National Energy Board

Reason for Decision

Hydro-Québec

EH-2-89

July 1989

Exports of Electricity

National Energy Board

Reason for Decision

In the Matter of

Hydro-Québec

For exports to the New York Power Authority

EH-2-89

July 1989

Cat. No. NE22-1/1989-10
ISBN 0-662-56888-5

This report is published separately in both official languages.

Copies are available on request from:
Regulatory Support Office
National Energy Board
473 Albert Street
Ottawa, Canada
K1A 0E5
(613) 998-7204

Printed in Canada

Nº de cat. NE22-1/1989-10
ISBN 0-662-56888-5

Ce rapport est publié séparément dans les deux langues officielles.

Exemplaires disponibles auprès du:
Bureau du soutien de la réglementation
Office national de l'énergie
473, rue Albert
Ottawa (Canada)
K1PA 0E5
(613) 998-7204

Imprimé au Canada

Table of Contents

List of Appendices

Abbreviations

Units of measurement

kV	kilovolt	(1 000 volts)
MW	megawatt	(1 000 kilowatts)
kW.h	kilowatt hour	(1 000 watt hours)
GW.h	gigawatt hour	(1 000 000 kW.h)
TW.h	terawatt hour	(1 000 GW.h)
$	Canadian dollar	(unless otherwise specified)

Names

Applicant	Hydro-Québec
NB Power	The New Brunswick Electric Power Commission
Act	National Energy Board Act
Grand Council	Grand Council of the Crees (of Québec) and Cree Regional Authority
Maritime Electric	Maritime Electric Company, Limited
NYPA	New York Power Authority
Board	National Energy Board
NEB	National Energy Board

Recital and Appearances

IN THE MATTER OF the National Energy Board Act and the Regulations made thereunder; and

IN THE MATTER OF an application by Hydro-Québec for a licence to export electricity to the New York Power Authority, pursuant to Part VI of the National Energy Board Act. Filed with the Board under File No. 1923-Q1-17.

HEARD at Montréal, Québec on 16, 17, and 18 May 1989.

BEFORE:

J.G. Fredette	Presiding Member
A.D. Hunt	Member
A.B. Gilmour	Member

APPEARANCES:

B.A. Roy, c.r. J.G. Bertrand	Hydro-Québec
H. Geltman	Canadian Citizen
I. Harvie	The New Brunswick Electric Power Commission
J. O'Reilly	Grand Council of the Crees (of Québec) and Cree Regional Authority
R. Roth	Manitoba Hydro
W. Lea, Q.C.	Maritime Electric Company, Limited
C. McCue	Ontario Ministry of Energy
L. Keough	New England Power Pool
E. Finn	Ontario Hydro
J. Robitaille	Attorney General of Québec
H. Fels	STOP
F.J. Morel	National Energy Board

Chapter 1
The Applicant

The Applicant, Hydro-Québec, is a public utility producing and distributing electricity throughout Québec. It was established in 1944 by an act of the legislature of the Province of Québec and currently operates under the authority of the Hydro-Québec Act (RSQ, chapter H-5)

Hydro-Québec owns and operates an electric power system which covers nearly all regions of Québec. Appendix I contains a map of the system's main features in 1988. The map also indicates interconnections with systems outside the province.

Interconnections between the Hydro-Québec system and neighbouring Canadian electric systems include, among others, the 735 kV transmission lines linking it to the Churchill Falls generating station in Labrador. There are some 12 lines between Ontario and Québec which link electrically isolated regions or generating stations to either the Ontario or Québec system. The interconnections between these two provinces have a total transfer capacity of 1700 MW which can be used to its maximum extent by reducing exports to the State of New York by 900 MW. There are two direct current ties between Québec and New Brunswick, each of which has a nominal capacity of 350 MW. There are also some alternating current lines able to supply 350 MW of the New Brunswick load through radial operation. The power transfer capacity between the two provinces is therefore approximately 1050 MW.

Hydro-Québec's main interconnections with neighbouring American states are as follows:

- State of New York: a 120 kV double-circuit line owned by the Cedars Rapids Transmission Company Limited (a subsidiary of Hydro-Québec) and a 765 kV line. These interconnections have a potential transfer capacity of approximately 2600 MW, but receptions by that State are currently limited to 2175 MW;

- State of Vermont: two 120 kV lines, one with a transfer capacity of 100 MW between the Stanstead substation in Québec and the Border substation in Vermont, the other with a transfer capacity of 200 MW between the Bedford substation in Québec and the Highgate substation in Vermont.

- Other New England States: a ± 450 kV direct current line with an initial usable capacity of 690 MW which would be upgraded to 2000 MW in 1990.

- There are also some other international power lines fed by the Hydro-Québec system, but these are primarily low-voltage distribution circuits which supply small loads as a border service.

Hydro-Québec has been issued 15 licences and 4 orders authorizing exports to the New England and New York markets.
-

Chapter 2
The Application

2.1 Background - Licence EL-96

Hydro-Québec currently holds Licence EL-96 issued by the National Energy Board (the Board) in September 1976. This licence authorizes the export to The Power Authority of the State of New York (PASNY), carrying on business under the name of New York Power Authority (NYPA), of 800 MW of power and up to a maximum of 3000 GW.h of associated energy between April and October of each year during the term of the licence. This licence has been in effect since 23 June 1978 and is scheduled to end on 22 June 1991. These exports take place pursuant to the provisions of the Power Contract between Hydro-Québec and NYPA, which will expire on 31 October 1998.

In a letter dated 27 October 1988, Hydro-Québec initially applied to the Board for an extension of Licence EL-96 to 31 October 1998. In support of its application, Hydro-Québec stated: [Translation]

> "Evidence relating to this application and furnished in compliance with the National Energy Board Act (RSC 1970, c N-6) and the Regulations adopted pursuant thereto has already been filed with the Board under reference number 1923-4/Q2-2. Hydro-Québec is of the opinion that this evidence is still relevant to the present application."

In a letter of 16 December 1988, the Board replied that it felt that this application should be processed as an application for a new licence in view of its decision of September 1976 regarding a possible extension of exports under Licence EL-96 beyond the initial thirteen-year term. That decision reads as follows:

> "... Hence, if this type of export is to continue beyond that time, it should be justified afresh and a new licence sought."[1]

2.2 The Application

In its new application of 15 February 1989, Hydro-Québec is requesting a licence to allow it to continue and complete exports of firm energy according to the terms of the Power Contract with NYPA, which is scheduled to expire on 31 October 1998. The licence sought for the period from 23 June 1991 to 31 October 1998 could be considered an "extension" of Licence EL-96, which ends on 22 June 1991. The quantities involved are the same as for Licence EL-96: 800 MW of power and up to a maximum of 3000 GW.h of energy annually. The licence applies to summer diversity power, meaning that exports take place only between April and October.

---

[1] National Energy Board - Report to the Governor in Council, September 1976, page 71.

Chapter 3
The Contract

The Power Contract between Hydro-Québec and NYPA, which was signed in New York on 28 November 1973 and in Montréal on 29 March 1974, was approved by the Government of Québec on 20 March 1974. This contract sets out the terms and conditions governing the sale of diversity power and energy during the summer period, from 1 April to 31 October. It has been in effect since December 1978 and is scheduled to expire on 31 October 1998.

The Board previously considered this contract during the public hearing held in June 1976, following which it granted Hydro-Québec Licence EL-96.

This contract is a firm contract for the power component only, since the energy portion is subject to annual negotiation.

The following two sections briefly outline the terms and conditions of the contract respecting the quantities and prices of the power and energy to be delivered during the 1991-1998 period.

3.1 Power

Hydro-Québec is to make available to NYPA 800 MW of diversity power between April and October of each year of the contract. In return, NYPA must "take or pay" for the power regardless of the quantity of energy delivered to it during the term of the contract.

The prices of this power have been set for the entire duration of the contract. For the period from 1991 to 1998, they are as follows:

1991	Can $1.75 per kW/month
1992 to 1996	Can $2.01 per kW/month
1997 to 1998	Can $2.23 per kW/month

3.2 Energy

The annual quantity of energy associated with the diversity power may vary from zero to 3000 GW.h (3 TW.h). The maximum quantity is equal to a load factor of 73 per cent. However, for each year in the 1991-1998 period, the quantities of energy are negotiable according to the mechanism provided for in article 3.5 of the contract.

Twenty-four months prior to the start of each export period, Hydro-Québec must inform NYPA of the "basic amount" of energy (3000 GW.h maximum) that will be available and the price to be charged, which would not be less than the price of comparable sales in Canada. Then, in the next six months, NYPA must inform Hydro-Québec of the basic amount of energy it wishes to purchase during the period in question. NYPA has the right to require that Hydro-Québec deliver 3000 GW.h during the seven-month period. However, if the basic amount offered by Hydro-Québec is less, NYPA would be obliged to return the quantity in excess of the basic amount during the five months of the subsequent winter.

The contract contains a mechanism for determining energy prices through annual negotiations. However, if the two parties are unable to agree on the energy price at least twelve months prior to the start of an export period, the basic amount will be zero and the price will thus be the lower of (i) Hydro-Québec's initial price quote or (ii) the average incremental cost of the most expensive 50 MW produced or purchased by the utility serving New York City during the week of the most recent summer peak. In such an event NYPA would be required to return the entire quantity of energy thus purchased to Hydro-Québec during the following winter (November to March), and Hydro-Québec would have to pay the export price.

Moreover, if Hydro-Québec has to provide thermal energy in order to meet NYPA's demand under article 3.3 of the contract, the price of this energy would be equal to 110 per cent of the total production cost, including delivery costs and the start-up costs of the generating station if applicable.

Chapter 4
The Applicant's Evidence

Hydro-Québec submitted its evidence in compliance with the new Canadian Electricity Policy, announced in September 1988, and with the Board's Memorandum of Guidance, published in December 1988. Chapter 6 of this report provides a brief overview of these two documents.

With regard to the provisions relating to matters of surplus and the price of equivalent service in Canada, or the second price criterion, Hydro-Québec chose to adhere to the concept of fair market access to the proposed electricity exports and provided information designed to show that it followed the procedures set out in Annex 2 to the Canadian Electricity Policy.

4.1 Surplus

4.1.1 1989-1998 Development Plan

At the close of 1988, Hydro-Québec's total generating capacity was 24 590 MW. This figure consists of some 22 836 MW of hydro-electric capacity, 685 MW of nuclear capacity and 1069 MW of thermal capacity. In addition, the Applicant has access under contract to most of the generation of the Churchill Falls power plant which has a nominal capacity of 5225 MW.

Hydro-Québec reports that, for 1988, its system peak demand, recorded on 4 January 1989, was 26 466 MW, compared with a peak of 26 005 MW the year before. This is an increase of 1.8 per cent. Sales of regular electricity in Québec were 119.8 TW.h, a rise of 8.5 per cent over 1987, while sales of surplus electricity inside and outside the province combined with regular export sales were 25.6 TW.h, a drop of 40.0 per cent as compared with 1987.

According to the data provided by Hydro-Québec, in April 1991, its total generating capacity will be 30 348 MW. In April 1998, this capacity will increase to approximately 36 677 MW. These figures include firm purchases from Churchill Falls.

Most of the 7300 MW of production to be put into service by 1998 will come from the hydro-electric generating stations of Phase 2 of the La Grande complex. (Appendix II provides an overview of Hydro-Québec's new hydro-electric generating facilities proposed for 1989 to 1998).

4.1.2 Special terms of the export

The delivery period of the licence sought is from 1 April to 31 October of each year from 1991 to 1998. This is the summer period, when Hydro-Québec's loads are reduced. The system's annual peak occurs generally between the end of December and the end of February of the following year.

4.1.3 Export Market

New York Power Authority is a state agency created in 1931 to provide electricity at the best possible price for consumers in the State of New York. It sells electricity to industries, a number of authorized public agencies and other utilities in New York State. To this end, it constructs, owns and operates

electrical generating and transmission equipment, and purchases energy from outside the State. NYPA is a member of the New York Power Pool, which includes seven other companies providing almost all the electricity in the State of New York.

As mentioned earlier, the annual electricity consumption peak in New York State is in the summer, while the Québec peak is in winter. There is thus a seasonal diversity between the peak loads of these two systems.

The Applicant submitted a document on the electricity demand forecast for the New York Power Pool system. According to these figures, between 1991 and 1998, peak demand in New York State will range from 25 580 MW to 27 680 MW in summer and from 23 740 MW to 25 450 MW in winter.

4.1.4 Load, Supply and Excess Power and Energy

The evidence submitted by Hydro-Québec showed that, taking into account regular load requirements, operating reserve, interruptible power, emergency power and planned maintenance, the Applicant will have at least 4200 MW of surplus power, even after delivery of 800 MW to NYPA during the export period (see Appendix III).

The quantities of energy to be delivered between 1991 and 1998 are not known at present and will depend on Hydro-Québec's energy potential. They will be negotiated annually in accordance with the terms and conditions of the contract. The quantity of energy that Hydro-Québec proposes to export annually to NYPA will range from 0 to 3000 GW.h.

The target demand scenario of the Development Plan 1989-1991 - Horizon 1998 is based on an average streamflow for both the Hydro-Québec system and the Churchill Falls generating station in Labrador. Projections of regular export sales include, first, all firm energy and/or power contracts authorized by the Board. They also assume an annual delivery of 1000 GW.h to NYPA under the licence sought and other quantities of energy to be delivered under export contracts (already signed, under negotiation or sought) which the Board has not yet considered.

During cross-examination, the witnesses for Hydro-Québec testified that the assumption of an annual delivery of 1000 GW.h to NYPA between 1991 and 1998 inclusive was used strictly for the purposes of the target demand scenario. They stated that, at the present time, there was no commitment on the part of Hydro-Québec to deliver these 1000 GW.h to NYPA.

In order to meet the increased demand forecast in the target scenario, new hydro-electric generating stations will be put into service during the export period (see Appendix II). Hydro-Québec recently announced a change to its latest Development Plan, namely that the in-service dates of some facilities (Brisay, Laforge-1, LG-2A) would be advanced by one or two years. One of the witnesses for the Applicant testified that this step was justified, since demand for electricity in Québec was higher than estimated in the target scenario, particularly demand from the industrial sector. He also stated that there would be no construction or advancement of facilities to meet contractual commitments with NYPA.

The Hydro-Québec Development Plan takes into account the low streamflow conditions that have been noted in the last five years in the Hydro-Quebec and Churchill Falls systems. This has resulted in a heavy drawdown of Hydro-Quebec's reservoirs in the last two years. If this situation continues, Hydro-

Québec could face problems in meeting all regular electricity requirements forecast in its target demand scenario for 1991 to 1998. In order to overcome these problems, the Development Plan indicates that it may be necessary to use the Tracy thermal station, purchase energy from neighbouring systems and small independent producers, use cogeneration and, in an extreme situation, operate certain reservoirs at levels below normal operating conditions.

4.2 Export Price

The prices of power are set out in article 4.1 of the contract, and energy prices are to be determined according to the terms and conditions of article 3.5 of the contract, which are explained in Chapter 3 of this report.

This contract contains a mechanism for determining the price of energy through annual negotiation. For 1988, the average price obtained for energy was 27.6 mills/kW.h. For 1982 to 1990, the prices negotiated for energy tracked the prices of fuels on the New York market.

4.2.1 Canadian Costs

According to the evidence submitted by Hydro-Québec, the proposed export would not require any new electrical generating or transmitting facilities. The incremental production cost of hydro-electric energy, including maintenance costs and losses, is relatively low. If Hydro-Québec has to export thermal energy, the price of this energy would be equal to 110 percent of the total production cost. Total revenues for firm power only would be more than $87 million. Hydro-Québec testified that revenues from the sale of power and energy would ensure the recovery of all costs assumed in Canada.

4.3 Fair Market Access to the Electricity Proposed for Export

4.3.1 Diversity Power

Hydro-Québec testified that there was currently no market for an equivalent service in Canada, since there was no seasonal diversity between systems.

Nevertheless, in its application, it stated that it had a sufficient quantity of power to provide neighbouring systems with an equivalent service under terms and conditions comparable with those concluded with NYPA and, specifically, at a price that would not be higher than that charged to NYPA.

Hydro-Québec chose to adhere to the policy of fair market access to the electricity proposed for export instead of using the offer mechanism. On 17 February 1989, it forwarded a copy of the licence application it had filed with the Board to the four interconnected systems:

- Cornwall Electric
- Churchill Falls (Labrador) Corporation Limited
- Ontario Hydro
- New Brunswick Power

None of these economically accessible Canadian systems expressed an interest in obtaining an equivalent service, that is, in purchasing summer diversity power for the 1991-1998 period.

4.3.2 Energy

Hydro-Québec testified that it did not know either the annual energy quantities or prices. Energy is separate from the long-term firm power contract, since it is subject to annual negotiations. It is therefore impossible to predict at the present time the quantities to be exported and the prices.

However, during the hearing, New Brunswick Power and Ontario Hydro expressed their interest in being informed of the quantities and prices negotiated for each year over the term of the contract.

Hydro-Québec testified that it planned to demonstrate to the Board that it had adhered to the concept of fair market access every time the basic amount and price of energy were negotiated under article 3.5 of the contract with NYPA.

Hydro-Quebec stated that it fully supported the Canadian Electricity Policy, and the concept of fair market access in particular. It claims to adhere to this concept by continuing to forward to economically accessible utilities as much information as possible, as it has been doing for a number of years now. However, a witness for Hydro-Québec made the following comment with regard to this matter: (Translation)

We do not interpret the policy as requiring us to keep our Canadian neighbours apprised of developments in negotiations on quantities, product definition and prices as they occur.

4.4 System Reliability

The electricity would continue to be exported over the 765 kV Chateauguay-Massena international power line number 7040. Hydro-Québec testified that, to date, there had been no major deficiencies on this line that would have had any effect on neighbouring systems.

Hydro-Québec maintained that the proposed export would not have any negative effects outside Québec and thus would not affect the reliability of neighbouring systems in any way whatsoever. Moreover, Hydro-Québec complies with the reliability and safety standards of the Northeast Power Coordinating Council, of which Ontario Hydro and New Brunswick Power are also members. These standards have been in effect since 1978 and are constantly being tested to ensure that the operation of the interconnection is completely safe for all neighbouring systems.

4.5 Environmental Impact

Hydro-Québec stated that the electricity required to supply the proposed export would be provided from hydraulic facilities; that the operation of the Gentilly nuclear facility, which serves Québec's base requirements, would not be altered; and that its thermal generation facilities would not normally be operated to serve the proposed export. Furthermore, it indicated that the electricity would be transmitted over approved existing transmission lines.

Under the contract linking it to NYPA, Hydro-Québec may be required to export a maximum of 3000 GW.h between April and October of each year. This quantity of energy represents a mere two per cent

of Hydro-Québec's total generating capacity. On this subject, Hydro-Québec maintained that any possible change in the overall water reservoir level caused by the proposed exports would be negligible and would not likely have any noticeable impact on the environment. A witness for the Applicant testified that the reservoirs were operated according to operating and technical standards developed in view of the specific features of each reservoir.

However, should delivery of hydro-electric power have to be reduced or interrupted, under the terms of article 3.3 of the contract, Hydro-Québec could be forced to provide power from a thermal source. This would happen only if the interruption of exports to NYPA was liable to lower the voltage in the New York metropolitan area. In response to an information request from the Board, Hydro-Québec stated that in such an event thermal facilities, probaly the Tracy generating station, would be operated in accordance with the provincial environmental standards set out in the *Quality of the Atmosphere Regulation (RRQ 1981, c.Q-2, r.20)*.

For all the aforementioned reasons, the Applicant anticipates that the generation and transmission of the electricity required for export to NYPA would not have any environmental impact. Moreover, in support of its application, Hydro-Québec conformed to the environmental information requirements of the Canadian Electricity Policy of September 1988.

Chapter 5
Interventions

5.1 The New Brunswick Electric Power Commission

N.B. Power did not oppose the application and indicated that it was not interested in purchasing any of the electricity proposed to be exported at the present time, but that it might have an interest in the export during the term of the requested licence extension. To that end, it requested that any licence approving the extension provide for some mechanism to allow N.B. Power, throughout the licence term,

- to become informed, on a timely basis, of any proposed export and its associated price, and

- to have first access to any proposed export under similar terms and conditions, including price, to those to be provided to the export customer.

N.B. Power expressed its concern that the fair market access guideline not be interpreted in such a manner so as to shift all the onus regarding apprising Canadian utilities of proposed exports from exporters to the interconnected Canadian utilities. It was also N.B. Power's view that the guideline should not be interpreted to exclude N.B. Power from purchasing electricity available for export if N.B. Power was projected to be exporting concurrent with making such a purchase.

5.2 Maritime Electric Company, Limited

Maritime Electric Company, Limited (Maritime Electric) did not oppose the application, stating that there was nothing in the evidence indicating that the capacity component of the export would result in electricity for which there is a market in Canada ending up in the United States. However, because the nature of the deal was that the quantity and price of energy would only be determined during any year in which energy exports were planned, it was Maritime Electric's position that the licence ought to contain a condition to ensure that Canadian markets for the annual basic amount of energy would not be overlooked.

According to Maritime Electric, in light of the new electricity policy it would not be appropriate to continue to make use of the offer condition to ensure that Canadian requirements were satisfied. Rather, it was Maritime Electric's position that a condition requiring in effect that Hydro-Québec provide fair market access to the basic amount of energy in accordance with the fair market access guideline was capable of protecting the Canadian interest at least as well as, if not better, than the offer condition. Maritime Electric did not believe however, that Hydro-Québec should have to provide the Board with information showing that it had complied with the guideline in relation to the basic amount of energy to be exported in any year.

It was also Maritime Electric's view that under the fair market access concept both exporters and prospective Canadian purchasers shared certain responsibilities but in particular, exporters were required to continue to take the initiative in keeping prospective Canadian purchasers informed about the particular characteristics of proposed exports.

5.3 Ontario Hydro

Ontario Hydro did not oppose the application and admitted that it had been provided with sufficient fair market access to date. To ensure that fair market access continued to be available, Ontario Hydro submitted that any licence issued by the Board should have similar conditions to those in Licence EL-96. In particular it was Ontario Hydro's position that the licence should be conditioned to continue to require

- Hydro-Québec to obtain the Board's approval, on an annual basis, of the basic amount of energy and the export price,

- that the composite export price for power and energy be not less than the price to Canadians for the same service, that is for seasonal diversity power, and

- Hydro-Québec to offer, on an annual basis, the proposed basic amount of energy, at the export price, to accessible Canadian utilities.

It was Ontario Hydro's view that, in the absence of an annual offer condition, the licence should be conditioned to require that Hydro-Québec advise accessible Canadian utilities, on an annual basis, of the proposed basic amount of energy and the associated export price and provide those utilities the opportunity to negotiate for the purchase of all or part of that amount of energy at the export price. However, if the licence included this condition instead of an offer condition similar to condition number 15 of Licence EL-96, Ontario Hydro stated that another condition would be required similar to condition number 15(d), providing for a determination by the Board as to whether there would be sufficient energy available in any year to satisfy all Canadian requirements as well as the export requirement.

Ontario Hydro also stated that it was concerned with the definition of fair market access, with particular regard to how it would be applied when a Canadian utility was exporting to the United States at the same time that it was purchasing electricity from another Canadian utility. It was Ontario Hydro's view that in the context of the fair market access guideline the only workable definition of purchase for resale was when an export commitment was made at a point in time, conditional on a corresponding purchase. It was also Ontario Hydro's contention that even if the purchase for resale prohibition included in the guideline was applied only to that case the results would be reduced benefits to Canada because of fewer transactions being made.

5.4 Attorney General of Québec

The Attorney General of Québec stated that Québec supported Hydro-Québec's application. He also indicated that the Applicant had complied with the conditions set out in the *National Energy Board Act* by demonstrating that the power and energy to be exported were surplus to Canadian requirements and that the price was just and reasonable in relation to the public interest.

5.5 Grand Council of the Crees (of Québec) and Cree Regional Authority (Grand Council)

The Grand Council of the Crees and the Cree Regional Authority opposed the application. In its view, the present licence application formed part of a larger strategy of the Applicant to achieve sales of 3500 MW of power by the year 2000, and that strategy would involve major ecological and social impacts resulting from the required construction.

It was also the Grand Council's view that the energy required to meet the proposed export would be generated solely from James Bay. Based on studies of the James Bay reservoirs, the Grand Council expressed concern that the reservoir drawdown, associated with the generation of electricity for export, would increase the concentration of mercury within the reservoir resulting in an increase in the mercury content of fish and hence pose a significant health hazard. It was for this reason that the Council suggested that approval of the export application be withheld pending examination of the environmental impact of the proposed export by the appropriate federal and provincial agencies.

During final argument, the Grand Council also suggested that, in the event the Board decided to approve the export, the licence that would be issued should include conditions to ensure that no negative environmental impact would result from the proposed export and to ensure that no new facilities would be required to supply the proposed export.

5.6 H. Geltman

Mr. H. Geltman, representing himself, asked the Board to postpone approval of the export application, pending a review of the needs at the buyer's end and of the needs at the seller's end, in terms of ethical, educational and environmental criteria.

5.7 STOP

STOP, an environmental organization incorporated in 1970 and based in Montreal, submitted written intervention opposing the application.

The witness appearing on behalf of STOP described the organization and its philosophy as an ecology-conservation group. The witness, however, was not the author of the STOP submission and therefore was reluctant to be cross-examined on the contents thereof.

Chapter 6
Disposition

Introduction

National Energy Board Act

Section 118 of the Act requires the Board, in examining an application for an export licence, to have regard to all considerations that appear to it to be relevant. Without limiting the generality of the foregoing, the Board is required to satisfy itself that the power to be exported is surplus to reasonably foreseeable requirements for use in Canada and that the price to be charged by the Applicant is just and reasonable in relation to the public interest.

New Canadian Electricity Policy and National Energy Board Memorandum of Guidance

The September 1988 policy deals with the regulation of exports of electricity and international or interprovincial power lines. It is also designed to ensure that electricity exports do not contravene federal environmental standards or guidelines.

The purpose of the Board's Memorandum of Guidance, published in December 1988, is to inform interested parties of the measures the Board intends to take to implement this new policy and, in particular, to advise parties of immediate changes to the information required to be provided to the Board in support of their export and international power line applications.

Full implementation of this Policy must await amendments to the National Energy Board Act and consequential amendments to the National Energy Board Part VI Regulations and the Board's Rules of Practice and Procedure made pursuant to the Act. However, certain important aspects of the Policy can be implemented on an interim basis without amendments to the Act. To this end, the Board has proposed amendments to the NEB Part VI Regulations, the Rules of Practice and Procedure, and the Board's procedure in dealing with export applications. These changes are in keeping with the present Act.

The following amendments were announced in the Board's Memorandum of Guidance, more specifically in the guideline regarding immediate implementation of the electricity export policy.

1) Information Required for an Export Licence

a) Pursuant to subsection 6(2) of the Part VI Regulations, parties will be relieved of the need to furnish to the Board the information required in paragraphs (a) to (aa), with the exception of the provisions relating to surplus and price. Until the proposed amendments take effect, parties are required to continue to comply with paragraph 6(2)(w), which requires the filing of evidence to demonstrate that the electricity proposed to be exported is surplus to reasonably foreseeable requirements for use in Canada, and with paragraph

6(2)(z), which requires the filing of evidence to demonstrate that the export price is just and reasonable and satisfies the price criteria.

b) In place of the information for which an exemption has been granted in item (a), parties are advised that, pursuant to subsection 6(1) of the Part VI Regulations, the Board requires the information set out in the proposed amendments to section 6 of the Part IV Regulations[1] with the exception of the proposed paragraphs (m) and (n) relating to surplus and price. The information required for these particular items is detailed in item (a) above.

2) Concept of Fair Market Access

Henceforth, the Board will use the concept and procedures as set out in Annex 2 to the Electricity Policy document to assist it in satisfying itself that Canadians have been afforded fair market access to the electricity proposed for export and that the export is in the public interest.

In particular, the Board has advised parties that if they wish, they can satisfy the Board as to the second price criterion by demonstrating that they have adhered to the concept of fair market access, rather than by offering, as was previously the case, the electricity proposed to be exported to interconnected Canadian utilities.

3) The proposed amendment to the Part VI Regulations[2] also sets out the environmental requirements: a description of provincial approvals and relevant provincial review procedures; an assessment and a statement of the measures that will be taken to mitigate any probable environmental impact of the proposed export; and evidence demonstrating that the proposed export does not contravene relevant federal environmental standards or guidelines.

Application for Export

The Board has given careful consideration to all the evidence and submission presented and has reached the following conclusions.

6.1 Export Price

Pursuant to section 118 (b) of the Act, the Board must satisfy itself that the price to be charged by an applicant for power exported by the applicant is just and reasonable in relation to the public interest. In assessing the suitability of an export price, the Board used the following two criteria: (a) the export

---

1 Appendix I - Memorandum of Guidance to Interested Parties Concerning Implementation of the Canadian Electricity Policy, published in December 1988.

2 Appendix I - Memorandum of Guidance to Interested Parties Concerning Implementation of the Canadian Electricity Policy, published in December 1988.

price should recover the applicable costs incurred in Canada and (b) the export price should not be less than the price for an equivalent service to Canadian customers.

The second price criterion is discussed further in section 6.2.2 of this chapter under the general title of *Fair market Access to the Electricity Proposed for Export*. As to the third price criterion, it is no longer applicable in view of the Canada-United States Free Trade Agreement, which called for immediate changes to certain regulatory provisions that were incompatible with Canada's commitments. The NEB Part VI Regulations have, moreover, been amended accordingly.

6.1.1 First Price Criterion

The Board is of the opinion that applicable costs include all marginal production costs associated with both hydro-electric power and energy. According to the evidence, all the generating facilities needed to provide the proposed exports have been constructed primarily to meet the Québec load. The evidence shows that these costs would be much lower than the anticipated revenues for the entire period to be covered by the licence sought.

The Board is convinced that the export prices will recover the applicable costs incurred in Canada.

However, Hydro-Québec could be forced to use thermal generation to meet its commitments to NYPA. In order to ensure that the price being charged for thermal generation satisfies the first price criterion, the Board will condition the licence accordingly.

6.2 Fair market Access to the Electricity Proposed for Export

6.2.1 Surplus

To comply with the provisions of paragraph 118 (a) of the Act, Hydro-Québec chose to adhere to the concept of fair market access to the electricity proposed for export rather than use the offer mechanism.

The diversity power contract with NYPA is unique in that there is no provision stipulating that the purchase of energy is subject to the purchase of diversity power. Moreover, the quantity and price of the diversity power are well defined for each year of the contract, while such is not the case for energy. The Board therefore deems it appropriate to consider power and energy surpluses separately, as it did in its decision of September 1976.

6.2.1.1 Diversity Power

The Board notes that Hydro-Québec has demonstrated that it has ample power to meet its own customers' requirements, its obligations to other provinces and its export commitments, including the delivery of 800 MW of diversity power to NYPA during the months of April to October of each year between 1991 and 1998 (see Appendix III). Since the licence sought is for firm power, fair market access need be afforded to Canadian utilities only once prior to the start of the export period. According to the evidence, no interconnected Canadian utility expressed an interest in the diversity power. The Board is thus convinced that the firm power that would be exported to NYPA would be surplus to reasonably foreseeable Canadian requirements, in compliance with the concept of fair market access.

6.2.1.2 Energy

Hydro-Québec has applied for a licence authorizing it to export up to 3000 GW.h of energy a year. Under the power contract, Hydro-Québec clearly has no obligation to sell the energy associated with the diversity power. However, NYPA can demand delivery of the maximum quantity of energy, 3000 GW.h, between April and October, but conditional on this quantity of energy being returned to Hydro-Québec during the five months of the subsequent winter.

The contract stipulates that, for the duration of the contract, the quantities of energy to be sold to NYPA are subject to annual negotiation to determine both the basic amount, which can vary from zero to 3000 GW.h, and the price of this energy. Any quantities of energy delivered to NYPA in excess of the basic amount would have to be returned to Hydro-Québec during the following winter.

Hydro-Québec testified that, according to its projections, it could offer NYPA an annual basic amount of 1000 GW.h between 1991 and 1998. It also pointed out that this figure was merely an estimate and that, at present, it did not know the basic amounts of energy it would be able to offer for export to NYPA between 1991 and 1998. Without knowing the quantities available for each of the years in question, it is obviously difficult for Canadian utilities to make a decision regarding their requirements for this product. For this reason, the Board is convinced that, in order to comply with the principle of fair market access, Canadian utilities must have access to the energy at the time of each annual negotiation.

In view of the foregoing, the Board is unable to determine whether the basic amounts of energy to be offered to NYPA would be surplus to Canadian requirements in accordance with the concept of fair market access. Also, the Board must also satisfy itself that NYPA will return the entire quantity of energy exported in excess of the basic amount during the five months of the following winter.

Consequently, by means of conditions to be included in the licence sought, the Board must satisfy itself:

a) that the annual non-returnable basic amounts of energy proposed for export are surplus to reasonably foreseeable Canadian requirements (condition 9); and

b) that the quantities of energy exported in excess of the basic amounts are returned the following winter, failing which exports will not be permitted during the subsequent summer period (condition 12).

6.2.2 Second Price Criterion

The evidence has shown that Hydro-Québec satisfied the second price criterion, namely that the export price not be lower than the price of an equivalent service to Canadian clients, by adhering to the concept of fair market access.

6.2.2.1 Diversity Power

Hydro-Québec provided a copy of the application it filed with the Board to interconnected Canadian utilities, none of which expressed an interest in diversity power.

The Board acknowledges that the prices for power, which are set for the entire term of the contact, may seem low. However, it should be borne in mind that they were negotiated in 1971 and 1972 as part of a contract to terminate in 1998, more than twenty-five years later. The cost analyses conducted at that time took these factors into consideration and demonstrated to the Board that the prices were reasonable. If these prices were compared to those negotiated today for firm power delivered during the summer period on the American market, the prices in the contract with NYPA would be very low. However, since there is no market in Canada for summer diversity power, the Board is of the opinion that the price of the power is just and reasonable in relation to the public interest.

6.2.2.2 Energy

As for the price of energy, in view of the nature of the energy surplus and the provisions of the contract, the Board notes that it is impossible for Hydro-Québec to determine in advance the quantities and prices to be negotiated for each year during the term of the contract. Canadian utilities likewise cannot determine their requirements for a product of which the quantity and price are unknown. Three of the intervenors, Maritime Electric, New Brunswick Power and Ontario Hydro, expressed their concern with regard to this matter. They stated that Canadian utilities must be ensured, by means of a licence condition, that they will be afforded fair market access to the basic amount of energy at the same prices and under the same terms and conditions as offered to NYPA each time negotiations are held between Hydro-Québec and NYPA.

The Board notes that these utilities also expressed concern regarding the definition of the concept of fair market access in respect of the energy proposed for export, particularly to the effect that the Board should ensure that the offer mechanism is not replaced by one which would shift all responsibility onto the interconnected Canadian utilities rather than onto the exporters. The Board is not inclined to use the offer mechanism, as suggested by certain intervenors, since Hydro-Québec has chosen to adhere to the concept of fair market access. Moreover, a condition relating to the requirements for this concept would ensure that the export was in the public interest while at the same time respecting the letter and spirit of the Canadian Electricity Policy.

Thus, to ensure that Canadian utilities will be afforded fair market access to the energy proposed for export and that the price is just and reasonable, the licence will include a condition requiring Hydro-Québec to submit to the Board for its approval the price and the basic amount of energy, and to demonstrate to the Board's satisfaction that it has respected the principle of fair market access. The basic amount would be zero until such time as Hydro-Québec complies with this condition.

6.3 System Reliability

The Board is satisfied that the proposed export will not affect the reliability of the neighbouring systems in any way and that the Applicant will continue to comply with reliability and safety standards of the Northeast Power Coordinating Council.

6.4 Environmental Impact

6.4.1 Hydro-Electric Generation

The proposed exports would come from hydro-electric generating stations and the evidence has shown that the management of Hydro-Québec's reservoirs complies with the operating and technical standards specific to each reservoir.

The Grand Council suggested that the application was linked to Hydro-Québec's future export development plans and that the energy required to meet the proposed export would be generated solely from James Bay production facilities and would require additional facilities. In this regard, the Board notes that the Grand Council provided no evidence that directly linked this application to the development of future facilities, and, that Hydro-Quebec stated clearly that energy for export would be produced by its existing system facilities. The Board is satisfied that the proposed export will be from existing facilities and that no new generating stations will be placed in service to meet contractual commitments with NYPA.

Concerning mercury contamination, the Board is of the opinion that the incremental environmental impact, if any, resulting from the export to NYPA will be minimal. The Grand Council did not quantify the relationship between reservoir fluctuation and mercury contamination. Moreover, examination by the Board established that the existing James Bay production facilities had been constructed following agreement with the Grand Council; that physical operational limits for the reservoirs had been established; and, that environmental provisions and conditions had been included in the agreement. The Board also notes that witnesses representing both Hydro-Québec and the Grand Council were of the view that the James Bay reservoirs are operated in compliance with the set physical operational limits. Accordingly, the Board believes it is unnecessary to include conditions in the licence in the manner suggested by the Grand Council.

6.4.2 Thermal Generation

The exceptional circumstances outlined in section 4.5 of this report could require the export of thermal energy. In this regard, Hydro-Québec testified that the operation of its thermal stations complied with the provincial standards applicable to thermal emissions as set out in the *Quality of the atmosphere Regulation (RRQ 1981, c. Q-2, r.20).*

According to the Canadian Electricity Policy, in environmental matters, the Board must satisfy itself that thermal generation of electricity for export does not contravene relevant federal environmental standards and guidelines. The licence will be conditioned accordingly.

Although federal standards and guidelines currently in effect apply only to new generating stations, the Board considered them and acknowledged that they constituted only useful indicators for the assessment of the above-mentioned provincial standards. From its review, the Board is satisfied that the operation of thermal facilities would be in compliance with the guidelines applicable to thermal emissions into the ambient air for new stationary sources.

None of the evidence tendered to the Board demonstrated that there would be a noticeable additional environmental impact as a result of the export of electricity under the terms of the contract with NYPA. Thus, the Board is satisfied that,under the circumstances and subject to the above-noted condition, Hydro-Québec does not contravene the environmental requirements of the Canadian Electricity Policy.

6.5 The Board's Findings

The Board has satisfied itself that the power to be exported is surplus to reasonably foreseeable Canadian requirements and that the price to be charged is just and reasonable in relation to the public interest. As for the matter of energy, the Board must satisfy itself, by conditioning the licence, that the basic amounts of energy are surplus to reasonably foreseeable Canadian requirements and that the price to be charged is just and reasonable in relation to the public interest. The Board, having had regard to all other considerations that appear to be relevant, on 25 July 1989 has issued to Hydro-Québec, subject to Governor in Council approval, Licence EL-178 authorizing the export to NYPA of 800 MW of diversity power and up to 3000 GW.h of energy annually, from 23 June 1991 to 31 October 1998. The applicable terms and conditions are set out in Appendix IV.

The foregoing constitutes our Reasons for Decision and Decision in the matter of the present application of Hydro-Québec pursuant to Part VI of the National Energy Board Act.

J.-G. Fredette
Presiding Member

A.D. Hunt
Member

A.B. Gilmour
Member

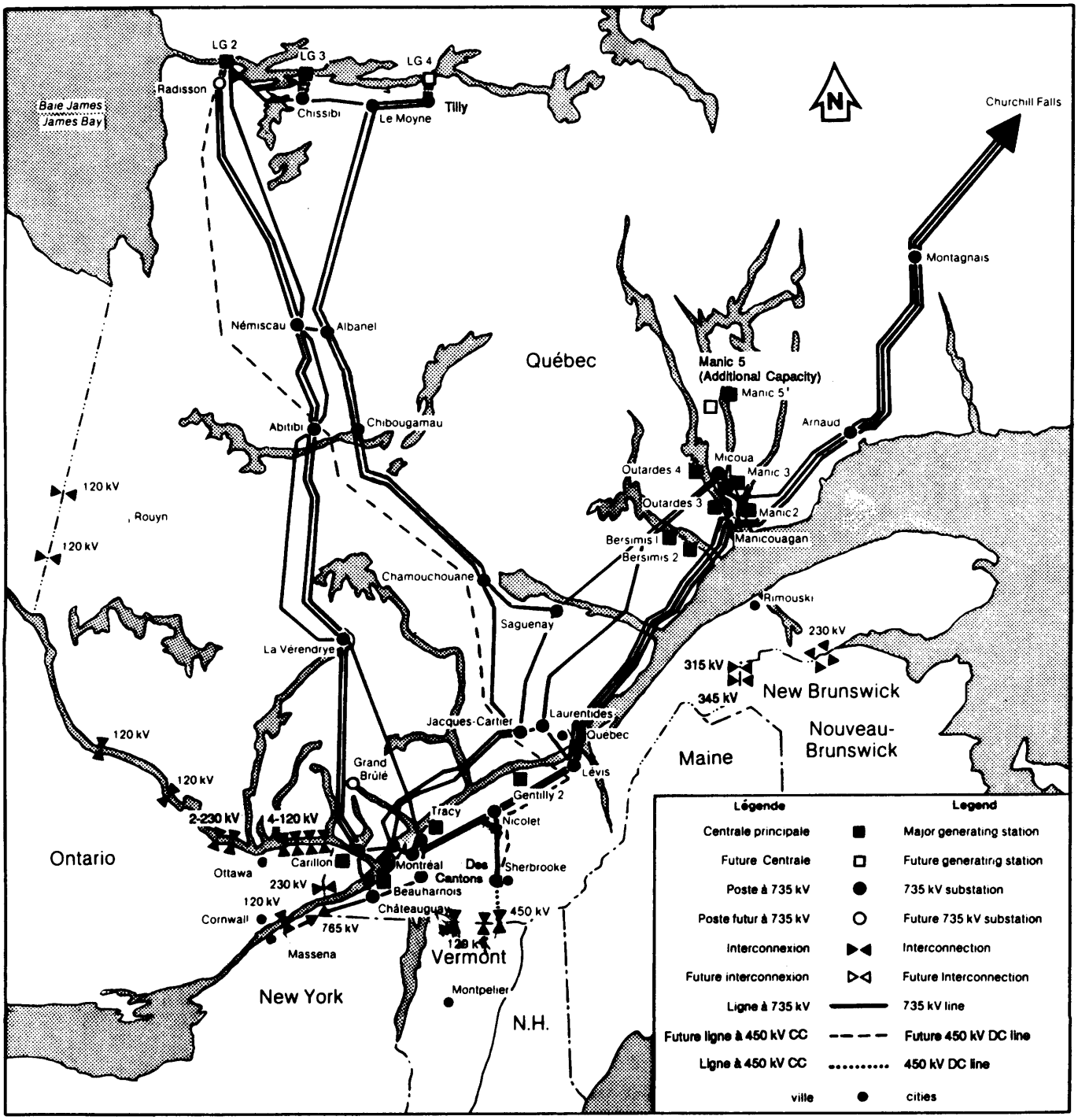
Ottawa Canada
July 1989

Appendix I

Figure a1-1
Map - Hydro-Québec
Systems Main Features in 1988

Hydro-Québec
Les principales installations en 1988

Hydro-Quebec
Systems Main Features In 1988



Appendix II

Table A2-1
Hydro-Québec
Construction Program
Hydro- Québec

1989-1998

Main hydro-electric projects	Power*	Commissioning Dates
	MW	
Manic 5 PA	1056	1989
La Grande 2A	1900	1991-1992
La Grande 1	1310	1994-1995
Brisay	380	1993
Laforge 1	820	1994
Laforge 2	270	1996
Roues Manic 5	175	1994-1997
Suréquipement de Manic 3	330	1997
Sainte-Marguerite	820	1998

* Available at peak

Source: Hydro-Québec Development Plan 1989-1991 - Horizon 1998 and evidence presented at the hearing (EH-2-89)

Appendix III

Table a3-1
Hydro-Québec
Capacity, Demand and Excess of Power
Month of April *
(MW)

		1991	1992	1993	1994	1995	1996	1997	1998
1.	Capacity	30348	31692	32242	32810	33799	35267	35642	36677
2.	Regular Loads **	22578	23091	24673	25047	25055	26189	27241	27673
3.	Gross excess (1-2)	**7770**	**8601**	**7569**	**7763**	**8744**	**9078**	**8401**	**9004**
4.	Operation reserve	3620	2368	2541	2613	2650	2797	2899	2962
5.	Planned maintenance	842	986	978	751	748	786	793	821
6.	Net excess (3-4-5)	**3308**	**5247**	**4050**	**4399**	**5346**	**5495**	**4709**	**5221**
7.	Emergency aid ***								
	interruptible loads	850	850	1050	1400	1700	2000	2000	2000
	neighbouring systems	900	900	1050	1050	1050	1050	1050	1050
	total	**1750**	**1750**	**2100**	**2450**	**2750**	**3050**	**3050**	**3050**
8.	Export to NYPA	800	800	800	800	800	800	800	800
9.	Total excess (6+7-8)	**4258**	**6197**	**5350**	**6049**	**7296**	**7745**	**6959**	**7471**

* April is the critical month, i.e., the month of lease excess power during the summer export period.

** Includes domestic load plus all other firm commitments.

*** Loads that could be interrupted or available power at the peak period.

Appendix IV
Licence No. EL-178

IN THE MATTER OF an application by Hydro-Québec pursuant to Part VI of the National Energy Board Act ("the Act"), for a licence for the exportation of electricity, filed with the National Energy Board ("the Board") under File No. 1923-QI- 17.

WHEREAS, by an application to the Board dated 15 February 1989 Hydro-Québec has applied, under Part VI of the Act, for a licence for the exportation of Diversity Power and its associated energy at a place on the international boundary line between Canada and the United States of America;

AND WHEREAS a public hearing has been held commencing on 16 May 1989, at which Hydro-Québec and other interested parties have been heard;

AND WHEREAS the Board, having taken into account all such matters as appear to it to be relevant, has satisfied itself that the power and energy to be exported will not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada and that the price to be charged by Hydro-Québec for the power and energy to be exported by it will be just and reasonable in relation to the public interest;

NOW THEREFORE, the National Energy Board, pursuant to section 117 of the Act, and subject to the conditions hereof, hereby issues this licence to Hydro-Québec for the exportation of Diversity Power and its associated energy at a place on the international boundary line between Canada and the United States of America.

THIS LICENCE is subject to the following terms and conditions:

1. The term of this licence shall commence on 23 June 1991 and shall end on 31 October 1998.

2. The classes of inter-utility export transfers authorized hereunder are sale and equi-change transfers of firm power and energy.

3. The power and energy to be exported hereunder shall be transmitted over the 765 kV international power line for which the Board has issued Certificate of Public Convenience and Necessity EC-III-15.

4. The power and energy to be exported hereunder shall be as described in the Power Contract between The Power Authority of the State of New York (PASNY), carrying on business under the name of New York Power Authority (NYPA), and Hydro-Québec, dated at New York on 28 November 1973 and at Montréal on 29 March 1974, as amended ("Power Contract").

5. All exports made hereunder shall be in accordance with the Power Contract.

6. No amendment or addition to, termination or substitution of, the Power Contract shall be effective until approved by the Board.

7. The quantity of power, called diversity power, that may be exported hereunder, during any summer period, 1 April to 31 October, shall not exceed 800 megawatts.

8. The annual quantity of energy that may be exported hereunder, during any summer period, 1 April to 31 October, shall not exceed 3000 GW.h, less, for the year 1991, the quantity of energy exported pursuant to Licence EL-96.

9. Every time that the basic amount of energy and its price are determined for one or several summer periods pursuant to Section 3.5 of the Power Contract, Hydro-Québec shall

   (a) submit for approval by the Board a statement of such quantities and price, and

   (b) provide the necessary information to establish, to the satisfaction of the Board, that it has conformed to the requirements of the fair market access guideline included in Annex 2 of the Canadian electricity policy of September 1988.

The basic amount for any summer period shall be zero until Hydro-Québec has complied with sub-conditions (a) and (b).

10. If Hydro-Québec exports energy from thermal sources, pursuant to Section 3.3 of the Power Contract, or for any other reason, the price shall be as set forth in Section 4.5 of the Power Contract.

11. The generation of thermal energy to be exported hereunder shall not contravene relevant federal environmental standards or guidelines.

12. (a) For each year, Hydro-Québec shall, unless otherwise authorized by the Board, require NYPA to return all energy exported in excess of the approved basic amount and to complete such return by 31st day of March following.

   (b) If the return of energy exported in excess of the approved basic amount is not completed by 31st day of March pursuant to sub-condition a) Hydro-Québec shall not export during the following summer period.

13. Hydro-Québec, within 15 days after the end of each month comprised in the term of this licence, shall file with the Board a report in such form and detail as the Board may specify, setting forth for each such month

   (a) the quantities of power and energy exported hereunder,

   (b) the price for the energy and the resulting revenue, and

   (c) all associated energy imports.

ISSUED under Part VI of the National Energy Board Act at Ottawa, Ontario, this 25 July 1989.

National Energy Board

Louise Meagher
Secretary