



National Energy
Board

Office national
de l'énergie

Reasons for Decision

**New Brunswick Power
Corporation**

EH-2-2002

May 2003

Facilities

National Energy Board

Reasons for Decision

In the Matter of

New Brunswick Power Corporation

Application dated 31 May 2001, revised 26 July 2002, for an International Power Line.

EH-2-2002

May 2003

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represented by the National Energy Board

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Abbreviations

ACSR	Aluminum Conductor Steel Reinforced
Act or NEB Act	National Energy Board Act
AC	alternating current
Agency	Canadian Environmental Assessment Agency
Applicant	New Brunswick Power Corporation
Board	National Energy Board
CEA Act	Canadian Environmental Assessment Act
Certificate	Certificate of Public Convenience and Necessity
CSA	Canadian Standards Association
CSA Standard	Canadian Standards Association Standard CAN/CSA-C22.3 No. 1 Overhead Systems
CSR	comprehensive study report
dBA	decibels (A weighting)
DFO	Department of Fisheries and Oceans Canada
EC	Environment Canada
Emera	Emera Energy Inc.
EMFs	electro-magnetic fields
EPN	Early Public Notification
GFR	Guidelines for Filing Requirements
HQ	Hydro-Québec
HVDC	high voltage direct current
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IPL	international power line
km	kilometre(s)
KP	kilometre post
kV	kilovolt(s)

kV/m	kilovolts per metre
line	power line
m	metre(s)
MAWIW	MAWIW Tribal Council
mG	milliGauss
Minister	Minister of Natural Resources
MCA	Maritimes Control Area
MCM	Thousands of Circular Mils
MEPCO	Maine Electric Power Company
MW	megawatt(s) (1,000 kilowatt; 1,000,000 Watt)
NB APC	New Brunswick Aboriginal Peoples Council
NB Power	New Brunswick Power Corporation
NPCC	Northeast Power Coordinating Council
NEB	National Energy Board
NEPOOL	New England Power Pool
NERC	North American Electric Reliability Council
PCP	Public Consultation Program
RI	radio interference
ROW	right of way
Saint John Citizens Coalition for Clean Air	Citizens Coalition
TEDC	Tobique Economic Development Corporation
UNBI	Union of New Brunswick Indians
US	United States of America

Recital and Appearances

IN THE MATTER OF the National Energy Board Act (the Act) and the regulations made thereunder; and

IN THE MATTER OF an application dated 31 May 2001, revised 26 July 2002, by New Brunswick Power Corporation (NB Power) for a Certificate of Public Convenience and Necessity (Certificate) for the construction and operation of an international power line; and

IN THE MATTER OF Hearing Order EH-2-2002 dated 6 December 2002;

HEARD in Saint John, New Brunswick on 24 March 2003;

BEFORE:

J.-P. Théorêt	Presiding Member
K.W. Vollman	Member
G. Caron	Member

APPEARANCES:

I. Blue	New Brunswick Power Corporation
A. Hamilton	

G. Dalzell	Saint John Citizens Coalition for Clean Air
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N. Getty	Union of New Brunswick Indians
R. Perley	

J. Feron	Emera Energy Inc.
S. Fraser	

D. Tucker	On his own behalf
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I. Blue	Province of New Brunswick
A. Hamilton	

C. Beauchemin	National Energy Board Counsel
D. Saumure	

Chapter 1

Introduction

1.1 Background

On 31 May 2001, New Brunswick Power Corporation (NB Power or the Applicant) applied to the National Energy Board (the Board) pursuant to sections 58.16 and 58.23 of Part III.1 of the *National Energy Board Act* (the Act) for a certificate of public convenience and necessity to construct and operate a 345 kilovolt (kV) international power line (IPL). In doing so, the provisions of the Act referred to in section 58.27 would apply in respect of the proposed IPL, rather than the laws of the Province of New Brunswick. NB Power later filed a revised application with the Board on 26 July 2002.

Prior to filing its application, NB Power filed a preliminary submission on 19 April 2001 for the Canadian portion of the 345 kV IPL from Point Lepreau, New Brunswick to Orrington, Maine. Pursuant to the *Canadian Environmental Assessment Act* (CEA Act), the environmental assessment process for the Project commenced on 4 May 2001 with the issuance of a letter under section 5 of the *Regulations Respecting the Coordination by Federal Authorities of Environmental Procedures and Requirements*. The 4 May letter also outlined that, if applied for, the proposed IPL would require the completion of a comprehensive study report (CSR) pursuant to the CEA Act as the proposed IPL would have a voltage of 345 kV and would require greater than 75 km in length of new right of way. The Board also requested input from those federal authorities that had expressed an interest in the Project.

As responsible authorities for the project, the Board and the Department of Fisheries and Oceans Canada (DFO) in consultation with the Canadian Environmental Assessment Agency (the Agency) established a process for the preparation of the CSR and advised NB Power on 16 August 2001 that NB Power, as the proponent of the project, would be responsible for carrying out a comprehensive study and preparing a CSR pursuant to section 17 of the CEA Act. Participants in the process included NB Power, DFO and Board staff. Environment Canada (EC) and the Agency also participated by providing specialist advice as federal authorities. More information on the CSR is provided in Chapter 6 of these Reasons.

The Board established a process to assess NB Power's revised application and published Hearing Order EH-2-2002 on 6 December 2002.

NB Power published notices of the hearing in the Canada Gazette, Globe & Mail and National Post (Financial Post), and the following New Brunswick newspapers: the Telegraph Journal (Saint John), Daily Gleaner (Fredericton), Times & Transcript (Moncton), Saint John Times Globe, St. Croix Courier (St. Stephen), and L'Acadie Nouvelle (Caraquet).

The Board held an oral public hearing to consider NB Power's revised application on 24 March 2003 in Saint John, New Brunswick.

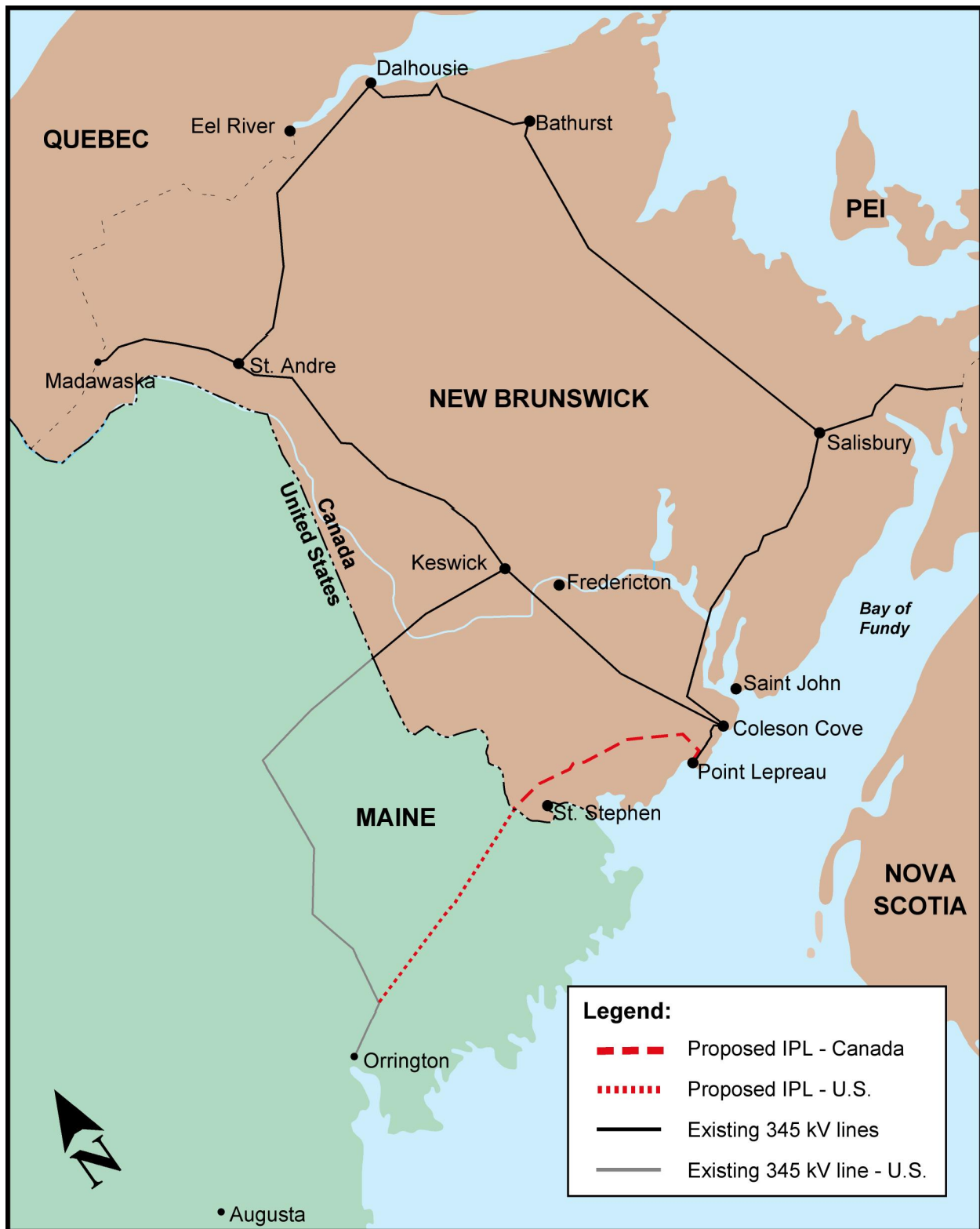
1.2 Project Description

The proposed IPL is a 345 kV transmission line from the Point Lepreau Peninsula on the Bay of Fundy in New Brunswick, through Saint John and Charlotte counties to a point on the international border between Canada and the United States of America (US) near Woodland, Maine (Figure 1-1). The IPL would be 95.5 km long and would cost an estimated \$43 million.

The IPL was originally planned to connect with a new 345 kV transmission line running from the international border to Orrington, Maine which would be owned by Bangor Hydro. Bangor Hydro was purchased by Emera Energy Inc. (Emera) which was undecided about whether to proceed with the project. Regardless, NB Power was of the view that the proposed IPL, if approved, will be an important component in opening up the electricity market in New Brunswick and that Emera or others may therefore be interested in completing the proposed IPL.

The stated purpose of the IPL is to improve the reliability, efficiency and market access of the regional electricity system.

Figure 1-1
New Brunswick Power's 345 kV Powerlines and Proposed IPL



Chapter 2

Need for the Facilities

2.1 Existing Facilities

NB Power's electric power system is one of the three Canadian and two US (Northern Maine) electric utility systems comprising the Maritimes Control Area (MCA) of the Northeast Power Coordinating Council (NPCC). The NPCC in turn is one of the ten regional reliability councils of the North American Electric Reliability Council (NERC).

NB Power has one IPL commonly known as the Maritime Electric Power Company (MEPCO) line. This IPL interconnects all MCA members' systems to other NPCC members' systems in the US. It runs between NB Power's Keswick station in Canada and Bangor Hydro's Orrington station in Maine. It is operated at the same voltage level as the equipment and facilities it connects to at its two termination points: 345 kV. The MEPCO line is over 30 years old and is the only alternating current (AC) synchronous linkage between the MCA and other NPCC electric utilities. It is also the only AC link by which the MCA can physically undertake electricity trading within the New England Power Pool (NEPOOL) electricity market.

As a stand-alone facility, the existing MEPCO line has physical, bi-directional electrical transmission capacity of 1000 MW. However, power system constraints within MCA and NPCC currently limit the full use of the MEPCO line to an export capacity to the US of 700 MW and no import capacity.

The Canadian portion of the MEPCO line is built with conductors of a smaller size and capacity than that of the US portion of the power line. NB Power indicated that this situation contributes to the MEPCO line's present capacity constraints, particularly the lack of any import capacity into the MCA.

The MCA also has two interconnects with Hydro-Québec (HQ). However, as with all other power systems that interconnect with the HQ system, these interconnections are high voltage direct current (HVDC) asynchronous, not AC. These links are also within NB Power's system; one link is located at each of Eel River and Madawaska, New Brunswick.

The new IPL that NB Power has applied for would provide a second physical interconnection between NB Power's system and that of Bangor Hydro and would in effect provide a second link between the MCA and southern elements of the NPCC. Like the existing IPL, the new IPL would have initial bi-directional physical transmission capacity of 1000 MW and would be built for and operated at 345 kV. However, the new IPL would be built with a consistent and larger capacity conductor size than the MEPCO line.

2.2 Justification for the Second Interconnection

NB Power advanced seven reasons in support of the second interconnection.

1. NB Power asserted that the new IPL – as a second AC synchronous connection between the MCA and Maine - will improve its and the MCA's response to a first-contingency loss of either the new IPL or the existing MEPCO line. Specifically, concurrent operation of the two lines will provide additional low voltage support in southern New Brunswick and prevent 'islanding' (synchronous electrical separation) of the MCA from Maine and the NPCC, in the event of a first contingency loss of either IPL. The new IPL will therefore improve the reliability of electric power supply for New Brunswick, plus its neighboring Canadian and American areas of the Maritimes Control Area.
2. NB Power indicated that the use of the new IPL, particularly concurrent with the MEPCO line, will incur less transmission line losses during imports from or exports to Maine, through three means:
 - The new IPL will be a shorter physical path from NB Power's major load center – the Point Lepreau and Coleson Cove plant sites - to Bangor Hydro's Orrington station;
 - Any power transmitted between Orrington and NB Power can be divided between two electrical paths, instead of just one, when both lines are used; and
 - The new IPL will have larger conductors and thereby incur lower losses per unit of electricity transmitted than the MEPCO line.

As an example, NB Power stated that at an export level of 700 MW, line loss reductions of 28 MW are expected when the new IPL is in place.

3. NB Power stated that the new IPL will improve market access between NPCC/NEPOOL and the Maritime Control Area. NB Power indicated that the new IPL will allow the export transfer capability between itself and Bangor Hydro's Orrington station to rise by 300 MW to 1000 MW and that these exports could now be 'firm' whereas they are currently 'interruptible'. NB Power also indicated that the new IPL will, for the first time, allow imports into the MCA via Orrington of up to 400 MW and that these imports could also be 'firm'. NB Power asserted that electricity customers in the MCA are presently susceptible to the exercise of market power from its existing suppliers, but that the new IPL will allow access to purchases from the larger New England market.
4. NB Power observed that the New England area experiences its peak electrical loads during summer months and can have surplus generation to sell in the winter. In contrast, New Brunswick, Nova Scotia and Québec systems experience their peak loads during winter months. Therefore, NB Power was of the view that the new IPL will increase the availability of additional generation sources to MCA utilities as well as Hydro-Québec, from the New England area, particularly in the event of system contingencies during load peaks, or during the winter.

5. NB Power indicated that it must make a decision whether to refurbish or retire its Point Lepreau nuclear generating facility when it reaches the end of its current operational life in 2006 or soon thereafter. NB Power stated that it will need access to the additional import capacity provided by the IPL either during the minimum 18 month period that Point Lepreau will be off-line for refurbishment, or during the period that it takes for new generation capacity to come on stream in the event the Point Lepreau facility is retired.
6. NB Power pointed to recent developments concerning the present and future availability of natural gas in the Maritime region. It indicated that a 400 MW gas-fired generation facility had been under consideration to meet future load requirements, but that the likelihood that such a unit will be built was presently in doubt, further necessitating the need for the second tie to meet the generation needs of the province during times of peak demand.
7. NB Power noted that the building of the new IPL could provide a cheaper alternative to utilities in northern Maine than the construction of new local sources of generation in that region.

Mr. Tucker, a local intervenor, was of the view that the Board should reject the application for the IPL. He noted that the proposed IPL will not provide enough import capacity to fully cover the 670 MW of generation capacity lost to NB Power when Point Lepreau is either refurbished or retired. Mr. Tucker was of the view that the risks facing New Brunswick electricity consumers are due to a lack of generation capability, particularly during winter months, and not transmission capacity as forwarded by NB Power. He noted that no evidence was placed on the record of any US power generator being interested in using the additional capacity of the applied-for IPL or committing to providing firm power over the line. He asserted that the security of adequate supply will not be guaranteed by construction of the applied-for IPL. He indicated his preference, as a concerned electricity consumer in New Brunswick, that NB Power should channel its financial resources into generating capacity instead of the IPL.

Mr. Tucker expressed concerns regarding the US portion of the IPL. He expressed doubt that the government or the residents of New Brunswick, as ultimate owners of NB Power, will support NB Power's direct involvement in the development of transmission assets in the US should this be required. He asserted that proper and complete examination of the overall line could not be made until all owner/operator agreements are in place and available for study by the Board and other interested parties.

Mr. Tucker further noted that the proposed route in the US had been denied approval and that required environmental approvals have been allowed to lapse. He pointed to statements made by the present US partner in the project, Emera Energy, identifying questions regarding "the extent to which the IPL could capture, on a contractual basis, incremental cross-border flows". He expressed the view that the continued uncertainty regarding fundamental aspects of the IPL creates a situation wherein there remain too many unknowns relative to the project.

NB Power acknowledged concerns that were raised about the ownership of the US portion of the IPL; its design and operation; its construction schedule; and the likelihood of it being permitted by US authorities. NB Power pointed to commitments it had received from Emera Corporation,

the present holder of the US rights to the IPL, that it will take steps to enable other developers to advance the project in the event that Emera did not wish to pursue the project. NB Power stated that if Emera did not proceed with the project its intention was to move the project forward in the US by either forming a subsidiary company or finding another business partner on the US side.

Views of the Board

The Board notes that no power line operators filed evidence indicating that the applied-for IPL would negatively affect their systems. The Board understands and accepts NB Power's assertions that the IPL will:

- Provide power system reliability improvements;
- Provide energy efficiency improvements in the form of lower transmission line losses;
- Increase export capability;
- Enable the direct import of power from the New England area;
- Allow 'firm' energy transactions between the MCA and the NEPOOL;
- Improve access to additional generation capacity in New England during the winter season or in the event of system contingencies; and
- Improve access to additional generation capacity in New England to assist in meeting system requirements arising out of the refurbishment or retirement of Point Lepreau.

At the hearing, Mr. Tucker asserted that NB Power lacks generation and not transmission capacity and that the financial resources it is now intending for the applied-for IPL should instead be directed towards generation capacity. However, this assertion is not supported by the record in this proceeding. Therefore, the Board makes no findings on the alternative suggested by Mr. Tucker.

Mr. Tucker also noted that the applied-for IPL will not provide enough import capacity for NB Power to cover the temporary loss or the retirement of Point Lepreau. The Board notes that nothing was placed onto the record which indicates that the applied-for IPL might impede NB Power's ability to secure any additional generation that it might require, in excess of available import capacity, during the period.

The Board continues to have concern about the US portion of the applied-for IPL and would include a condition in a certificate it could issue requiring NB Power to demonstrate to the Board's satisfaction that all US Federal and State regulatory approvals have been granted for the corresponding power line in the state of Maine prior to the construction of the applied-for IPL in New Brunswick.

Chapter 3

Design and Safety of the IPL

NB Power provided preliminary design information for the proposed IPL. NB Power advised that it will complete the final design of the IPL in early to mid-2005.

3.1 Basic Design of the IPL

The proposed IPL will be a three-phase 345 kV AC circuit built on tubular steel ‘H’-frame structures using two bundled conductors per phase of 1192 MCM ACSR “Grackle” conductor. NB Power stated that the ‘H’-frame structures selected for the IPL are more robust than the traditional steel towers used on its existing 345 kV lines. V-string insulator arrangements are proposed for center phase conductor bundles to reduce clearance requirements and structure widths. The IPL will be constructed within a 50 metre (m) wide right of way. The IPL will be built and operated at 345 kV which is the voltage of the facilities that it will connect to at both the Point Lepreau and Orrington stations. The IPL will be AC to provide additional synchronous connection between the MCA and the New England area of the NPCC.

The terrestrial route that the IPL will traverse is a near-coastal area and could result in the IPL being subjected to significant adverse weather conditions such as very strong winds or severe radial icing accompanied by strong winds at low temperatures. There are several terrain variations of note along the route, such as “Old Ridge”, “Red Rock Ridge” and a hill near Angle Hub #6. NB Power engaged expert consultants to develop the transmission line loading cases that it will use to complete its final line design. These load cases were developed using historical weather data collected at stations at Moncton and Saint John, New Brunswick.

NB Power noted that line designs for most Canadian regions typically use a 50 year weather return period as specified in current CSA power line design standards. NB Power indicated that the new IPL will be of particular importance to its system and that they wanted a higher level of reliability from it. Accordingly, NB Power wanted to use more demanding load cases in the design of this IPL than it might use for its other similar transmission lines. NB Power provided consultant reports wherein the use of 100 year weather return period values with an overload factor of 1.35 was recommended. NB Power committed to following this recommendation, which the report states will effectively provide structures capable of withstanding 500 year return period loadings of the four load cases selected and reviewed.

Severe ice storms and the ability of power systems to survive these occurrences is of significant importance to the electric utility industry. NB Power advised that it is part of an international consortium of electric utilities and others involved in undertaking work on this challenge. NB Power stated its intention to incorporate any lessons learned from its participation in the consortium into its design of the proposed IPL.

Views of the Board

The Board has considered the information provided by NB Power and is of the view that it forms an adequate basis for the finalization of the IPL's design. The Board is also aware that accepted industry practice and applicable design standards for transmission lines evolve and change over time. As line design would not be complete until 2005 the Board is of the view that NB Power should design the IPL to the standards that would exist in 2005. The Board notes that NB Power has stated its willingness and intention to do so. Nevertheless, the Board would include conditions in a certificate it may issue in respect of these facilities which would require NB Power to design, construct and operate its facilities in accordance with the specifications, drawings, and other information or undertakings it has made in its application-related correspondence, and to design and construct the IPL to comply with the version of CAN/CSA C22.3 No. 1 Overhead Systems that is current in 2005.

The Board has also noted NB Power's election, pursuant to section 58.23, which would have the effect that the provisions of the Act referred to in section 58.27 would apply in respect of the proposed IPL, rather than the laws of the Province of New Brunswick. As a result, the Board finds it necessary to include a condition in a certificate it may issue in respect of these facilities which would provide for the ongoing regulation of the operation and maintenance of these facilities. In the event that NB Power does not have existing manuals, procedures and programs in place that address the items listed in the proposed condition, the Board would expect NB Power to draft or modify its new manuals, procedures and programs accordingly.

3.2 Electro-Magnetic Fields and Human Health

Two intervenors expressed concerns about the strength of electro-magnetic fields (EMFs) that the IPL will produce along its route. NB Power stated that magnetic field strengths associated with the IPL are related primarily to current loading and proximity. According to NB Power, the design of the IPL complies with electrical and mechanical engineering standards. They further stated that the goal of such standards is the assurance, as far as practically possible, of both a safe and efficient operation. NB Power noted that "Health Canada does not presently consider that guidelines are necessary as the scientific evidence is not strong enough to conclude that typical exposures cause health problems." However, NB Power provided figures indicating that calculated EMFs expected along the ROW of the proposed IPL were below guidelines for maximum exposure published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) which operates under the World Health Organization. NB Power stated that while the ICNIRP guidelines are based on acute and not chronic health effects, they are the most often quoted for the general public. NB Power also indicated that it had routed its IPL to avoid areas of residential development.

NB Power noted that it maintains membership on the Canadian Electricity Association's EMF Task Force and, by so doing, monitors the state of the science with respect to EMFs. Current information regarding EMFs is made available by NB Power to concerned customers upon request.

In its Notice of Intervention, the Saint John Citizens Coalition for Clean Air (Citizens Coalition) included the issue of the health risk of electro-magnetic fields. However, during final argument, Mr. Dalzell, on behalf of the Citizens Coalition, stated that the evidence on the record covered the Citizens Coalition's initial concerns and therefore there was no need for further clarification.

In his final argument, Mr. Tucker requested that NB Power take measures to reduce the levels of EMFs at the edge of the ROW below 66 milliGauss (mG) to "demonstrate a proactive approach to a concern widely held with the general public." He stated that "much literature accepts a value of approximately 4 mG as being acceptable" for EMF exposure.

Views of the Board

The Board notes that guidelines and standards for EMF exposures from electrical transmission lines have not been established in Canada, and accepts NB Power's use of the ICNIRP guidelines. The Board notes that no evidence was put on the record regarding the 4 mG value, nor were questions posed to NB Power's witness panels. The Board is satisfied with NB Power's assurances that the EMFs resulting from the operation of the IPL would not reach levels which could be considered to be harmful to public health. The Board is also satisfied that NB Power would continue to respond to concerned customer requests for information concerning EMFs.

The Board is of the view that NB Power has adequately addressed the EMF issue within the preliminary design of the proposed IPL and expects that it would continue to do so within the line's final design.

3.3 Audible Noise and Radio Interference

NB Power noted that there are no regulations in place regarding audible noise emissions emanating from transmission lines. It noted that some jurisdictions impose noise limits of between 45 and 60 dBA depending upon location and time of day. NB Power provided calculated values of the IPL's projected noise levels which were generally 45 dBA or below. NB Power also commented that the potential impact of this noise to the public had been reduced by routing of the IPL at locations affording minimal public exposure.

NB Power reported that it had experienced no radio interference (RI) problems attributable to its existing 345 kV lines and stated that it did not anticipate experiencing any such problems with the proposed IPL. NB Power indicated that it will conform to requirements of the *Radiocommunications Act* which require that it take baseline measurements of RI following energization of newly built transmission lines.

Views of the Board

The Board is satisfied with how NB Power has addressed the issues of radio interference and audible noise in its preliminary design of the IPL and expects that NB Power would continue to address them in a like manner when completing the IPL's final design in 2005.

Chapter 4

Public Consultation

4.1 Early Public Notification

The purpose of the Early Public Notification (EPN) program, which is required under the Board's Guidelines for Filing Requirements (GFR), is to inform the public about the project, to seek public input into the route selection, environmental assessment and socio-economic impact assessment, to identify issues and concerns of those potentially affected by the project and to resolve issues. NB Power indicated that it has been conducting its early Public Consultation Program (PCP) since February 2001.

The objective of NB Power's PCP is to:

- provide information and seek input from members of the general public and other interested parties on NB Power's route selection;
- identify, document and monitor issues and concerns arising from the public consultation process; and
- identify measures that will mitigate or resolve public issues.

NB Power identified several stakeholders to the project including directly affected landowners, federal, provincial and municipal government agencies, Aboriginal peoples, local businesses, environmental groups, community residents and adjacent landowners. NB Power conducted nine information sessions where residents were invited to attend by way of letters of invitation, faxes, radio ads, media advisories and community signage. These public information sessions were conducted in three New Brunswick communities (St. Stephen, Pennfield and Musquash). In addition, one-on-one stakeholder meetings were held. Other consultation techniques included the distribution of printed material/information sheets and maps, and the establishment of a toll-free project information telephone line.

NB Power stated that the PCP identified a number of issues, concerns and questions associated with the proposed IPL Project and provided NB Power and its environmental and socio-economic consultants with important information. This information was considered during the selection of the one km wide Preferred Corridor, the environmental and socio-economic assessment process and in the selection of the preliminary Preferred 50 m ROW.

NB Power committed to continuing its consultation with any individual or groups who may have an interest in the IPL Project.

Views of the Board

Based on the submissions of NB Power, the Board is satisfied that the requirements of the NEB's Guidelines for Filing Requirements, in respect

of Early Public Notification requirements, have been met for the IPL Project. The Board is satisfied that stakeholders and Aboriginal persons with possible interests in the IPL were provided with adequate notice of the Project and had sufficient information to clearly understand how the Project could affect them.

4.2 Aboriginal Peoples

In its Application, NB Power submitted that, since February 2001, it had identified and contacted a number of First Nations and Aboriginal groups in respect of the IPL. Specifically, NB Power met with or contacted representatives of the following organizations and communities:

- Big Cove First Nation Community
- Burnt Church First Nation Community
- Madawaska Maliseet First Nation Community
- Maliseet Advisory Committee on Archaeology
- MAWIW Tribal Council (MAWIW)
- New Brunswick Aboriginal Peoples Council (NB APC)
- Oromocto First Nation Community
- Tobique First Nation Community
- Union of New Brunswick Indians (UNBI)
- Wulastuk Grand Council

Based on discussions with these groups, it was noted that UNBI represents 13 bands and some 5,733 individuals while MAWIW represents three bands consisting of approximately 6,000 individuals. The NB APC represents some 3,500 individuals living off reserve. NB Power stated that the consultation program was undertaken to provide Aboriginal communities with the opportunity to voice their issues relating to the proposed IPL Project and to identify current use of lands and resources for traditional purposes as defined by the CEA Act.

The initial discussions focused on introducing the IPL Project and explaining the purpose of the consultation. During these discussions, it was suggested by the Aboriginal representatives that the Chiefs and community members be consulted to identify current use of lands and resources for traditional purposes.

Community meetings were held between November 2001 and January 2002 at the following locations: Madawaska Maliseet First Nation, Big Cove First Nation, Burnt Church First Nation and Tobique First Nation. Information concerning current use of lands and resources by Aboriginal persons was collected using a checklist at the meetings and during other meetings with Elders. NB Power also conducted an Aboriginal Traditional Use Plant survey along the ROW between 5 July and 2 October 2001. The results of the survey showed that no significant impacts will occur on traditionally/historically used plant species which may potentially be used by Aboriginal persons.

In order to facilitate ongoing communication both MAWIW and UNBI retained a Liaison Officer as part of a mutual support agreement with NB Power. The agreements provided financial assistance for the two Liaison Officers, as well as assistance for the Aboriginal groups in the review of environmental documents associated with the Project. NB Power also established an archaeological protocol which will identify First Nations' involvement if a significant heritage resource is located during clearing and construction activities.

Views of the Board

The Board notes that NB Power held numerous meetings with various Aboriginal communities that held an interest in the project and gathered information regarding their current use of the land and resources within the proposed IPL corridor. Moreover, NB Power conducted a study regarding the traditional/historical plant use showing that plant species which could potentially be used by Aboriginal persons would not be significantly impacted upon. The Board also notes that NB Power has established an archeological protocol in the event that significant heritage resources are located during construction activities.

The EH-2-2002 hearing held on 24 March 2003 offered another opportunity for Aboriginal peoples to express their concerns. While some letters of comment were filed and considered, the only Aboriginal group to appear at the hearing was the Union of New Brunswick Indians and its participation consisted of monitoring since it did not avail itself of its opportunity to cross-examine the Applicant nor did it elect to present final argument.

The Board is of the view that NB Power has taken care to ensure that it understands concerns Aboriginal peoples may have regarding the proposed IPL and that NB Power has meaningful measures and plans in place to address these concerns.

Chapter 5

Routing and Land Matters

5.1 Corridor Selection Process

NB Power stated that the proposed IPL will be 95.5 km long and will extend from the Point Lepreau terminal on the Bay of Fundy in New Brunswick, through the Counties of Saint John and Charlotte to a point on the international border between Canada and the US, near Woodland, Maine.

The study area used to locate the one km Preferred Corridor applied for by NB Power encompassed an area approximately 35 km wide by 90 km long. The general study area boundaries included Mount Pleasant, Big Kendron Lake and Lynnefield to the north; St. Stephen, Bartlett Mills, Second Falls and Point Lepreau to the south; Dipper Harbour and South Oromocto Lake to the east; and the St. Croix River to the west.

NB Power selected three corridor alternatives from within the general study area (i.e., the northern, central and southern corridors). The general criteria considered in the corridor routing exercise included environmental (both biophysical and socio-economic constraints), length, cost, market and engineering considerations. The southern corridor was identified by NB Power as the preferred corridor. It has the shortest total distance, resulting in less environmental disturbance and the lowest construction cost (Figure 5-1).

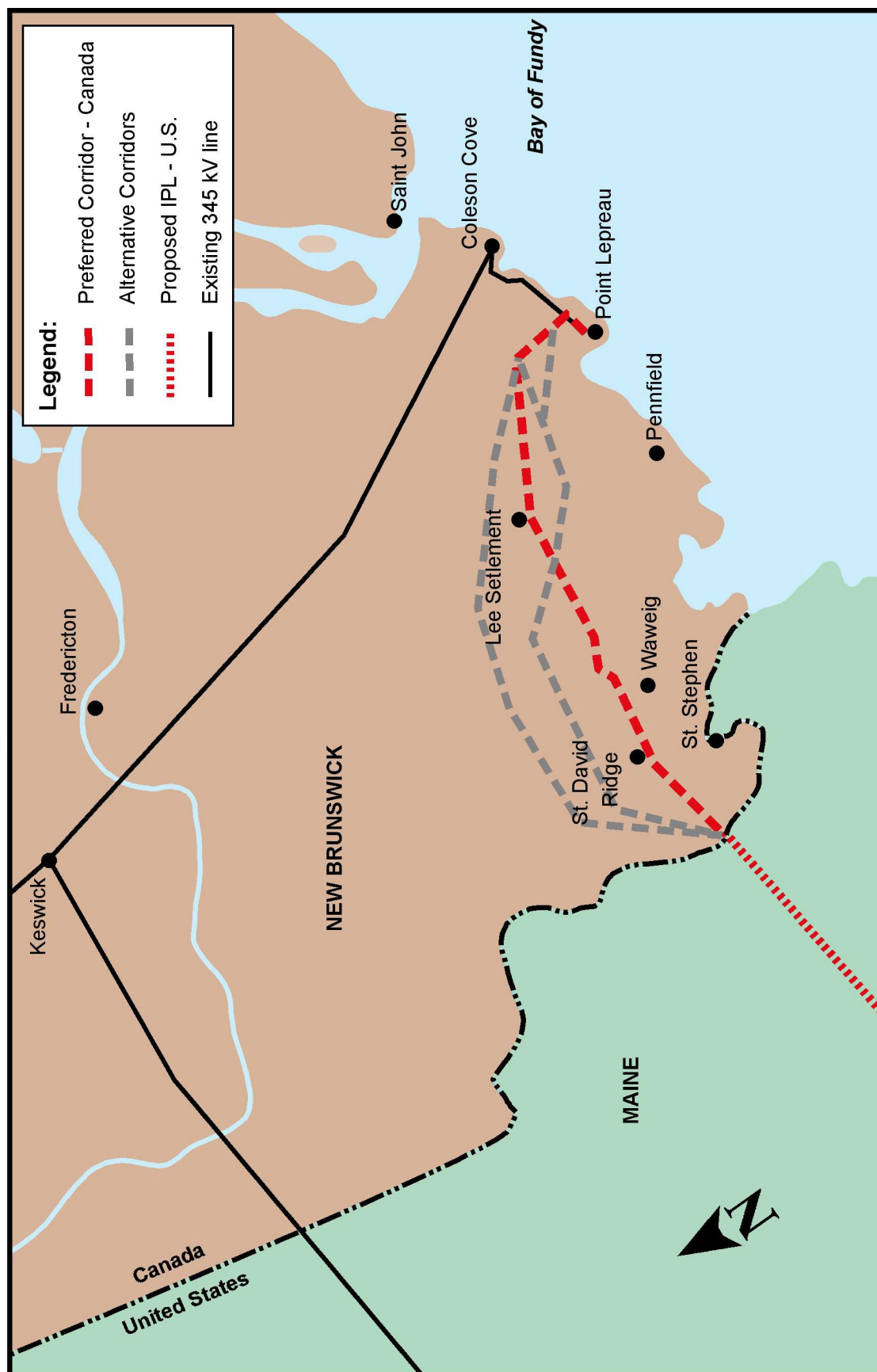
Two route modifications that extend beyond the width of the one km Preferred Corridor were identified during additional detailed investigations. These modifications were addressed in Section 2 of the Comprehensive Study Report. The first route modification was located between Rocky Lake and Bonny River (from approximately KP 28 to KP 48). The main issues addressed were two engineering and environmental constraints, camps and homes in Lee Settlement and a waterfall of high aesthetic value. The second route modification was located between Elmsville and Waweig (from approximately KP 56 to KP 62). The main issues and constraints addressed were a newly developed gravel pit, a blueberry field, some residential homes and farmland.

NB Power has identified a preliminary Preferred 50 m ROW within the one km corridor which it expects to finalize following regulatory approval.

Views of the Board

The Board considers the one km wide corridor and the 50 m route selection process undertaken by NB Power for the proposed IPL to be appropriate. It is the Board's view that NB Power's proposed one km wide corridor location and the Preferred ROW located within that corridor are acceptable.

**Figure 5-1
Proposed Route**



5.2 Land Requirements

The proposed IPL is approximately 95.5 km long. It will be located within approximately 14 km of existing ROW and 81.5 km of new ROW. The ownership of lands within the proposed one km IPL corridor is approximately 36 percent Crown and 64 percent private. The Preferred 50 m ROW route would traverse 5 percent NB Power land, 46 percent Crown and 49 percent private.

The ROW width was chosen by considering three main factors: the size of the structures; conductor swing-over; and tree falling distances. The proposed tubular steel H-Frame structures have a design height of 22 to 34 m. The average span length between structures is estimated to be 350 m and the minimum height from ground to conductor at low sag will be 9 m. The conductors of a power line are not rigid and will move. These movements can be calculated and the ROW must be wide enough to maintain safe electrical clearances between the conductors at all time. In addition, trees adjacent to the ROW are subject to falling and the ROW must be wide enough to ensure that falling trees do not contact the line conductors to avoid line outages. Based on these requirements, NB Power indicated that a 50 m wide ROW will be required.

Views of the Board

The Board has considered the potential impacts of the construction of the IPL on affected landowners, including the amount of land required for easements. The Board finds that NB Power's anticipated requirements for easements are reasonable and justified in this application.

5.3 Land Acquisition Process

NB Power filed sample land acquisition documents to demonstrate compliance with sections 86 and 87 of the Act.

To ensure commitments made to landowners and stakeholders during the land negotiation and acquisition process are identified and carried out, NB Power will use two complementary methods. The first method is a Line List Report that details and tracks commitments made to landowners. This report will be included in the IPL construction contract. The second is the Commitment Management System that NB Power has developed to track issues relating to the IPL Project.

Views of the Board

The Board has considered NB Power's land acquisition documents and finds that they are in compliance with the requirements of sections 86 and 87 of the Act. Moreover, the Board is satisfied with the acquisition process proposed by NB Power.

Chapter 6

Environment and Socio-Economic Matters

6.1 Environmental Matters

NB Power completed a CSR for the Project in order to satisfy the requirements of the CEA Act and to satisfy its responsibilities pursuant to section 58.16 of the NEB Act relating to environmental and socio-economic matters. The CSR considered comments from the public, as well as advice from DFO, EC, the Agency and Provincial regulatory authorities. The CSR described the Project, the environmental assessment process, the potential environmental effects, the mitigative measures and the criteria used in evaluating the significance of the environmental effects. The CSR concluded that the project is unlikely to cause significant adverse residual environmental effects.

The Board and DFO forwarded the completed CSR to the Agency on 20 September 2002 at which time the Agency facilitated a public comment process on the CSR ending 31 October 2002. Following the comment process the Board and DFO confirmed to the agency their view that the CSR was complete. Having taken into consideration the CSR, public comments filed pursuant to subsection 22(2) of the CEA Act and the Agency's recommendations, the federal Minister of the Environment concluded that the IPL Project, as described with mitigation, is not likely to cause significant adverse environmental effects and that public concerns do not warrant further environmental assessment by a review panel or mediator. As a result, the Minister of the Environment referred NB Power's application back to the Board and DFO for action under section 37 of the CEA Act.

As part of the hearing record, NB Power filed a Project Specific Environmental Protection Plan (EPP) outlining the specific actions NB Power will take to address environmental issues identified for the project. The EPP proposed a construction period commencing in the winter of 2005 and ending in the fall of 2006, a delay of two years from the original schedule outlined in the CSR. NB Power also made commitments to confirm baseline information for a number of site-specific factors, the majority of which were completed at the time of the hearing.

NB Power's CSR includes further commitments to design and implement monitoring and follow-up programs including:

- pre-construction monitoring to confirm baseline information;
- compliance monitoring to ensure the project is carried out in compliance with NB Power's approved commitments; and
- environmental effects monitoring to confirm the accuracy of prediction and the effectiveness of mitigative measures, as required for CSR projects pursuant to subsection 38(1) of the CEA Act.

Views of the Board

Following the CSR process and in the event that the Board approves NB Power's proposed application, the Board has further responsibilities which include:

- ensuring that any mitigation measures referred to in supporting its conclusions on the CSR are implemented pursuant to section 37(2) of the CEA Act and section 58.16 of the NEB Act; and
- designing and implementing a follow-up program pursuant to subsection 38(1) of the CEA Act.

To address these responsibilities the Board proposed a number of conditions at the hearing. These conditions related to:

1. Compliance with all commitments made;
2. The appropriate level and timing for confirming and updating baseline information prior to construction;
3. Updating the associated environmental protection plan prior to construction;
4. Reporting on compliance monitoring; and
5. Designing, implementing and reporting on, a follow-up program pursuant to subsection 38(1) of the CEA Act.

The Board notes that the construction schedule found in the EPP shows a delay in the construction schedule outlined in the CSR of two years. The Board is of the view that the baseline information should be updated for any construction commencing in 2005 or later. This requirement would ensure that changes to the environment which may have occurred in the intervening period between the original surveys and the actual start date are current and issues remain appropriately addressed.

Environmental issues that were not discussed in the environmental assessment of a project may arise during construction. These issues may result in public concern or an on-going requirement for remediation. Therefore, the Board would include a condition requiring that, following construction, the status of all environmental issues be reported to the Board until these issues are resolved to the Board's satisfaction.

The Board notes that the Agency's operational Policy Statement: "Follow-up Programs under the Canadian Environmental Assessment Act (October 2002)" indicates that "new or unproven techniques and

technology” should be considered as a factor that would trigger the need for a follow-up program. The Board also notes that access management strategies continue to evolve within the industry and bird diversion devices constitute a relatively new technology. For this reason, the Board is of the view that NB Power should report on the success of these mitigative strategies to increase industry’s knowledge level and to make recommendations on appropriate industry practice.

The Board considered the CSR and all evidence on the record. The Board is of the view that, with the implementation of NB Power’s proposed mitigative measures and Board-imposed conditions, the Project is not likely to cause significant adverse environmental effects.

6.2 Socio-Economic Matters

NB Power submitted that the main socio-economic effects resulting from the IPL Project will be to generate positive employment and subcontracting benefits and that Project construction will have a beneficial effect on the local economy. NB Power stated that local and regional benefits of the IPL Project will include the purchase or procurement of; food and lodging, hardware, fuel, vehicle maintenance, equipment and vehicle rentals, flagging services, communication costs, local labour, storage rentals and security services.

NB Power indicated that it will advise local businesses and labour unions well in advance of the awarding of the contract for the construction of the IPL. In addition, NB Power committed to emphasizing any requirements for the purchase of material and services and the employment of local residents in its tender documents for construction and maintenance of the IPL. NB Power noted that the ROW survey and clearing work will be carried out by NB Power using a combination of NB Power employees and local contractors. NB Power stated that there are numerous qualified personnel in New Brunswick to conduct this work.

NB Power anticipates clearing of the ROW will require 27 contract employees and three NB Power employees; surveying will require 28 casual employees and three NB Power employees; and line construction will require 80 contract personnel (at peak activity). The expected personnel requirement for operation and maintenance of the IPL includes a total of 282 person days/year for vegetation maintenance, ground patrol, air patrol and general maintenance.

Mr. Beaver Paul, President and CEO of the Tobique Economic Development Corporation (TEDC) indicated in a letter of comment to the NEB dated 17 March 2003 that NB Power lacked a definitive inclusion policy for Aboriginal people to benefit in potential socio-economic benefits of its capital and operational programs. In reply to the TEDC’s letter of comment, NB Power stated that “there will be a reasonable opportunity for First Nations to participate in the benefits of the project during the tendering process.”

At the hearing, NB Power indicated that it is an equal opportunity employer and welcomes Aboriginal groups to submit tenders for the IPL Project. NB Power committed to continue to communicate with Aboriginal groups prior to issuing the tenders for the IPL and provide information on how they can bid on the tenders. NB Power has a vendor registration database

that is used to pre-qualify companies for future tenders. In response to an undertaking at the hearing, NB Power indicated that although the TEDC is not listed as a vendor on its current database, the Tobique Maliseet Indian Band is listed.

NB Power also submitted at the hearing that they are bound by the *Crown Construction Act* and the *Public Purchasing Act*, which clearly outline the methodologies to be used in tendering and the evaluation of tenders.

Views of the Board

The Board concurs with NB Power's statement that construction of the IPL Project will have a beneficial effect on the local economy. The Board is also satisfied with NB Power's intentions to maximize local and regional economic benefits by encouraging its contractors to use local resources as they are available for clearing, surveying and construction of the IPL.

With regard to Aboriginal economic participation in the IPL Project, the Board accepts NB Power's commitment to contact Aboriginal communities prior to clearing and construction tenders being issued.

Chapter 7

Disposition

The foregoing chapters constitute our Decision and Reasons for Decision in respect of the application heard before the Board in the EH-2-2002 proceeding.

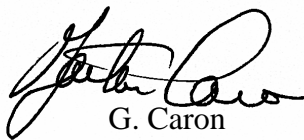
The Board is satisfied from the evidence that the proposed international power line is and will be required by the present and future public convenience and necessity. The Board approves NB Power's application made pursuant to section 58.16 and 58.23 of the NEB Act for a new 345 kV IPL and will, subject to approval of the Governor in Council, issue a certificate of public convenience and necessity subject to the conditions set out in Appendix II.



J.-P. Théorêt
Presiding Member



K.W. Vollman
Member



G. Caron
Member

May 2003
Calgary Alberta

Appendix I

List of Issues

The Directions on Procedure identified the following list of issues for discussion in the EH-2-2002 proceeding:

1. The need for the proposed facilities.
2. The appropriateness of the design of the proposed facilities.
3. The safety of the design and operation of the proposed facilities.
4. The potential environmental and socio-economic effects of the proposed facilities.
5. The appropriateness of the route selection, land requirements and land rights acquisition process.
6. The appropriate terms and conditions to be included in any approval that may be granted.

Appendix II

Certificate Conditions

1. The International Power Line to be constructed and operated pursuant to this certificate (the Power Line) shall be owned and operated by New Brunswick Power Corporation (NB Power).
2. The Power Line shall be operated at its nominal design voltage level of 345 kV.
3. NB Power shall cause the Power Line to be designed, manufactured, located within the one kilometre corridor, constructed, installed and operated in accordance with those specifications, drawings, and other information or undertakings set forth in its application and related correspondence.
4. NB Power shall design and construct the Power Line to comply with the most current version of CAN/CSA C22.3 No. 1 Overhead Systems.
5. NB Power shall comply with all of the conditions contained in this certificate unless the Board otherwise directs.
6. Prior to scheduling or providing transmission service to any Party intending or proposing to export electricity from Canada over the Power Line, NB Power shall ensure that the Party obtains all requisite export permits or licences authorizing any such exportation.

Prior to Construction

7. Prior to construction, NB Power shall demonstrate to the Board's satisfaction that all US Federal and State regulatory approvals have been granted for the corresponding power line in the state of Maine.
8. In the event that construction commences after the year 2005, NB Power shall file with the Board for approval, 6 months prior to the start of field construction, a report outlining:
 - a) a review of any baseline information for key parameters (e.g. changes in land use, species at risk, raptors, deer wintering areas) which could potentially have changed since the date of approval, based on field assessment during the most appropriate season;
 - b) any changes to the project which are considered necessary as a result of changed circumstances or new accepted industry practices; and
 - c) any changes to NB Power's mitigative strategy that are considered necessary to address any new circumstances identified in items (a) or (b).

9. NB Power shall file with the Board for approval, no later than sixty (60) days prior to the start of field construction, an update of its project-specific Environmental Protection Plan (EPP) for the Power Line incorporating any updates required pursuant to Condition 8 and a reclamation plan which includes a description of the measurable desired end results to which NB Power intends to reclaim and maintain the right-of-way once the construction has been completed.
10. NB Power shall file with the Board for approval, no later than sixty (60) days prior to the start of field construction, the environmental effects monitoring and follow-up program, as required under the *Canadian Environmental Assessment Act*. The program shall verify the accuracy of the environmental assessment predictions and/or effectiveness of the mitigation for those parameters outlined under NB Power's Environmental Effects Monitoring Section of the Comprehensive Study Report (CSR). Further, the program shall monitor the effectiveness of the proposed mitigation for:
 - a) bird diversion devices; and
 - b) the access management program as outlined in section 6.5.3 of the CSR.

Copies of all correspondence demonstrating consultation with Environment Canada in developing the program shall be included in the submission to the NEB. This follow-up program shall include a schedule for the submission of reports.

11. At least sixty (60) days prior to the commencement of construction, NB Power shall submit for Board approval, a quality assurance and compliance program which will outline, in mandatory terms, the policies and procedures NB Power will implement to ensure the Power Line is designed and constructed in conformance with these conditions of approval, company designs and specifications and undertakings set forth in its application or otherwise adduced in evidence before the Board in the EH-2-2002 proceeding. The program should include but not be limited to:
 - a) a process or procedure to identify all conditions of approval, company designs and specifications and undertakings set forth in its application or otherwise adduced in evidence that will be subject to the program;
 - b) the policies, processes and procedures that will be in place to achieve the program;
 - c) the name of the person responsible for each aspect of the program;
 - d) the name(s) of the person(s) authorized to stop work should it be in non-conformance with the program;
 - e) the qualifications of the person(s) authorized to stop work;
 - f) a process or procedure to identify and implement corrective action before recommencing work;

- g) a process or procedure to evaluate the effectiveness of the corrective actions taken; and
 - h) methods by which adherence to the policies, processes and procedures will be monitored, measured, documented and reported to NB Power's management.
12. NB Power shall file with the Board, at least sixty (60) days prior to the commencement of construction activities:
- a) NB Power's construction manual for the Power Line, or that of its construction contractor, or both.
 - b) If contractors are used, NB Power's acceptance of those contractors' construction manuals and health and safety programs.
 - c) An outline of NB Power's and/or its contractor's training program for the construction safety manual.

Prior to Operation

13. At least sixty (60) days prior to operation of the Power Line, NB Power shall submit a list of the manuals, procedures and programs that it will implement on the 345 kV Power Line which pertain to:
- a) the ongoing physical facility maintenance and monitoring requirements and plans for the Power Line;
 - b) a public awareness program that:
 - i) keeps the public apprised and aware of ongoing hazards associated with the Power Line; and
 - ii) provides contact numbers for the public to report issues and concerns;
 - c) an emergency response and incident management program;
 - d) vegetation/weed control plans and procedures for the Power Line's right of way;
 - e) training requirements for personnel implementing these manuals, procedures and programs;
 - f) a requirement that NB Power conduct documented audits of its records and inspections of the Power Line's facilities and right of way to confirm NB Power's conformance to the requirements of the manuals, procedures and programs; and
 - g) a requirement that the manuals, procedures and programs be reviewed and updated as appropriate to ensure that these remain current with regulatory requirements and accepted industry practice.

These manuals, programs and procedures shall be made available for Board review and audit.

During Operation

14. NB Power shall retain adequate and appropriate records of operation and maintenance activities for the Board's review should the Board elect to audit these activities.
15. Within thirty (30) days of the date that the approved facilities are placed in service NB Power shall file with the Board a confirmation, by an officer of the company, that the approved facilities were completed and constructed in compliance with all applicable conditions in this certificate. If compliance with any of these conditions cannot be confirmed, the officer of the company shall file with the Board details as to why compliance cannot be confirmed.
16. NB Power shall file with the Board, on or before the 31 January that follows each of the first, second, and third complete growing seasons following construction or as otherwise directed by the Board, a report which describes:
 - a) the environmental issues which arose during construction;
 - b) whether the environmental issues identified on the right of way are resolved or unresolved;
 - c) an assessment of whether NB Power has achieved its desired end results for reclamation; and
 - d) the measures NB Power proposes to take to address the unresolved issues.
17. NB Power shall file with the Board, based on the schedule referred to in Condition 10, the report(s) outlining the results of the follow-up program.

Expiration of Certificate

18. Unless the Board otherwise directs prior to 31 December 2006, this certificate shall expire on 31 December 2006 unless the construction of the applied-for facilities has commenced by that date.