.

9.2.6 Culture and Heritage Resources

VEC - Culture

ATK workshops and self-directed studies were used to identify potential impacts of the Bipole III Project on culture. Construction of the Bipole III transmission line, the AC collector lines and the Keewatinoow Converter Station and northern ground electrode have the potential to affect culture by changing the physical landscape. These impacts on culture can come about in a number of ways:

- Activities such as excavation and clearing may hinder the ability of First Nations or Métis people to take part in activities that sustain their culture, may desecrate areas of cultural or spiritual value, or may destroy landmarks that help to maintain cultural memory.
- There may be direct or indirect impacts on culturally sensitive sites, such as places where medicinal plants are gathered. If people are unable to gather a medicinal plant close to home, they may be forced to travel farther for the plant or give up the practice of using it.
- Loss of landscapes that are culturally important could inhibit the ability of

people to orally recount their history. Part of a community's history may be tied to a traditional trail, for example, and loss of the trail and its identifying features would affect the ability to pass on that history.

During ATK workshops, participants' words were coded and grouped into themes to generate nine categories of measurable indicators of impacts on culture. These categories are: kinship, language, worldview, traditional knowledge, cultural practices, cultural products, leisure, health and wellness, and law and order. Many areas along the FPR have connections to multiple cultural indicators. The Cowan-Briggs Spur Berry Patch, for example, is important to cultural practices and cultural products (berry picking), kinship (as a family-gathering place), worldview and traditional knowledge.

What We Heard: Culture

The Commission heard presentations on the importance of a holistic view of the environment and culture in Aboriginal cultures. Representatives of Fox Lake Cree Nation spoke of the concept of *mino pimatisiwin* a Cree expression for wellness that refers to the overall health of a people and their environment, or *aski*. The goal of FLCN is that *mino pimatisiwin* must be restored and maintained. A focus on *mino pimatisiwin* includes the integrity of language and culture, as well as environmental and socio-economic matters.

Regarding the name of the Keewatinoow Converter Station, the Commission heard that there may be variations in spelling and pronunciation of the name and from at least one perspective the current spelling is incorrect.

The Commission also heard that the ATK process, which might have brought out information on impacts on culture, was not conducted in a culturally sensitive manner. The ATK workshops conducted for Manitoba Hydro were over-reliant on a list of prepared questions used to solicit data, rather than establishing a relationship with people in Aboriginal communities who would then share stories and knowledge. This may explain why few sacred sites were revealed in the process.

VEC – Heritage Resources

Heritage resources include known archaeological sites, designated heritage sites, historic plaques, centennial farms, and other such resources. Within the 4.8 km-wide Local Study Area surrounding the FPR are 94 existing heritage resources and 194 environmentally sensitive sites (ESS) that may contain heritage resources. The 194 ESSs were identified using techniques such as aerial surveys and a desktop predictive model that predicts the landforms most likely to have been used by previous inhabitants.

In addition to the 94 heritage resources identified through document searches, 30 heritage resources along the transmission line were identified through ATK workshops. These sites include campsites, burial sites, trails, and areas with specific historical and cultural uses. Five main areas of heritage resource concern were identified along the FPR as a result of ATK workshops and archaeological data.

- The Keewatinoow Converter Station site contains two archaeological sites discovered along gravel ridges. One of these sites may be an ancient burial site. Artifacts found at the site are believed to be as old as 3,500 years and to be significant evidence of Paleo-Inuit occupation of the site at a time when the coast of what is now Hudson Bay extended as far as Gillam. Protection plans for these sites have been established.
- A petroform, discovered in 2002 during the construction of the Wuskwatim transmission line, is within 16 metres of the centre of the FPR near Cormorant.
- A salt works was operated in the area near the Red Deer River. This salt works, identified through ATK and existing archaeological information, was an important resource in historic time in this area. It is located outside the Bipole III right-of-way.
- The Cowan-Briggs Spur area was identified through ATK as containing burial sites.
- The Assiniboine River crossing was identified through ATK as containing a large number of heritage resources, including the historic

Yellow Quill trail, campsites, and ceremonial sites.

Field investigations for the EIS were limited. Many areas in the north were inaccessible because of water levels at the time the heritage resource impact assessment was being carried out. In the south, most areas were inaccessible because they were private land. Access routes leading to the right-of-way were not investigated. No heritage resources were found in investigations at the Riel Converter Station site or the southern ground electrode, both of which sites have been used for agriculture for more than a century. Field research will be required prior to construction at the sites identified through the desktop modelling as having high or medium potential to contain archaeological resources. In addition to these sites, Manitoba Hydro will conduct field investigations prior to construction at major river crossings, as they are more likely to contain heritage resources than other places along the right-of-way.

Construction has the potential to disturb both known and unknown heritage resources during site clearing, excavation, grading, creation of borrow pits, and other activities. As well, increased access to an area may have an effect on heritage resources.

Manitoba Hydro will develop a Heritage Resources Protection Plan as part of its Environmental Protection Plan. Included in this plan will be the role of the project archaeologist, who will provide advice and field support in the event heritage resources are discovered during construction. In the event human remains or burials are discovered during construction, the work must stop and the project archaeologist must be contacted immediately. Protection of heritage resources in Manitoba is required under *The Heritage Resources Act*.

Mitigation measures to prevent damage to heritage resources include: avoiding locations of heritage resources during construction, cordoning off sites using fencing or barriers, controlled collection of artifacts and data recording by the project archaeologist, salvage excavation with data recording, training of environment officers to identify artifacts that may be discovered in unexpected locations, ensuring that field

engineers confirm precise locations of tower footings in areas where heritage resources are likely to be found.

What We Heard: Heritage Resources

Swan Lake First Nation is particularly concerned about the section of the FPR that crosses the Assiniboine River. Because of a concentration of heritage resources in this area, including ceremonial sites, burial sites, river crossings, ancient campsites, and an important historic gathering place at the Round Plain, SLFN told the Commission that they wish the transmission line right-of-way to cross the Assiniboine at a different location. SLFN's research into the FPR included examining known archaeological sites and assessing potential for additional undiscovered sites. In assessing the potential for undiscovered sites, the SLFN archaeologist found artifacts at three sites on or near the FPR as well as some scattered artifacts. Considering the potential for more heritage sites and the importance of the area, SLFN told the Commission it cannot support Bipole III being built along the route identified in the EIS as the Final Preferred Route.

Commission Comment: Culture and Heritage Resources

The Commission believes that Manitoba Hydro must be sensitive to local communities in building and operating the Bipole III Project. Previous commentary and recommendations made in Chapter Six in relation to Manitoba Hydro's consultation and ATK activities are relevant to the discussion of these VECs. A more up-to-date and culturally sensitive process for consulting with communities and supporting the collection and use of ATK would reduce potential impacts on these VECs.

It is important to realize that many activities carried out in the environment, such as trapping, hunting, fishing and resource harvesting, are as much cultural practices as they are economic activities. As a result, then, anything that disrupts these activities also disrupts culture. Paying compensation for the economic losses to, for example, trapping does not mitigate the cultural loss. The Community Development Initiative may

be a source of funds for a variety of projects that will help communities maintain their culture amid environmental, economic and social changes.

With regard to heritage resources, it is important to keep in mind that these are by no means limited to those resources, such as archaeological sites, that have already been identified. In many cases, heritage resources are only identified because there has previously been some disturbance, such as building of roads, that has turned up artifacts. It is also important to remember that the landscape itself is a heritage resource, providing visual cues for storytelling and memory. Alteration of the landscape can, by itself, have an impact on heritage. This needs to be kept in mind when the precise locations of towers are determined and when plans are made for vegetation management and access management. Community consultation is thereby necessary for the protection of both culture and heritage resources in order to identify priorities and sensitive sites.

Chapter Ten: Route Adjustments

10.1 Overview

Following a request by Manitoba Conservation and Water Stewardship (MCWS), Manitoba Hydro prepared a plan for three routing adjustments to approximately 140 km of the Bipole III right-of-way. In a letter dated August 29, 2012, MCWS requested that Manitoba Hydro prepare detailed options for relocation of the Final Preferred Route (FPR) in four places:

- the Wabowden caribou range between PR 373 and PTH 6
- along PTH 10 between Red Deer River Provincial Park and Steeprock Wildlife Management Area
- in Game Hunting Area 14 (in the area referred to as Moose Meadows)
- in Game Hunting Areas 14A and 19A (near the area known as the Cowan-Briggs Spur or Kettle Hills Berry Patch)

Manitoba Hydro made a presentation on its proposed alternatives at the Clean Environment Commission hearing on October 29, 2012. Subsequently, on November 9, 2012, MCWS directed Manitoba Hydro to prepare a written supplemental EIS on the proposed revision. Manitoba Hydro then requested an adjournment of the hearings to allow time to address the matter. Following the adjournment on November 22, 2012, Manitoba Hydro began a process of consultation with affected communities and environmental analysis of the proposed changes by its team of experts.

Consultation activities for the adjustments included regional open houses, landowner information centres, and stakeholder meetings. Activities to engage with First Nations and Northern Affairs communities included community open houses and leadership meetings. Attempts to consult with the Manitoba Métis Federation failed amid disagreements over the scope and budgeting of such consultations. Leadership meetings, community open houses,

or both took place at First Nations and Northern Affairs communities. These were held at Baden, Barrows, Camperville, Crane River, Dawson Bay, Duck Bay, Ebb and Flow First Nation, Herb Lake, National Mills, Pine Creek First Nation, Powell, Red Deer Lake, Sapotaweyak Cree Nation, Wuskwi Sipiik First Nation, and Wabowden. Other consultation events included: meetings with Ducks Unlimited, the Moose Management Committee in Swan River, the Manitoba Lodges and Outfitters Association, the RM of Mountain, the RM and Town of Minitonas, and open houses in Birch River, The Pas, Swan River, and Winnipeg.

Following this additional consultation and assessment, a supplement to the Bipole III EIS was submitted to MCWS on January 28, 2013, and made available to the Participants in the hearings and to the public. The route revisions were discussed when the hearings resumed March 4, 2013.

One of the four requested changes was determined by Manitoba Hydro not to be feasible. Manitoba Hydro had been requested to revise the route in the area of Red Deer River Provincial Park, in order to move the route further away from the small wayside park and some nearby cottages and residences. However, because of Treaty Land Entitlement (TLE) land, there is no other location for the transmission line in this area. Manitoba Hydro brought forward three adjustments in response to the MCWS request.

- A 48-km section near Wabowden reduces the amount of new right-of-way needed and avoids important habitat areas for boreal woodland caribou. This adjustment reduces the overall length of the line by nine kilometres and takes advantage of existing rail and transmission line corridors along PTH 6 and PR 373.
- A 33-km section is intended to address concerns about potential fragmentation of an area of GHA 14 east of Mafeking. This adjustment increases the overall line

length by three kilometres by keeping the transmission line closer to PTH 10 from the Steeprock River to a point west of Bellsite.

- A 57-km section in GHA 14A and 19A was intended to keep the line out of a relatively undisturbed area of moose habitat south of PTH 20 and west of Pine Creek and Camperville. This adjustment would increase the overall length by four kilometres and require the right-of-way to extend farther into the Swan Pelican Forest Reserve and the important berry-picking and plant-harvesting area west of Cowan.

These three adjustments are referred to as the Adjusted Final Preferred Route (AFPR). When the hearings resumed to consider these three proposed adjustments, changes were also proposed to the FPR in southern Manitoba in order to affect less agricultural land. This issue arose because of a proposal put forward by the Bipole III Coalition and an information request made by the Commission, which will be discussed in a later portion of this chapter.

10.2 Wabowden Adjustment

10.2.1 Consultation Summary – Wabowden AFPR

Participants in consultations regarding the Wabowden rerouting supported the change on the grounds that it minimizes disturbance and new access. Eight out of eight comment sheets supported the adjustment.

10.2.2 Environmental Effects – Wabowden AFPR

For most VECs, there was little difference between the AFPR and the FPR. Where a VEC is not mentioned in the summaries below, it indicates that there was no difference, or that the VEC in question is not found in the area of that route adjustment. Details below refer only to the Wabowden area.

Aquatic Environment

The AFPR and the FPR cross the same number of watercourses, but while four of the FPR watercourses are rated as moderately sensitive,

three of those crossed by the AFPR are moderately sensitive and one is low.

Terrestrial Ecosystems and Vegetation

The AFPR crosses an area where one plant species of conservation concern (oblong-leaved rock cress) has been observed.

American Marten

The AFPR intersects with slightly more high-quality American marten habitat than does the FPR, though the total amount is small: 0.56 square km.

Wolverine

Wolverine are wide-ranging and found in low population densities. The location of the AFPR near existing disturbances (road and rail) means it is less likely to be close to any denning sites for wolverine than the FPR would be.

Boreal Woodland Caribou

Of the three boreal woodland caribou ranges affected by the Bipole III line, the Wabowden range has the highest degree of fragmentation caused by human disturbance. The AFPR causes substantially less new disturbance than the FPR. Using the AFPR, the Bipole III line will intersect 85.3 km of the Wabowden range, with 78.9 km of this along existing linear features (roads, railway). Using the FPR, the line would intersect 94.16 km of the Wabowden caribou range, with only 39.2 km following existing linear features. The Wabowden adjustment eliminated 49 km of new right-of-way by paralleling existing infrastructure. The AFPR intersects less high-quality winter calving habitat than the FPR and does not bisect any core winter habitat.

Birds and Habitat

Of the 21 bird species used as VECs, 16 will either have less habitat affected or an unchanged amount affected as a result of the AFPR.

Commercial Forestry

The AFPR increases the amount of productive forest land to be withdrawn from

potential commercial forestry operations. However, much of the productive forest has already been harvested in this area, and so the AFPR will go through forests that are in the early stages of regrowth, meaning that relatively little additional standing timber will be cut.

Mining/Aggregates

The AFPR has a greater impact on the mining industry than the FPR. The shadow effect caused by magnetic fields from the operation of the transmission line might interfere with geophysical survey methods used by the industry for mineral exploration. Potential mitigation methods for this include conducting geophysical surveys along the AFPR before construction to create a library of data for the mining industry or using data processing to filter out the interference effects of the transmission line on survey equipment. This latter method may require some research and development. The AFPR affects 28 mining claims, 12 quarry withdrawal areas and four casual quarry permits. This compares to one mining claim and five quarry withdrawal areas for the FPR in this area.

Recreation and Tourism

The AFPR crosses an area of Crown land, east of Kiski Lake, along PTH 6, where there is a permit for a campground/trailer court.

Domestic Resource Use

The AFPR follows existing linear features such as PTH 6, the Hudson Bay Railway and Provincial Road 373, minimizing any potential impact on domestic resource use.

10.3 GHA 14 (Moose Meadows) Adjustment

10.3.1 Consultation Summary – GHA 14 - AFPR

While seven out of 10 comment sheets supported the AFPR over the FPR in GHA 14, there was a range of opinion on the benefit of making the adjustment. Some participants said they believed there are more moose in the area of the AFPR. Though the reason for the adjustment was to avoid an area that had been described as very important to moose, some participants in consultations regarding the adjustment said

the original FPR went through an area with few moose. Some private land owners were concerned that the adjusted route would now go through their property. They said that if the route does go through their property they would prefer it be on the half-mile line.

Officials of the Protected Areas Initiative were concerned that the adjusted route would not have a sufficient buffer separating it from the Bell and Steeprock Canyons Protected Area, located northwest of Bellsite. However, a 100-metre buffer would be sufficient to eliminate concerns.

10.3.2 Environmental Effects – GHA 14 AFPR

Details below refer to the 33-km portion of the AFPR near Mafeking and the 30-km portion of the FPR that it avoids.

Aquatic Environment

The AFPR crosses eight watercourses, compared to 18 for the FPR.

Terrestrial Ecosystems and Vegetation

The Local Study Area (the 4.8 km strip centred on the right-of-way) for the AFPR includes a small amount (two hectares) of dry upland prairie, but there is none within the right-of-way itself.

American Marten

The right-of-way for the AFPR contains more high-quality marten habitat, though the amounts are small: 0.48 square kilometres for the AFPR and 0.12 square kilometres for the FPR.

Moose

Research and consultation on the effects of the route adjustments on moose led to a mixed assessment of potential effects. The Local Study Area for the AFPR contains considerably more (35 square kilometres) habitat that fits Manitoba Hydro's model for high-quality moose habitat than does the original FPR (6.6 square kilometres). This creates the potential that the AFPR would result in increased risk of hunter or predator access to moose populations.

Manitoba Hydro believes that aerial observations made in December, 2012, provide evidence to support its model of what constitutes high-quality moose habitat. Aerial surveys of the Moose Meadows and broader GHA 14 area indicated that moose were on average significantly closer to areas that fit Manitoba Hydro's model than would be shown by a random distribution. This, Manitoba Hydro has stated, supports the validity of the model. Moose were also closer during these aerial surveys to disturbed areas such as transmission lines, roads and logged areas than a random distribution would demonstrate, which provides support for the contention that moose favour recently disturbed forests. Furthermore, these observations were consistent with an aerial survey conducted by MCWS in late January, 2011. These observations call into question the rationale for adjusting the route in the GHA 14 Moose Meadows area, since the adjustments were requested because of the concern that Manitoba Hydro's model had failed to identify the importance of Moose Meadows.

Elk

The Local Study Area for the AFPR includes 36 square kilometres of modeled elk habitat, compared to 6.9 square kilometres for the FPR.

Birds and Habitat

Fourteen bird VECs will have less or an unchanged amount of habitat affected as a result of the AFPR.

Land Tenure and Residential Development

The closest residence to the AFPR is located 355 metres away.

Private Forest Lands

Approximately 10 hectares of additional private forest land will be affected by the AFPR.

Aboriginal Lands and Treaty Land Entitlement Selection

The AFPR passes near a portion of Wuskwi Sipihk First Nation (WSFN) and registered TLE lands of WSFN. At its closest, the AFPR is

approximately 133 metres from these lands, and is on the opposite side of PTH 10 and an existing transmission line from most of these lands.

Designated Protected Areas and the Protected Areas Initiative

The AFPR crosses the Porcupine Forest Reserve for approximately six kilometres. Forest reserves contain both protected and unprotected areas and contain areas that allow for industrial activities such as forest harvesting. This portion of the Porcupine Forest Reserve is not protected. The AFPR will also pass close to the edge of the Bell and Steeprock Canyon Protected Area, with a 100-metre buffer from the edge of the right-of-way.

Agricultural Land Use/Productivity

The AFPR crosses less agricultural land than the FPR. Approximately 25% of the land crossed by the AFPR in this area is used for agriculture, compared to 40% of the land along the FPR. Most of the agricultural land along the AFPR is pasture, rather than cropland. In this area the AFPR will split management units of farms for approximately one kilometre, compared to 16 kilometres for the FPR.

Commercial Forestry

The AFPR may encroach on one MCWS forest sample plot. In the three sections in total, eight high-value forest sites (places where trees have been planted after harvest) will be affected by the AFPR.

Domestic Resource Use

ATK studies and interviews indicate domestic resource use activities, including berry picking, traditional plant gathering, mammal and bird hunting in the area crossed by the AFPR. As the AFPR has few water crossings in this area, its potential impact on fishing is minimal.

Heritage Resources

Five registered archaeological sites are within the Local Study Area of the AFPR and there is the potential for more that have not been discovered.

What We Heard: GHA 14 AFPR

The Commission heard, in a discussion of the moose habitat being traversed by the route changes, especially in GHA 14, that there are a number of possibilities for enhanced mitigation techniques in environmentally sensitive sites (ESS). These include greater limitations on access during construction, more substantial access controls after construction, placing towers closer together so that the transmission line will sag less (and thereby allow vegetation to grow higher on the right-of-way), and a vegetation-clearing approach in some areas where trees lower than 17 metres are left standing. Given that the AFPR passes closer to areas identified by Manitoba Hydro as important to moose while the FPR passes through an area identified by some hearing Participants and their witnesses as important to moose, Manitoba Hydro representatives said at the hearing that they do not consider either route to be superior from an environmental impact perspective.

10.4 GHA 14A/19A Adjustment

10.4.1 Consultation Summary – GHA 14A/19A AFPR

Eight out of 12 comment sheets submitted during consultations preferred the AFPR to the FPR. A variety of opinions were presented on issues concerning the adjustments. Some were concerned that the adjustments north of PTH 20 in this section would create more access to both moose habitat and berry-picking and resource-harvesting areas. Concerns were also presented regarding heritage and vegetation management. Some participants expressed concern about herbicides and wanted to ensure that they would not be used in this area.

10.4.2 Environmental Effects – GHA 14A/19A

The details below are for the 57-km AFPR in GHA 14A/19A and the 53-km section of the FPR that it avoids.

Aquatic Environment

The AFPR crosses 14 watercourses, compared to 18 for the FPR.

Terrestrial Ecosystems and Vegetation

The AFPR crosses through an area where two plant species of conservation concern (lyre-leaved rock cress and timber oat grass) have been observed. This section of the AFPR also includes 18 hectares of dry upland prairie within the Local Study Area (4.8 km wide strip) of the AFPR. No figures were available to compare the AFPR and the FPR for these VECs.

Elk

The Local Study Area for the AFPR comes into contact with considerably more modeled elk habitat than does the FPR: 151 square kilometres compared to 83 square kilometres.

Birds and Habitat

Out of 21 bird VECs, 12 will have more habitat affected as a result of the AFPR. Nine bird VECs either have less or the same amount of habitat affected by the AFPR. The AFPR contains fifteen environmentally sensitive sites for birds, more than the FPR.

Designated Protected Areas and the Protected Areas Initiative

Both the AFPR and the FPR cross the Swan Pelican Forest Reserve, but the AFPR continues through the forest reserve for approximately twice as far.

Agricultural Land Use/Productivity

The AFPR goes through a small amount of agricultural land, amounting to 6% of this portion of the line. The AFPR will divide farm fields for one kilometre, compared to nine kilometres for the FPR. Both the AFPR and the FPR will pass through a large bison ranch located both on privately owned land and on land leased from the Crown.

Domestic Resource Use

ATK studies and interviews and Manitoba Hydro's community consultations indicated extensive domestic resource use in this area. Blueberries, cranberries, Seneca root, spruce and diamond willow, ginger root, pin cherries, sweet grass, and traditional medicines are among the

plants harvested in this area. Many participants at open houses expressed the concern that the AFPR in this area would have a greater impact on domestic resource use than the FPR.

Culture

The AFPR is considered to have a greater potential to affect culture than the FPR. Harvesting of berries and traditional plants in this area has been important for community and family cohesion, carrying on of traditions, recreation, and health and wellness for many years. This harvesting area is important for residents of nearby communities, such as Camperville, Pine Creek First Nation and Duck Bay, and for Métis and First Nations people who travel longer distances for harvesting. While the FPR also raised concerns about increasing access to this harvesting area, the AFPR appears to create greater uncertainty about these effects.

Heritage Resources

The Local Study Area of the AFPR has 25 registered archaeological sites. While none of these sites is within the right-of-way for the adjusted route, most are closer to the AFPR than to the FPR. As well, the presence of so many sites relatively close together indicates that there are likely more undiscovered archaeological sites.

What We Heard: GHA 14A/19A - AFPR

The Commission heard that Manitoba's Heritage Resources Branch has stated that a heritage resource impact assessment must be carried out if the AFPR is chosen in the GHA 14A/19A area. The Commission also heard that in the area around Pulp River there may be several burial mounds.

One unexpected piece of information that came forward during the hearings concerned the existence of a large bison ranch west of Pine Creek First Nation (PCFN). The Commission heard that many people in PCFN are concerned about the ranch, which may have as many as 4,000 animals and cover as much as 70 square miles, largely on leased Crown land but also on private land. Possible impacts of the ranch on water quality – resulting from manure produced by the large herd of bison – as well as the impact

of the fencing around the ranch were discussed during the hearings. The Commission heard that within PCFN a strong feeling exists that the Bipole III transmission line should not cross the bison ranch, though representatives of the community were unable to explain how they believe the transmission line could magnify the environmental impact of the ranch. The AFPR crosses the ranch for an estimated 15.5 km, while the FPR crosses it for 13.2 km. Representatives of PCFN said the community would prefer a third alignment, which would bring the Bipole III line closer to their community but keep it off the bison ranch.

Manitoba Hydro representatives told the Commission that in their opinion the FPR is a better choice in GHA 14A/19A than the AFPR.

Commission Comment: the Adjusted Final Preferred Route

The Commission supports the use of the Adjusted FPR for the Wabowden area and for GHA 14. While the superiority of the AFPR is less clear for GHA 14 than for the Wabowden area, the Commission acknowledges the views put forward by many resource harvesters, many of them from the local area, who maintain that the FPR would have traversed important and otherwise unfragmented habitat in GHA 14. For the GHA 14A/19A area near the Cowan-Briggs Spur Berry Patch, the Commission believes that the original FPR presents the better choice, as it poses less of a potential threat to domestic resource use, cultural activities and any heritage resources associated with the area. Where the AFPR passes through or near high-quality moose habitat in the GHA 14 area (as well as in other environmentally sensitive sites along the entire transmission line), the Commission recommends the use of Manitoba Hydro's proposed enhanced mitigation techniques, in order to reduce additional access to sensitive habitat.

In reference to the concerns expressed by PCFN regarding the transmission line crossing the private bison ranch in GHA 14A/19A, the Commission has heard this concern, but has not been presented with a rationale for it. Ultimately, the proposal to move the line closer to PCFN in order to avoid the private bison ranch appears to

be more likely than either of the other options to cause conflict or environmental harm. However, Manitoba Hydro should have identified such a large ranch, using so much Crown land, in the immediate area of the Bipole III right-of-way, much earlier in the process.

Licensing Recommendations

The Commission recommends that:

- 10.1 *Manitoba Hydro incorporate the proposed Adjusted Final Preferred Route segment in the Wabowden area into the Project Final Preferred Route.*
- 10.2 *Manitoba Hydro incorporate the proposed Adjusted Final Preferred Route segment in the GHA 14 (Moose Meadows) area into the Project Final Preferred Route.*
- 10.3 *Manitoba Hydro maintain the proposed Final Preferred Route segment in the GHA 14A/19A area for the Project.*

10.5 Proposed Adjustments to Reduce Agricultural Impacts

When the hearings resumed in March, 2013, to consider the route adjustments in western and northern Manitoba, the Commission also heard discussion of alternative routing and termination points for Bipole III in southern Manitoba. The main impetus for these alternative approaches was to minimize the impact on productive farming areas in southern Manitoba. One of these alternatives was proposed by the Bipole III Coalition, based on the expertise of consultants and former Manitoba Hydro executives. Another was raised as an information request from the Clean Environment Commission itself.

The Bipole III Coalition proposed that Manitoba Hydro could improve reliability immediately by building a converter station at the Riel site east of Winnipeg and connecting the Bipole II line to this converter station. This would have the immediate effect of reducing the threat to reliability caused by having both Bipole I and II terminate at the Dorsey site. According to the Bipole III Coalition, when it is needed for additional transmission capacity, Bipole III would then connect to a new converter station to be

built at a site southwest of Winnipeg known as LaVerendrye. The Bipole III line to LaVerendrye would be able to travel in a fairly direct manner from just west of Long Plain First Nation to this site, eliminating the need for the longer route, which curves south and east of Winnipeg before terminating at Riel. Under the Coalition's plan, Manitoba Hydro would then have three HVDC lines, each terminating in a different converter station, allowing for less susceptibility to line or converter station failures.

The discussion of this alternative also involved some consideration of the feasibility of running a portion of the Bipole III transmission line underground, a question also brought forward by the Bipole III Coalition. These discussions involved a complex interplay of judgements about acceptable risks, forecasts of future demand, and analyses of technical engineering questions concerning the performance of power transmission systems.

Key points in the proposal raised by the Bipole III Coalition were:

- Keeping the termination of Bipoles I and II at Dorsey leaves Manitoba with a very large amount of its electricity terminating at a common point, even with the addition of a third Bipole.
- As Manitoba's electricity consumption grows, by about 2025 the province will again be vulnerable in the event of a failure of the Dorsey station, even with Bipole III.
- Equipment at Dorsey is reaching the point where it needs to be replaced, allowing a window of opportunity to build a brand-new station, rather than to refurbish an older one.
- Manitoba Hydro's scenarios involving a shortfall in electricity in the event of a loss of the Dorsey station or the Bipoles I and II corridor were based on extreme worst-case scenarios.
- Manitoba Hydro's planning for load growth is based on nearly double the annual growth in electricity demand per year compared to what occurred in the period 1992-2012.

The Bipole III Coalition argued that separating the termination points of Bipoles I and II immediately would reduce one of the greatest reliability risks for Manitoba Hydro, and might allow time for other technical matters to be resolved, such as those related to running portions of the Bipole III line underground in agricultural regions.

In response, Manitoba Hydro stated that the Bipole III Coalition's proposed alternatives would cost more than \$1 billion more than Manitoba Hydro's current plans, that moving Bipole II from its current termination at Dorsey to a new station at Riel would pose a reliability risk in the absence of Bipole III, and that the Bipole III Coalition proposal would delay the in-service date for Bipole III until 2025, which would be unacceptable to Manitoba Hydro, as it would limit the ability to meet projected load growth. Manitoba Hydro argued as well that its planning for worst-case scenarios considers the possibility that ice storms can occur during the peak demand months, that the amount of electricity that can be imported is limited and that in the event of a shortfall, reducing energy use through strategies such as rolling blackouts would be unacceptable to Manitobans. Finally, Manitoba Hydro argued that postponing the development of Bipole III to 2025 would only delay, but not prevent, the impact of the line running across agricultural land.

The Commission also heard a disagreement between Manitoba Hydro and the Bipole III Coalition on the technical and financial feasibility of underground cables. Among the key issues of disagreement are:

- **Cost** – Manitoba Hydro estimates underground lines to cost eight times more than overhead, whereas the Bipole III Coalition estimates underground cable to cost four times more.
- **Timing** – Splicing underground cables is a specialized and time-consuming task for which there are few work crews available. The Bipole III Coalition estimated that it could take 560 work days to complete the splicing for a 65-km length of underground line, while Manitoba Hydro estimated that it could take 1050 working days and if this work

could not be performed in winter this could require five years.

- **Logistics** – Three of the four factories that produce the kind of cable used for underground transmission are fully committed to 2017 and since this cable is transported on 100-tonne reels, bringing it to Manitoba would be a major logistical challenge.
- **Feasibility** – The Bipole III Coalition presented information on a number of high-voltage transmission projects involving submarine cables to bring electricity to islands or otherwise provide a connection that cannot be made on land. There are not at present any 500 kV transmission lines running entirely underground.

The Commission question about alternative routing in southern Manitoba concerned the feasibility of rerouting Bipole II so that it could terminate at a new converter station at Riel and building the converter station for Bipole III at Dorsey. Under this plan, the Bipole III line would run in a fairly direct manner from a point just southwest of Lake Manitoba to Dorsey, again avoiding a great deal of prime agricultural land in those sections of the FPR that cross from southwest to southeast of Winnipeg.

This would eliminate about 230 km of Bipole III in agricultural lands south of Winnipeg. However, it would require approximately 80 km of right-of-way from the Westborne area, southwest of Lake Manitoba, to Dorsey. As well, in order for Bipole II to be sufficiently separated from Dorsey to bring about the desired improvements in reliability, a new right-of-way would be needed to branch off from the existing Bipoles I and II right-of-way around St. Ambrose. This new section of Bipole II would run through approximately 100 km of agricultural land in order to reach the Riel Converter Station. Furthermore, for technical reasons, the Riel and Dorsey stations would need to be connected by a new 500 kV DC line that would run south of Winnipeg for approximately 70 km. As a result, then, this concept would not reduce the impact of the Bipole III Project on agricultural land. As well, for technical reasons, the equipment at Dorsey would not be compatible

with Bipole III and so essentially a new converter station would need to be built at Dorsey.

Ultimately, the Commission heard no conclusive evidence that alternative plans for linking transmission lines and converter stations or for using underground transmission lines could reduce the environmental impact on agricultural land at a reasonable cost, while meeting the requirement for improved reliability, at this time.

Chapter Eleven: Cumulative Effects Assessment

11.1 Overview

Cumulative effects are changes to the environment caused by an action in combination with other past, present and future human actions. By considering these other actions, cumulative effects assessments are intended to prevent a situation sometimes referred to as “death by a thousand cuts,” in which small impacts from a number of projects add up to a very substantial impact. When the Bipole III Project is built, many of the effects on the biophysical or socio-economic environment will act in combination with other projects. The purpose of the cumulative effects assessment (CEA) of the Bipole III Project was to determine the significance of these combined (cumulative) effects on the 67 VECs.

Guidance for the CEA was provided by three main sources:

- The Bipole III Transmission Project Environmental Assessment Scoping Document (2010)
- The *Canadian Environmental Assessment Act* (1992)
- The Cumulative Effects Assessment Practitioners Guide, prepared for the Canadian Environmental Assessment Agency (Hegmann *et al* 1999)

The Scoping Document for the Bipole III EIS directed that Manitoba Hydro’s CEA was to be based on guidance from the *Canadian Environmental Assessment Act* (1992). CEAA requires that cumulative effect assessment include any cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out.

11.2 Cumulative Effects Assessment Scope

The cumulative effects assessment considered three categories of other projects and activities

that could have effects overlapping those of Bipole III: past and existing projects and activities, future projects and activities that are currently approved or are in the planning and approval process, and prospective future projects and activities that are not approved or in the approval process.

- Past and existing projects and activities included the Wuskwatim Transmission Project, upgrades and rehabilitation of existing hydroelectric projects such as the Kettle Generating Station, the Riel Sectionalization Project, provincial highways and roads and winter road development, forestry operations and road development associated with the Tolko and Louisiana Pacific forestry operations, and exploration of mineral licence areas.
- Future projects and activities that are currently approved or are in the planning and approvals process included the Keewatinoow wastewater management system, the Keeyask generating station, the Keeyask transmission system, and new residential development for the town of Gillam.
- Prospective future projects included the Conawapa Generating Station, forestry operations and road development at Louisiana Pacific and Tolko, exploration of mineral licence areas, and future agricultural activities.

Generally speaking, projects in the third of these categories were not ultimately included in the cumulative effects assessment. In considering developments that overlap the effects of Bipole III, Manitoba Hydro initially considered many projects and activities. After an initial screening, a number of these developments either were considered only to a limited extent in the Bipole III CEA or were not considered. Some past projects (such as the Wuskwatim Transmission Line) were considered as part of the baseline: that is, part of the environment as it currently exists. Other past projects (such as the Dorsey to

Portage 230 kV AC line and the Bipole I and II transmission lines) were excluded on the basis that their effects would not overlap spatially with Bipole III.

Some future projects (such as the Conawapa Generating Station) were considered only to a limited extent, on the grounds that they are not certain to occur and their effects will occur after the main effects of the Bipole III Project. Other prospective future projects (such as a planned new transmission line from Winnipeg to the Canada-U.S. border) were not considered further in the CEA on the grounds that their environmental impacts will not overlap spatially with the impacts of Bipole III.

What We Heard: Cumulative Effects Assessment Scope

The Commission heard a great deal of evidence and argument on the subject of cumulative effects. Broadly speaking, cumulative effects discussions in the hearings can be divided into two categories: testimony about personal and community experience with the many overlapping impacts on the biophysical and socio-economic environment in the Project Study Area and criticisms of Manitoba Hydro's process for assessing cumulative effects.

Many Presenters with personal experience in the Bipole III Project Study Area were critical of the scope of Manitoba Hydro's CEA. The Commission heard representatives from several Aboriginal communities who expressed the view that Bipole III would add to the cumulative impacts of previous developments that had affected their ability to live their traditional way of life and obtain food, traditional medicines or other resources.

Representatives of Fox Lake Cree Nation (FLCN) provided a compelling description of the cumulative impacts felt in their traditional lands as a result of Hydro development beginning in the 1960s. The Commission heard that prior to development, the Nelson River in the area near Gillam was a clear, safe and clean source of drinking water and a transportation corridor that provided access to fish and wildlife resources up and down the river. In the decades since,

subsistence fisheries for brook trout and sturgeon have been damaged or destroyed by damming and diversion of local streams, dumping of sewage, and increased fishing by construction workers. The constant hum of transmission lines can be heard in many places. Gravel pits and transmission line rights-of-way are permanent marks on the landscape. Because of this, the people of FLCN do not view Bipole III as a single, discrete project, but as part of a process of development that has had a wide-ranging series of cumulative effects on the land, resources and people of the area. They view past, present and future projects as essentially one vast development.

The FLCN representatives stressed that the impact of the Bipole III Project must also be considered in relation to the proposed Keeyask and Conawapa projects. The AC collector lines running from the Radisson Converter Station to the Keewatinoow Converter Station will run along the south side of the Nelson River for most of the distance to Keewatinoow. Development of Keeyask will require a south access road from Gillam to the dam site, as well as a new set of AC collector lines running to Radisson. This will further fragment habitat south of the Nelson River. The Keewatinoow Converter Station site is adjacent to the site of the proposed Conawapa dam and so the impact of a large construction camp at Keewatinoow may be followed by an even larger Conawapa construction camp. Increased population in Gillam during the years of construction of all three projects, combined with increased access to resource-use areas, could put pressure on local populations of moose, caribou, brook trout and other animals. This prediction is based on FLCN's experience during the construction of Kettle, Long Spruce and Limestone generating stations.

The Commission heard that FLCN estimates that more than 100,000 acres of their local resource use area, from Keeyask to the Conawapa rapids, has been lost or disturbed as a result of hydroelectric development. They estimate as well that 75% of the local area used for berry picking and harvesting of medicinal plants has been destroyed in Gillam and Bird and a similar amount of trapping and hunting area has been lost.

Representatives of Tataskweyak Cree Nation (TCN) said at the hearings they disagreed with the way cumulative effects were assessed for Bipole III, specifically, with the requirement for spatial and temporal overlap. Past Manitoba Hydro projects within their traditional lands have been determined to have no temporal overlap with Bipole III and have instead been included in the baseline for assessing cumulative effects. To members of TCN, though, each project has created impacts that have accumulated for the past 50 years. In all, almost 124,000 acres of land in Tataskweyak's resource area have been affected by 35 Manitoba Hydro projects, including generating stations, converter stations, transmission lines, roads and rail spurs and related infrastructure.

At The Pas, members of Opaskwayak Cree Nation (OCN) referred to the impact of the Grand Rapids dam in raising the level of Cedar Lake and affecting fishing and trapping in Cedar Lake and the Saskatchewan River Delta. They also referred to the impact of dams on the Saskatchewan River in Saskatchewan, which have also affected the ecosystem of the Saskatchewan River Delta in Manitoba. These effects are still being felt in the area where the Bipole III line will run through this part of the province.

First Nations and Métis people who provided evidence to the Commission spoke about the potential effects of Bipole III working cumulatively with the effects of logging in western Manitoba. The Wuskwi Sipiik First Nation Traditional Land Use and Occupancy study refers to degradation of water quality and declines in the numbers of fish and coots, or mud hens, since the development of the Louisiana Pacific plant in the area. An expert witness retained by Wuskwi Sipiik testified that there is reason to believe forestry allocations in the area have been unsustainable, with effects on many aspects of the environment from birds to moose to water, and that clearing the right-of-way for Bipole III may exacerbate this problem.

During the hearing in Dauphin, members of Pine Creek First Nation (PCFN) spoke about logging in the Duck Mountains, which they believe has led to flooding in the waterways that flow into PCFN and reductions in water quality. They also spoke about the impact of the Grand Rapids dam, which led to the relocation of another

First Nations community within their traditional lands. The people of PCFN still have not been compensated for lost resources resulting from this relocation, they said. A more recent development is the growth of a large bison ranch, adjacent to PCFN, which raises concerns in the community regarding impacts on wildlife, access to traditional resources, and water quality. Members view all of these impacts as working together to affect their way of life.

Expert witnesses for the Consumers' Association of Canada (CAC) raised questions about the scope of the Bipole III CEA, and focused part of their criticism on Manitoba Hydro's definition of the baseline used in conducting its cumulative effects assessment. In its CEA, Manitoba Hydro defined the baseline for cumulative effects assessment as "the future without the proposed project." That is, the corporation's experts considered the various VECs as they are now, prior to the construction of Bipole III and compared this to the condition they may be in as a result of construction, operation and maintenance of the Project. Defining the baseline in this manner, it was argued, accepts all previous developments up to this time as part of the baseline. An alternative would be to compare the post-Bipole III condition of the VECs to baseline conditions as they existed at an earlier time, possibly prior to Manitoba Hydro's major developments in northern Manitoba. Manitoba Hydro's experts testified that they also considered the stresses that VECs are already experiencing as a result of past activities and projects.

It was pointed out that the Scoping Document for the EIS had committed Manitoba Hydro to conduct a CEA that included "regional and strategic environmental assessment approaches," which would seem to suggest a wider scope than was used.

11.3 Cumulative Effects Assessment Methodology

After determining the effects of the Bipole III Project on each of the 67 VECs, Manitoba Hydro conducted a CEA of those VECs that were expected to have a negative residual effect from the Project after the application of mitigation measures. Manitoba Hydro then considered

whether or not this negative effect would overlap negative effects from other projects and activities. For example, if a negative effect from the Project would only be felt during construction, it would not overlap a possible negative effect arising from a future project such as Keeyask or Conawapa. Likewise, if a negative effect were only felt in the immediate area of Bipole III, it would not overlap a negative effect in the area of the Wuskwatim Generating Station.

A series of screening exercises weeded out most VECs from further consideration during the CEA. These screening processes were done separately for the 46 biophysical VECs and the 21 socio-economic VECs. First, the process screened out VECs that would have a negligible effect. Then it assessed which residual effects on biophysical VECs were site specific, that is, which biophysical VECs were only going to be affected within the immediate footprint of the Bipole III Project. These seven VECs (soil productivity, terrain stability, aquifer productivity, plant species and communities of conservation concern, native grasslands/prairie areas, beaver, wood frog) were screened out through this process.

Next, Manitoba Hydro screened 35 biophysical VECs that would be affected by Bipole III within the 4.8 km Local Study Area, but not extending into the larger Project Study Area. This process determined that 28 of these VECs would have small-magnitude effects from Bipole III and six VECs would have moderate-magnitude effects related to construction, but that these would be of short-term duration. One VEC, American marten, would have both a moderate magnitude effect and a medium-term duration effect. For all VECs, negative effects that were only within the 4.8 km-wide Local Study Area were considered not significant.

Next, Manitoba Hydro assessed two biophysical VECs that would experience negative effects from Bipole III extending into the Project Study Area. These two were climate and boreal woodland caribou. The CEA considered the potential effect of Bipole III on climate to be negligible. The cumulative effect on boreal woodland caribou as a result of overlapping effects of Keeyask, Conawapa, future forestry, mining, and road developments was determined to be potentially significant.

Among the socio-economic VECs, the same process was carried out. One VEC, economic opportunities, was screened out first because it would have a positive effect. Five socio-economic VECs were screened out on the basis that they would only be affected by Bipole III within the Project Footprint. Eleven socio-economic VECs were examined for which the effects of Bipole III would be felt within the Local Study Area, but not extending to the Project Study Area. Of these, eight were determined to have only small-magnitude effects, while the other three were determined to have moderate-magnitude effects that didn't overlap with other projects. Therefore, none of these socio-economic VECs were considered to have potentially significant cumulative effects.

Finally, Manitoba Hydro assessed cumulative effects for four socio-economic VECs that would experience effects extending into the Project Study Area. These VECs were community services, travel and transportation, public safety and culture. Manitoba Hydro determined that cumulative effects to culture would be of small magnitude and short to medium duration. The remaining three VECs have the potential to interact with Kettle Generating Station upgrading, Keeyask, and Conawapa, to create potentially significant cumulative effects.

The four VECs (caribou, community services, travel and transportation, and public safety) determined to have potentially significant cumulative effects resulting from Bipole III in combination with other past, present and future projects then received special consideration in development of the draft Environmental Protection Plan, which will be discussed in the next chapter.

What We Heard: Cumulative Effects Methodology

Manitoba Hydro's CEA methodology came under criticism from Participants and their expert witnesses, who characterized it as lacking objective criteria, being too narrowly focused, and essentially misunderstanding the concept of cumulative effects.

One of the key concerns the Commission heard was that few impact thresholds were

identified. Manitoba Hydro's cumulative effects consultant acknowledged that Canadian environmental assessment guidelines state that the significance of impacts should be assessed objectively. This would seem to suggest that measurable thresholds would be required. One of the few measurable thresholds in the CEA referred to cumulative effects on caribou. The impact threshold used for disturbance of caribou habitat was a total amount of disturbed habitat at or above 35% of a herd's range. Disturbance could result from human causes such as roads, transmission lines and logging, or and from natural factors such as forest fires. This threshold was developed for the Environment Canada Recovery Strategy for Woodland Caribou. In the Environment Canada document, caribou populations that have 10% to 35% of their habitat disturbed are considered to have a 90% to 60% probability of being self-sustaining. The document states that a threshold of 35% for habitat disturbance is a minimum standard for protecting caribou populations, as even at this disturbance level there is still a substantial probability (40%) that the population will not be self-sustaining.

Of the three caribou herds affected by the Bipole III transmission line, the Reed Lake herd, which has only a small portion of its range crossed by the Bipole III line, has already reached that threshold, largely as a result of forest fires. The Reed Lake herd has a current disturbance level within its range of 42.5%. With the addition of Bipole III, that will rise to 43.9%. Disturbance levels for the other two herds, The Bog and Wabowden, are at 14.7% and 25.6%, respectively, and will rise to 16.4% and 25.8% after the Bipole III Project is completed. While these totals are below the 35% threshold, it should be noted that a particularly bad fire season could add substantially to them.

During cross-examination of Manitoba Hydro's cumulative effects consultant, a representative of the Manitoba Métis Federation made the point that the fact that moose hunting has been halted in several western Manitoba Game Hunting Areas suggests that a cumulative effects threshold for moose has already been reached.

The discussion of thresholds was part of a broad critique of methodology. Experts testifying on behalf of the Consumers' Association of Canada (CAC) analyzed the Bipole III CEA according to four components of cumulative effects assessment: scoping practices of the assessment, how the assessment analyzes past effects, how the assessment analyzes future effects, and what management measures it proposes for cumulative effects. They presented six key critiques of the Bipole III CEA:

- **Shifting baseline** (also referred to as “the new normal”) – The baseline against which cumulative effects are assessed largely ignores the effects of past actions and changes in conditions over time.
- **Assertions without analysis** – Vague, qualitative statements about cumulative effects are made without adequate quantitative evidence.
- **Temporally restrictive** – Although the Bipole III Project is stated to have a 50-year lifespan and will likely continue long beyond that, analysis of cumulative effects does not extend more than five years into the future and no planned activities beyond the year 2024 are considered.
- **Spatially and ecologically restrictive** – Most VECs are not examined in the context of regional ecological health, but instead are examined at the level of the right-of-way or Local Study Area. There are also few thresholds of ecological health used, with the exception of the thresholds for disturbance of caribou habitat.
- **Passing the buck** – Future cumulative effects are described as being dealt with through the environmental assessments of future projects.
- **Misrepresentation of cumulative effects** – The Bipole III CEA assesses the magnitude of cumulative effects “compared to” the effects of other future disturbances or changes. Cumulative effects assessment is intended to look at the total of the effects of current and future disturbances, so it is not a comparative exercise.

The CAC witnesses noted that the Clean Environment Commission's report on public hearings in the Wuskwatim Generation and Transmission Projects in 2004 had issued criticisms of the cumulative effects assessment for that project. Specifically, the 2004 report recommended against absorbing the adverse effects of the Churchill River Diversion and the Augmented Flow Program into the baseline of future projects and was critical of Manitoba Hydro for not considering cumulative effects further than 10 years into the future. The Commission's 2004 report commented that absorbing adverse effects into the baseline could preclude possible actions to remediate, mitigate or restore conditions.

Based on their critique, the witnesses for the Consumers' Association of Canada presented a number of recommendations, some specific to the Bipole III Project and others for ensuring good cumulative effects assessment in all projects. Many of these recommendations concerned the establishment of thresholds, such as density of linear features or measures of habitat fragmentation, which could be used to evaluate the risks to VECs. Others focused on improved modeling and analysis of disturbances. These recommendations also included a broader inclusion of past and future projects in the cumulative effects assessment and a temporal scope extending further into the future.

As for recommendations to encourage improved cumulative effects assessments generally, the CAC experts called for updates to *The Environment Act* to more clearly require analysis of cumulative effects and disallow "phased-in" approval processes for large projects. They also recommended regional-strategic assessment of cumulative effects of current and future land uses, especially in the northern portion of the Bipole III study area and recommended that the Government of Manitoba implement regional monitoring for watershed health in order to provide project proponents with a data set for cumulative effects assessment.

In response, Manitoba Hydro produced a written opinion from the chief editor and lead author of the Cumulative Effects Assessment Practitioners Guide, prepared for the Canadian Environmental Assessment Agency, concluding

that the Bipole III CEA does meet current practice. The written opinion stated that both the Practitioners Guide and the *Canadian Environmental Assessment Act* support a "project-centric" approach and the use of existing conditions to establish a baseline, although earlier baselines may be beneficial in some cases. In regards to some of the other criticisms, Manitoba Hydro's expert wrote:

- Thresholds may be used to assist in evaluation, but may not be available for many VECs.
- Reliance on future management measures for future projects is a pragmatic and reasonable approach rather than "passing the buck."
- Study areas for cumulative effects may vary considerably from project to project, but for a linear project such as a transmission line, use of a study area based on a linear corridor is common practice.
- Computer-based modelling may be useful in analyzing future effects, but is not mandatory.
- The *Canadian Environmental Assessment Act* does not state that regional assessments are mandatory, but that information from relevant regional studies should be used.
- Time horizons in cumulative assessments may vary considerably, but the most useful are those that can be considered with a fair degree of certainty.
- Conclusions about significance of cumulative effects must provide the incremental contribution of the project under review – not just the overall cumulative effect.

This, in turn, led to consideration as to whether society's expectations of a cumulative effects assessment had become more stringent since the adoption of the Practitioners' Guide in 1999 and whether Manitoba should strive for a higher standard in cumulative assessment than "good enough."

Commission Comment: Cumulative Effects Assessment

The Commission has a long history of being less than satisfied with the nature of cumulative effects assessments conducted by proponents in Manitoba. In its 2004 report on the Wuskwatim Generation and Transmission Projects, the Commission observed that the Proponent appeared to interpret and implement the definition of cumulative effects narrowly. In addressing cumulative effects assessment, the Commission wrote that “there is substantial room for improvement in relation to national and international environmental assessment standards” and that “the Commission expects broader cumulative effects assessment in the future.” (Clean Environment Commission 2004).

In a move to improve the process, the Commission recommended that “The practice of environmental assessment in Manitoba be enhanced by requiring higher standards of performance.” This included a call to “provide guidance for proponents, consultants and practitioners” and to “establish protocols for best professional practice that includes cumulative-effects assessment.”

The Commission returned to this subject in its 2005 report on the Red River Floodway Expansion project. The Commission called upon proponents to “take a broad perspective of guidelines and the definition of environmental effects” particularly in regard to cumulative effects assessments. It was recommended to the Minister of Conservation at that time that “Guidelines for projects be more prescriptive as to what would constitute an acceptable cumulative effects assessment.” The Commission repeated its recommendations for improving the process. (Manitoba Clean Environment Commission 2005).

The cumulative effects analysis should be the most important section of an environmental assessment report. It is where the residual or lasting effects of the project are described. In the Bipole III EIS, the cumulative effects assessment was the least enlightening of the many that comprised the EIS and its technical reports. As is noted elsewhere in this report, there was

considerable discussion – and difference of opinion – during the hearings in regard to this subject. Manitoba Hydro argued that it had lived up to the intent stated in its Scoping Document of conducting the cumulative effects assessment in accord with the Canadian Environmental Assessment Agency (CEAA) guidelines, as well as “best and current practices.” Others countered that, while the Proponent may have lived up to the requirements of the guidelines, they did not live up to current best practices.

In testimony before the Hearing Panel, the Proponent’s consultant stated that the trigger used to determine whether a given VEC would be considered under a cumulative effects analysis was two-fold:

“Was there an adverse effect on the VEC, as distinct from a positive one, and was it detectable?” (Transcript p. 5818, lines 22 – 25)

This is, in fact, just one step, and is not exactly the trigger used in the CEAA Practitioners Guide, which states:

“A CEA, for a single project under regulatory review, should fundamentally do the following:

1. Determine if the project will have an effect on a VEC.
2. If such an effect can be demonstrated, determine if the incremental effect acts cumulatively with the effects of other actions, either past, existing or future.
3. Determine if the effect of the project, in combination with the other effects, may cause a significant change now or in the future in the characteristics of the VEC after the application of mitigation for that project.” (Hegmann *et al* 1999).

The Commission came to believe that, if the effect found in the first step was not deemed to be significant, then the cumulative analysis of the second step was not done. This concern has been noted in a number of academic papers:

“Baxter *et al* (2001) identified a fundamental flaw in CEAs done in Canada

in that VECs are often included only if they were significantly impacted by the project. As a result, environmental components that are only incrementally affected are not considered even if the intensity of the impact, which is just being slightly amplified by this project, could be increased beyond a sustainable level.” (Bérubé 2007).

“Some would make the persuasive argument that any project EIA should first try to determine whether the proposed project, with and without impact mitigation, might itself have any effects on VECs. After all can assessors not conclude that a project cannot have any significant cumulative effects if it has no effects by itself? As attractive as this argument may be initially, it breaks down as soon as we consider the distinct possibility that two projects in the same vicinity, one ahead of the other in sequence, may each have undetectable impacts by themselves, but horrific impacts together.” (Duinker & Greig 2006).

This is further underlined in the CEAA Guide:

“A cumulative effect on a VEC may be significant even though each individual project-specific assessment of that same VEC concludes that the effects are insignificant. This is a fundamental principle in the understanding of cumulative effects.” (Hegmann *et al* 1999).

Returning to a more practical level, the Commission finds it simply inconceivable – given the 50-plus-year history of Manitoba Hydro development in northern Manitoba and given that at least 35 Manitoba Hydro projects have been constructed in the north in that time – that there are few, if any, cumulative effects identified in this EIS. This is strongly reinforced by the testimony we heard from members of the TCN and FLCN. The Commission is sympathetic to the view that Manitoba Hydro projects are interconnected and have had many cumulative effects on the biophysical and socio-economic environment.

In the end, while the Commission was less than happy with the nature and quality of the cumulative effects assessment, it is prepared to concede that the Proponent has met the minimum standards necessary. The Commission would note

that a provincial Crown Corporation of the stature of Manitoba Hydro should strive to meet a higher standard.

Non-Licensing Recommendation

The Commission recommends that:

11.1 Manitoba Hydro implement a cumulative effects assessment approach that goes beyond the minimal standard of the 1999 CEAA guidelines and is more in line with current “best practices.” At a minimum, this approach would:

- *assess effects in close vicinity to the Project as well as in the regional context;*
- *assess effects during a longer period of time into the past and future;*
- *consider effects on VECs due to interactions with other actions, and not just the effects of the single action under review;*
- *in evaluating significance, consider other than just local, direct effects; and*
- *include all past, current and reasonable foreseeable actions.*

Chapter Twelve: Environmental Protection, Monitoring and Management

12.1 Overview

The Bipole III Environmental Impact Statement (EIS) contained an outline of Manitoba Hydro's Environmental Protection Program, which provides the framework for delivery, management and monitoring of environmental protection measures. One of the roles of the Environmental Protection Program is to oversee the development and implementation of environmental protection documents, which include specific plans for the construction and operation of various projects components. The EIS included a copy of the Draft Environmental Protection Plan for Bipole III, which outlines specific steps to be taken to ensure the protection of the environment. This plan is considered a draft up to the point at which an *Environment Act* licence is issued. At that point, any conditions attached to the licence will be added to the draft plan and it will become the operational Environmental Protection Plan for the Project. The Bipole III Project is the first for which a draft EPP was submitted as part of the Environmental Impact Statement. Previously, Manitoba Hydro has submitted an EIS for a project and then developed its EPP after receiving approval.

12.2 Environmental Protection Plan

As part of the environmental effects assessment, described in Chapters Eight and Nine of this report, Manitoba Hydro identified necessary mitigation measures, monitoring and other follow-up actions. The EPP provides a framework for implementing, managing, monitoring and evaluating these measures during construction and operation of Bipole III.

The Environmental Protection Plan will follow an adaptive management approach, which means that continued monitoring will be conducted so that the mitigation measures used to reduce environmental impact in construction and operations can be modified where necessary. Adaptive management is necessary because in managing any natural resource there will be uncertainty and unanticipated effects. Monitoring

is intended to reveal these unanticipated effects and allow for changes, or adaptations, to make the plan more effective.

Manitoba Hydro's Draft EPP includes a commitments document that lists more than 600 measures designed to protect the environment during construction, operation (including maintenance) and ultimately decommissioning of the Project. These specific measures are grouped into five broad categories: project activities, project components, environment components, environmental issues/topics, and management. Specific environmental-protection measures are listed under each of these categories and sub-categories:

- **Project activities:** blasting, burning, clearing, demobilizing and clean-up, draining, drilling, grading, grubbing, rehabilitating and revegetating, and soil stripping.
- **Project components:** access roads and trails, borrow pits and quarries, construction camps, facilities and buildings, marshalling yards, potable water and wells, power supply stations, rights-of-way, stream crossings, and transmission towers and conductors.
- **Environmental components:** agricultural areas, built-up and populated areas, fish and fish habitat, groundwater, heritage resources, permafrost, waterbodies, wetlands, and wildlife.
- **Environmental issues and topics:** aircraft use, emergency response, erosion protection and sediment control, hazardous substances, petroleum products, safety and health, soil contamination, treated wood, vehicle and equipment maintenance, and waste management.
- **Management:** including management, administrative, contractual and other steps to ensure that environmental protection measures are taken, as well as various

kinds of community and stakeholder communication.

Within the final EPP will be a variety of other plans for management and monitoring. Management plans have been prepared in response to specific environmental issues identified during the environmental assessment of the Project. These include the access management plans that have been mentioned as tools for reducing the impact of the right-of-way on VECs such as wildlife and resource use. Other management plans include erosion control and rehabilitation. Monitoring plans are prepared in response to specific requirements for follow-up, either to confirm compliance or to assess the effectiveness of environmental assessment and mitigation. These could include monitoring of water quality, wildlife populations, wildlife mortality, or effects on resource use. Another specific plan is for the protection of heritage resources.

To manage the information that will be developed on all aspects of environmental management, an Environmental Protection Information Management System is being developed. This includes a system to manage the information that flows from inspection and monitoring, with reporting and communication tools for providing information to communities, managers, contractors and others who may need it. As part of this, online information tools will provide a wide range of information that may be needed in management of the Project, including identification information on invasive species and species important to Aboriginal communities, locations of environmentally sensitive sites (ESS), and measures of environmental performance, such as spills or incidents requiring follow-up.

During construction, this information will be used to create detailed maps (1 to 10,000 scale) that will show specific terrain features such as water crossings or steep terrain and ESSs such as bird nesting sites. These maps will then have attached mitigation tables. The purpose of this is to ensure that contractors have access to the environmental management information they need to ensure that the protection measures are followed. Specific ATK details are not included on these maps, in order to preserve

the confidentiality of the intellectual property of communities that participated in the process.

12.2.1 Community Engagement

Development of EPPs involves a series of community engagement meetings, which began in April, 2012, in the three northern sections of the Bipole III line, from The Pas to the Keewatinoow Converter Station site. This consultation, including meetings with Fox Lake Cree Nation and Tataskweyak Cree Nation, began in the north because Manitoba Hydro plans to begin construction in the north. By late 2012, Manitoba Hydro representatives had engaged with community representatives, elders and others in more than 70% of the communities in the northern portion of the study area. During the hearings, Manitoba Hydro made commitments to meet with the Manitoba Métis Federation, Pine Creek First Nation and other communities in order to develop EPPs in central Manitoba.

12.2.2 Staffing

Manitoba Hydro will have three staff, a senior environmental assessment officer and two senior environmental officers, to develop and manage the implementation of EPPs. Other Manitoba Hydro staff and employees of contactors will work directly on applying these plans.

Each of 11 construction components of the Project – the eight sections of the transmission line, the AC collector lines, Keewatinoow Converter Station and Riel Converter Station – will have its own construction EPP. For each construction EPP there will be one environmental inspector. Each construction EPP will also have one environmental monitor, who will be a member of the local community hired for the construction season and for one month during the summer. There will also be a number of community liaison workers, selected by communities, and employed during the construction period for one or two days per week to provide a connection between the community and the Project.

In addition to these workers with a purely environmental focus, for each construction EPP there will be one Manitoba Hydro construction

manager or site manager who will work with contractors to ensure compliance with the plan. Construction contractors will also be responsible to ensure that their employees comply with the plan. Each contractor will be required to have a qualified environmental officer on staff who will keep detailed records of environmental approvals, accidents, incidents, waste, and public complaints. The contractors' environmental officers will be required to report any non-compliance, accidents or discoveries of heritage resources directly to their construction supervisors.

12.2.3 Monitoring

Manitoba Hydro will carry out annual field investigations at environmentally sensitive sites (ESS), where specialists will investigate the effectiveness of mitigation measures. Monitoring specialists will also work to monitor the impact on wildlife, aquatics, soils, vegetation, heritage, socio-economic and cultural resources and other factors. During the off-season, these specialists will assess the effectiveness of mitigation measures on a wide range of ESSs. During these times, they will work with the local community environmental monitors. Environmental monitors will be able to bring community and traditional knowledge to the monitoring process and will gain experience and capacity by working with the specialists during this off-season monitoring.

Several topics will be subject to on-going monitoring, including caribou, bird-wire strikes, plant communities, groundwater, water quality and soil productivity. The following are some specific monitoring plans put forward by Manitoba Hydro.

- Manitoba Hydro indicated in the EIS that it would put 20 collars per year on caribou, with the last animals collared in 2015, resulting in continuing monitoring until 2017-18, given the two-to-three-year life of the collars.
- Plant communities that have been identified as important to Aboriginal communities will be monitored after construction to assess any changes in composition or productivity.
- Permanent sampling sites will be established to record any changes in vegetation resulting

from the Project, such as introduction of non-native or invasive species.

- Groundwater will be monitored for quality and productivity by testing for petroleum hydrocarbons, dissolved metals and other substances and to ensure that water from the Nelson River has not entered into the aquifer adjacent to the Keewatinooow Converter Station.
- Stream crossings along the Bipole III line will be monitored after construction to ensure that rehabilitation has been carried out and that the watercourse is at least as stable as it was before construction.
- Crops and vegetation along the transmission line will be monitored by aerial or ground patrols twice per year for two years after construction to determine effects on soil productivity and the need for mitigation.
- Areas where there are plants of conservation concern will be monitored following construction to determine the success of measures in preventing damage.

What We Heard: Environment Protection Plan

The Commission heard concerns that in monitoring its Environmental Protection Plan, Manitoba Hydro will be essentially policing itself. The need for independence and credibility of monitors was brought up by several individuals and Aboriginal organizations in presentations.

The Manitoba Métis Federation requested that, if Manitoba Hydro is issued an *Environment Act* licence for Bipole III, one of the requirements should be that it enter into legally binding contractual agreements with Aboriginal communities regarding monitoring and mitigation. This was suggested as a means of holding Manitoba Hydro to account. Such an agreement would include funding to permit the parties to participate effectively, a plan for dissemination of monitoring data and annual monitoring reports, and a commitment that Participants would be able to review Environmental Protection Plans and Access Management Plans prior to finalization. In

addition, the MMF recommended establishment of an independent monitoring body for the Bipole III Project, citing as an example the independent monitoring body for the Snap Lake Diamond Mine in the Northwest Territories.

As part of an Environmental Protection Plan being developed by Fox Lake Cree Nation (FLCN), FLCN has proposed independent monitors representing FLCN at all construction sites. These monitors would receive training, be funded by Manitoba Hydro and would have clear and direct channels of communication both with Manitoba Hydro and with the community. This is part of a broader plan for rehabilitation and recovery to be led by FLCN that would include recovery plans for sturgeon, brook trout, geese, moose and caribou. As part of this plan, FLCN has proposed the creation of FLCN “*Aski* officers” with the same authority as natural resource officers. Among other things, these *Aski* officers would oversee new hunting protocols, which would prohibit hunting by outsiders and restrict hunting access, and work to ensure compliance with recovery plans. They also proposed a big-game monitoring program to be led by FLCN and based on elders’ and harvesters’ experience and knowledge. As well, FLCN has proposed that future sampling within their traditional territory be vetted by FLCN and that Manitoba Hydro consultants doing research or monitoring present their findings to a core group of elders and harvesters.

The Consumers’ Association of Canada also proposed the creation of an independent monitoring body for the Bipole III Project. The CAC noted that independent oversight is increasingly being employed in resource management. Examples include independent oversight boards created for each of the three diamond mines in the Northwest Territories, as well as agencies created or proposed in the wake of environmental disasters such as the Exxon Valdes tanker spill in Alaska and the Deepwater Horizon blowout in the Gulf of Mexico.

Several reasons were put forward for establishing independent oversight for Bipole III.

- The Project has a sizeable footprint, much of it in hinterland areas where it is more difficult

for government regulators to follow up on the Proponent’s work.

- There are questions regarding the monitoring and administrative capacity of the federal and provincial governments.
- There may be a lack of trust between the public and the Proponent.
- Questions remain about implementation of monitoring programs.
- The Manitoba Government has an overlapping mandate as regulator of the Project and at the same time Proponent, given that Manitoba Hydro is a Crown corporation. This was described as the most compelling argument for an independent oversight body.

Based on their study of independent oversight bodies in Canada, the United States and Europe, the CAC’s expert witnesses said an oversight body for Bipole III should have a strong legal foundation, clear mandate, effective communication and outreach, independent authority, independent composition, adequate long-term funding, and experienced members. The CAC’s experts said provincial oversight of Manitoba Hydro and Manitoba’s Freedom of Information legislation provide a level of oversight, but they argued that the large number of plans and the many commitments regarding management of environmental impacts across the length of the Bipole III Project make independent oversight necessary.

The Commission also heard a discussion of the concept of “active adaptive management” in management of environmental protection. In this concept, the word “adaptive” means that a management plan has the flexibility to respond to changes in the environment and to unanticipated effects. The word “active” means that the plan does not merely respond to these unforeseen effects, but seeks out new knowledge through testing and experimentation to allow for the best possible environmental management.

Manitoba Hydro representatives said the corporation has applied lessons learned recently

from the construction of the Wuskwatim transmission line to improve environmental management on the Bipole III Project. These lessons include improving communication with contractors regarding environmental protection measures and having dedicated environmental inspectors on construction sites, rather than just training construction inspectors on environmental inspection. Making the environmental monitor position full-time during construction and for one month during the summer monitoring season is also described as a result of learning lessons from Wuskwatim. While witnesses saw these developments as positive steps, it was also suggested that a plan for continued experimentation and learning during the Bipole III Project itself is needed.

Commission Comment: Environmental Protection Plan

The Commission believes that Manitoba Hydro has given substantial thought to plans for protection of the environment and mitigation of effects. A very large number of mitigation measures have been listed, which, if followed rigorously, will minimize impacts on many of the VECs listed in the EIS. Manitoba Hydro's plan for environmental officers to work with contractors and for environmental monitors to act as liaisons between their communities and the Bipole III Project provides some level of confidence that the Project will be carried out with environmental protection foremost in mind.

Increased transparency and increased opportunities for public input would increase confidence further. Provision of information to the public requires more than an annual report to the regulator. Creation of a user-friendly website on which Manitoba Hydro would post updates and environmental bulletins would help communities to stay informed. A function allowing for comments, concerns and observations would make this website even more valuable. A member of the public who has seen evidence that Manitoba Hydro's contractors are not complying with the protection and mitigation measures, for example, buffers around waterways or bird colonies, would then be able to post a comment or question on this website to bring it

to the attention of Manitoba Hydro, the public and regulator. It has been noted earlier that a community committee will be formed in Gillam to oversee local issues resulting from Bipole III. Community committees will likely be formed at various points along the line as well. A Bipole III website would allow a record of these meetings to be made available to the public as well. The Commission is recommending that the following elements be included in the establishment and management of a Bipole III Transmission Project website:

- The website must be easy to find, for example, with a prominent link on Manitoba Hydro's home page, and be visibly distinguishable from other Manitoba Hydro information.
- The website must be updated at short intervals, at least quarterly, and be available in perpetuity.
- Information posted on the website must be based on the actions and progress outlined in the Environmental Protection Plan and the various management plans, such as those for access and vegetation.
- Categories of information must be easily discernible either by topic or area and be cross-referenced where there is overlap. Examples of information that could be included are wastewater monitoring results, employment statistics, kilometres of road constructed and decommissioned, minutes of community meetings, and caribou and moose population statistics.
- Information must be in plain language, with the minimal use of jargon, and address the interests and concerns of the communities affected by the Project.
- Data sets and descriptions of analyses and their results must be linked and available where applicable.
- The website must include a feedback function that allows users to post questions to be answered by Manitoba Hydro and to report problems or perceived infractions.

The Commission doubts the feasibility of some of the more complicated oversight mechanisms presented during hearings. A large, essentially permanent body with representation from across the nearly 1,400-km Local Study Area, representing communities with highly varied concerns and no common representative group, would be cumbersome and expensive.

In ongoing management of the Bipole III Project, the Commission agrees that an active adaptive management approach would be most desirable. In such an approach, Manitoba Hydro would not only continue to adapt its management techniques in order to minimize environmental impacts, but would actively experiment with different ways of managing issues such as access to the right-of-way, maintenance of vegetation, creation of line-of-sight barriers to prevent predation or other issues. The assumptions and results of such experiments should be publicly reported through the recommended website and kept on file for future reference. Annual reports from Manitoba Hydro to Manitoba Conservation and Water Stewardship (MCWS) must contain such details, including quantitative measures, tests, modelling or other testable verifications of results. This would allow MCWS to verify Manitoba Hydro's assumptions and predictions regarding environmental impacts and mitigation and to compare results of adaptive management to previous condition of the environment. Any trends that are apparent over the years of reporting should be identified and addressed.

The essence of active adaptive management is learning. Manitoba Hydro and MCWS should ensure continued learning from this Project. Once construction is completed, an in-depth review of procedures and fulfillment of commitments is needed. Under the direction of the MCWS, an environmental audit should be carried out by an independent third party to assess the success of the EPP and the accuracy of predictions and assumptions about environmental effects. The results of this audit must be reported back to MCWS and made public through the website. Five years after submission of the construction audit, a re-review of commitments made regarding maintenance in the operational phase should also be conducted by an independent third party and reported to MCWS and the public.

Licensing Recommendations

The Commission recommends that:

- 12.1 *Manitoba Hydro, under the direction of Manitoba Conservation and Water Stewardship, on completion of the Bipole III Project, undertake a third-party environmental audit to assess whether commitments were met and to assess the accuracy of assumptions and predictions. The results of this audit will be made public. This is to be repeated five years after the first environmental audit.*
- 12.2 *Manitoba Hydro develop and maintain, in perpetuity, an easily accessible Project-related website to contain all of the information related to monitoring and assessing environmental mitigation and management committed to and noted throughout this report. This information is to be easily retrievable and updated frequently. Minutes from any community meeting related to Bipole III Project monitoring and mitigation management are to be posted on this website.*
- 12.3 *Manitoba Hydro provide to the Manitoba Government an annual report on the Bipole III Project containing information in such detail that past, current and future assessments can be made as to the accuracy of predictions, success of mitigation actions and commitments to future actions. These reports will provide assessment of any trends detected over the entire reporting period. These reports will be made public.*

12.3 Management Plans

The EPP describes several other kinds of plans that will have a role in environmental protection during the life of the Bipole III Project. These plans include: access management, blasting, decommissioning, emergency preparedness and response, erosion protection and sediment control, rehabilitation, remediation, solid waste and recycling, and vegetation management.

12.3.1 Access Management

Access management was referred to often in consideration of measures to prevent or mitigate effects on wildlife, plants, domestic resource use, culture and heritage resources and

other VECs. Draft access management plans will be provided for review by government, First Nations, Aboriginal communities, rural municipalities, environment organizations and other stakeholders.

What We Heard: Access Management

Access management was a major topic of concern for Participants, Presenters and MCWS. Increased access in already-stressed areas and new access to previously inaccessible areas was of concern to domestic harvesters, trappers, wildlife managers, and Aboriginal communities.

Representatives of the MMF and several First Nations indicated that increased access to moose, fish and other domestic resources would be detrimental to their well-being. Trappers expressed the concern that increased access would allow snowmobilers and other recreationists the opportunity to use the right-of-way and other access avenues that could lead to vandalism and damage to their equipment. Trappers also noted that they also often use the rights-of-way to access portions to their traplines. Members of FLCN and other First Nations were concerned about increased access from non-community members who would compete for harvest of game, berries, and other plant resources.

It was also brought forward that clearing of the right-of-way may hinder the recovery of moose in the central Manitoba area. A major concern of MCWS was the effect of increased access, which led to their request for a re-examination of routing options to reduce the risk of increased access in key woodland caribou habitat and in an area of declining moose populations.

In response, Manitoba Hydro proposed changes to portions of the route, by paralleling existing developments to the extent possible in the Wabowden area, a change in routing in the GHA 14 Moose Meadows area and enhanced mitigation measures in Moose Meadows and GHA 14A/19A. These measures will include enhanced access controls, such as ditching and multiple gating.

Manitoba Hydro has also committed to consult with communities, First Nations, the

Manitoba Métis Federation, other Aboriginal groups and harvesters in the development of the Access Management Plan at the local level.

Commission Comment: Access Management

It is inevitable that access will be increased in some areas where the Bipole III Project will be built. How access is managed and mitigated will determine the long-term effect of this access.

The right-of-way and associated access lanes have the potential to affect numerous aspects of the biophysical and socio-economic environment. Potential effects of these access lanes include: allowing distribution of invasive organisms that could displace native species; facilitating an increase in predation of prey species, particularly woodland caribou and moose; facilitating the spread of diseases, such as brainworm from white-tailed deer; allowing human access to previously inaccessible locations and resources; and allowing new resource users to compete with current users for the same resource.

Manitoba Hydro has proposed a suite of actions to minimize the primary and secondary impact of enhanced access. Among these are ensuring that equipment and machinery are washed to lessen the possibility of carrying invasive organisms into the access routes. Re-routing and using enhanced mitigations measures in moose and caribou areas is laudable. Manitoba Hydro should use whatever methods are necessary to minimize access to the right-of-way and reduce line-of-sight (the ability of a predator or hunter to see prey animals from a distance) along the right-of-way. Such methods can include but are not limited to using terrain features and vegetation composition to limit light-of-sight for predators such as wolves and humans. Manitoba Hydro must also take actions to limit new access by recreationists. In areas where the right-of-way crosses public trails, efforts need to be made to screen and impede this access as much as possible.

In order to determine the use of these access lanes and determine how to prevent or mitigate the effects, real data are required. The Commission heard that trail cameras are used during the construction phase at right-of-way

access points to monitor unauthorized use. The Commission believes trail cameras should be put in place at major access points and remain there for up to five years after construction to monitor the use of these access points by both humans and animals. With this information, Manitoba Hydro will then be able to determine whether its proposed preventative and mitigation measures are effective and if further actions will be required.

Licensing Recommendation

The Commission recommends that:

12.4 Manitoba Hydro place trail cameras at major points of access to the Project right-of-way for at least five years after construction to monitor authorized and unauthorized use of access roads, trails and the right-of-way by humans and animals.

12.3.2 Vegetation Management

Manitoba Hydro's transmission system includes more than 11,000 km of right-of-way, covering more than 50,000 hectares. Manitoba Hydro practises vegetation management on its rights-of-way in order to protect public safety, prevent forest fires, protect facilities, meet reliability standards of the North American Electric Reliability Commission (NERC), and ensure access to the right-of-way for repairs and maintenance.

Trees falling onto transmission lines can create a risk of electrocution, or can cause a forest fire. Blackouts caused by trees falling onto power lines include the famous 2003 blackout that struck 50 million power users in eastern Canada and the northeast United States. NERC standards established since that power failure create zero tolerance for tree-caused blackouts. Manitoba Hydro is required by *The Manitoba Hydro Act* to meet this regulation.

Trees within the right-of-way do not need to be tall enough to contact power lines to create risks. A minimum space is needed between vegetation and the transmission line in order to prevent electricity from jumping the gap. As well, trees within the right-of-way create more fuel for forest fires. A forest fire along a right-of-way can cause the air to conduct electricity and cause the transmission line to short-circuit.

Rights-of-way are designed to accommodate the way transmission lines sag, stretch and sway to the side in strong winds. The line is designed to sag 20 metres at the point between towers. If it is blown to the side, a tall tree along the edge of the right-of-way could become too close to the line. (See Fig. 12.1).

Vegetation management begins with the initial clearing of the right-of-way. Clearing will be done by a variety of methods depending on the terrain and sensitivity. In many places, a mower or a bulldozer with a shearblade will be used in winter to strip off all vegetation. Doing so is fast but it is non-selective and can disturb the soil. More selective clearing is carried out with a feller buncher, a piece of heavy equipment with a long arm that can reach out and cut down an individual tree. Feller bunchers may be used to remove individual danger trees or to reach into sensitive areas. For areas where machinery cannot reach and in highly sensitive sites on steep slopes, along waterways or in places otherwise indicated as environmentally sensitive sites (ESS), manual cutting is done using chainsaws, brush-saws and brush axes. Manual cutting is the slowest and most labour-intensive clearing technique.

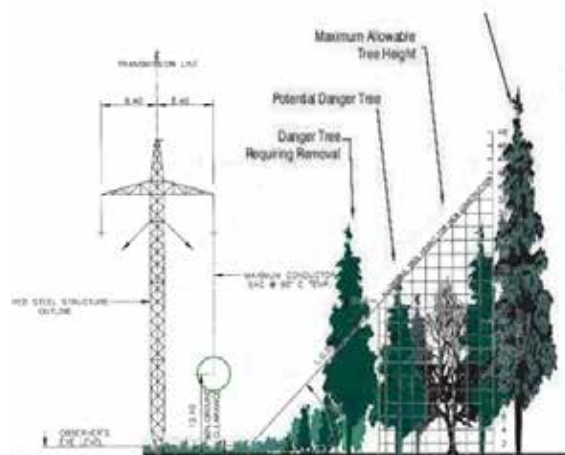


Fig. 12.1 Profile of the right-of-way

Over the two years following clearing, suckers will grow from roots of deciduous trees and other pioneer plants will begin to grow. In year two or three after clearing, the line is surveyed to report on vegetation regrowth. Information on regrowth will then form the basis of vegetation management planning. Vegetation management

implementation will begin in the fourth or fifth year, followed by annual inspections to assess the effectiveness of management.

The goal of vegetation management is to have a self-sustaining, low-growing plant community along the right-of-way consisting of bushes and shrubs that will not pose a threat to the transmission line. These low-growing plants will then dominate the community, out-competing any tree seedlings or suckers for available space, light, water, and nutrients.

Continued management of vegetation can use mechanical equipment, manual clearing, or herbicides. The non-selective nature of mechanical equipment means that using mowers or shearblades to manage vegetation results in the low-growing vegetation being removed along with trees. As well, continually cutting trees means that more suckers will grow.

Manitoba Hydro considers selective use of herbicides to be a more effective way of controlling the fast-growing trees, such as aspens, that could otherwise be a threat to the line. Careful application of herbicide is intended to allow Manitoba Hydro to go longer periods of time between treatments, extending to 15 years or more. As the number of trees in a treated area decreases, less herbicide will be required during subsequent treatments.

Set-back areas of 30 metres are applied around water bodies where no herbicide will be used. Sensitive sites, such as those identified through ATK as sites for gathering berries and other plants, will also not be treated with herbicides.

What We Heard: Vegetation Management

The perceptions of herbicides held by Manitoba Hydro and many people in communities near the Bipole III line appear to be fundamentally at odds. In Manitoba Hydro's view, herbicides are a tool that, if used properly, allow for effective control of vegetation with no impact on the environment. Buffer zones of 30 metres around waterbodies are sufficient to protect aquatic life and water quality. Environmentally

sensitive sites, such as locations of berry picking, medicinal plant harvesting, or sites where rare plants are found, can be set aside as no-herbicide zones. In areas where herbicides are used, proper use will allow for small amounts of the products to be used. Furthermore, the Commission heard that herbicides used today in vegetation management break down more quickly in the soil than those used in the past, resulting in less residual herbicide in the soil.

On the other hand, the perception of herbicides held by many Manitobans, and especially among many members of Aboriginal communities, is that any use of herbicides creates the potential for contamination. The Commission heard presentations that suggested the fear of contamination may prevent people from harvesting resources near the Bipole III line. The Commission heard as well that many Aboriginal resource harvesters believe that the presence of chemicals, even in minute amounts, affects the quality of the resource and the health of consumers. Some communities have requested that Manitoba Hydro agree not to use herbicides at all within their traditional areas. Pine Creek First Nation has asked that herbicides be avoided throughout the watershed that flows into their First Nation. Manitoba Hydro has stated that an entire watershed would not be deemed an environmentally sensitive site, but it could be possible to use larger buffer areas around waterbodies in order to further reduce the risk of herbicide entering the watershed. In response to concerns about herbicide use, Manitoba Hydro also stated that there are trade-offs when not using herbicides. Using mechanical means of vegetation management, as an alternative to chemical means, results in damage to the soil, destruction of birds' nests, destruction of desired vegetation, and the potential for more erosion.

Commission Comment: Vegetation Management

The Commission believes that the goal of vegetation management should be to re-establish and maintain the ecosystem as it was prior to construction of the right-of-way, to the extent possible, while avoiding interference with the transmission line. Manitoba Hydro should consider the concept, described by Dr. Jill Gunn

in her report for the Consumers' Association of Canada during the hearings, of creating multiple vegetation zones along the right-of-way, rather than a 1,400-km strip of grasses and shrubs that will otherwise cut a straight and abrupt line through the adjacent habitat. In the conifer-dominated sections of the Bipole III line, maintenance of the coniferous character of the environment, by topping conifers rather than removing them, will help to maintain this character. This will provide cover for small furbearers, disrupt line-of-sight and impede access. Wildlife trees (those that can be used by cavity-nesting animals) should be maintained to the extent possible by topping rather than total removal.

Magnusson and Stewart 1985 have provided data regarding the effect of herbicides on mosses growing in the bog areas along Bipoles I and II. They found that although mosses re-grow after herbiciding, the species change. A more tolerant species becomes dominant and it takes a very long time for sphagnum to re-establish. As bog areas are sparsely treed, take a very long time to re-establish their vegetation once disturbed, and pose minimal threat to the transmission line, it does not seem that herbiciding in bogs is necessary. Herbiciding in bogs should not be undertaken, as mechanical means of vegetation control should be sufficient to address any threats to the transmission line in these areas.

The spread of white-tailed deer and brainworm northward is also of concern. To limit this migration, vegetation management should be used to the extent possible in order to avoid creating an inviting environment for white-tailed deer. Manitoba Hydro should aim to manage the right-of-way north of Swan River to discourage the increase, spread or survival of white-tailed deer.

In developing or modifying the vegetation management program, Manitoba Hydro should use local information, collected along Bipoles I and II at various time intervals (Magnusson and Stewart 1987, MacLellan and Stewart 1985, Walker, 1994) as well as Manitoba Hydro's own past experience to predict possible outcomes. Published data and experience of other jurisdictions and energy providers should be taken

into consideration in developing, monitoring and modifying any such plan.

Licensing Recommendation

The Commission recommends that:

12.5 Manitoba Hydro not use herbicides in bog areas.

Non-Licensing Recommendations

The Commission recommends that:

12.6 Manitoba Hydro manage vegetation along the Project right-of-way in coniferous-dominated forest to retain the coniferous character, by using such techniques as topping conifers.

12.7 Manitoba Hydro use terrain features and vegetation composition to limit access to and line-of-sight along the Project right-of-way.

12.8 Manitoba Hydro leave wildlife trees throughout the Project right-of-way where they do not pose a hazard.

12.9 Manitoba Hydro manage the Project right-of-way from Swan River northward to discourage population increase and distribution of white-tailed deer.

Chapter Thirteen: Improving Environmental Assessment in Manitoba

13.1 Overview

In October 2012, the Clean Environment Commission held public hearings in Gillam, during which a life-long member of the community asked an important question. As a young man, he had seen Manitoba Hydro move into his community to begin decades of development along the lower Nelson River. As an adult, he had been employed to work on these projects as a highly skilled heavy equipment operator. As a life-long resident, he had experienced the extremely significant disruption to the environment and to the way of life of his fellow community members. And, now as an elder, he has to live with these disruptions and do what he can to ensure that they are not exacerbated.

His question was “why were there no similar hearings for the Kettle and Long Spruce and Limestone projects built by Manitoba Hydro during the ‘60s, ‘70s and ‘80s?”

The simple answer was that the statute requiring such environmental assessment, *The Environment Act*, did not come into effect until 1988. The first Manitoba Hydro projects to undergo environmental assessment and public review by the Commission were the Wuskwatim Generation and Transmission projects. This review took place in 2004. In its report on the Wuskwatim reviews, the Commission noted that, given that this was a first-time review, it was prepared to grant the Proponents, Manitoba Hydro and the Nisichawayasihk Cree Nation, some leeway. But the Commission stated that it would expect the standard of assessment to improve for future projects.

Unfortunately, this has not happened. As has been noted throughout this report, the Environmental Impact Statement prepared and filed by Manitoba Hydro for the Bipole III Transmission Project was determined to be significantly wanting. Some of these shortcomings are noted below. If the Commission’s review process had been based on the EIS alone, the

application would have failed. But, as has been noted elsewhere, the Commission, in conjunction with Manitoba government officials, the Participants and members of the public, was able to elicit from Manitoba Hydro a considerable amount of additional information – enough to allow the Hearing Panel to fulfil its mandate to provide advice and recommendations to the Minister of Manitoba Conservation and Water Stewardship.

The Commission has not been able to determine why the EIS was so deficient. Or, why Manitoba Hydro was willing to accept such a document from its consultants and file it with Manitoba Conservation and Water Stewardship. Nor do we understand why, after the problems were presented, Manitoba Hydro would not accept that the EIS had serious limitations.

The Commission is of the view that such poor environmental assessment should not be allowed to continue into the future. To allow this would pose additional, unneeded threats to our environment. To that end, in this section, the Commission will describe some of its observations of the environmental assessment process in Manitoba and make some recommendations that the Commission believes would improve this process.

13.2 Limitations in the EIS

From the Commission’s perspective, the crux of the problem was the apparent lack of an overall plan or overall direction for the environmental assessment conducted by the Proponent. There did not appear to be an overall environmental assessment framework, nor did it seem that much, if any, direction was provided to the technicians on performing field and analytical operations that would fit into a standard framework. The result was a report that was long, repetitive, disorganized and included many contradictions and inconsistencies. This led to a great struggle for those examining the documentation to see the logical connections between the collection of data,

the analysis of data and the conclusions in the EIS. It was particularly difficult to determine how the subject area results were incorporated in the final assessments and conclusions.

A great deal of information was collected and presented in the EIS and the Technical Reports. However, empirical analysis was very limited, or non-existent, making it very difficult to make an informed decision about the certainty of the conclusions. Most of the conclusions were qualitative and not quantitative. Although much of the field data collected is valuable in the larger picture, as it adds to the overall understanding of the environment in Manitoba, especially in uninventoried remote locations, the volume and detail may not have been required to develop an EIS. Because there was not knowledgeable and consistent direction provided, much time, effort and money may have been spent unnecessarily.

The standards, benchmarks, definitions and analytical techniques used to identify the relevant valued environmental components (VECs) and analyse how they would be affected by the Project differed greatly from subject area to subject area. VEC-based analysis was not effectively pulled together to provide an overall picture of the impact on the environment. Many of the far-too-numerous VECs appeared to have been chosen based on the subjective opinion of individual researchers. Selection of some VECs was further influenced by opinions of targeted stakeholders, rather than a systematic and evidence-based appraisal of what VECs would provide for an effective EIS. The decision to include as VECs species that do not exist within the study area, or even species known or believed to be extirpated from Manitoba, raised additional concerns about the EIS. At the same time, some obvious species or environmental components were not included among the VECs.

Manitoba Hydro is a large corporation with plans for many developments over the next number of years. These developments will range from relatively small to very large. All will require some degree of environmental assessment before being granted a licence to commence. Within the Corporation are a number of large divisions, some of which are responsible for their own developments, including responsibility for the attendant environmental assessments.

The Commission is of the view that this is not good policy, as it can lead to inconsistency in standards and practice. Manitoba Hydro should establish a centralized environmental assessment department staffed with the necessary expertise to manage and coordinate all environmental assessment and monitoring processes conducted by the Corporation. While external consultants will always be needed, Manitoba Hydro needs to take ownership and not to depend upon these consultants to provide leadership to its environmental program.

13.3 The Regulatory Process

While the failings of the Bipole III EIS fall squarely at the feet of the Proponent, Manitoba Hydro, some of our recommended solutions will be directed at the Province of Manitoba. This is not intended to be criticism of provincial officials. As noted above and elsewhere in this report, provincial officials played a large role in helping to improve the quality of the EIS. If we are critical, it is of the regulatory regime that these officials must work within. The statute and regulations governing the licensing process were introduced in 1988. They put this province at the forefront of environmental protection at that time, but are now in need of updating.

This issue of environmental assessment procedures and protocols has been of major concern to the Clean Environment Commission for some time. Beginning in 2004, with the report on the Wuskwatim projects, the Commission has made recommendations calling upon the Province to enhance the practice of environmental assessment by requiring higher standards of performance. The Wuskwatim report specifically recommended that: “the Government of Manitoba should

- enact environmental assessment legislation,
- provide guidance for proponents, consultants and practitioners,
- establish protocols for best professional practice that included cumulative effects assessment.”

These recommendations, with some small differences, were repeated in a number of

subsequent reports, including those on the Red River Floodway Expansion in 2005, the Pembina Valley Water Cooperative in 2007, and Louisiana Pacific in 2010. (Manitoba Clean Environment Commission 2005, 2007, 2010).

While statutory provisions would carry the ultimate authority, this is not the only solution. The goals that the Commission believes are needed could be achieved by regulation, practice directions, protocols or other policy measures.

It has been the Commission's experience, echoed by the public and Participants, that many of the proposals and review documents lack the description and/or details that would allow a reasonable understanding of a project and its environmental effects. In the recent past, the Commission has found it increasingly necessary to request more technical information in great detail from the proponents, as well as the regulator, in order to understand a proposal, and to ensure that the current and emerging environmental standards are fully met.

Having established protocols and practice directions in place would result in a more complete proposal being available to the Commission and the public at the outset of the review process. This, in turn, would decrease the amount of time and effort required to review a proposal, decrease the amount of time and expense required to conduct a hearing, as well as decrease the need for large Participant Assistance awards to respond to deficiencies in these reports.

Matters the Commission believes must be addressed include, but are certainly not limited to:

- Environmental Assessment – When is it required; and to what degree?
- Environmental Impact Statement - What triggers the requirement for an EIS? This term is not included in any of the legal or policy documents available that generally outline this requirement for a potential proponent. What are the minimum requirements of an EIS?
- Guidelines – The current legislation states that guidelines or instructions may be

provided, but there is no regulation or policy that defines how this action will be implemented.

- Scoping Document – In current practice, proponent-generated scoping documents have replaced government-issued guidelines. What is the role of the scoping document? Proponents should be required to address all matters contained in the scoping document. If not, they need to clearly explain why.
- Cumulative Effects Assessment – It has become clear that, in Manitoba, the process and standards are interpreted quite differently by various parties. A standard acceptable in Manitoba, one that proponents would be required to meet, needs to be established and made clear to future project proponents.

A review of the current guidelines, protocols and other guidance documents used in environmental assessment is required to ensure they reflect the current state of knowledge and national and international standards. Those guidelines, protocols and documents still in draft form need to be finalized and formally accepted into the environmental review process. Regarding some topics, guidelines and protocols are currently lacking and will need to be developed. This would go a long way to ensuring that Manitoba's environment is protected, as well as facilitating an informed public.

The Commission is aware that resources in government are stretched at this time, but believes that a little "short-term pain" would result in much "long-term gain".

Non-Licensing Recommendation

The Commission recommends that:

13.1 The Government of Manitoba enhance the practice of environmental assessment by requiring higher standards of performance. In this regard, the government should:

- *Develop environmental assessment standards by whatever means necessary – legislation, regulation, practice directions, protocols or other policy measures.*

- *Provide comprehensive and clear guidance for proponents, consultants and practitioners.*
- *Establish protocols for best professional practice.*

The new environmental assessment process must, at a minimum, address: use of traditional and local knowledge, selection of appropriate valued environmental components, establishment of baseline conditions, and establishment of thresholds in the conduct of environmental assessments.

The protocols should reduce uncertainty, enhance effectiveness and improve predictability of future environmental assessments.

13.4 The Need for a Regional Cumulative Assessment

During the Bipole III hearings, it became apparent that past hydro-electric developments in northern Manitoba have had a profound impact on communities in the area of these projects, as well as on the environment upstream and downstream. Bipole III and projects proposed for the near future will add to these impacts. As the Commission heard from the affected communities, the cumulative effects of these projects need to be considered as a whole. The Bipole III cumulative effects assessment did not take into account and was not required to take into account the breadth of all these projects.

However, in order to fully understand the impact of proposed future projects, it will be necessary to understand the impact of past and current projects in addition to new impacts. A regional cumulative effects assessment is needed for all Manitoba Hydro projects and associated infrastructure in the Nelson River sub-watershed. The result of such an assessment would be a greater understanding of the impacts of the individual projects, as well as the cumulative impacts of all projects together. Understanding these impacts may lead to the use of current mitigation measures being applied to past impacts, resulting in some remediation. Greater understanding may also lead to alterations in the structure or operation of existing projects, and may offset impacts from new projects.

It is recommended that this Regional Cumulative Effects Assessment be undertaken prior to the licensing of any additional projects in the Nelson River sub-watershed and that this regional assessment be part of the cumulative effects assessment carried out for any individual future project. The regional assessment must include, but not be limited to, Jenpeg, Kettle, Long Spruce, Limestone, Bipole I, II and III and all associated transmission lines and infrastructure.

Non-Licensing Recommendation

The Commission recommends that:

13.2 Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River sub-watershed; and that this be undertaken prior to the licensing of any additional projects in the Nelson River sub-watershed after the Bipole III Project.

Chapter Fourteen: Recommendations

Licensing recommendations to build and operate the Bipole III Transmission Project

The Commission recommends that:

- 1.1 Manitoba Hydro be issued an Environment Act licence for the Bipole III Transmission Project, subject to licensing conditions outlined in subsequent recommendations in this report.
- 8.1 Manitoba Hydro reclaim and replant borrow pits as soon as they are no longer in use for the Project.
- 8.2 Manitoba Hydro minimize burning of slash, by using chipping and mulching as the preferred method of disposal.
- 8.3 Manitoba Hydro continue collaring and monitoring population status and movements of the three affected boreal woodland caribou herds for at least 25 years following the start of Bipole III construction.
- 8.4 Manitoba Hydro provide all information gathered on boreal woodland caribou to Manitoba Conservation and Water Stewardship to be included in any regional analyses.
- 8.5 Manitoba Hydro conduct studies on black bear population, distribution and predation on boreal woodland caribou in caribou ranges within the Project Study Area.
- 8.6 Manitoba Hydro expand and enhance studies on timber wolf population, distribution and predation within the Project Study Area.
- 8.7 Manitoba Hydro obtain approval of the Wildlife and Ecosystem Protection Branch of Manitoba Conservation and Water Stewardship for the design and management of access roads and trails for the Bipole III Transmission Project in known caribou or moose range.
- 8.8 Manitoba Hydro obtain approval of the Wildlife and Ecosystem Protection Branch of Manitoba Conservation and

Water Stewardship in the design and implementation of mitigation measures for the Bipole III Transmission Project in known caribou and moose range.

- 8.10 Manitoba Hydro expand and enhance the furbearer pilot study to include areas along the Bipole III right-of-way.
- 9.1 Manitoba Hydro, through consultation with local landowners, ensure that its routing and tower placement generate the least possible impact on agricultural operations, unless clear and compelling reasons exist to depart from such routing.
- 9.2 Manitoba Hydro provide an option for annual payments, where compensation is paid for agricultural losses due to the Project.
- 9.3 Manitoba Hydro undertake the following specific route changes:
 - Map 92 – Section 34-8-6E to 36-8-5E – place the line on the East-West ½-mile line.
 - Map 88 – move the north/south stretch of the line ½ mile to the east in Sections 7-7-1E to 31-7-1E; or to the west through Sections 12-7-1W to 36-7-1W.
 - Map 86 – Section 3-8-4W – turn north at the ½-mile line in the middle of this section.
 - Map 85 – Section 6-8-6W – turn north at the ½-mile line in the middle of this section.
 - Map 84/85 – Section 6-8-6W to Section 6-8-8W – the FPR is situated 42 metres north of the E/W ½-mile line. This is not acceptable. Place the line on the ½-mile line. There is a house, in SW 5, about 150 metres south of this line, shielded by thick tree growth. If more space is required between this house and the transmission line, then a short (no more than ½ mile) jog is to be taken to avoid the house.

- Map 82 – Section 1-11-9-W to Sec. 24-11-9W or 25-11-9W – place the north/south stretch on the ½-mile line.
- Map 79/80 – Sec 7-13-8W to Sec 12-13-10W to Sec 13-14-10W to Sec 36-14-10W – place the east/west and north/south stretches on the ½-mile line.
- North of Sec 36-14-10W – if the FPR crosses cropland, it should be on the ½-mile line.

These changes should require very little additional environmental assessment. Where necessary, Manitoba Hydro is to conduct this under the direction of MCWS. Given the Commission's view that Manitoba Hydro may not have consulted with all affected farmers along the route, it is recommended that, prior to making the specific changes recommended above, Manitoba Hydro consult with all affected farmers to seek consensus or majority support for moving the line from roadsides to the half-mile line. The Commission is cognizant that there may be differences of opinion among farmers. We expect Manitoba Hydro to consult directly with all involved farmers. If no consensus can be reached, majority will rule. Straight stretches are to remain straight.

- 9.7 Manitoba Hydro ensure that affected outfitters are fairly compensated for any documented losses attributable to the Bipole III Transmission Project.
- 9.8 Manitoba Hydro conduct vegetation clearing for the Bipole III Project by hand in identified environmentally sensitive sites related to traditional plant harvesting.
- 9.9 Manitoba Hydro provide a buffer between herbicide application areas along the Bipole III right-of-way and identified environmentally sensitive sites related to traditional plant harvesting.
- 9.10 Manitoba Hydro post areas that have been actively herbicided along the right-of-way in the vicinity of identified environmentally sensitive sites related to traditional plant harvesting.

- 9.11 Manitoba Hydro conduct a community health assessment of the Gillam area prior to the commencement of construction of the Bipole III Project.

- 10.1 Manitoba Hydro incorporate the proposed Adjusted Final Preferred Route segment in the Wabowden area into the Project Final Preferred Route.

- 10.2 Manitoba Hydro incorporate the proposed Adjusted Final Preferred Route segment in the GHA 14 (Moose Meadows) area into the Project Final Preferred Route.

- 10.3 Manitoba Hydro maintain the proposed Final Preferred Route segment in the GHA 14A/19A area for the Project.

- 12.1 Manitoba Hydro, under the direction of Manitoba Conservation and Water Stewardship, on completion of the Bipole III Project, undertake a third-party environmental audit to assess whether commitments were met and to assess the accuracy of assumptions and predictions. The results of this audit shall be made public. This is to be repeated five years after the first environmental audit.

- 12.2 Manitoba Hydro develop and maintain, in perpetuity, an easily accessible Project-related website to contain all of the information related to monitoring and assessing environmental mitigation and management committed to and noted throughout this report. This information is to be easily retrievable and updated frequently. Minutes from any community meeting related to Bipole III Project monitoring and mitigation management are to be posted on this website.

- 12.3 Manitoba Hydro provide to the Manitoba Government an annual report on the Bipole III Project containing information in such detail that past, current and future assessments can be made as to the accuracy of predictions, success of mitigation actions and commitments to future actions. These reports will provide assessment of any trends detected over the entire reporting period. These reports shall be made public.

12.4 Manitoba Hydro place trail cameras at major points of access to the Project right-of-way for at least five years after construction to monitor authorized and unauthorized use of access roads, trails and the right-of-way by humans and animals.

12.5 Manitoba Hydro not use herbicides in bog areas.

Non-Licensing Recommendations

The Commission recommends that:

6.1 Manitoba Hydro improve its consultation processes by seeking input from experts, many available in Manitoba, in the field of participatory consultation processes, as well as representatives of Aboriginal organizations.

6.2 The Manitoba Government, with Manitoba Hydro, investigate the feasibility of developing an Aboriginal Traditional Knowledge database that could be used in the assessment of potential impacts of future projects.

7.1 Manitoba Hydro develop a more streamlined, open and transparent approach to route selection, making more use of quantitative data.

7.2 Manitoba Hydro, in future, invite the potentially affected public and communities, including First Nations and the Manitoba Métis Federation, to participate in the selection of alternative routes and route selection criteria as well as in identifying baseline studies.

7.3 Manitoba Hydro undertake route selection and environmental assessment based on an ecosystems approach, rather than just on individual Valued Environmental Components (VECs). This would make the process more in keeping with Aboriginal worldviews of the interrelationship between people and the environment.

7.4 Manitoba Hydro discontinue using undeveloped Crown land as a default routing option without appropriate assessment of the impact on ecological, traditional or cultural values of those lands.

8.9 The Manitoba Government and Manitoba Hydro monitor white-tailed deer distributions and prevalence of brainworm along the Bipole III transmission line.

9.4 Manitoba Hydro, to the extent possible, place towers for the Projects so as to minimize impacts on agricultural operations where routing is alongside an existing transmission line.

9.5 Manitoba Hydro place towers for the Project in or immediately adjacent to the grass swales along the field side of drains, where routing is along existing drains.

9.6 Manitoba Hydro make best efforts to accommodate the continuation of educational programs on community traplines that are affected by the Project.

11.1 Manitoba Hydro implement a cumulative effects assessment approach that goes beyond the minimal standard of the 1999 CEEA guidelines and is more in line with current "best practices." At a minimum, this approach would:

- assess effects in close vicinity to the Project as well as in the regional context;
- assess effects during a longer period of time into the past and future;
- consider effects on VECs due to interactions with other actions, and not just the effects of the single action under review;
- in evaluating significance, consider other than just local, direct effects; and
- include all past, current and reasonable foreseeable actions.

12.6 Manitoba Hydro manage vegetation along the Project right-of-way in coniferous-dominated forest to retain the coniferous character, by using such techniques as topping conifers.

12.7 Manitoba Hydro use terrain features and vegetation composition to limit access to and line-of-sight along the Project right-of-way.

12.8 Manitoba Hydro leave wildlife trees throughout the Project right-of-way where they do not pose a hazard.

12.9 Manitoba Hydro manage the Project right-of-way from Swan River northward to discourage population increase and distribution of white-tailed deer.

13.1 The Government of Manitoba enhance the practice of environmental assessment in the Province by requiring higher standards of performance. In this regard, the government should:

- Develop environmental assessment standards by whatever means necessary: legislation, regulation, practice directions, protocols or other policy measures.
- Provide comprehensive and clear guidance for proponents, consultants and practitioners.
- Establish protocols for best professional practice.

The new environmental assessment process must, at a minimum, address: use of traditional and local knowledge, selection of appropriate valued environmental components, establishment of baseline conditions, and establishment of thresholds in the conduct of environmental assessments.

The protocols should reduce uncertainty, enhance effectiveness and improve predictability of future environmental assessments.

13.2 Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River sub-watershed; and that this be undertaken prior to the licensing of any additional projects in the Nelson River sub-watershed after the Bipole III Project.

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Glossary

Aboriginal People: The *Constitution Act* defines Canada's Aboriginal peoples as the Indians (First Nations), Métis and Inuit.

Aboriginal Traditional Knowledge: Knowledge that is held by and unique to Aboriginal people. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal knowledge holders.

Adaptive Management: The implementation of new or modified mitigation measures over the construction and operation phases of a project to address unanticipated environmental effects.

Adverse Effects: Negative effects on the environment and people that may result from a proposed project.

Annual Allowable Cut (AAC): The amount of wood that is permitted to be harvested in a year in order to ensure sustainability of the resource.

Aquifer: A body of rock or sediment that is sufficiently porous and permeable to store, transmit and yield significant quantities of groundwater to wells and springs.

Area of Special Interest (ASI): Areas in Manitoba that are under consideration for permanent protection because of their unique ecological features.

Artesian Aquifer: A body of rock or sediment containing groundwater that is under sufficient pressure that when it is penetrated by a well, water will rise above the top of the aquifer.

Baseline: A description of the environmental conditions at and surrounding a proposed action, used as a measurement of changes resulting from the action.

Biodiversity: The diversity of life in an environment, as indicated by number of species of plants and animals.

Bipole: In high voltage direct current (HVDC) transmission, a system consisting of a transmission line and converter facilities, in which the transmission line has a negatively charged pole and a positively charged pole.

Bird Diverter: A device attached to a transmission line to make it more visible to flying birds and reduce collisions between birds and lines.

Bog: A wetland ecosystem made up of accumulations of peat, either moderately or slightly decomposed, derived primarily from sphagnum moss. Bog water is acidic, usually at or very near the surface and unaffected by the nutrient-rich groundwater found in the adjacent mineral soil.

Boreal: Referring to the north. A climate and ecological zone, dominated by conifers, that occurs north of the temperate hardwood forests of North America, but south of the subarctic.

Boreal Shield Ecozone: As classified by Environment Canada, an ecological land classification consisting predominantly of boreal forest on soils overlying Precambrian shield rock.

Borrow pit: The hole left by removal of material (usually sand or gravel) for construction.

Broadleaf: Refers to perennial plants that lose their leaves at the end of the growing season.

Brood Parasitism: A form of parasitism in which some birds (such as the brown-headed cowbird) lay their eggs in the nests of other birds, resulting in them being hatched and reared by the other birds, often at the expense of the other birds' young.

Buffer: An area of land separating two distinct land uses that acts to mitigate the effects of one land use on the other.

Buffer Zone: An area that protects or reduces impacts to a natural resource from human activity, such as a strip of land along roads, trails or waterways that is generally maintained to enhance aesthetic values or ecosystem integrity.

Carbon Capture: Storage of carbon dioxide so that it does not remain in the atmosphere and contribute to climate change.

Circuit: The complete path of an electric current.

Clay: A heavy soil consisting of fine particles.

Coke: A high-carbon residue of coal or petroleum left after a distillation process.

Collector System/Lines: In the Bipole III context, refers to AC transmission lines used to transmit energy from northern generating stations to the DC transmission line.

Commercial Forest Zone: The area defined by Manitoba Conservation and Water Stewardship where commercial forest harvesting may take place.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Committee established by the *Species at Risk Act* as the authority for assessing the conservation status of species that may be at risk of extinction in Canada.

Community: In an ecological context, an interacting population of various species in a specific location.

Community Health Assessment: A process undertaken to identify the strengths and needs of a human community, enable community-wide establishment of health priorities and facilitate collaborative action planning directed at improving community health status and quality of life.

Community Pasture: An area of leased Crown or municipal land that is used primarily for grazing cattle and horses.

Compaction: A process that squeezes the mineral grains in soil together, reducing porosity and hence productivity.

Conductor: Any material that will readily carry a flow of electricity. Transmission line wires are more properly referred to as conductors. In the context of Bipole III, the transmission line consists of two bundles of conductors.

Coniferous: A cone-bearing plant belonging to the taxonomic group Gymnospermae. Types of spruce, fir and pine are among the coniferous trees in Manitoba.

Construction Camp: Temporary housing and support facilities for workers during construction.

Contaminant: As defined by *The Manitoba Dangerous Goods Handling and Transportation Act*, “any solid, liquid, gas, waste, radiation, or any combination thereof that is foreign to or in excess of the natural constituents of the environment and that affects the natural, physical, chemical or biological quality of the environment; or that is or is likely to be harmful or damaging to the health or safety of a person.”

Converter Station: The terminal equipment for a HVDC transmission line, in which alternating current is converted to direct current or direct current is converted to alternating current.

Corona Discharge: An electrical discharge around a conductor that can electrically charge air molecules to become air ions.

Country Foods: Traditional foods from the land, such as wild animals, birds, fish, plants and berries.

Cover: Vegetation such as trees or undergrowth that provides shelter for wildlife.

Cover Type: In the Bipole III context, types of cover are divided into four categories: Softwood, Softwood with Hardwood, Hardwood with Softwood, and Hardwood.

Critical Habitats: An area of habitat or the place in which an organism lives that is essential in providing the requirements needed for that species to live.

Cumulative Effects Assessment: An assessment of the incremental effects of an action on the environment when the environmental effects are combined with the effects of other past, present and future actions.

Cumulative Environmental Effects: The environmental effects that are likely to result from a project in combination with the environmental effects of other past, present or future project.

Current: The rate of motion of electrical charge through a conductor.

Danger Trees: Trees located outside a cleared transmission line right-of-way, which may pose a risk of contact or short circuit with the line or structures by falling on them.

Deciduous: Perennial plants from which the leaves fall off at the end of the growing season,

Decommissioning: The planned shutdown, dismantling and removal of a building, equipment, plant or other facilities.

Distribution System: The poles, conductors and transformers that deliver electricity to customers. The distribution system transforms high voltages to lower, more usable levels.

Easement: The permission or right to use a defined area of land for a specific purpose, such as a transmission line right-of-way.

Ecodistrict: A subdivision of an ecoregion, with distinct ecological areas, identified by their geology, topography, soils, vegetation, climate conditions, species and water resources.

Ecological Land Classification: The Canadian classification of lands from an ecological perspective, an approach that attempts to identify ecologically similar areas.

Ecoregion: A geographical area characterized by a distinctive regional climate as expressed by vegetation.

Ecosystem: A functional unit including the living and non-living things in an area, as well as the relationships among those living and non-living things.

Ecozone: An area of the Earth's surface representing large and very generalized ecological units; the most general level of the Canadian ecological land classifications.

Edge Effect: The effect caused by the transition between two distinct ecological communities. In the Bipole III context, edge effects will occur where the cleared transmission line right-of-way runs through forest, bringing two distinct communities (forest and shrub-and-grass covered opening) adjacent to one another.

Electric and Magnetic Field (EMF): Invisible lines of force surrounding any wire carrying electricity, produced by all electric tools and appliances, household wiring and power lines. The strength of EMFs depends on the voltage level and the amount of current flow. Fields fall off sharply with increasing distance from a transmission line.

Endangered: A species facing imminent extirpation or extinction.

Enduring Feature: A long-term feature, as identified through soil and geological landforms, that influences life in an area.

Environmental Assessment: Process for identifying project and environment interactions, predicting environmental effects, identifying mitigation measures, evaluating significance, reporting and following up to verify accuracy and effectiveness leading to production of an environmental assessment report, which is used as a planning tool to guide decision making, as well as project design and implementation.

Environmental Monitoring: Periodic or continuous surveillance or testing, according to a pre-determined schedule, of one or more environmental components, usually conducted to determine the level of compliance with stated requirements or to observe the status and trends of a particular environmental component over time.

Environmental Protection Program: A framework for delivery, management and monitoring of environmental protection activities in keeping with issues identified in the environmental assessment, regulatory requirements and public expectations.

Environmentally Sensitive Site: Locations, features, areas, activities or facilities that were identified in the Bipole III EIS to be ecologically, economically or culturally important or sensitive to disturbance and require protection during construction and operation of the project.

Extirpation: The extinction of a species within a given area, with the species still occurring elsewhere in its range.

Feller Buncher: A type of harvester used in logging. A motorized vehicle with an attachment that can rapidly cut and gather several trees before felling them.

Fen: A type of wetland fed by surface and/or groundwater, in which water chemistry is neutral to alkaline and sedges are the dominant vegetation.

Fish Habitat: Spawning, nursery, rearing, food supply and migration areas upon which fish depend.

Forest Management Licence: A licence that describes the area in which trees can be cut, the volume that can be harvested, and other terms and conditions, and provides for a continuous supply of timber to a user. There are currently two Forest Management Licences in Manitoba.

Forest Management Unit: A sub-unit of a Forest Section.

Forest Section: One of several large areas into which the province of Manitoba is divided for management of forest resources.

Footprint: The surface area occupied by a structure or activity.

Fragmentation: The breaking up of contiguous blocks of habitat into increasingly smaller blocks.

Furbearer: Mammal species that are trapped for their fur, such as marten, fox, and beaver.

Game Hunting Area (GHA): Designated area in Manitoba in which game hunting is regulated by species, quota, hunting method, etc.

Generating Station: A structure that produces electricity. It may use a variety of methods, including coal, natural gas or water.

Grassland: An area with vegetation consisting primarily of grass species, occurring on a site that is arid or at least well-drained.

Greenhouse Gas: A gas, such as methane, carbon dioxide or chlorofluorocarbons, that contributes to global warming by trapping heat between the Earth and the upper atmosphere.

Grey water: Wastewater, as from washing clothing, showers, food preparation, etc., but not including sewage.

Ground Electrode: In the Bipole III Project, the ground electrodes provide a ground or earth return system for minor imbalances of current between the positive and negative poles during normal operation and, in the event of a pole outage, for return of current. They consist of a large, metal ring about 300 to 800 metres in diameter buried approximately three meters in the ground and surrounded by a highly conductive bed of coke.

Groundwater: Water that occurs beneath the land surface and fills the pore spaces of soil or rock below the saturated zone.

Grubbing: The act of removing roots from soil using a root rake, harrow or similar device.

Guidelines: Non-mandatory, supplemental information about acceptable methods, procedures and standards for implementation of requirements found in legislation, policies and directives.

Habitat: The place in which an animal or plant lives; the sum of environmental circumstances in the place inhabited by an organism, population or community.

Half-Mile Line: The surveyed line that divides a section of land (one mile by one mile) in half.

Hardwood: Manitoba hardwoods include deciduous trees such as aspen, birch, ash, basswood and oak.

Hazardous Substance: Any substance which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing or otherwise harmful is likely to cause death or injury.

Hectare: An area of 10,000 square metres. There are 100 hectares in one square kilometre. One hectare is almost 2.5 acres.

Herbicide: A product used to destroy or inhibit plant growth.

Heritage Resources: A heritage site, heritage object and any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof. (*The Heritage Resources Act.*)

Hibernaculum (plural: Hibernacula): A place where large numbers of animals hibernate. Best known examples in Manitoba would be the Narcisse garter snake dens.

High Voltage Direct Current Transmission (HVDC): Electric power transmission using direct current and high voltage.

Human Health Risk Assessment (HHRA): A scientific study which assesses potential risks from exposure to chemical substances.

Impact: General term referring to the overall effect of a project.

Indicator: Anything that is used to measure the condition of something of interest. In an environmental assessment, indicators are used to predict changes in the environment and to evaluate their significance.

Invertebrates: Animals without a spinal column (for example, insects, spiders, worms, clams).

Invasive Species: Those species that grow outside of their region of origin and can out-compete species native to the region.

Leaching: To draw a material out of a substance through percolating liquid.

Lek: clearing in which sharp-tailed grouse perform mating displays.

Local Study Area: In the Bipole III Project, the Local Study Area was a strip 4.8 km wide centred on the transmission line and collector lines, and also surrounding the converter station sites.

Linear Feature: A geographic feature, such as a road, trail or transmission line, that can be represented on a map by a line.

The Manitoba Endangered Species Act (MESA): Legislation to ensure the protection and enhance the survival of endangered and threatened species in Manitoba.

Marsh: A tract of low wetland, often treeless and periodically covered in water, generally characterized by grasses, sedges, cattails and rushes.

Marshalling Yard: An open area used to stockpile, store and assemble construction materials.

Mass Wasting: The downhill movement of soil under the influence of gravity, which can lead to more sediment in surface water or loss of vegetation.

Merchantable: In the context of forestry, wood fiber that can be sold for commercial use.

Midwest Reliability Organization: A non-profit organization dedicated to ensuring the reliability and security of the bulk power system in the region that includes Manitoba and the Midwest and northern plains states of the U.S.

Mineral Lick: A natural mineral deposit where animals may obtain needed minerals. (Also referred to as a salt lick).

Mineral Soil: Soil containing little organic matter.

Mitigation: The elimination, reduction or control of the adverse environmental effects of a project, including restitution for damage.

Mixed Wood: Forest stands composed of coniferous and deciduous vegetation, each representing between 25% and 75% of the total.

Monitoring: Continuing assessment of conditions at and surrounding an activity to determine if effects occur as predicted, if operation remains within acceptable limits, and if mitigation measures are as effective as predicted.

Monopolar: Operation of a Bipole line when one pole (i.e. one of the bundles of conductors) is out of service. In the event of an outage of one pole in a Bipole transmission system, partial operation may be maintained by using the ground electrode for earth or ground return to maintain current flow in the energized pole.

Moraine: An accumulation of material, including blocks of rock, boulders, pebbles and clay that has been transported and deposited by a glacier or ice sheet.

Natural Resource Officer: Manitoba government employee who enforces a wide range of natural resource-based acts and regulations related to fish, wildlife, forests, parks, Crown lands, and water.

Non-Commercial Forest Zone: The area, defined by Manitoba Conservation and Water Stewardship, that generally does not produce trees large enough for commercial harvesting.

North American Electric Reliability

Corporation: An organization that develops and enforces reliability standards, assesses adequacy annually via a 10-year forecast, monitors the bulk power system, and educates, trains and certifies industry personnel.

Northern Affairs Community: A community served by the Manitoba Department of Aboriginal and Northern Affairs.

Northern Flood Agreement: A land compensation agreement among the Government of Canada, Government of Manitoba, Manitoba Hydro-Electric Board (Manitoba Hydro), and the Northern Flood Committee as a result of the impacts to First Nations' land caused by the Churchill River Diversion Project.

Optical Protection Ground Wire: A wire providing both lightning protection for a transmission line and communications for line control and protection. Also sometimes called the Sky Wire.

Organic: Of, or relating to, or derived from living matter. Also refers to an order of soils that have developed predominantly from organic deposits.

Overburden: Soil or loose material that overlies bedrock.

Particulate Matter: Material suspended in the air in the form of tiny particles.

Peat: Partially carbonized vegetable matter, typically moss, formed by partial decomposition in water.

Permafrost: A condition where soil temperature remains below 0 Celsius for at least two consecutive years. Typically the soil will thaw at the surface during the summer, but below a certain point it will remain frozen. Permafrost is divided into continuous and discontinuous permafrost.

Permeability: The degree to which fluids or gases can pass through a barrier or material such as soil. When referring to soil, it refers to the degree to which the soil is able to transmit water.

Polycyclic Aromatic Hydrocarbons: A class of hydrocarbon molecules that have multiple carbon rings. Includes a number of carcinogenic (cancer-causing) substances and environmental pollutants. Hydrocarbons are compounds that contain only carbon and hydrogen and are derived mostly from petroleum, but also from coal tar and plant sources.

Potable Water: Water suitable for human or animal consumption.

Pre-Construction: Includes all project activities (surveying, staking, mapping, conducting field studies, carrying out public consultation and communication activities) that lead up to but do not include project construction.

Preferred Route: The best route choice based on public input, biophysical, socio-economic, and cost and technical considerations.

Project Study Area: In the case of Bipole III, the large, crescent-shaped area covering approximately 20% of Manitoba and running from northeast of Gillam to east of Winnipeg via western Manitoba. Research and consultation for Bipole III was carried on throughout the Project Study Area in order to develop the Final Preferred Route for the transmission line.

Protected Area: As defined by the World Conservation Union, a protected area is an area of land and/or water especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Protected Areas Initiative: Manitoba's Protected Areas Initiative seeks to permanently protect an adequate sample of all the Province's diverse landscapes that represent the biodiversity of Manitoba's natural regions.

Protected Species: Plant or animal species protected under the *Species at Risk Act* (federal) or *The Endangered Species Act* (Manitoba).

Quarry: An open excavation or pit from which stone, gravel or sand is obtained by digging, cutting or blasting.

Raptor: A bird of prey such as an owl, falcon, eagle or hawk.

Rare Species: Any indigenous species that, because of its biological characteristics or because it occurs at the fringe of its range, exists in low numbers, but is not a threatened species.

Recruitment: A term referring to the rate at which young animals survive to maturity

Reforestation: the natural or artificial restocking of a previously forested site (typically after harvesting) with trees.

Registered Trapline: An area in which an individual is granted exclusive right to harvest furbearers. Part of a system implemented by the Manitoba government for management of commercial harvesting of furbearers

Rehabilitation: In the context of the Bipole III EIS, restoration of a disturbed site, land area or structure to its original condition, or to useful operation or productive capacity.

Residual Environmental Effect: An environmental effect that remains, or is predicted to remain, after mitigation measures have been applied.

Resource Management Area: An area jointly managed by a Resource Management Board established by agreement between Manitoba and a First Nation or a local Aboriginal community.

Right-of-Way: Area or strip of land controlled and maintained for the development of a road, railway, pipeline or electrical transmission or distribution line, and used for the construction, operation and maintenance of the facility.

Riparian: Referring to terrain, vegetation or simply a position adjacent to or associated with a stream, flood plain or standing body of water.

Rookery: A communal nesting ground for birds.

Salinity: The concentration of mineral salts dissolved in water.

Salt Flat: The dried-up bed of a former salt lake.

Salt Marsh: A marsh that is affected by brackish to saline water.

Scoping: An activity that focuses the environmental assessment of a proposal on relevant issues and concerns, types of effects, alternatives for consideration, time frame, and methodology, and establishes the boundaries for the assessment.

Sediment: Material, including soil and organic material, that is deposited on the bottom of a waterbody.

Sedge: A family of plants found in marshes and wet areas.

Sensory Displacement: the impact that results from animals avoiding an area because of noise and human activity

Setback: Prescribed distance between a pollution source or disturbance and a resource or ecosystem that needs protection.

Shelterbelt: Row of trees or bushes planted usually to prevent wind erosion in agricultural areas.

Site Selection and Environmental Assessment (SSEA): Process used to select a site or route for a development such as a transmission line or station and assess any potential environmental impacts of the development.

Slash: Woody debris left from clearing in forest or shrubland.

Softwood: Typical softwoods in Manitoba are trees such as spruce, fir and pine.

The *Species at Risk Act (SARA)*: Federal act that provides for the legal protection of wildlife species.

Species of Special Concern: As defined by COSEWIC, a species that has characteristics that make it particularly sensitive to human activities or natural events.

Staging: Gathering of birds in preparation for migration.

Stray Voltage: Defined by the Institute of Electrical and Electronics Engineers as a voltage that may be present in normal operation of an electrical system between two surfaces that can be simultaneously contacted by a person or animal.

Stripping (soil): The act of removing the natural soil and organic covering from an area by mechanical means.

Suckering: The growth of a plant that produces new shoots at the base or below ground travelling out from the plant base.

Suspended Solids: Small solid particles which remain in suspension (not dissolved) in water

Threatened: As defined by COSEWIC, a species likely to become endangered if limiting factors are not reversed.

Threshold: A limit or level which, if exceeded, likely will result in noticeable or measurable change or environmental effect that may be significant.

Treaty Land Entitlement (TLE): Land owed to certain First Nations under terms of the treaties sign by First Nations and Canada between 1871 and 1910. Treaties provided that Canada would provide reserve land to First Nations based on population size, but not all First Nations received their full allocation.

Turbidity: The level of sediment in water that reduces clarity.

Understory: Vegetation growing beneath taller plants.

Ungulate: Any of a number of mammals with hooves, including moose, caribou, deer and elk.

Upland Game Bird: A non-waterfowl bird, such as ruffed, spruce or sharp-tailed grouse, that is hunted by humans.

Valued Environmental Component (VEC):

Any part of the environment that is considered important by the proponent, public, scientists or government involved in the assessment process, based on societal or cultural values or scientific interest and concern.

Vegetation Management: The process of preventing the growth of vegetation from interfering with a specific land use. In the case of Bipole III, ensuring that vegetation does not grow tall enough to become a threat to the transmission line or towers.

Volatile Organic Compounds (VOC):

Compounds that have a high vapour pressure and low to medium solubility in water. They may occur naturally or as a result of human activity. Fuels, solvents, paint thinners, and dry cleaning agents contain VOCs.

Volt: The unit of measure of electric pressure which causes current to flow.

Waterbird: A bird commonly associated with water, such as any kind of duck, goose, tern, gull, crane, or heron.

Waterbody: Any location where water flows or is present, whether or not the flow or presence of water is continuous, intermittent or occurs only in a flood. This includes lakes, rivers, wetlands and aquifers.

Waterfowl: Birds that frequent water, such as ducks, geese and swans.

Watershed: The region draining into a river, river system, or other body of water.

Water Table: The upper surface of the zone of saturation in an unconfined aquifer.

Watt: The unit of measurement of electric power.

Wildlife Management Area (WMA): Area in Manitoba established under *The Wildlife Act* for management, conservation and enhancement of wildlife.

Wetland: Land where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities.

Woodlot: A relatively small area of forest, usually privately owned, maintained as a source of fuel or lumber.

Woodlot Management Plan: A plan for harvesting and management of a privately owned woodlot.

Appendix A: Terms of Reference Clean Environment Commission Public Hearings on the Bipole III Transmission Project

DEC 08 2011



MINISTER OF CONSERVATION

Legislative Building
Winnipeg, Manitoba, CANADA
R3C 0V8

DEC - 5 2011

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

Dear Mr. Sargeant:

Pursuant to Clause 6 (5) (b) of *The Environment Act* (the Act), I hereby request the Clean Environment Commission to hold public hearings on the proposed Bipole III transmission line project. My intent in this regard was announced publicly on December 2, 2011, following the receipt of the Environmental Impact Statement (EIS) by my department on December 1, 2011.

To guide the scope of your review, pursuant to Clause 6 (5.1) of the Act, attached are Terms of Reference.

Following completion of the hearings, please forward me in accordance with Clause 7(3) of the Act, a report outlining the Commission's advice and recommendations regarding the proposed project.

A copy of the EIS will be forwarded by the Environmental Assessment and Licensing Branch directly to your office this afternoon.

Yours sincerely,


Dave Chomiak
Minister

Attachment

Terms of Reference
Clean Environment Commission
Manitoba Hydro Bipole III Transmission Line Project:
A Major Reliability Initiative (the Project)

Background

On December 14, 2009, Manitoba Conservation, Environmental Assessment and Licensing Branch (EALB), received an Environment Act Proposal and Draft Environmental Assessment Scoping Document from Manitoba Hydro respecting the proposed Bipole III transmission line project. The scoping document is for the Environmental Impact Statement (EIS) and it was finalized in June 2010 following a public and Technical Advisory Committee (TAC) review.

As authorized under *The Environment Act* (the Act), the Minister of Conservation has decided that the assessment of this project will include a review by the Clean Environment Commission (the Commission).

To date, no federal triggers have been identified for the project and as such, a federal regulatory decision will likely not be required. However, Manitoba will seek expert advice from federal agencies in accordance with the Canada/Manitoba Agreement on Environmental Assessment Cooperation.

Terms of Reference

Pursuant to Section 6 (5.1) of the Act, the Minister has determined that the Terms of Reference the Commission is to follow in carrying out its duties are:

- To review and evaluate the Environmental Impact Statement (EIS) and the proponent's public consultation summary;
- To hold public hearings to provide an opportunity for the Commission to consider stakeholder and public input as part of their project assessment. The locations of hearings must include Winnipeg, but other locations also should be considered along the proposed route to allow easier access to those members of the public that do not live in Winnipeg but may be affected by the project; and,
- To prepare and file a report with the Minister of Conservation outlining the results of the Commission's review and providing recommendations for the Minister's consideration. The report should be filed within ninety (90) days from the date of completion of hearings as per Section 7(3) of the Act.

Mandate of the Hearings

The Commission shall conduct the hearings in general accordance with its Process Guidelines Respecting Public Hearings. The Commission may, at any time, request that the Minister of Conservation review or clarify these Terms of Reference.

Hearings should be located in areas that will allow reasonable access to potential stakeholders.

The Commission shall, within the mandate of the hearing and the Terms of Reference provided by the Minister as noted above, provide a report recommending:

- Whether an Environment Act licence should be issued to Manitoba Hydro for the Bipole III Project.

Should the Commission recommend the issuance of an Environment Act licence for the Bipole III Project, then appropriate recommendations should be provided within the scope of the Terms of Reference:

- Measures proposed to mitigate any potential adverse environmental, socio-economic and cultural effects resulting from the Bipole III Project, and, where appropriate manage residual effects; and
- Future monitoring that may be recommended in relation to the Bipole III Project.

The Commission's recommendation shall incorporate, where appropriate, the Principles of Sustainable Development and Guidelines for Sustainable Development as contained in *Sustainable Development Strategy for Manitoba*.

December 5, 2011

Appendix B: List of Presenters

Presenter	Affiliation	Presenter	Affiliation
Abrahamson, Ralph	Peguis First Nation	Courcelles, Cheryl Kennedy	Private
Agger, Leslie	Fox Lake Cree Nation	Dawson, Robert	Peguis First Nation
Anderson, Karen	Private	De Rocquigny, Bertrand	Bipole III Coalition
Bailey, William	Manitoba Hydro	Delaronde, Billy	Private
Bateman, Len	Private	Derry, William (Art)	Bipole III Coalition
Beardy, Catherine	Private	Dick, Samson	Private
Beardy, Elizabeth	Private	Diduck, Alan	Consumers' Association of Canada (Manitoba) Inc.
Beauchamp, Willy	Private	Dorion, Philip	Opaskwayak Cree Nation
Beddome, James	Green Party of Manitoba	Duck, Gloria	Manitoba Métis Federation
Bedford, Douglas	Manitoba Hydro	Dyck, John	Manitoba Hydro
Berger, Robert	Manitoba Hydro	Elder, Rob	Manitoba Hydro
Berrien, Robert	Bipole III Coalition	Elisabeth, Hicks	Manitoba Hydro
Bignell, Norman	Private	Ennis, David	Private
Boucher, Charlie	Pine Creek First Nation	Ferland, Darrel	Opaskwayak Cree Nation
Boudreau, Edward	Private	Fitzpatrick, Patricia	Consumers' Association of Canada (Manitoba) Inc.
Brass, Gordon Junior	Private	Fleming, Peter	Manitoba Métis Federation
Brass, Gordon Senior	Private	Fleury, John	Private
Brass, Lawrence Douglas	Wuskwi Sipiik First Nation	Franzmann, Ray	Private
Braun, Tracey	Manitoba Conservation and Water Stewardship	Friesen, Karen	Private
Brown, Gordon	Consumers' Association of Canada (Manitoba) Inc.	Friesen, Reg	Bipole III Coalition
Bushie, Charlie	Private	Gambler, Rene	Private
Campbell, Anita	Private	Gennaille, Clarice	Manitoba Métis Federation
Catcheway, Donald	Private	Gennaille, Nelson	Sapotawayak, Manitoba
Chartrand, David	Manitoba Métis Federation	Gennaille, Richard	Manitoba Métis Federation
Chartrand, Louis	Private	Graafland, Helen	Private
Church, Bob	Manitoba Métis Federation	Graafland, Monique	Private
Cluny, Ian	Tataskweyak Cree Nation	Graham, Jim	Private
Collinson, James	Bipole III Coalition	Grant, David	Private
Cook, Jason	Private		

Presenter	Affiliation
Gray, Glenn	Manitoba Hydro
Gunn, Jill	Consumers' Association of Canada (Manitoba) Inc.
Hamilton, Judith	Private
Hamlin, Robert	Private
Harris, Dawn	Private
Head, Mary	Opaskwayak Cree Nation
Hegmann, George	Manitoba Hydro
Hobson, Harry	Swan Lake First Nation
Hudson, Glenn	Peguis First Nation
Jebb, Edwin	Opaskwayak Cree Nation
Johnson, Shannon	Manitoba Hydro
Joyal, Trevor	Manitoba Hydro
Kames, Irmgard	Private
Keating, Shaun	Tataskweyak Cree Nation, Adviser
Kehler, Irwin	Private
Koenig, Kristina	Manitoba Hydro
Kulchyski, Peter	Peguis First Nation
Kuzdak, Vince	Manitoba Hydro
Lagimodiere, Jean	Manitoba Métis Federation
Lagimodiere, Julyda	Private
Laliberte, Garland	Bipole III Coalition
Lapointe, Gerald	Private
Lapointe, Yves	Private
Larcombe, Patt	Manitoba Métis Federation
Lawson, W. Graham	Bipole III Coalition
Lee, Murray	Consumers' Association of Canada (Manitoba) Inc.
Lockhart, Sophie	Private
Lowe, Ron	Tataskweyak Cree Nation, Adviser
Mac Innes, Finlay	Manitoba Hydro
Mackenzie, Douglas	Tataskweyak Cree Nation, Adviser
Mackling, Alvin Henry	Private

Presenter	Affiliation
Madden, Jason	Manitoba Métis Federation
Manningway, Wayne	Peguis First Nation
Massan, Noah	Private
Mayor, Janet	Manitoba Hydro
Mazur, Kurt	Manitoba Hydro
Mazur, Ronald	Manitoba Hydro
McCorrister, Elmer	Manitoba Métis Federation
McCorrister, Nathan	Peguis First Nation
McGarry, Patrick	Manitoba Hydro
McKay, Cindy	Private
McKay, Marvin	Private
McKenny, Joyce	Swan Lake First Nation
McLean, Garry	Private
McLeod, Curtis	Manitoba Hydro
Meekish, Calvin	Private
Mercredi, Eugennie	Private
Meronek, Brian	Bipole III Coalition
Mills, Warren	Pine Creek First Nation
Moose, Ivan	Private
Morin, Emile	Private
Munro, George	Private
Myska, Albert	Private
Nayet, Willy	Private
Nepinak, Francis	Private
Nepinak, Reg	Private
Neufeld, Gerald	Manitoba Hydro
Nielsen, Jim	Manitoba Hydro
Noble, Bram	Consumers' Association of Canada (Manitoba) Inc.
Nychuk, Rick	Bipole III Coalition
Ortiz, Wayne	Manitoba Hydro
Osler, Cam	Manitoba Hydro
Paranteau, Elder Robert	Private
Paranteau, Solomon	Private
Parenteau, John	Private
Pedersen, Blaine	Private

Presenter	Affiliation
Pedersen, Jim	Private
Pederson, Vickie	Private
Penner, Calvin	Private
Penner, Glenn	Manitoba Hydro
Petch, Virginia	Manitoba Hydro
Peters, Lee Ann	Private
Peters, Sara	Private
Phin, Richard	Manitoba Hydro
Playford, Tomasin	Swan Lake First Nation
Plett, Jennifer	Private
Poirier, Vicki	Private
Pugh, Barry	Private
Reimer, Mark	Private
Rempel, Chandra	Private
Rempel, Margaret	Private
Rempel, Paul	Private
Rettie, Jim	Manitoba Hydro
Ross, Loretta	Fox Lake Cree Nation
Ross, Wendy	Fox Lake Cree Nation
Schindler, Doug	Manitoba Hydro
Scott, Bill	Swan Lake First Nation
Scott, David	Swan Lake First Nation
Scott, Elaine	Swan Lake First Nation
Scott, Wayne	Swan Lake First Nation
Sinclair, James	Peguis First Nation
Skinner, Douglas	Consumers' Association of Canada (Manitoba) Inc.
Slota, Phillip	Manitoba Hydro
Soprovich, Dan	Wuskwi Sipiik First Nation, Private
Spence, John	Private
Spence, Melanie	Tataskweyak Cree Nation, Adviser
Spence, V	Tataskweyak Cree Nation, Adviser
Stevens, Craig	Wuskwi Sipiik First Nation
Stevenson, Lloyd	Peguis First Nation
Stewart, Abbie	Manitoba Métis Federation

Presenter	Affiliation
Stockwell, John	Pine Creek First Nation
Supernant, Kisha	Manitoba Métis Federation
Sutherland, Mike	Peguis First Nation
Swaluk, Kevin	Manitoba Hydro
Teklemariam, Efrem	Manitoba Hydro
Tishinski, Will	Private
Tkachyk, Ted	Private
Turenne, Paul	Manitoba Lodges and Outfitters Association
Tymofichuk, Ed	Manitoba Hydro
Wiens, Bob	Private
Wiens, Alvin	Private
Wiens, Heidi	Private
Wiens, Tim	Private
Williams, Byron	Consumers' Association of Canada (Manitoba) Inc.
Whelan Enns, Gaile	Manitoba Wildlands
Woodford, Dennis	Bipole III Coalition
Young, Chris	Tataskweyak Cree Nation, Adviser
Zastre, Elwood	Wuskwi Sipiik First Nation

Presenters of written submissions

Presenter	Affiliation
Graafland, Helena	Private
Hudson, Glenn	Peguis First Nation
Pugh, Pam	Private
Robert, Dennis	Private
Unger, Helena	Private
Constant, Louisa	York Factory First Nation

Presenter of Written Submission

Presenter

Affiliation

Doug Dobrowski

Association of Manitoba Municipalities