



**Advisory Panel on the Proposed
New Brunswick - Québec Electricity Transaction**

February 1, 2010

Chair – David A. Ganong



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EXECUTIVE SUMMARY

On October 29, 2009 the governments of New Brunswick and Québec announced a proposed agreement whereby Hydro-Québec would acquire most of the assets of NB Power and provide a guaranteed electricity supply at a set price to the province.

Because of the complexity of the Proposal, the high degree of uncertainty and the wide range of questions by the public, an independent advisory panel was requested on November 20, 2009 to examine the Proposal.

On January 20, 2010 changes to the Proposal were announced.

This report addresses the proposed agreement as presented to the Panel up to January 26, 2010 referred to in this report as the “Proposal”.

The six-person panel (Panel) was asked by the Government of New Brunswick to provide independent advice on whether the Proposal would represent the best interests of New Brunswickers. The mandate of the Panel was to compare short and long-term benefits and risks of the transaction to business as usual.

The Advisory Panel on the proposed New Brunswick-Québec Electricity Transaction was an independent body of lay New Brunswickers with a broad cross section of backgrounds. The panel spent 12 days meeting with key individuals and conducting an independent and objective examination of the information available. Panel members accepted no remuneration for their time. To assist with its review, the Panel secured independent expert advice.

The Proposal

The Proposal contemplated the sale of NB Power’s hydro generation facilities, two diesel peaking plants and the Point Lepreau nuclear generating facility once the refurbishment project is completed. The Proposal also contemplated a guaranteed bulk electricity supply of 14 Terawatt-hours per year by Hydro-Québec at a blended rate of 7.35 cents per kilowatt-hour referred to as the Heritage Pool Supply (HPS). The rate would be held constant for 5 years and then escalated at the New Brunswick consumer price index (CPI) in perpetuity. Hydro-Québec would make a payment to New Brunswick of \$3.2 billion for the assets being transferred, part of which would be paid after the Lepreau refurbishment.

The New Brunswick government would retain ownership of the fossil-fuelled power plants, the NB Power transmission assets and the NB Power distribution assets and customer sales. The generation from the fossil-fuelled power plants would be contracted exclusively to Hydro-Québec and the costs would be covered by Hydro-Québec as part of their obligation to provide the guaranteed electricity supply (HPS) price. The New Brunswick System Operator (NBSO) would continue to be an independent agency and open access transmission would remain.

Context

The Panel recognized the circumstances that lead to the Proposal. NB Power is faced with major financial and technical challenges particularly in generation that will inevitably lead to significant rate increases over many years to come and is faced with substantial risks that could further add to the rates and possibly require government support to alleviate. These risks include:

- increasing and volatile fuel prices, particularly for oil fired generation plants;
- greenhouse gas emissions regulations;
- large capital costs for the replacement or refurbishment of generating facilities;
- interest and exchange rates on refinanced debt or increased debt for replacement generation projects;
- possible outage of a large generation facility; and
- start-up, operation and decommissioning of the Point Lepreau nuclear plant.

Meanwhile, Hydro-Québec has a surplus of clean, reliable and low cost electricity available as a result of a major hydro construction program and a near-term decline in market growth in the U.S. Northeast. With a closer relationship between the NB Power generation facilities and Hydro-Québec’s flexible hydro system, which has long-term storage, the resulting system efficiencies of operation present a unique opportunity for lower cost electricity and lower financial risks for New Brunswick and benefits for Hydro-Québec.

Conclusions

If the Proposal is implemented, the Panel concluded that it would be a good deal for New Brunswick for the following reasons:

- Electricity rates would be lower for New Brunswick customers in the near and long term. Residential, commercial and wholesale customer rates are expected to average more than 6% lower during the first 10 years and 13% lower by 2030, while Industrial rates are expected to average more than 20% lower during the first 10 years and 23% lower by 2030.
- There are significant future risks that will affect rates in the near and long term that would be substantially reduced.
- The Panel accepts the assessment of the experts retained by the government and their preliminary determination that the purchase price offered by Hydro-Québec falls within a range of fair value for the assets to be transferred based on standard industry financial methods.
- A substantial portion of the NB Power debt would be serviced by Hydro-Québec and future debt accumulation by NB Power for replacing or refurbishing generation would be avoided. The remaining debt related to transmission and distribution would be serviced within the regulatory framework and customer rate commitment of the government.
- Hydro-Québec would benefit from a market for its electricity at a firm price over the long term and would be able to achieve operational efficiencies and savings by more closely coupling its generation to the New Brunswick facilities.
- There should be real environmental improvement with reduced air and other pollutants and reduced risk of future high costs for greenhouse gas emission reductions.
- New Brunswick would continue to have policy and regulatory control over the electricity sector while allowing competitive elements of the markets to operate.

Recommendations

Further, the Panel recommends that:

- The Province strengthen the regulatory framework as soon as possible to provide broader authority and oversight for the New Brunswick Energy and Utilities Board (EUB) without government interference in its decisions, as is normal in other jurisdictions.
- The Province require by regulation, in the new regulatory framework, greatly expanded investment by all distribution utilities in energy efficiency and demand side management (DSM) with aggressive targets to avoid purchasing electricity supply beyond the Heritage Pool Supply.
- The costs associated with the Lepreau deferral account should begin to be applied to rates in the first year of the Proposal term rather than being deferred for five years.
- The Province fully support new technology and innovation for electricity system improvement, such as “smart grid” technology as strategic priorities for the energy sector and that they be reflected in energy agreements, the regulatory framework and any future economic development strategy and energy policy.
- While the proposal is beneficial to the financial security of the province and provides a platform for the development of a strategic policy vision, which the panel believes is necessary, it must integrate energy policy and economic development and capture the human and institutional resources unique to New Brunswick.

The Panel concluded, based on the information available up to January 26, 2010 that the benefits to New Brunswick of rate savings over the short and long term, reduced environmental impacts from fossil-fuelled generation, the transfer of significant risk on generation facilities to Hydro-Québec, the mitigation of financial risk related to current and future debt and the positioning of the province toward a greener economy all contribute to real and positive value to New Brunswick over business as usual.

THE ADVISORY PANEL

David Ganong (Panel Chair), Chairman of Ganong Bros., Limited, a St. Stephen manufacturer with 350 New Brunswick employees. He has had an extensive business career in New Brunswick and has served on numerous Provincial and National Boards, including Air Canada, Sun Life Insurance Company and Chairman of the Clarica Life Insurance Company. He is a Member of the Opinion Leaders Forum on Climate Change, past Chair and Member of the Board of Governors of the University of New Brunswick, past Chair of the Atlantic Provinces Economic Council, a Director of the Canadian Council of Chief Executives and the founding Chair of the New Brunswick Business Council. He is also a Member of the Order of Canada.

John McLaughlin, president emeritus of the University of New Brunswick. He has an academic background in engineering and institutional economics. He has been a leader in building the North American geomatics industry and has worked extensively internationally, in more than 40 countries, with the World Bank, the United Nations and several other international agencies and companies.

Elizabeth Weir, president and chief operating officer of Efficiency NB. Since her appointment in 2005, Efficiency NB has become recognized as a national leader for its award-winning energy efficiency programs and services. Prior to this, she also served for 14 years as a member of the New Brunswick Legislative Assembly and Leader of the provincial New Democratic Party. She was the first woman leader elected to the New Brunswick Legislature. As a result of her significant contribution to public policy development, legislative oversight, and international democracy development training in 11 countries, she received an honorary doctorate from the University of New Brunswick in 2005 and in 2008, was the recipient of the Red Cross Humanitarian of the Year Award.

Allison McCain, chairman of McCain Foods Ltd. since 2002. He has more than 30 years of business experience. After graduating in engineering from UNB he worked for NBTel for three years before joining McCain Foods. He held a number of positions at McCain including three years in Australia and sixteen years in Britain before becoming chairman. In 2004, he was appointed chair of UNB's Forging our Futures Campaign that raised more than \$100 million. He was appointed a governor of the Beaverbrook Art Gallery in 2004 and assumed the chair of the board in 2008.

Louis LaPierre, professor emeritus in biology at the Université de Moncton and the past K.C. Irving Chair in Sustainable Development. He has dedicated the past three decades working with a variety of groups committed to protecting the environment. He was a member of the National High Level Nuclear Waste Disposal Panel, the Chair of the Bruce New Built Environmental Assessment Panel as nominated by the Federal Minister of Environment and was the Chair of the New Brunswick Sustainable Development Strategy.

Gilles Lepage served as president and chief executive officer of the Mouvement des caisses populaires acadiennes from 1994 to 2004. He has participated in numerous forums that examined the economic development and quality of life in New Brunswick, including the McKelvey-Lévesque commission on the cost of health care in the province. He also served as co-chairman of the provincial government's Self-Sufficiency Task Force.

Advisors to the Panel:

Robert B. Catell, Chairman of the Advanced Energy Research and Technology Center (AERTC) at New York State University at Stony Brook and former chairman and CEO of KeySpan Corporation of New York. (now part of National Grid). In that capacity Mr. Catell accomplished many large corporate energy transactions in the U.S. Northeast.

David Manning, Q.C., Director, M.J. Bradley & Associates LLC in New York, an international energy and environmental consulting firm, and a former Deputy Minister of Energy in Alberta.

1. INTRODUCTION

On October 29, 2009 the governments of New Brunswick and Québec announced a proposed agreement whereby Hydro-Québec would acquire most of the assets of NB Power and provide a guaranteed electricity supply at a set price to the province.

Because of the complexity of the transaction, the high degree of uncertainty and the wide range of questions by the public, an independent advisory panel was requested on November 20, 2009 to examine the proposal.

On January 20, 2010 changes to the proposal were announced.

This report addresses the proposed agreement as presented to the Panel up to January 26, 2010 referred to in this report as the “Proposal”.

The Proposal contemplated the sale to Hydro-Québec of only the NB Power hydro plants, the Lepreau nuclear plant and two diesel peaking plants and for Hydro-Québec to provide a guaranteed electricity supply at a set price. The New Brunswick government would continue to own the fossil-fuelled power plants, the Grand Manan plant, the NB Power transmission system and the NB Power distribution system. The New Brunswick System Operator (NBSO) would remain an independent agency.

The six-person panel was asked by the government to provide objective advice on whether the Proposal represents the best interests of New Brunswickers. Its mandate was to compare short and long-term benefits and risks of continuing to own all of NB Power versus that of the Proposal.

The panel examined several key aspects of the Proposal including:

- the financial implications;
- long-term effects on electricity rates;
- New Brunswick’s control of energy policies;
- environmental impacts;
- short-and long-term risks and avoided risks; and
- benefits and costs to the provincial economy.

The Advisory Panel on the proposed New Brunswick - Québec Electricity Transaction (Panel) was an independent body of lay New Brunswickers with a broad cross section of backgrounds. The Panel spent 12 days over a two month period meeting with experts, examining the issues and preparing conclusions and recommendations. Panel members accepted no remuneration for their time. To assist with its review, the Panel secured independent expert advice.

When the Proposal was being modified, the Panel shifted its examination to the new terms being negotiated. Most of the key issues remained the same although the circumstances and possible outcomes changed. Some experts came back before the Panel more than once. A list of those who appeared before the Panel is included in Appendix A.

It is important to note that the conclusions and recommendations of the Panel are the result of an independent examination of the available information. While New Brunswick government officials appeared before the Panel, the report was not prepared in consultation with the Government of New Brunswick, the Government of Québec, Hydro-Québec, or NB Power. The Panel drew its conclusions and recommendations on the basis of the information available.

The Panel members felt adequately informed and provide their conclusions and recommendations on the strength of their collective professional experience.

The Panel was of the view however, that the active involvement of NB Power and others would be necessary to complete the transaction.

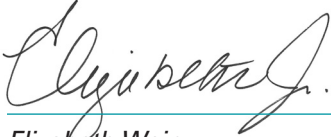
This Report is respectfully submitted by the Advisory Panel
to the Premier of New Brunswick.



Allison McCain



John McLaughlin



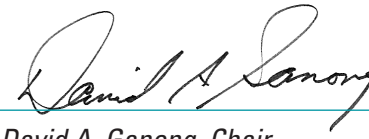
Elizabeth Weir



Gilles Lepage



Louis LaPierre



David A. Ganong, Chair

2. CURRENT SITUATION

The Electricity Sector in New Brunswick

With the passing of the new Electricity Act in New Brunswick in 2004, the electricity industry was separated into four parts in a move from a traditional monopoly industry toward more wholesale market competition and independent power generation. The industry segments include:

- Generation – production of electricity by NB Power and independent producers;
- Transmission – building and maintenance of high voltage transmission wires continuing to be owned by NB Power;
- Distribution and Customer Service – local delivery of electricity and retail sales by three municipal distribution utilities and by NB Power Distribution in the rest of the province.
- System Operator (NBSO) – an independent agency responsible for operating the transmission system, its reliability, access to the system, the rules of access and the charges for shipping electricity on the system (transmission tariff). This facilitates open and fair electricity trading in the region.

The NB Power Corporation was also restructured into three parts in order to fit into the new industry structure allowing for independent generators to compete for the bulk wholesale market.

The role of the NB Energy and Utilities Board (EUB) was enhanced to ensure that customer electricity rates are fairly charged and to oversee the operations of the NBSO.

By 2009, independent power generators totalled 504 Megawatts (MW) of production capacity while NB Power had 3,829 MW of production capacity. Additional independent generation will be going into production in the next few months with additional wind farms bringing the total wind generation capacity to 363 MW.

Figure 1: Generating Facilities in New Brunswick

Electricity Generation and Transmission in 2009

NB Power Generation

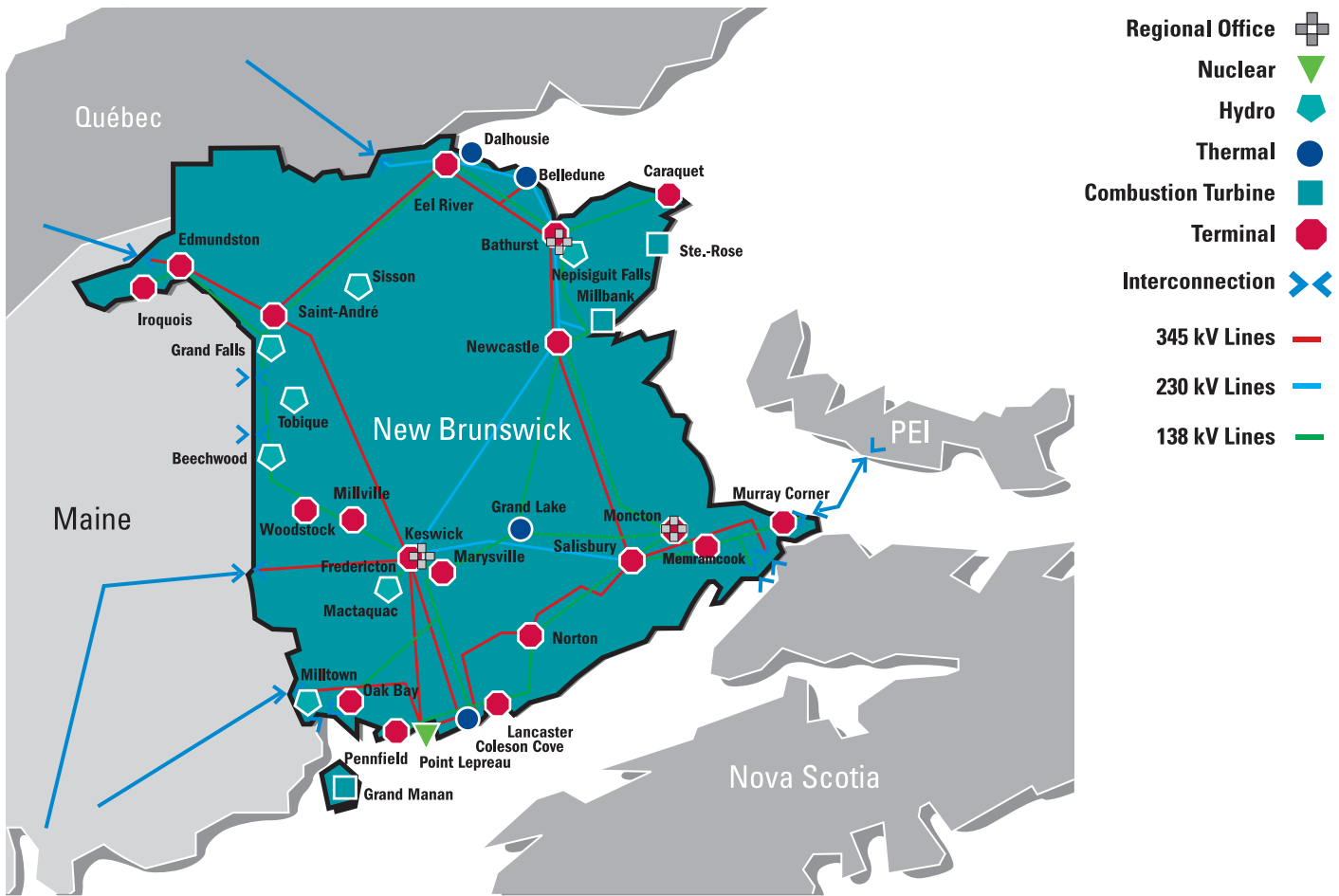
Plant	Fuel	MW
Point Lepreau	Nuclear	635
Milltown	Hydro	3
Sisson	Hydro	9
Nepisiguit Falls	Hydro	11
Tobique	Hydro	20
Grand Falls	Hydro	66
Beechwood	Hydro	112
Mactaquac	Hydro	672
Grand Manan Turbine	Thermal	29
Grand Lake	Thermal	52
Ste. Rose Combustion Turbine	Thermal	99
Dalhousie	Thermal	299
Millbank Combustion Turbine	Thermal	397
Belledune	Thermal	457
Coleson Cove	Thermal	968
Total		3829

Independent Generation

Plant	Fuel	MW
Bayside Power	natural gas	263
TransAlta's Kent Hills Wind Farm	wind	96
Grandview Generating Station	natural gas	90
Other non-utility generators	various	55
Total		504

Source: NB Power

Figure 2: New Brunswick Electricity System



Source: NB Power

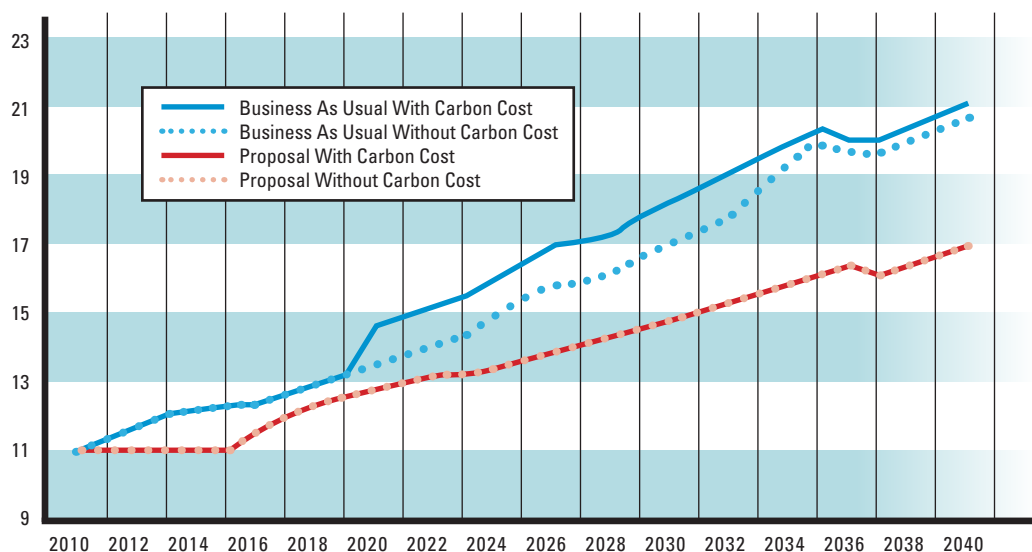
Challenges in Generation; Financial Risks

NB Power Generation is faced with many challenges over the next several years that likely translate into substantial rate increases. Most of those challenges are in generation. Fossil-fuelled power plants make up about 45% of NB Power electricity generation when Lepreau is operating, while 97% of Hydro-Québec’s generation is from renewable sources. In normal operations the cost of fuel affects approximately one third of NB Power’s total costs. NB Power’s reliance on fossil fuel exposes it to fuel price escalation and volatility. Oil prices are expected to increase substantially in coming years and recent history has shown that large fluctuations in prices occur over short periods for a range of reasons from market speculation to political events.

Climate change has become a dominant public issue driving political agendas. Regulation of greenhouse gas

(GHG) emissions is already in place in several jurisdictions including the North-eastern US. Meanwhile, the federal governments of both Canada and the U.S. are developing GHG legislation and regulations for implementation within the decade. All fossil-fuelled plants are also expected to face greenhouse gas (GHG) regulations that are increasingly stringent. The impact of putting a price on carbon was analysed by consultants engaged by the province, NERA Economic Consulting (NERA). NERA estimated the cost risk for NB Power to meet future GHG regulations could range from over \$500 million to well over \$1billion (in 2010 dollars). The following chart illustrates one scenario based on proposed federal regulations in the U.S. being applied in 2020 and with a price of carbon at \$20/tonne in 2009 dollars. The dotted lines show rates without carbon costs and the solid lines show rates with carbon cost included.

Figure 3: Residential Average Rates; Carbon Cost Effect (cents/KWh)
 \$20 per ton carbon charge in 2020



Source: NERA Economic Consulting

NB Power is faced with replacing several generating facilities within the next 20 to 25 years. The refurbishment or replacement of power plants including Mactaquac by 2030, Belledune by 2033 and Point Lepreau by 2035 represent significant capital expenditures that will have to be rolled into rates. Refurbishment of Mactaquac alone will be in the range of \$2-3 billion in current year dollars. Any new electricity generation facilities will produce at higher cost than today.

Large capital construction projects necessitate higher debt levels and the associated risk of higher interest rates and currency exchange rates. The single largest risk to NB Power is the successful refurbishment and start-up of the Point Lepreau nuclear plant. An extended refurbishment period or difficulties with the restarting of the facility have huge financial implications.

In summary, many challenges face NB Power in generation, which represent substantial financial risks including:

- increasing and volatile fuel prices;
- greenhouse gas emissions regulations;
- large capital costs for the replacement or refurbishment of generating facilities;
- outage of a large generation facility;
- interest and exchange rates on debt;
- start-up, operation and decommissioning of Point Lepreau nuclear plant.

Transmission; Capacity

There are some upgrades required in the high voltage transmission system, some to accommodate renewable energy projects such as new wind farms. These upgrades would be necessary in both the business as usual and the Proposal cases. As the energy shifts away from high GHG emitting plants some transmission realignment will be necessary.

Market Situation

The Panel was not in a position to speculate on the business purpose behind Hydro-Québec's transaction. Its role was only to assess the transaction itself in the interest of the people of New Brunswick. In order to do that, it is important to understand the energy market in which Hydro-Québec, NB Power, and other market participants in the region operate.

In recent years, Hydro-Québec has embarked upon a major capital construction program to maximize hydro resources within the Province. Hydro-Québec has undertaken a new 4,500 MW development plan, creating more hydro and wind energy for a future carbon-constrained market. Recently, the declining North American economy and expansion of domestic natural gas reserves have negatively impacted electricity export market prices. As a result of the recession, demand for electricity is expected to be lower than forecast leaving Hydro-Québec with excess electricity capacity.

In anticipation of economic recovery, and a continental or global regime to address climate change, Hydro-Québec is expected to spend in excess of \$20 billion on generation and transmission through to 2050.

Natural gas is the primary fuel source for electricity generation in the U.S. Northeast. New technology has increased natural gas reserves in North America, lowering and stabilizing gas prices, with a moderating impact on the price of electricity in Hydro-Québec's export markets.

New Brunswick offers Hydro-Québec an expanded market, improved access to export markets in the U.S. and domestic maritime markets, along with generation assets that provide balance and flexibility in the operation of a regional power market.

Hydro-Québec's ability to "store" large volumes of power in its hydro reservoirs is unique and strategic in the power market. They are therefore best positioned to integrate the St. John River hydro power system, which is most productive during spring runoff, when prices are reduced.

The Panel recognized significant financial and technical challenges facing NB Power in this market, with its current fuel mix as environmental standards strengthen. This would result in a high likelihood of rate increases and potential government support to keep NB Power viable in the absence of this transaction.

Open Access Transmission System

New Brunswick's transmission system has interconnections with Québec, PEI, Nova Scotia and Maine. It is not only situated geographically amidst those markets, it is an "open access transmission jurisdiction", meeting the U.S. standards. This is required to allow open trading of electricity in the region and to export into the U.S. market.

Any electricity producer can transmit their electricity over the system, but because it has finite capacity, they must bid competitively for scheduled space on the system. The tariff paid for transmission is regulated by the EUB, which allows a fair rate of return to the owner of the transmission system.

The New Brunswick System Operator (NBSO) is a non-profit organization that is independent of other electricity industry participants. It is governed by an independent board and regulated by the EUB. The NBSO coordinates controls and monitors the operations of the NB electrical power system and is responsible for reliability coordination in New Brunswick, Nova Scotia, PEI and Northern Maine. Its independence is important to facilitate a competitive wholesale electricity market.

3. THE PROPOSAL

The Assets

The assets of NB Power that would be acquired by Hydro-Québec include:

- Hydro generation facilities;
- Two diesel peaking plants at Millbank and St. Rose;
- Point Lepreau nuclear generating facility, once the refurbishment project has been completed, estimated to be in January 2011;
- Firm transmission rights associated with the acquired generation plants.

The New Brunswick government would retain ownership of the fossil-fuelled power plants, the Grand Manan plant, the NB Power transmission assets, the NB Power distribution assets and NB Power customer sales. The NBSO would remain an independent agency.

Two of the fossil-fuelled plants would remain in operation for the benefit of Hydro-Québec under supply contracts based on tolling agreements. They include the Belledune generating facility (coal) and the Coleson Cove generating facility (oil). Coleson would be operated only during peak periods. Under the tolling agreements Hydro-Québec would provide fuel and air emissions permits and would have the exclusive right to purchase electricity production from the plants, but would not own them.

Hydro-Québec would have the option to direct New Brunswick to shut down these facilities with one year's prior notice and pay New Brunswick, if applicable, the equivalent of 12 months of fixed costs.

Three other generating plants have been deemed surplus to needs. The 2010 closing of the Grand Lake generating facility (coal) was announced at the end of September 2009. The Dalhousie generating facility (oil) phase out was announced on October 29, 2009, and Courtenay Bay generating facility (oil) has not operated in three years.

The conditions for the sale of Point Lepreau include the full completion of the refurbishment project currently under way, the successful restart of the plant and the issuance of the necessary operational permits and authorizations.

Supply of Electricity to New Brunswick

Hydro-Québec would provide up to 14 Terawatt-hours per year (TWh/year) of electricity to NB Power Distribution in perpetuity to be known as the NB Heritage Pool Supply (HPS). This is slightly above the current average level of electricity use in the province. Two energy pools would be created by the Province: one of 4.5 TWh/year for industrial customers and one of 9.5 TWh/year for residential, commercial and wholesale customers.

Electricity Rates for First Five Years

The HPS would be provided to NB Power Distribution at a price of 7.35 cents/kilowatt-hour for five years. Thereafter, it would escalate at the rate of the New Brunswick Consumer Price Index (CPI).

Industrial rates would be set immediately after the closing of the agreements at a level that would result in rate reductions averaging 23% for large industrial customers using more than 5,000 kW per month and averaging 15% for large industrial customers using between 750 kW and 5,000 kW per month.

On the first, second, third and fourth anniversaries of the closing date, industrial rates would be adjusted in accordance with increases, if any, to Hydro-Québec's L and M business rates;

Residential, commercial and wholesale rates would be frozen for five years at the levels currently in effect in New Brunswick;

All New Brunswick electricity needs beyond the HPS would be met through calls for tenders by NB Power Distribution at market conditions approved by the EUB.

Electricity Rates After Five Years

After year five, transmission and distribution rates would be separated from the electricity price. The transmission and distribution portion of the rates to be charged to customers would be regulated on a cost of service basis by the EUB.

The electricity commodity price within the HPS would increase at the rate of the New Brunswick CPI. All customers including industrial, residential, commercial and wholesale would see electricity commodity price increases at the rate of CPI in perpetuity. Electricity demand beyond the HPS, if any, would be provided on a competitive bid basis conducted under the authority of the EUB.

The cost for any electricity supply over the HPS for residential, commercial and wholesale customers in the first five years, which is not anticipated, would be put into a deferral account and only charged to those customers in the years after the five year period. This would be separate and distinct from the Lepreau deferral account which is the accumulated cost of replacement power and other costs during the refurbishment project. Payment of the Lepreau deferral account will be deferred until after the end of year five, after which it will be rolled into rates.

New Brunswick would modify the regulatory framework defining the structure and regulation of certain elements of the electricity industry to ensure that the terms of the final arrangement are implemented. Key elements would include:

- After year five, transmission and distribution rates would remain regulated on a cost of service basis by the EUB;

- Access to the transmission system would remain open and non-discriminatory and the transmission tariff and market rules would continue to be administered by NBSO and would continue to be regulated by the EUB.
- The NBSO would remain an independent agency.

Financial Considerations

Hydro-Québec would commit to making two payments to New Brunswick totalling \$3.2 billion, the first (\$1.8 billion) on the closing date of the transaction, which is expected to be on March 31, 2010, and the second (\$1.4 billion) on the closing date of the Point Lepreau transaction, which is expected to occur in January 2011.

The Province would continue to receive property taxes on the generation assets and utility taxes on the transmission system as in the business as usual case.

4. FINANCIAL SENSE

Comparison of Long-term Electric Rates

The Panel, with the assistance of its expert advisors, examined reports by NERA that compare the difference in rates between business as usual and the Proposal. The analysis concluded that from 2011 forward the residential, commercial, and wholesale customers (municipal utilities) would experience a net present value (NPV) saving of \$3.4 billion (68% of the total). The industrial customers would experience NPV savings of \$1.6 billion (32% of the total).

The savings would result from a guaranteed electricity supply from Hydro-Québec with price increases controlled by a known formula rather than the business as usual conditions. The guaranteed HPS would insulate electricity rates in the province from the direct influence of oil price increases, future carbon costs and current and future debt on generation facilities.

The following chart illustrates a comparison of electricity rates between business as usual and the Proposal. Individual charts for the industrial and the residential-commercial-wholesale groups are found in appendix C.

The Panel reviewed the assumptions made by NERA as well as a sensitivity analysis and were satisfied that the assumptions made were reasonable. The assumptions used are listed in Appendix D. The Panel reviewed sensitivity scenarios on a range of factors and concluded that none would lead to a negative outcome. It did reveal

however, that the risk on carbon emissions regulations could substantially increase future rates under business as usual as is illustrated in Figure 3 on page 12.

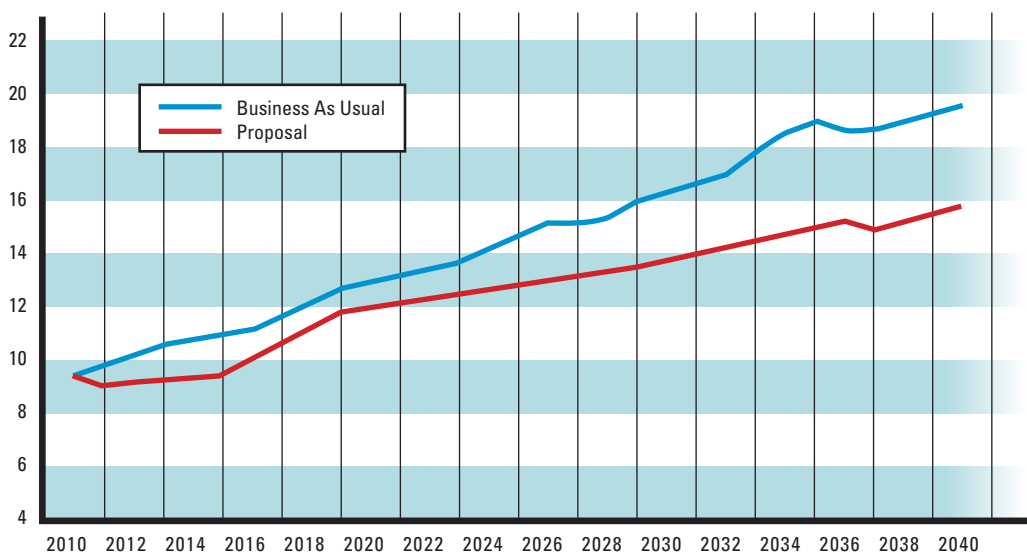
The Panel agreed that implementation of the Proposal would be a good financial deal for New Brunswick electricity customers. The HPS under the Proposal would offer a unique opportunity for New Brunswick to access lower cost hydro electricity supply with lower risk and to pass the substantial savings on to electricity customers. Although the projected savings beyond 20 to 25 years cannot be modelled with high accuracy, it is apparent that there should still be a net benefit in the long term.

Lepreau Deferral Account

This deferral account is the cost of replacement power and retaining the staff while the Point Lepreau generating plant is being refurbished and is a debt that must be paid by New Brunswick rate payers. It must be paid whether or not the Proposal is implemented. This account is estimated to be above \$880 million by the time the plant is restarted. The payment of the costs is being deferred for five years from start-up of the plant and then it will be rolled into electricity rates.

The Panel recognized that the Lepreau deferral account is an issue both in the business as usual case and if the Proposal is implemented. The concern is when the costs will be recovered in the rates. The Panel recommends that the costs associated with this deferral account should

Figure 4: Average Total Rates (cents/KWh)



Source: NERA Economic Consulting

begin to be applied to rates in the first year of the Proposal term rather than being deferred thus reducing interest charges on the deferred debt and mitigating a larger rate increase in sixth year after the plant restarts.

Cost of Decommissioning Plants

In both the business as usual case and in the Proposal, some fossil-fuelled power plants are considered surplus. The provincial government has announced that the Grand Lake plant and the Dalhousie plant will be closed in 2010. In both cases there is a cost for decommissioning these plants. Preliminary estimates amount to \$13 - \$18 million for Grand Lake. It is not yet clear how those costs will be handled, whether rolled into rates or assumed by the government.

The Panel recommends that the government must soon determine how the decommissioning costs for the fossil-fuelled power plants will be handled and whether they will be rolled into rates or assumed by the government.

Mitigation of Financial Risks

As noted above, the challenges facing NB Power translate into considerable financial risks particularly in generation of electricity in the near and longer term.

A supply of low cost electricity produced from hydro would provide the opportunity to reduce the reliance of New Brunswick on fossil-fuelled power generation and the associated risks of fuel cost escalation and greenhouse gas regulations. It would also avoid the large capital costs to replace or refurbish some generation facilities along with the associated debt and the risks of changing interest rates and currency exchange rates.

The guaranteed HPS would also ensure an adequate supply of electricity at the HPS price should any of the generation facilities experience an extended outage or shutdown. This is particularly important in the case of Point Lepreau. The 14 TWh must be provided whether Lepreau runs or not.

The sale of the Point Lepreau generating plant would not be final until its refurbishment is complete and its start-up and operation is proven successful. However, should the restarting of Lepreau be unsuccessful or extended for some time, replacement electricity supply will be needed. The guarantee of lower cost replacement electricity supply under the HPS would reduce the cost compared to replacement supply from the open electricity market. It is unlikely that any electricity producer bidding into the regional electricity market would be lower in price than the guaranteed HPS from Hydro-Québec under the Proposal.

In effect, the HPS would help New Brunswick manage some of the replacement power risk of Lepreau if it is not restarted and Hydro-Québec would be assuming the full risk of Lepreau if it does restart.

Further to this, under the tolling agreements for the fossil-fuelled power plants that New Brunswick would retain ownership of, Hydro-Québec would be responsible for the fuel supply and the greenhouse gas emission allowances (carbon credits) needed to run them. This would be a transfer of considerable risk of substantial cost from NB Power to Hydro-Québec.

The Panel concluded that the Proposal would help mitigate most of the financial risks associated with generation in the business as usual case including:

- increasing and volatile fuel prices;
- expected greenhouse gas emission regulations;
- large capital costs for the replacement or refurbishment of generating facilities;
- interest and exchange rates on debt;
- outage of a large generation facility; and
- operation and decommissioning of Point Lepreau nuclear plant.

Debt

The debt currently supported by NB Power would be reduced substantially as a result of the transaction. Also, the future rate effects of debt increases that would be inevitable in the business as usual case would be avoided. This would reduce NB Power's vulnerability to future interest rate increases. Hydro-Québec could service the debt that it would undertake in acquiring the assets through the savings it could achieve by strategic management of the generation facilities it acquires from NB Power. The long term storage reservoirs and flexibility of their hydro system would allow Hydro-Québec to achieve more efficiencies with the NB Power generation assets than NB Power could do on its own.

NB Power would be left to service the debt of only the transmission and distribution companies and the deferral account. This debt should be sufficiently serviced by revenue from rates.

In the examination of NB Power debt and its ability to handle it, the Panel recognized an ongoing concern. Over the years government has constrained electricity rates that NB Power could charge customers through directives to the utility and by overruling EUB decisions. That limit on rates has resulted in insufficient revenue to

NB Power to effectively manage the debt the company has accumulated. The consequence has been that debt gets further deferred into the future. In the May 2009 EUB hearing on NB Power Distribution's rate increase, it was stated by NB Power that an increase in rates much greater than 10% would actually be needed to meet their shortfall in revenue requirements. The 3% rate cap as directed by the government left NB Power with insufficient revenue.

The panel concluded that a substantial portion of the NB Power debt would be eliminated and future debt accumulation by NB Power for replacing or refurbishing generation facilities would be avoided. The remaining debt related to transmission and distribution should be serviced within the rate commitment of the government.

Value of the Assets

The Proposal includes the sale of the NB Power hydro and nuclear generation assets to Hydro-Québec, and tolling agreements which place two of NB Power's fossil-fuelled plants under Hydro-Québec control. The preliminary financial analysis relating to the financial fairness of the purchase price offered by Hydro-Québec was performed by a financial services firm engaged by the province, Macquarie Capital Markets Canada Ltd. (Macquarie). Macquarie's findings remain preliminary until final details of the transaction are known.

The value of the assets would be directly related to the competing price for electricity and the facility cost of production. In the case of the Dalhousie and Coleson Cove oil-fired plants, recent oil prices have priced their production out of the market. Dalhousie has therefore been determined surplus and worth salvage value less decommissioning cost and Coleson Cove is left operating during peak periods only, significantly reducing its value.

Macquarie used standard industry techniques to assess the value of the NB Power facilities, taking into account competing electricity prices over the longer term and factoring in certain assumptions with respect to cost of carbon (greenhouse gas emissions) in future energy markets. Macquarie has concluded on a preliminary basis that the sale price proposed for the facilities returned net value to New Brunswick.

In reviewing NERA's rate forecast, the Panel and its expert advisors challenged NERA's conservative assumptions with respect to the impact of carbon on market value. In order to value the transaction to New Brunswick, it was necessary for financial analysts to make certain

assumptions on the price of carbon and the timing of greenhouse gas regulation.

While there is significant political uncertainty on the issue of climate change with respect to the form of regulation and timing, the Panel agreed that a carbon-constrained economy is inevitable. The current Canadian government has made it clear that it will keep pace with developments within the United States, which dramatically changed its position on climate change with the election of 2008.

There are several large electricity projects within the Northeastern United States seeking Canadian-supplied renewable energy for the New York and New England electricity markets. These initiatives reflect the need for carbon-free energy to meet existing and future renewable energy mandates and the anticipated retirement of the least-efficient fossil-fuelled generating stations.

The tolling agreements under the Proposal would preserve Belledune and Coleson Cove as long as their production is economic. The Panel viewed NERA's assumptions as conservative when considering carbon regulation impacts on those plants and that the carbon price would impact production from these plants much more quickly. This finding enhances the value of the Proposal to replace existing fossil fuel plants with low-carbon hydro at a guaranteed maximum price.

The Panel also recognized the impact of future capital expense on value of the assets and the opportunity to maximize the value of these assets by integrating all forms of generation into a regional resource pool. A business as usual case would leave New Brunswick overly dependent on fossil-fuel based generation and more exposed to the future impact of carbon price and emission regulation.

The value of the transmission system would remain with the province as it would continue to own those assets. The transmission system would continue to provide a reasonable rate of return on equity as determined by the EUB.

The Panel accepts the assessment of the experts retained by the government and their preliminary determination that the purchase price offered by Hydro-Québec falls within a range of fair value for the assets to be transferred based on standard industry financial methods.

The Panel concluded that the price to be paid for the assets would be fair and returns value to New Brunswick. After discussions with various industry and public utility experts, the Panel concluded that the economic analysis completed by the consultants engaged by the government follow normal methods for the industry and are credible.

5. ENVIRONMENTAL IMPACTS

The New Brunswick Department of Environment's review of the impacts of the Proposal found that no new environmental risks or concerns would be created for the province. New energy projects, as well as facility decommissioning, would continue to be reviewed through the province's Environmental Impact Assessment process. Existing facilities would continue to be regulated under the Clean Air Act, the Clean Environment Act and the Clean Water Act.

The decommissioning of NB Power's facilities at Grand Lake and Dalhousie will result in substantial reductions in mercury, sulphur dioxide and other air pollutants. Both Canadian and regional emissions targets will be exceeded.

These plant closures are estimated to result in annual reductions of:

- 2.1 million tonnes of greenhouse gases (GHG) – 11% of provincial total
- 89 kilograms of mercury – 92% of NB Power total
- 27,000 tonnes of sulphur dioxide – 81% of NB Power total
- 4,400 tonnes of nitrous oxides – 33% of NB Power total

It will allow the province to exceed its 2012 GHG reduction target by one million tonnes (Mt) or 6% below 1990 levels. If additional hydro generated electricity from Québec displaces more expensive oil fired generation at Coleson Cove and coal generation from Belledune, further reductions could be expected.

Estimates made by NERA of the potential cost for NB Power to comply with future GHG regulations from coal and oil power plants could range from \$500 million to over \$1 billion (in 2010 dollars).

The Panel concluded that there should be real environmental improvement with reduced air and other pollutants and reduced risk of high greenhouse gas emissions reduction costs and other environmental costs.

6. SOVEREIGNTY AND REGULATION

Ability to Establish Energy Policy

Energy policy can be viewed as strategic positions taken and measures implemented by government, whether regulatory or economic, to influence particular outcomes that are beneficial for New Brunswick. The strategic approaches the government takes should recognize the strengths and weaknesses of the province and be supported by appropriate energy policies. They should also recognize the trend towards a carbon constrained world, new technologies and innovation and cleaner energy sources.

New Brunswick has several advantages in the energy sector. Its geographical position relative to other provinces and the U.S. Northeast has particular advantages, which are evident in substantial export and transfers of refined petroleum products, natural gas and electricity.

The government has pursued an agenda to expand exports of energy in various forms to U.S. Northeast markets. The apparent intent has been to build on the existing energy transmission and distribution networks in gas and electricity, the petroleum refining capacity, the diverse energy mix and the potential to develop environmentally friendly energy sources.

It is apparent that if the Proposal is implemented, the province would continue to have the authority to set energy policy and to influence developments in the sector through regulatory frameworks and economic measures. However, some of the ability to implement such measures may be affected by the detailed agreements being negotiated. Development opportunities such as energy efficiency, renewable energy, deployment of innovations in energy technologies in the future and community engagement could be compromised in the final agreements.

The Panel recognized that the Province is proposing to take serious and far reaching decisions affecting the energy sector and economic development. Without taking on the obligation to set an economic development direction in the context of an integrated energy policy, this transaction would exist in a strategic vacuum. The Government must seize this opportunity to ensure the Province get the full benefits available.

The Panel concluded that if the Proposal is implemented the province would retain the ability to establish and implement energy policies and regulatory control over the electricity industry while allowing competitive elements of the markets to operate. However, it is important that the Proposal be implemented with strategic direction in

economic development in a broader perspective and with a complementary energy policy.

Current Regulation and EUB Role

Because sovereignty and the regulatory framework were key concerns around the original Proposal, the Panel spent some time examining the proposed arrangement and the regulatory implications. While the amended Proposal would alleviate several of the sovereignty concerns, the Panel found that electricity customers could benefit significantly from reform of the regulatory framework regardless of whether or not the Proposal is approved and implemented.

The electricity sector is complex in that certain segments are regulated while other segments are not. This is to allow market competition and the resulting business discipline to work where possible. In New Brunswick, generation of electricity is not regulated and the natural monopoly segments, transmission and distribution, are regulated.

The New Brunswick Energy and Utilities Board (EUB) is a quasi judicial organization at arm's length from government. It is governed by the Energy and Utilities Board Act and other statutes such as the Electricity Act and the Gas Distribution Act. The extent of its powers is determined by the legislation; it does not set policy. It appears before the Crown Corporations Committee of the Legislature annually for review of its operations.

The EUB reviews the rates charged by NB Power Distribution to balance the interests of customers and the utility. It does not approve capital projects nor does it have authority to review customer complaints. NB Power Distribution can increase rates up to 3%, or CPI whichever is greater, without review by the EUB. The decisions of the EUB are subject to final approval by the government.

Alternative Regulation and EUB Role

In other jurisdictions in Canada and the U.S., the utility regulator has considerably more oversight providing greater transparency and fairness of treatment for customers. The authority of these utility regulators typically goes beyond reviewing only the rates charged to customers to include both broader electricity system implications and sustainable development principles.

Another feature of the traditional regulatory framework is the authority of the regulator's decisions to be final without further government oversight. Currently, decisions of the EUB must be approved by the government, which can

distort the decisions of the regulator away from the basic principles of its review as directed by the legislation.

The Panel concluded that the implementation of a regulatory framework that conforms to normal practices in other jurisdictions would provide increased customer protection, greater transparency and more scrutiny of the operations of the electric utility. It would bring New Brunswick more in line with other jurisdictions in respect of electric utility regulation and would separate industry regulation from government.

The Panel recommends that, regardless of whether or not the Proposal is implemented, the province strengthen as soon as possible the regulatory framework to provide broader authority and oversight of the electricity industry by the EUB that is more normal and more aligned with other jurisdictions. To ensure greater EUB independence, more transparency and fairness for customers the EUB should have a legislated statement of purpose to ensure that electricity needs of customers are satisfied while promoting sustainable development as well as individual and collective equity. It should have the authority to:

- review and approve rates on application of interested parties;
- review and approve rates of all transmission and distribution utilities;
- order utilities to pay the cost of parties who participate in EUB proceedings if participation is found to be useful;
- review the purchase, construction and disposal of transmission and distribution capital projects;
- examine customer complaints;
- require all electricity distribution utilities to invest in all economic energy efficiency prior to acquiring new electricity supply; economics would be determined by standard electricity industry resource cost tests;
- examine energy efficiency program plans and determine the amount that each utility must allocate to energy efficiency programs;
- examine supply plans for electricity in excess of the HPS;
- ensure that regulatory requirements for renewable energy are respected; and
- make final decisions independent of oversight by the government.

Legislative Compliance

A review by the Department of Environment concluded that implementation of the Proposal would not affect the authority of the province to protect the environment. All environmental laws would continue to apply for new project approvals and operational approvals.

The Panel concluded that the new companies established through the implementation of the Proposal would have to comply with all environmental laws as NB Power or any other company operating in the province does today.

Ownership

There has been considerable concern expressed over the potential loss of New Brunswick's sovereignty in a range of areas resulting from the sale of NB Power generation assets to Hydro-Québec. Most of these concerns have related to the original Proposal. The amended Proposal would involve the sale of only the non-fossil fuel generation assets.

Independent ownership and the location of owners of electric utilities outside a jurisdiction are common in the industry throughout North America. For example, utilities in Nova Scotia, Prince Edward Island and Newfoundland and Labrador are privately owned with shareholders located in and beyond those jurisdictions. Most U.S. utilities are shareholder owned corporations operating in multiple states, all subject to local regulation. Such ownership does not appear to materially affect the authority of the government of the jurisdiction to establish energy policies, environmental protection requirements, land use guidance and other natural resource policies. For example, the authority to expropriate land would not be provided to the new generation company owned by Hydro-Québec as it is to NB Power. Further to this, there are several independent generation facilities throughout New Brunswick today amounting to 504 MW of capacity in 2009 and soon to grow to about 800 MW with new wind farms coming on line.

The Panel concluded that ownership of generation assets by Hydro-Québec should not affect New Brunswick's authority to set policy and regulations any more than other independently owned hydro and other electricity generation facilities in the province.

7. ECONOMIC COSTS AND BENEFITS

Broader development perspective

In the review of the Proposal it became evident to the Panel that, while the Proposal has potentially far reaching impacts on the New Brunswick economy, it has not yet been positioned within a broader economic development strategy for the province. Until such a strategy is developed, which would ideally be combined with an integrated energy policy, the Proposal has a narrow perspective relating only to lower electricity rates. If such a strategy is not developed, the benefits of the HPS would not be fully realized.

The transaction must set the stage for a strategic direction to attract new industry and business to New Brunswick which focus on providing new and innovative energy efficient processes and technologies. Such a strategy would extend well beyond electricity prices alone. Many natural resource based industrial facilities have closed in Québec in recent times. Considering Québec's low electricity rates this would indicate that electricity price is not the only economic driver for success in industry.

The Panel concluded that the Proposal, while beneficial to the financial security of the province, is not a substitute for a strategic policy vision integrating energy policy, economic development and capturing the human and institutional resources unique to New Brunswick.

Balance of Benefits

A supply of lower cost and cleaner hydro generated electricity to New Brunswick would result in substantial savings to homeowners, businesses and industry as compared to the continued operation of fossil-fuelled power plants. The difference in the cost of importing electricity from Québec and in-province generation would be sufficient to reduce electricity prices in New Brunswick while Hydro-Québec could make a positive return on the facilities it purchases from NB Power and on the firm block of power in the HPS.

In addition to its lower cost hydro power supply compared to other generation, there are synergies between Hydro-Québec's power generation structure and that of New Brunswick. Hydro-Québec can store energy behind

their power dams for as long as 3 years. New Brunswick has virtually no storage. The St. John River hydro system is referred to as "run-of-river" whereby the water storage time in the reservoirs is only hours. Hydro-Québec would be able to schedule operations of New Brunswick's generation to better utilize the timing of production and achieve efficiencies and cost reduction. Hydro-Québec can achieve these benefits from the facilities while NB Power would not be able to on its own.

The environmental benefits to New Brunswick, as discussed earlier are substantial and weigh in favour of the province. Decommissioning of fossil-fuelled power plants has to be done in either case.

The panel considered the issue of the permanent nature of the Proposal. While there would be value to the Heritage Pool Supply with the rate guarantee in perpetuity, there would also be risks. New technology might lead to lower cost electricity supply at some time in the future. Meanwhile, to open the HPS to review at some predetermined point there would be the risk that the rate would increase. The Proposal includes some future opportunities to address the HPS in perpetuity. One is aggressive investment in energy efficiency to reduce electricity demand. Another opportunity that would be available to large industry and municipal utilities (wholesale customers) would be to opt out of standard service should they find alternative lower cost electricity supply.

The Panel concluded that the benefits to New Brunswick of rate savings over the short and long term, reduced environmental impacts from fossil-fuelled generation, the transfer of significant risk on generation facilities to Hydro-Québec, the mitigation of financial risk related to current and future debt and the positioning of the province toward a greener economy all would contribute to real and positive value to New Brunswick over business as usual. Hydro-Québec would benefit from a market for its electricity at a firm price over the long term and would be able to achieve operational efficiencies and savings by coupling its generation to the New Brunswick facilities.

Jobs Created and Lost

The closure of the fossil-fuelled power plants, particularly Grand Lake and Dalhousie in the near term, will result in lower labour needs and reduced contract procurement and service requirements.

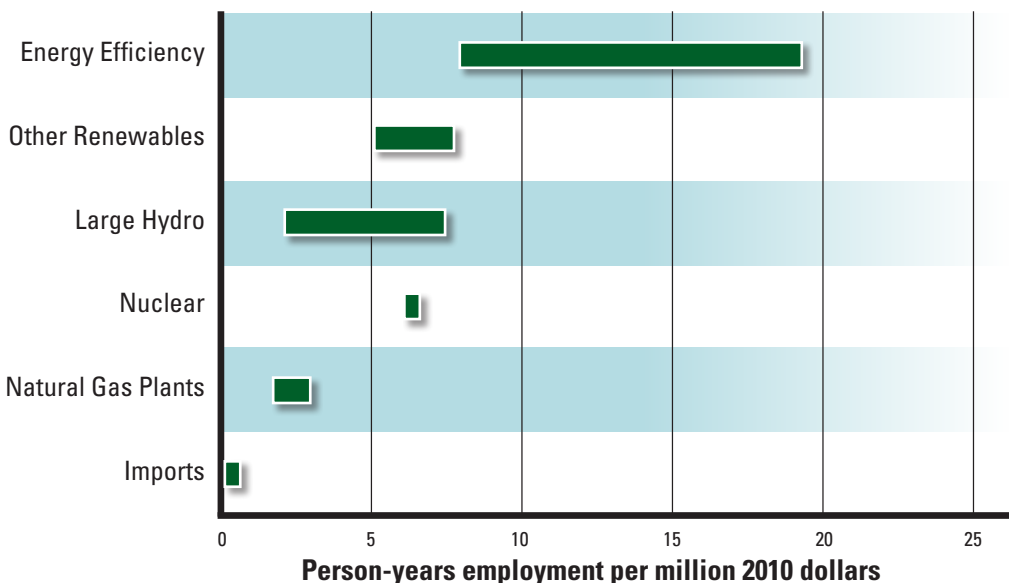
The jobs associated with those facilities might be expected to be offset by some increased or retained manufacturing as a result of lower electricity rates. However, there does not appear to be analysis available that forecasts the direct economic impacts in terms of business development and job creation.

A compensating development would be the expansion of energy efficiency investment with its labour intensiveness. Energy efficiency would both reduce the need for importation of electricity and create substantial employment. The chart in Figure 5 illustrates the comparative job creation associated with investment in various energy projects. Energy efficiency is far more labour intensive. For example, a \$50 million investment would create from 400 to 1000 person years of employment.

Similarly, new technologies and innovation in electricity production, delivery and use including the likes of heat pumps, solar energy and “smart grid” technologies should be supported in the transaction agreements and new regulatory framework. The development of wind power might be better facilitated with the natural compatibility of hydro with storage capacity and the variable nature of wind generation. Such development objectives should be tempered with an assessment of the net economic benefits to the province including job creation and business development.

The Panel concluded that a singular focus on low prices is too narrow in scope. The Panel recommends that, as part of a broader economic development perspective, energy efficiency and new energy technologies be embraced as strategic priorities for the province. In order to position the Province to be competitive, electricity agreements and the regulatory framework must support such development. These initiatives would help to offset job losses associated with the power plant closures and stimulate new business development.

Figure 5: Jobs Created Per \$Million Investment



Notes: Ranges include results from 12 studies conducted between 1991 and 2009. Value for imports is assumed to be near-zero.

Source: Independent Analysis Prepared for Efficiency NB

8. FUTURE OPPORTUNITIES

At a time when there is a significant focus on the electricity market and the regulatory framework in New Brunswick, the province should consider the developing trends in new technology and markets in the industry. Significant technological advancement is occurring in how electricity is produced, transported and used. Innovation in energy technologies and market structures will continue to advance.

The Proposal appears to focus solely on the price of electricity, but the resulting changes in market conditions and the regulatory framework have much broader provincial development implications. For example, New Brunswick has substantial opportunity for improving efficiencies in the use of energy and the adoption of new and innovative technologies like “smart grid”, distributed generation and renewable energy development. The province needs to foster these innovations to remain competitive and engage in the “green economy”.

The Panel recommends that the province ensure that all opportunities for innovation in electricity production, transportation and use are supported by the regulatory framework and market conditions resulting from implementing the Proposal. New technologies such as “smart grid”, in which more efficient management of electricity production, delivery and use are achieved, need to be fostered. Barriers to these developments should not be raised as a consequence of the Proposal.

Long Term Energy Strategy

While the government has pursued an agenda to expand exports of energy to U.S. Northeast markets, the proposal offers a platform for the development of an energy strategy with supporting policies which the Panel believes is necessary.

The Panel concluded that there is need for a long term integrated energy strategy with supporting policies. Right now, the Proposal on electricity is a stand-alone initiative and not part of an overall strategy for the province. Many questions remain on the approach of the province to capture opportunities in the energy sector in areas such as energy efficiency, renewable energy and research and development.

New Brunswick has an opportunity through integration of generation resources and enhancement of its open access transmission system to improve the air shed

of the Northeastern United States and Canada. Some of the dirtiest older plants within the United States are located in the Ohio Valley and the U.S. East Coast. As U.S. and Canadian air-quality regulation and climate change response progress, these plants will become less economic, particularly in the face of new, large scale renewable energy.

New Brunswick would have an opportunity to capitalize on long-term renewable resources, protecting the market from the future cost of carbon energy, while developing expertise in energy efficiency and smart grid technology. The entire Northeast region struggles to site renewables on a cost-effective basis, and will be looking for more imports from Canada’s significant supply.

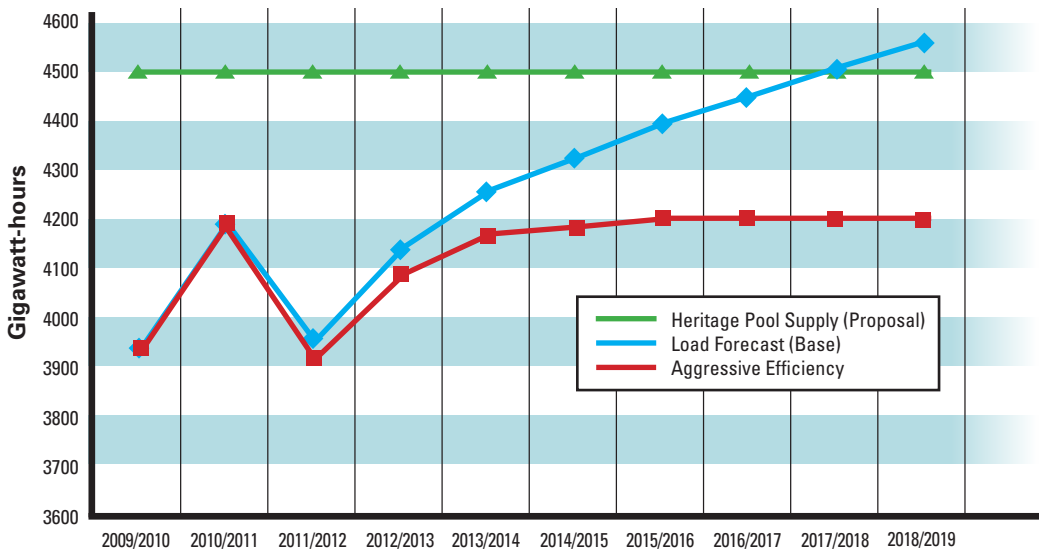
Energy Efficiency

Studies in New Brunswick and other jurisdictions along with recent experience of Efficiency NB indicate that there is a large potential for energy efficiency improvement in the province. A much expanded energy efficiency industry is possible. In the electricity market the estimated cost of energy efficiency programs for New Brunswick would range from 4.5 to 4.7 cents per kilowatt-hour, well below the cost of supplying electricity.

With promotion and strategic incentives along with supporting regulatory measures, substantial investments in energy efficiency would result. Such investments have large benefits in energy cost savings to citizens and business, increased competitiveness of industry and local job creation in design and construction. Environmental benefits in avoided air emissions are also substantial and form an important component of New Brunswick’s Climate Change Action Plan.

In the context of the Proposal, there would be a strong motivation for New Brunswick to keep electricity demand within the HPS and the preferred electricity price. This would be a challenge as lower prices would tend to increase demand. Projections of growth in demand indicate that the HPS would be exceeded in the near term, sooner if industry grows as is hoped. The chart that follows (Figure 6) is an illustration of the relative impact aggressive energy efficiency could have on industrial electricity demand.

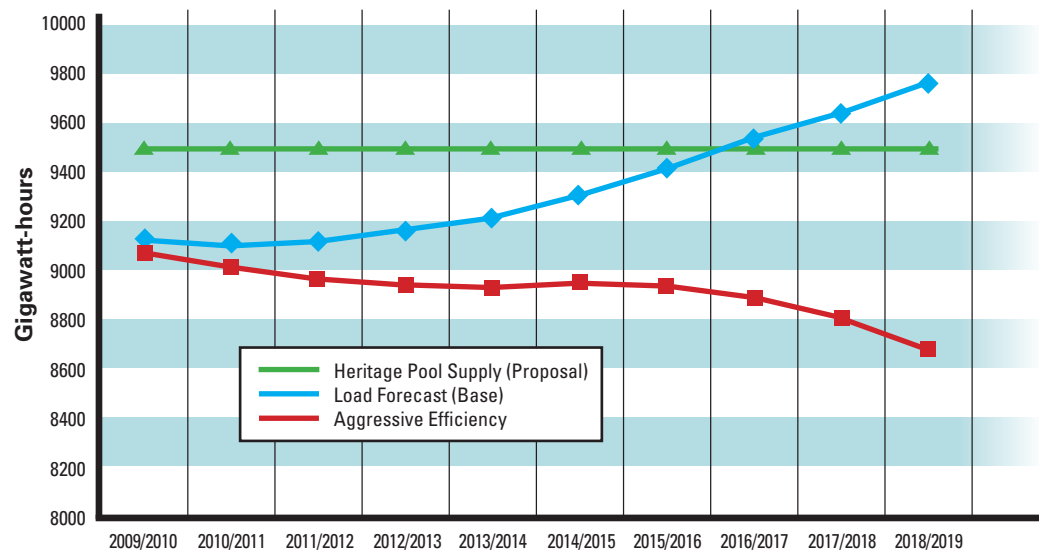
Figure 6: Effect of Energy Efficiency Investment on Industrial Demand



Source: Independent Analysis Prepared for Efficiency NB

The electricity demand in the residential, commercial and wholesale (RCW) markets could be affected similarly by aggressive energy efficiency.

Figure 7: Effect of Energy Efficiency Investment on Residential, Commercial and Wholesale Demand



Source: Independent Analysis Prepared for Efficiency NB

The mandate of Efficiency NB is to promote energy efficiency involving all fuels including oil, wood and electricity. In the short time of its existence, Efficiency NB has become recognized as a leader in Canada in its program design and delivery. However, its resources are limited to provincial government budget allocations and would be insufficient to keep electricity demand within the HPS threshold. The program funding needed to achieve the energy efficiency potential illustrated above and flatten the growth in electricity demand is in the range of \$690 million between 2010 and 2019. This investment would leverage in excess of \$3 billion in economic investment, creating over 30,000 person years of employment in the province.

The electricity market circumstances relative to the HPS in the Proposal would be similar to the circumstances in Québec. Electricity demand beyond their HPS reserve is provided at a higher price. Therefore, Hydro-Québec Distribution attempts to keep electricity demand within the HPS to reduce supply costs to all customers through substantial and strategic investments in energy efficiency. Hydro-Québec must have energy efficiency targets, program plans and budgets approved by the utility regulator (the Régie). The targets are aggressive, but in 2008, Hydro-Québec surpassed its energy efficiency targets for the fifth year in a row.

The following table shows the expenditures on electricity efficiency by utilities in other provinces. For example, Nova Scotia Power indicates that by 2018, investing in efficiency would save 2.3 TWh of electricity per year, eliminating the need to build a new 400-megawatt power plant. They are expected to spend from 2 to 5 percent of utility revenues on energy efficiency programs over the next 10 years.

Figure 8: Comparative Energy Efficiency Budgets and Projected Savings in Provinces

	Nova Scotia	Quebec	Manitoba	B.C.
Energy Efficiency Budgets (% of electric utility revenue)	2% in 2010	3% in 2010	3% in 2007	5% in 2010
Energy Savings (% of annual load on average)	2.0% over 10 years	0.6% over 8 years	0.5% over 10 years	0.8% over 12 years

Source: Independent Analysis Prepared for Efficiency NB

The Panel concluded that energy efficiency is one of the most important energy development opportunities available to New Brunswick and that implementation of the Proposal should foster its expansion to reduce the need for additional electricity supply beyond the HPS.

The Panel recommends that the Province require by regulation, in the new regulatory framework, greatly expanded investment by all electricity distribution utilities in energy efficiency and demand side management (DSM) in partnership with Efficiency NB. The regulatory framework should require the electricity distributors to fund all cost effective energy efficiency and DSM within their cost of service while retaining the benefits for New Brunswick consumers, such as ease of program access and expert advice, through Efficiency NB as the program delivery agent for all future energy efficiency and demand side management programs.

The regulatory framework should require the EUB to set aggressive energy efficiency targets, program plans and budgets that must be met by all electricity distributors in New Brunswick to keep electricity demand within the Heritage Pool Supply. Distributors should be allowed to amortize efficiency expenditures to mitigate early year rate effects. The targets, program plans and budgets should be developed from proposals prepared by the electricity distributors on a rolling 3 year basis.

Innovation; Investment

There are exciting new developments in the electricity sector, new and innovative technologies like “smart grid”, distributed generation and renewable energy development. Fostering these innovations would help the electricity sector advance and contribute to the “green economy”.

CONCLUDING STATEMENTS

“Smart grid” is a term being applied to new information systems and control technologies applied in electricity transmission and distribution systems to improve the effectiveness and efficiency of moving electricity to customers. In distribution, there are opportunities to use more advanced metering technology coupled with the distribution system that can better match up customer electricity loads with the availability of power supply. This is especially important for wind power with its variable availability. There are technologies that benefit the electricity system and the customers.

The Panel recommends that the Province fully support new technology and innovation as strategic priorities for the energy sector and that they be reflected in energy agreements, the regulatory framework and any future economic development strategy and energy policy. The policy and regulatory framework must provide the mechanisms and the investment needed for developing and adopting new innovations and “system improvements” in the electricity industry in the province.

The Panel concluded that, based on the information available up to January 26, 2010, the benefits to New Brunswick of rate savings over the short and long term, reduced environmental impacts from fossil-fuelled generation, the transfer of significant risk on generation facilities to Hydro-Québec, the mitigation of financial risk related to current and future debt and the positioning of the province toward a greener economy, all contribute to real and positive value to New Brunswick over business as usual.

GLOSSARY OF TERMS

Capacity; Power: The maximum electrical power that a generating unit can supply, a transmission line can carry or the demand of an electricity consumer or group of customers, usually expressed in megawatts (MW).

Capacity factor: The percentage of time a generating station is available for production.

Carbon cost: The cost for a power plant to be compliant with greenhouse gas (GHG) regulations by either reducing emissions or purchasing GHG permits.

Carbon price: The price is the cost for a plant to reduce GHG emissions or the purchase price of permits to emit GHG's under a cap-and-trade regulatory program, measured in \$/tonne of carbon dioxide equivalent.

Demand Side Management (DSM): Energy efficiency that is specific to electricity; managing both the electricity use and peak demand of customers usually in a partnership between the utility and customer where both invest funds and both achieve savings.

Electricity Commodity Price: the price for electricity without the transmission and distribution costs included; essentially the price of electricity supplied by a generator.

Energy: In the case of electricity, the amount produced by a power plant over time or the amount used by customers, expressed in:

Kilowatt-hour (kWh): The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit steadily for one hour

Megawatt-hour (MWh): 1000 kilowatt-hours

Gigawatt-hour (GWh): one million kilowatt-hours

Terawatt-hour (TWh): one billion kilowatt-hours; e.g. the total NB electricity consumption is just below 14 TWh per year.

Fossil fuels: Oil, coal, natural gas

Power Purchase Agreements (PPA): Contracts between two parties for the supply of electricity.

Tolling agreement: Where a processor (power plant owner) agrees with an owner of raw materials (fuel) to process the raw material for a specified fee (toll) into a product to be delivered to the product owner. The raw material and the product remain the property of the provider of the raw material. The processor's toll typically includes all expenses to own and operate the plant although other cost sharing arrangements can be included in the agreement.

APPENDICES

- A. Presenters to the Panel
- B. Terms of Reference of the Advisory Panel
- C. Rate Comparison Charts
- D. Assumptions for Assessment of Rate Impacts
by NERA Economic Consulting

APPENDIX A: PRESENTERS TO THE PANEL (AS OF JANUARY 26, 2010)

Meeting Dates	Presenters	Organization	Purpose of Meeting
December 3-4, 2009	Doug Tyler	Executive Council Office (ECO), Government of New Brunswick	Briefing on the Proposal
	Eugene Meehan Glenn McIsaac	NERA	Assessment of the Proposal rate impacts
	Brian Levitt Terry Burgoyne	Osler	Legal perspective of the Proposal
	Stanley Hartt Michael Bernstein Paul Bradley Chin-yen Chen	Macquarie Capital Markets Canada	Fairness opinion on the transaction
December 11, 2009	Claire LePage Neil Jacobsen Brian Pelkey Shelley Rinehart	Department of Energy	New Brunswick's energy strategy
	Ray Gorman Doug Goss Cyril Johnston	EUB	Role of the EUB
	Maurice Robichaud	Communications New Brunswick	Received the Panel's opinion on how its report was to be released
December 21-23, 2009	Doug Tyler	ECO	Updates on negotiations and clarifications of Proposal provisions and implications
	Brian Levitt	Osler	
	Thierry Vandal Marie-José Nadeau	Hydro-Québec	Hydro-Québec side of the transaction
	Sharon MacFarlane Lori Clark Anne Morton	NB Power	NB Power finances
	Diane Kent-Gillis Dean Munde Mark Glynn Paul Vanderlaan	Department of Environment	Environmental impacts of the Proposal
	Daniel Thériault	Public Intervener (EUB hearings)	Current regulatory process
	Francis McGuire	Chair, NB Power Board of Directors	NB Power Board's perspectives
	Lesley Rogers	Efficiency NB	Current and envisioned efficiency strategies and programs
January 5-6, 2010	Mike Ferguson	Auditor General	NB Power finances
	David Alward Paul Robichaud Jeannot Volpé Bruce Fitch Gilberte Michaud Dallas McCready	Official Opposition	Opposition's understanding of and position on the Proposal
	Lesley Rogers	Efficiency NB	Current and envisioned efficiency strategies and programs

Meeting Dates	Presenters	Organization	Purpose of Meeting
January 12-13, 2010	Doug Tyler	ECO	Update on negotiations and further clarifications on Proposal
	Brian Levitt	Osler	
	Bill Lévesque Jeff Trail Peter Thibodeau	Business New Brunswick	Economic impacts of Proposal
	Sylvain Gignac	NB System Operator (NBSO)	Overview of Transmission system and role of NBSO
	Francis McGuire Darrell Bishop	Chair, NB Power Board of Directors Former Executive Vice President, Strategic Planning.	NB Power perspectives
	Bill Whalen	Hawk – Marketing Services	Planning report release, communications and speaking engagements
	Michael Bernstein Paul Bradley Chin-yen Chen Mark Wayland	Macquarie Capital Markets Canada Deloitte & Touche LLP	Updated fairness opinion
	Eugene (Gene) Meehan Glenn Mclsaac	NERA	
	Premier Shawn Graham Jack Keir, Minister	NB Department of Energy	New Brunswick Government perspectives on transaction
January 15, 2010 (conference call)	Elizabeth Beale Fred Bergmann	APEC	Economic impacts of Proposal
January 25-26, 2010	Doug Tyler	ECO	Update on negotiations and clarifications of Proposal
	Brian Levitt	Osler	
	Eugene (Gene) Meehan Glenn Mclsaac	NERA	Sensitivity of assumptions on rate projections
	Sylvain Gignac	NBSO	Transmission system and inter- connections
	Yves Gagnon	KC Irving Chair in Sustainable Development (Université de Moncton)	Discussion of energy strategy alternatives
	Bill Whalen Susan Jones	Hawk – Marketing Services	Planning report production and communications
	Leonard Lee-White Catherine Mosher	Department of Finance	NB Power and government finances

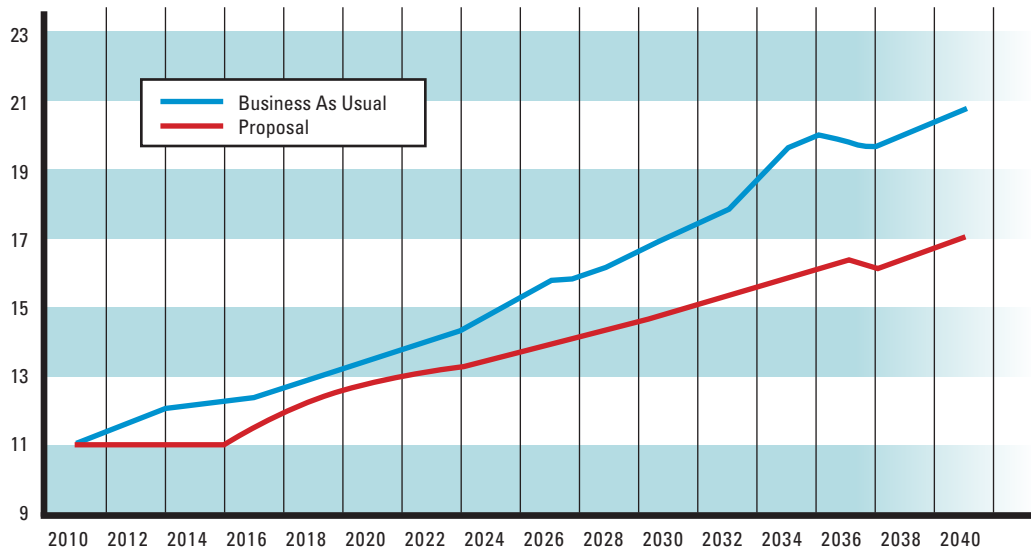
APPENDIX B: TERMS OF REFERENCE

Advisory Panel Examining the Proposed New Brunswick / Québec Electricity Transaction

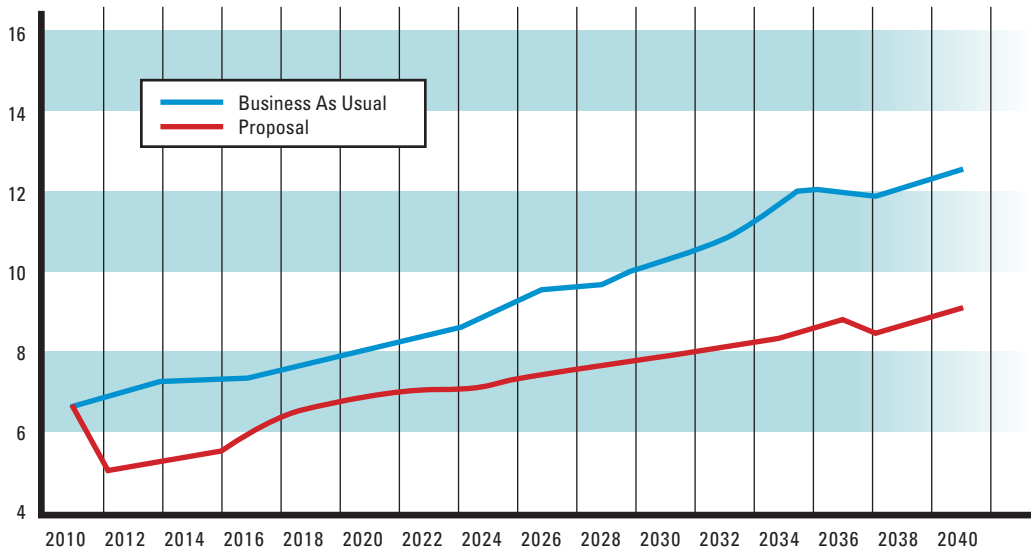
1. The advisory panel will provide independent advice to the premier as to whether the proposed commercial transaction is in the best interests of New Brunswick. In addition to such other matters as the panel may deem relevant, it will compare the benefits and risks of continuing to own and operate NB Power with those of selling it to Hydro-Québec.
2. The panel will address the following concerns that have been raised by New Brunswickers:
 - a. Does this transaction make financial sense?
 - b. After the five-year freeze on residential rates expires in 2015, what are long-term residential rates expected to be compared to what NB Power would charge?
 - c. How does this transaction impact New Brunswick's ability to establish its own energy policy, control future transmission development, and set environmental goals?
 - d. What are the short- and long-term risks (and avoided risks) of the proposed transaction compared to what they would be if NB Power were retained as a Crown corporation? Among the risks to be considered are those associated with environmental and climate change, future legislative compliance, fuel cost escalation, inflation, decommissioning of fossil and nuclear plants, interest rates, capital expenditures, etc.
 - e. What are the economic benefits to New Brunswick? What are the economic costs?
3. The panel will commence its work by being fully briefed on the background to the Proposal and its terms, and it will be kept apprised of developments as the Proposal is converted into more definitive agreements and draft legislation.
4. In order to complete its work in an expeditious and thorough manner, the panel will have access to all available information it requires as well as to the frank opinions of all those involved in the proposed transaction.
5. The panel will submit its report by mid-January 2010 to the premier, who in turn will table the report in the legislature.
6. The panel will be supported by a secretariat with resources appropriate to the task.

APPENDIX C: RATE COMPARISON CHARTS

Residential Average Rates (cents/KWh)



Large Industrial Average Rates (cents/kWh)*



*Energy-weighted average of all large industrial customers

- **General inflation**
 - o September 2009 Conference Board forecast of New Brunswick (CPI)
 - o 2.6% in 2010, 2.4% in 2011, 2.2% in 2012, and average 1.8% from 2013 to 2040
- **Load growth**
 - o Provided by NB Power for 2010-2020
- **Fuel and purchased power**
 - o Based on NB Power forecasts for 2011 and 2012, including the New York Mercantile Exchange (NYMEX) gas price of \$7.30/MMBtu (million British thermal units) in 2012, and capacity factors of 94.9% for Point Lepreau and 96.9% for Belledune
 - o Beyond 2012, we assume:
 - 89.5% capacity factor for Belledune throughout the forecast
 - 91% capacity factor for Point Lepreau through 2023, followed by a decline consistent with projections provided by NB Power
 - 1% real escalation in non-nuclear fuel and purchased power costs (consistent with escalation in NB Power’s existing Power Purchase Agreements (PPA), forward prices, and forecasts by the U.S. Department of Energy)
- **Off system sales revenues**
 - o Based on NB Power forecasts for 2012 escalated at inflation (no real escalation)
 - o No real escalation assumes market for opportunity sales impacted as adjoining regions add renewable resources, reducing the costs of plants operating at the margin
- **Operations, maintenance, and administration costs**
 - o Based on NB power forecasts for 2011 and 2012, increasing at inflation with no real escalation
 - o Since electricity sales are growing, this results in declining real costs per MWh and implied productivity gains for T&D expenses
- **Major capital additions**
 - o \$2.3 billion (2009\$) to refurbish Mactaquac by 2030, \$275 million for Belledune by 2033, and \$1.6 billion (including replacement power costs) for Point Lepreau by 2035
 - o Assume fossil assets remain available throughout the forecast period and expiring PPAs replaced with no increase in costs
- **Lepreau Deferral Account**
 - o Begins to be rolled into rates 5 years after start-up
- **Carbon cost**
 - o Assume NB Power receives sufficient free GHG emissions allowances to cover the output of Belledune through its remaining original life and the limited output of the other fossil power plants
 - o After refurbishment and life extension in 2033, assume NB Power must purchase GHG emissions allowances for Belledune at \$20/ton (2012\$)
- **New supply**
 - o Assume new supply costs \$85 per MWh in 2011, escalating at inflation
 - o Applies to new supply in stand-alone case and supply beyond the heritage pool volume provided under the Proposal

- o Price is generally consistent with the all-in cost of energy from a new gas fired combined cycle plant and with the cost of recent wind power proposals received by NB Power
- **Ratemaking assumptions**
 - o In stand-alone case, assume T&D rates based on 1.1x interest coverage with generation costs passed through without any profit
 - o In Proposal case, NB Power subject to cost of service ratemaking by the EUB for T&D services and allowed to earn a return on equity for transmission
- **Financing costs and allowed returns**
 - o Assume weighted average interest rate of 5.6% in stand-alone case
 - NB Power’s forecast cost of long-term debt at March 31, 2010 of 5.3%
 - Short-term debt cost of 3.0% (15% of total debt)
 - 0.65% debt portfolio management fee
 - o In the Proposal case, assume a weighted average cost of capital consistent with a regulated capital structure and return for NB Power
- **Discount rate and terminal value methodology**
 - o 6% discount rate
 - o Terminal value assumes savings remain constant beyond 2040 and valued as a perpetuity with no growth

