DECISION

IN THE MATTER OF an Application by New Brunswick Power Corporation to establish the need for and the evidence to be provided in connection with any specific hearing held to review the maintenance or upgrading of its generating facilities

July 11, 2001

NEW BRUNSWICK

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

Introduction

New Brunswick Power Corporation (NB Power), on March 1, 2001, made application to the New Brunswick Board of Commissioners of Public Utilities (the Board), requesting a generic hearing, in advance of any specific hearings, to address the following three questions:

1. Is it reasonable to believe that NB Power will require the electricity presently generated by Coleson Cove and/or Point Lepreau or replacement facilities in the future?
2. What are the relevant issues to be reviewed during any subsequent specific generating facility upgrading and/or maintenance hearing?
3. What is the nature and scope of the evidence that NB Power should provide for those hearings?

The pre-filed evidence was submitted to the Board April 2, 2001 and the pre-hearing conference, to establish the hearing procedures, was held April 17, 2001. The Board commenced the public hearing on June 4 and heard final argument June 6, 2001.

The witnesses for NB Power who testified were:

Stewart MacPherson
Ken Little
Darryl Bishop
William Marshall
Navin Bhutani
John Dalton, Consultant

The formal intervenors were:

Conservation Council of New Brunswick
Emera Corp.
Enbridge Gas New Brunswick
Irving Oil Ltd.
JD Irving Ltd.
New Brunswick Department of Natural Resources and Energy
NS Power Corp.
Rod Gillis
Saint John Citizens Coalition for Clean Air
Saint John Energy Ltd.

NB Power, pursuant to Subsection 40.1(1.1) of the Public Utilities Act, is required to make application to the Board before making an expenditure exceeding $75 million for the maintenance or upgrading of a generating facility. As part of this application process, the Board is required to hold a public hearing. The Board's decisions with respect to the three questions, based on the outcome of the hearings, are provided in the following sections.

1. Is it reasonable to believe that NB Power will require the electricity presently generated by Coleson Cove and/or Point Lepreau or replacement facilities in the future?

Section 2 of the Electric Power Act provides the following description of NB Power's mandate:

> "To provide for the continuous supply of energy adequate for the needs and future development of the Province and to promote economy and efficiency in the generation, distribution, supply, sale and use of power."

NB Power stated that it has an obligation to supply the electrical needs of the Province. No party to the proceedings took exception with this statement.

The question then becomes what are the in-province electricity requirements which NB Power must supply. In other words, what is the generation capacity required by NB Power in order to meet the peak demand that will be placed on its system during the 10 year planning period?

Generating capacity requirement is made up of two components, being the peak demand and a reserve requirement. Peak demand is the largest load requirement placed on the generating system at any point in a year. The reserve requirement is calculated as the larger of either 20% of the peak demand or the size of the largest generating unit in the system. The reserve requirement is necessary to supply higher than forecasted load requirements or to supply power in the event of a shutdown of a generating station. In New Brunswick, the peak demand typically coincides with the coldest day of the year. Historical data are used to aid in forecasting load requirements, as well as allowances for possible changes in demand.

NB Power provided a load forecast, which contained its estimates of the peak demand and the generation capacity necessary to serve that demand for the period 2002-2011. In 2002, the generating capacity requirement is forecasted to be 4026 megawatts (MW). To meet this demand, NB Power's system has a generating capacity of 4089.6 MW, allowing for an excess of 63.6 MW. In 2007, when Point Lepreau is shutdown, NB Power forecasts there will only be 3386 MW of generating capacity available. The corresponding generating demand will be 3690.4 MW, resulting in a shortfall of 304.4 MW.

All forecasts are an attempt to predict the future and are therefore subject to uncertainty. The current load forecast was prepared at a time when additional and new factors create even

greater uncertainty. For example, natural gas, as a competing energy source, is being introduced in New Brunswick. The provincial government has released an energy policy paper, which raises the possibility of significant changes to the way in which electricity will be generated and/or purchased in New Brunswick. The policy paper also discusses certain initiatives with respect to energy efficiency. NB Power stated that, in preparing its load forecast, it had considered these matters and included adjustments for them.

The Conservation Council of New Brunswick (CCNB) took exception to certain aspects of NB Power's load forecast. They questioned whether the demand for electricity in New Brunswick could be reduced even further than NB Power forecasted through energy efficiency programs. CCNB also suggested that the use of natural gas, together with the possibility of switching from electricity to an energy source other than natural gas, could further reduce the need for electricity in the province.

The amount of generation capacity that would be built by large customers was also the subject of some debate. CCNB stated that the 150 megawatts (MW) of capacity predicted by NB Power may be too low.

NB Power believes that it will not lose any sales of electricity, currently purchased by large industrial and wholesale customers, to any third party supplier. Once again, CCNB took issue with this position.

CCNB, in its final argument, requested that the Board give careful consideration to the reasonableness of the load forecast. The Department of Natural Resources and Energy (DNRE), in final argument, stated that it accepts that NB Power has demonstrated the need to replace the electricity produced by Coleson Cove and Point Lepreau. J. D. Irving, Limited (JDI), in its

closing remarks, said that NB Power has demonstrated that the electricity from Coleson Cove and Point Lepreau will be required.

The Board considers that the approximately 1000 MW of generating capacity represented by Coleson Cove is a necessary component of NB Power's system. The need for the 635 MW of generating capacity represented by Point Lepreau is another matter. NB Power's own forecast shows a deficiency of generating capacity of just over 300 MW in 2007 and approximately 430 MW in 2011. CCNB's position is that these deficiencies may turn out to be considerably smaller. CCNB did not, however, provide its own estimate of the potential deficiencies. Both DNRE and JDI believe that the full capacity represented by Point Lepreau will be required. JDI expressed concern that the forecast deficiency may be understated.

The Board is aware of the recent developments in other jurisdictions. The essential nature of electricity is such that it is of critical importance to have a secure and reliable supply of electricity adequate to meet the needs of customers in New Brunswick. There is, however, a potential financial risk to having generating capacity in excess of what is necessary for in-province needs. Generating capacity has significant cost and generally, a useful life of considerable length. Any costs associated with providing capacity which is in excess to the needs of New Brunswickers, and which is not paid for by export sales, must be recovered from in-province customers.

The Board considers that the load forecast presented by NB Power is, on balance, reasonable. The Board will not require NB Power to update its forecast in connection with any specific application involving Coleson Cove.

There are significant factors, beyond the control of NB Power, which may impact on the need for the 635 MW of generating capacity represented by Point Lepreau. It is not expected

that a specific application involving Point Lepreau will be filed until 2002. The Board understands that it was the practice of NB Power to prepare load forecasts on an annual basis. There are significant sums, literally hundreds of millions of dollars that are at stake. For these reasons, the Board believes that it would be prudent to have more current information available prior to considering an application specific to Point Lepreau. The Board therefore directs NB Power to file an updated load forecast three months prior to filing a Point Lepreau specific application. The updated forecast should address all significant changes, with particular reference to the issues of demand side management/energy efficiency, natural gas penetration/fuel switching, self-generation by large customers and supply of electricity by parties other than NB Power.

There will be a public review of this information. The Board expects that the public hearing would begin about one and half (1.5) months after NB Power files the updated load forecast. The Board anticipates issuing a decision on the estimated in-province requirements within one week of the conclusion of the hearing for the updated load forecast. The Board will discuss the schedule with NB Power and believes that it can be accomplished without having any significant impact on the timing associated with a Point Lepreau specific application.

2. <u>What are the relevant issues to be reviewed during any subsequent specific generating facility upgrading and/or maintenance hearings?</u>

In NBP Exhibit 6, the applicant provided its view of the relevant issues to be reviewed in subsequent specific generating facility hearings. This proposal was used as a reference in cross examination. NB Power expanded upon its proposal as a result of discussion which arose at the

hearing and restated it in NBP Exhibit 9. A copy of NBP Exhibit 9 will be attached to the written decision. The Board has numbered the pages for ease of reference.

The Board, in general, accepts NB Power's proposal as stated in NBP Exhibit 9, as the relevant issues to be reviewed in subsequent specific hearings on the Coleson Cove and the Point Lepreau refurbishments. The Board, however, considers that there may be benefits from considering additional supply options. The Board directs NB Power to evaluate the following two options:

a) buy-out of the electricity supply contract with Hydro Quebec

NB Power, in its evidence for the 1993 Rate Hearing, stated that it had a 20 year electricity supply contract with Hydro Quebec. The contract was for the supply of 400 MW of electricity to Hydro Quebec beginning on November 1, 1991. It reduced to a supply of 300 MW in November 1998 and will be further reduced to a supply of 200 MW in November of 2002. The contract expires in 2011. Four 100 MW combustion turbines were put on line at the Millbank generating station to support the contract. The Board recognizes that this contract continues to provide peak demand backup for Hydro Quebec's own generation.

The pre-filed evidence for the 1993 rate hearing established that NB Power considered combustion turbines as a peaking capacity option (vol. 2, section 6, page 6). If this capacity were available to NB Power, it would decrease the requirement for generating capacity in its system. The Board considers that there may be a benefit from this and directs NB Power to investigate the option of buying back the 200 MW supply contract with Hydro Quebec. This would have the effect of lowering the forecast for firm demand load as presented by NB Power in Table 2 of the Load and Resources Review, page 33 of NBP Exhibit 1. The cost of this option could then be compared against other supply options that are being considered.

b) buy-back from Enron Corp. of the two combustion turbine units

The Board is aware that NB Power, in the fall of 2000, sold two combustion turbines to Enron Corp. These units are two of the four that had been installed at the Millbank generating station and are currently still at that location. As these units could be reconnected to NB Power's grid, the Board directs NB Power to investigate the possibility of buying back the units as a supply option.

The Board is of the opinion that it is unlikely that any changes to the market place would be significant enough to eliminate the need for the 1000 MW of capacity from Coleson Cove. Given this, together with the fact that Coleson Cove is operating, and is expected to continue to operate for a considerable number of years, the Board will expect NB Power to specifically address why the refurbishment of Coleson Cove or construction of a replacement facility is required when it files a specific application involving Coleson Cove.

In NBP Exhibit 1, the pre-filed Evidence, page 36, NB Power lists electricity options that are currently being considered to meet the projected deficiencies beyond 2006. Questions and testimony during the hearing identified electricity supply options that could be considered for each project. The Board will require NB Power to address all reasonable supply options for each of the Coleson Cove and the Point Lepreau refurbishments. NB Power must identify all options that will be considered in the evaluation process outlined in NBP Exhibit 9.

In NBP Exhibit 9, page 2, Environmental Requirements, NB Power states its position that Environmental Impact Assessment (EIA) review issues should not be project evaluation criteria. DNRE, in their closing statement, pages 422 and 423 of the transcript, "take particular exception to that position and feel public hearings can't occur without reference to environmental issues, particularly costs".

The Board recognizes the EIA process developed under the provincial EIA regulation as the most appropriate method to address issues related to potential environmental effects. Under the registration phase of the regulation, there is no specified opportunity for formal public input, although it is understood that any member of the public can make comment on any project. The Board does not consider its hearing process as the appropriate venue in which to hear, or make determinations, on issues that are clearly within the mandate of the Department of the Environment and Local Government. It is the opinion of the Board that the Department may wish to update its own regulatory process to ensure that there is an adequate level of public input into any environmental review, whether under the EIA regulation or other regulations within its mandate.

The Board anticipates that there will be cost implications of meeting environmental standards through facility upgrades. To ensure that these costs are adequately captured in the overall costs of the project, the Board requires NB Power to detail this information for any site specific hearing.

In light of the timelines for the projects, the Board appreciates that the EIA process and the specific hearings for the Coleson Cove conversion may be conducted concurrently. Further, the Board anticipates that NB Power would be in a position to estimate costs associated with environmental upgrades in time for the site specific hearing without having received the Determination from the Minister of Environment and Local Government. Therefore, the Board does not plan to delay the Coleson Cove specific hearing by waiting for the EIA Determination. However, with respect to any associated pipeline hearing, the Board does not plan to issue its decision until NB Power has received the necessary Determination.

NB Power has outlined a two step evaluation process for electricity supply options. The first step using reliability, power cost and environmental criteria is a method to screen out the options that are not considered viable. The second step utilizes the criteria from step one as well as financial impacts, risk factors and mitigation strategies, export market impacts and life end effects criteria for a comprehensive comparison of the viable alternatives. The Board accepts this methodology as contained in NBP Exhibit 9.

3. What is the nature and scope of the evidence that NB Power should provide for those hearings?

The Board accepts the outline provided in NBP Exhibit 9 with respect to Question 3. To allow for a better understanding of the evaluation criteria, however, the Board directs NB Power to provide, for each criterion, a description of the objective, a detailed description of the individual components for each, and their relative weighting.

For the criterion, Cost of Power, the Board directs NB Power to establish the cost of producing a kilowatt of power for each of the viable alternatives. The Board will require a detailed discussion of the various components and their costs which make up the cost of production. This will allow for a proper comparison of the options as suggested by DNRE in final argument.

As discussed above, the Board accepts the two step process outlined in NBP Exhibit 9, to be used in identifying the viable project alternatives. The Board recognizes that this process will effectively allow NB Power to eliminate certain alternatives from further analysis and consideration. While the process is clear, there has been no indication that the rationale for

eliminating an alternative will be provided. To this end, the Board directs NB power to provide the rationale and supporting analysis for each eliminated alternative. This requirement shall be met for each alternative eliminated whether in Step 1 or Step 2.

As an additional detail regarding the selection of alternatives, the Board directs NB Power to provide a generation capacity rating for each viable alternative. Where there are significant variances between alternatives in terms of the capacity, a rationale for the variance shall be provided. For example, any specific application involving Point Lepreau should clearly distinguish between capacity required for in-province and capacity for export sales. The benefits from any export sales must be compared to the costs necessary to permit such sales.

In addition to the detailed discussion of the air quality issues and the mitigation strategies for both projects and their viable alternatives, the Board will require that a similarly detailed discussion of the water, wastewater and solid waste management issues be provided. To accompany this discussion, the Board will also require that the resultant current and anticipated future costs associated with the management of these issues be provided.

NB Power maintained throughout the hearings that the possibility for reduction in the demand for electricity through energy efficiency had been properly addressed in their evidence. NB Power stated that the only issue for future hearings should be how the forecast demand could be supplied. In their closing arguments, both DNRE and CCNB, highlighted the need for a further evaluation of demand side management (DSM) as an alternative to any supply side projects. Specifically, DNRE requested that the evaluation of DSM be included in the two step analysis, and the associated rationale for eliminating it as an option be provided. DNRE felt that there were significant environmental benefits to be had from following DSM.

While the Board appreciates the need for a proper analysis of DSM, the Board also anticipates that NB Power will file an application associated with the Coleson Cove project in the very near future. As stated above, the Board is of the opinion that the need for the 1000 MW capacity has been adequately proven. The Board will not, therefore, require NB Power to further address DSM in its evidence for the Coleson Cove application. The Board will, however as discussed above, require that the potential for DSM be addressed in the updated load forecast.

In NBP Exhibit 9, it is clearly stated that "No consideration of scientific and social policy issues" will be made as part of the project evaluation criteria. This is further emphasized in cross examination where NB Power witnesses indicated they felt that meeting the standards set by government was sufficient. The Board considers that it is appropriate that it only require NB Power to clearly identify the costs associated with meeting the standards as set by government. The Board agrees that an evaluation of the social policy and human health issues is more appropriately carried out by the government departments with the statutory mandate to set the policy direction in each of these areas. The Board is aware that in other jurisdictions externalities are considered in the overall environmental evaluation. It is noted, however, that the Board does not have the specific legislative mandate to address these issues.

Integral to the refurbishment of Coleson Cove to Orimulsion® is the fuel delivery system. CCNB expressed concern over the legal liability and clean up costs that might be associated with a spill of Orimulsion®. In its sensitivity analysis, the Board directs NB Power to provide an analysis of these and any other costs that might arise for each viable alternative.

DATED at the City of Saint John this 11th day of July 2001.

BY THE BOARD

Lorraine R. Légère
Secretary

Decision Attachment – below.

ATTACHMENT: EXHIBIT #9

Filed June 6, 2001

Question 1 **Requirement for Coleson Cove and Point Lepreau Capacity**

Nature of Electricity

Electricity cannot be stored
Supply must equal demand at all times
Reserve generation is required

NB Power's Objectives

1. Providing a reliable supply of energy;
2. Meeting environmental requirements; and
3. Achieving the lowest cost of energy

Industry Trends

Demand growth has slowed in recent years.
Supply situation is much tighter today.
Inadequate supply can have dire consequences (California).

New Brunswick Situation

There is little surplus today.
The forecast is for essentially zero load growth
New Brunswick economy is energy intensive and we cannot afford to be short.

Approvals Requested

1. NB Power Load Forecast is accepted as reasonable.

   - Variations in Load Forecasts will be provided for sensitivity evaluations at a project specific hearing for the purpose of assessing the robustness of any proposed refurbishment project.

   - The sensitivities would not be offered for the purpose of revisiting Question 1.

2. NB Power Load and Resource Review is accepted as reasonable.

3. Coleson Cove, Point Lepreau and/or replacement supply capacity is required to provide a reliable supply of electricity for New Brunswick.

4. Because the Load Forecast already makes aggressive provisions for demand reduction measures, NB Power need only examine supply side options to any proposed refurbishment project.

Question 2 - Relevant Issues?

Definition of the project

Project evaluation criteria:

1. Reliability of supply
   - Quantification of reliability contribution

2. Cost of Power
   - Life cycle cost
   - First year accounting cost
   - Limited to utility related costs

3. Environmental requirements (existing and projected standards)

- Meet standards for SO2, Nox, Hg, particulate
- Quantification of CO2 emissions and potential cost implications
- No consideration of scientific and social policy issues
- Delivery systems for fuel, lime-stone and ammonia
- No repeat of EIA review issues

4. Financial impacts
   - Borrowing requirements
   - Net income impact

5. Risk factors and mitigation strategies (management of risk)
   - Regulatory uncertainty including retail competition
   - Changing environmental standards (especially CO2)

6. Export market impacts
   - Competitive access including cost sharing, arrangements on 2nd tie And Neptune (subject to confidentiality arrangements)
   - Export benefits
   - Future transmission impacts including analysis of congestion pricing impacts

Process to review project alternatives

1. Identification of alternatives:
   - Generation supply options (conventional, new nuclear and renewable including wind)
   - Power purchases (including evidence with respect to Ontario and Newfoundland)
   - Self-generation by customers
   - Additional demand options will not be considered

2. Evaluation of alternatives
   - Using reliability, power cost and environmental criteria to screen viable options

3. Selection of viable alternative(s)

4. Comprehensive comparison of project with viable alternative(s)
   - Utilize all six criteria
   - Include end effects for differing project lives

Question 2 - **Relevant Issues? (Cont'd)**

5. Determination of overall project robustness through sensitivity analysis

6. Sensitivity analysis for comparison with viable alternatives to include variations in:
   - Load Forecast (+ or – 13%)
   - Fuel prices
   - Export market prices
   - Discount rate (private sector utility with taxes and IRR)
   - Capital cost (+ or – 25%)
   - Environmental externality mitigation costs

Question 3 **Nature and Scope of the Evidence**

Policy Overview

1. Project description, including status of EIA Application
2. Project drivers
   - environmental emission standards
   - life limiting factors

3. Electric and nuclear industry trends
4. Evaluation summary

Proposed Refurbishment Option – Generic Evidence

1. Generating station condition assessment (major components)
2. Refurbishment plan: Start date, Scope, construction costs and schedule including past experience
3. Replacement energy during construction
4. Expected useful life
5. Fixed and variable power costs (including future expected capital and maintenance investments and investments made prior to the Application

Evidence Specific to a Coleson Cove Project

1. Planned environmental mitigation strategies, resultant costs and emission levels
2. Trading value of emissions if available and how derived
3. Heavy metal and/or liquid effluent emissions
4. Orimulsion Fuel Characteristics, Availability and Worldwide usage
5. Fuel Delivery Plan, basis for selection of preferred option, spill risks and costs
6. Orimulsion Supply Risk Factors
7. Energy conversion efficiency unless third party confidential
8. In-Province and export sales before and after refurbishment
9. Design standards for emissions equipment
10. Cost of retaining dual fuel capability
11. Orimulsion contract (in confidence to the Board)
12. Cost and emission if revert to oil

Question 3 **Nature and Scope of the Evidence (Cont'd)**

Evidence Specific to Point Lepreau Project

1. Environmental considerations (emissions avoided including those available from independent source and emission levels including heavy metals and/or liquified effluents
2. Decommissioning plan and costs
3. Removal of radioactive components for refurbishment
4. Spent fuel management plan and costs
5. Nuclear option risk factors (including construction cost and schedule, reliable operation, staffing)
6. Licensing
7. Nuclear accounting issues
8. Funding of decommissioning & spent fuel management
9. Pickering A evidence on performance after refurbishment
10. Costs if any for a second unit

Non-Refurbishment Alternatives

1. Definitions of alternative supply options
2. Power costs (fixed and variable)
3. Expected useful life
4. Expected environmental mitigation strategies, resultant costs and emission levels for meeting and exceeding environmental standards including NO2 mitigation for combined cycle gas generation
5. Fueling considerations
6. Risk factors
7. On-going nuclear costs if Lepreau is not refurbished

Comparison of Alternatives

1. Power cost comparison
    - Levelized life cycle costs
    - First year accounting costs
2. Export market benefit comparisons
3. Comparison of emission levels
4. Financial impacts including 8-Year financial forecast with refurbishment and non-refurbishment options
5. Sensitivity analysis of economic variables, in-province and export sales, and discount rates
6. Risk assessment including possible added costs of future greenhouse gas regualtions
7. Socio-economic impacts
    - Summary level only