

POINT LEPREAU REFURBISHMENT REVIEW

EXECUTIVE SUMMARY
April 2004

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Introduction

1. In 2002, the New Brunswick Board of Commissioners of Public Utilities (PUB) decided that it was not in the public interest to proceed with the refurbishment of Point Lepreau. However, it noted that there could be non-economic factors outside the scope of their remit that only government can assess.
2. Since the PUB decision, work has continued on the project but limited to the activities necessary to keeping open the option of completing refurbishment by 2009. Studies of the electricity needs of the province from 2010 onwards show there to be a need either for a refurbished Point Lepreau or for an equivalently sized replacement. It is becoming urgent to decide whether or not Point Lepreau should be refurbished.
3. The provincial government commissioned this review to assist with making this decision.

Findings from the review

4. A particular concern was **whether the massive cost and schedule overruns** experienced on the Pickering restart project were likely to be repeated on the refurbishment of Point Lepreau. ***The review concluded the following:***
 - a) Compared with Pickering, the Point Lepreau project has a much smaller extent of work and the project start-up activities have been organised on good project management principles.
 - b) The approach of using a single general contractor to be responsible for all engineering, scheduling, procurement and site construction supervision should avoid many of the problems that plagued Pickering.
5. NB Power's **strategy for the refurbishment project and for the subsequent overlife operation** is to enter into a partnering arrangement with AECL in order to secure their worldwide knowledge of CANDU technology and their project management expertise. The intent is to have four contracts with AECL; the refurbishment contract, the retubing contract, the plant performance contract and the CANDU operations support services contract. ***The review concluded the following:***

- a) The logic of having a single general contractor on both the retubing and refurbishment contracts is compelling and the selection of AECL in this role is endorsed.
- b) The commercial terms for the contracts are too biased in favour of AECL with the contract pricing having been set by negotiation and not by competition.
- c) The contracts provide that, under defined circumstances, the government can terminate all three contracts without penalty.

Recommendation 1: The basis of the AECL retubing and refurbishment contracts should be renegotiated in respect of pricing and commercial terms.

Recommendation 2: These contracts should be put onto a 'fixed price' basis so that AECL takes the escalation risk.

Recommendation 3: Either the terms of the AECL plant performance contract should be revised so that there is an equitable proportioning of risk and reward or the contract should be terminated.

Recommendation 4: The negotiations on the CANDU operational support services contract should be terminated.

6. NB Power provided the following information on their estimate of final cost:

- ◆ Costs expended on determining the project scope; \$37 million.
- ◆ Future expenditure on AECL contracts, \$517 million.
- ◆ Future expenditure on NB Power project team and station costs, \$77 million.
- ◆ Generation revenue during commissioning, \$6 million (credit to the project).
- ◆ Contingency, \$36 million.
- ◆ Provision for escalation, \$101 million.
- ◆ Provision for interest during construction, \$173 million.
- ◆ **NB Power estimate of final project cost, \$935 million.**
- ◆ When analysing the project economics, the cost of providing the replacement electricity during the refurbishment shut down outage has to be included; NB Power provided the review with an estimate of \$280 million for this.

7. To reduce future outage durations, the review considered that the intrusive capital work NB Power is proposing to carry out after the reactor returns to service should instead be done in parallel with the refurbishment outage at an estimated cost of \$100 million. Also, it is considered prudent to include a further contingency of \$60 million. This results in a **revised, all-up estimate of final cost of \$1.4 billion**. *The review concluded the following:*

- a) The Point Lepreau refurbishment project is complex and will require tough, experienced and committed project management to achieve a successful outcome.
- b) With this qualification, the revised cost and schedule estimates for the Point Lepreau refurbishment project are considered to be realistic.

Recommendation 5: *The recently appointed NB Power chief executive should review the project management arrangements and ensure that; a) within the NB Power team, there are the necessary skills, experience and leadership, and b) that the interface with AECL provides the framework for a successful project.*

Recommendation 6: *NB Power should develop arrangements for purchasing replacement power aimed at reducing cost and risk.*

Recommendation 7: *Rather than delay significant capital work till after the refurbishment outage, this should be done as part of the project.*

8. For purposes of the review, NB Power ran a revised version of the **business case** model based on the new company organisation that will come into effect following restructuring. *The review concluded the following:*

- a) Economic modelling of the refurbishment project compared with the construction of a new fossil plant shows a wide range of outcomes.
- b) Refurbishment has no clear economic advantage over the construction of a new fossil plant of equivalent capacity.
- c) The rationale for the PUB decision in 2002 is as relevant today as it was then.

9. Regarding **operational performance**, for the first ten years following commissioning in 1983, Point Lepreau was a world leader. In the mid-to-late 90s there was poor performance. However, for the most recent three years, this has improved although it is still significantly below that of USA plants. *The review concluded the following:*

- a) In the USA, there has been a steady improvement in performance as a consequence of a determined effort by USA utilities focussed on the methodology of the Institute of Nuclear Power Operations, INPO (which in a Canadian context is the related organisation, the World Association of Nuclear Operators, WANO).
- b) NB Power needs to continue a dedicated focus on nuclear and operational performance.
- c) There should be an appropriate level of nuclear experience at NB Power board level.

Recommendation 8: NB Power needs to reinforce its focus on achieving the INPO/WANO objectives.

Recommendation 9: An NB Power board nuclear committee should be created. The chairman of this committee should be a board member and have independent, nuclear plant expertise.

Recommendation 10: The provincial government should review what options for alternative ownership structures of Point Lepreau may be possible such as lease or partnership.

10. With respect to the **non-economic aspects of the project**, there are several issues that argue in favour of refurbishment. First, were Point Lepreau to be closed, the replacement of nuclear by fossil based generation would have a significant adverse impact on New Brunswick's effort to meet its commitments to greenhouse gas reduction. Next, Point Lepreau has a positive impact on the local economy, is the centre of a high technology industry and has a favourable impact on local schools, universities and community colleges. Finally, there is the issue of security and diversity. Uranium fuel is plentiful; conversely, since the time of the PUB hearings, gas has increased in price and there are increasing concerns on the availability of supply. *The review concluded the following:*

- a) Security and diversity need a high weighting when considering the decision on whether to refurbish or to build a new fossil plant.

- b) Issues such as jobs in New Brunswick are important but it would be inappropriate to overemphasise this to the overall detriment of the ratepayer and the taxpayer.

Recommendation 11: The New Brunswick government should review the non-economic benefits of the refurbishment project and determine what weighting be attached to these.

The way forward

11. There are three factors that make it difficult to arrive at a clear recommendation on the way forward at this time; first, the uncompetitive nature of the AECL contracts and the concern that they may be overpriced and unduly expose NB Power (and thereby the province) to financial risk; secondly, the information on the fossil alternatives are based on business planning information and not on contractually binding, competitive tenders; and finally, the significance to be attributed to the non-economic issues.

Recommendation 12: To facilitate a decision-making process that is open, based on fact and auditable it is proposed that, in parallel:

- a) ***NB Power invites competitive bids for 635 MW of new capacity backed by a long-term fuel supply contract.***
- b) ***NB Power renegotiates AECL contracts to achieve more competitive prices and commercial terms.***
- c) ***The government solicits expressions of interest by nuclear utilities for their interest, in whole or in part, to lease or partner Point Lepreau either pre or post refurbishment.***
- d) ***There needs to be a clarification on a number of issues including; a review of electricity requirements within the province, the appropriateness of charging the refurbishment project with replacement power costs and the importance to be attributed to the non-economic issues especially those of security and diversity of electricity supply.***

The intent is that all of the above will be completed by the fall of 2004 and so form the basis for a factually based decision on the future structure of electricity generation in the province.