

APPENDIX 1

**OPTIONS ANALYSIS FOR THE NEW BRUNSWICK
ELECTRICITY MARKET AND THE NB POWER GROUP OF
COMPANIES**

**Submitted to
New Brunswick Minister of Energy**

**by
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OPTIONS ANALYSIS FOR THE NEW BRUNSWICK ELECTRICITY MARKET AND THE NB POWER GROUP OF COMPANIES

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INDEPENDENT PANEL REPORT

OPTIONS ANALYSIS FOR THE NEW BRUNSWICK ELECTRICITY MARKET AND THE NB POWER GROUP OF COMPANIES

The Honorable Jack Keir, Minister of Energy, Province of New Brunswick appointed an Independent Panel (the “Panel”) in July, 2008 to review the current electricity market in relation to current world conditions and the ongoing process of restructuring started in the late 1990s. The Panel was mandated to review the options available to the government in structuring the electricity market in New Brunswick in such a manner that

“the province both maintains its movement toward a market that ensures that ratepayers have safe, reliable access to the most reasonable cost electricity with minimum risk to taxpayers and ratepayers, and provides for the future growth and development of New Brunswick as the Energy Hub for the region”.

The Panel, composed of William K. Marshall, P.Eng., former President of the New Brunswick System Operator and William M. Thompson former Deputy Minister of the New Brunswick Department of Energy, submit this report (the “Report”) in response to their assigned mandate.

I Evolution Toward Electric Industry Restructuring in NB

The New Brunswick government created the New Brunswick Electric Power Commission in 1920 under the *Electric Power Act* to address the belief that light and power were necessities of life and a key factor in economic development. The role and growth of the Crown Corporation evolved over several years as private sector players were removed from the province in order to allow all residents to receive the necessary service. It was the 1950s before all areas of the province received access to electricity and the Crown Corporation fulfilled its public policy purpose to ensure that electricity would be universally accessible and at a standard price applicable everywhere.

The decision by the government of Nova Scotia in the early 1990s to sell Nova Scotia Power to the private sector led to discussions of what should be done in New Brunswick. This discussion grew more intensive as jurisdictions in the United States, other provinces and countries throughout the world started to move toward private sector driven competitive open access

electricity markets. Methods and results in different jurisdictions have varied depending on a number of factors but the trend toward more open and privately driven investments continues.

New Brunswick's initial involvement in electricity market restructuring was with the interprovincial trade discussions in the early to mid 1990s. With the exception of Alberta who introduced a market arrangement in 1996, the focus of interprovincial trade discussions was on cross-territory transmission access and not on internal markets. Progress was slow until the United States Federal Energy Regulatory Commission (FERC) issued Orders 888 and 889 in 1996 for open non-discriminatory transmission access under a *Pro Forma Tariff*. A reciprocity clause in the *Pro Forma Tariff* requires that any party taking service under the tariff is obliged to provide equivalent access to its own system. In response to the reciprocity requirement, Canadian provinces who enjoyed export benefits through interconnections to the U.S., including New Brunswick, introduced some form of open transmission access.

The specific actions taken in New Brunswick were substantial and are summarized here to provide the reader with a sense of the extent of the effort to engage the public and affected stakeholders as well as NB Power and the government:

- 1) 1997, November – NB Power initiated its *Out and Through Transmission Tariff* to meet the requirements of interprovincial trade negotiations.
- 2) 1998, February – The Province released *Discussion Paper - Electricity in New Brunswick Beyond 2000*. The purpose of the paper was to explain various restructuring issues and engage stakeholders in discussion of possible approaches that the Province might consider.
- 3) 1998, July – Special Task Force, co-chaired by David D. Hay and Donald J. Savoie, completed *Electricity in New Brunswick and Options For Its Future*. The report identified options available to the province for generating, transmitting, and distributing electricity. It concluded that “*separating NB Power’s generation business from both the wires business and the marketing business [is] a logical first step in developing a competitive electricity market.*”
- 4) 1999, May – The Select Committee on Energy of the New Brunswick Legislature submitted its report *Electricity Restructuring in New Brunswick* after months of public hearings, recommending that “*the province adopt a policy of managed transition ... that NB Power undergo a structural separation into three distinct crown corporations: NB Generation, NB Transmission, and NB Distribution*” and that “*NB Distribution’s requirement to purchase all of its domestic electric power requirements from NB Generation will be gradually reduced over a five-year transition period.*”
- 5) 2000 – The Province issued its *White Paper New Brunswick Energy Policy* which took account of the Select Committee recommendations and agreed that the electricity sector would be restructured in a “*controlled and deliberate*” manner to include competitive choice at the Wholesale and Industrial transmission levels.
- 6) 2002, April – The multi-stakeholder Market Design Committee (after 10 months of extensive work) issued the “*New Brunswick Market Design Committee Final Report*”

- which recommended detailed principles for the establishment of competitive access in the New Brunswick market.
- 7) 2002, May – The Government announced that “*NB Power was to remain a publicly-owned Crown utility*” and be restructured into a holding company called NB Power Holding Corporation (“Holdco”), with four subsidiary companies: NB Power Generation Corporation (“Genco”), NB Power Nuclear Corporation (“Nuclearco”), NB Power Transmission Corporation (“Transco”) and NB Power Distribution and Customer Service Corporation (“Disco”).
 - 8) 2002, June – The Government established a process with representatives from the Departments of Natural Resources & Energy, Finance, Justice, Executive Council and Environment supported by lawyers, investment bankers, accountants, consultants and NB Power employees to develop the necessary legislative, regulatory, legal, financial and operational regime to implement the recommendations of the Select Committee on Energy and the Market Design Committee. This resulted in the creation of proposed legislation that became the *Electricity Act*¹ and various subsidiary agreements and processes including the *New Brunswick Market Rules*, shareholder agreements for the incorporated companies, asset transfer agreements and financial reporting systems that mapped out the implementation strategy for creating the necessary corporate structure to operate within a new electricity market in New Brunswick. The appropriate legal structure for the newly created NB Power Group of Companies was structured to allow the companies to operate within the developed mandate of the new electricity market.
 - 9) 2002, August – NB Power made application to the Public Utilities Board (“PUB”) for approval and implementation of the *New Brunswick Open Access Transmission Tariff* (“OATT”) which is compatible with the FERC *Pro Forma Tariff*. The OATT was approved in spring 2003 and went into service in October 2003.
 - 10) 2003, April – The *Electricity Act* was passed by the Legislature after significant scrutiny, debate and amendment. The Act provided for the restructuring of NB Power, the creation of the New Brunswick System Operator (“NBSO”) and the introduction of competitive choice for Large Industrial transmission customers and Wholesale electricity customers.
 - 11) 2004, October – The *Electricity Act* was proclaimed and became law. Corporate documents were executed that created separate companies, including NBSO under a separate board of directors and the NB Power Group, with the necessary legal and financial structure to meet the intentions of the Act, including Power Purchase Agreements (“PPAs”) to specify resource obligations between the companies. The same group of corporate directors was appointed to the Board of each NB Power company with fiduciary responsibility, in conjunction with senior staff, to manage the transition to the new corporate structure.
 - 12) 2005 to 2008 – There were two major rate hearings for Disco based on the corporate structure outlined in the *Electricity Act* that resulted in increases in electricity rates of 9.6% and 5.9%, as well as decisions on various other issues. Concern was also

¹ *Electricity Act*, S.N.B. 2003, c. E-4.6.

- expressed by both the PUB and the Energy and Utilities Board (“EUB”)² that the nature of the operation of the NB Power Group was not conducive to development of competition.
- 13) 2008, Feb-March – Disco announced a 3% rate increase for April 1, 2008. This was followed by a request to the EUB from the Minister of Energy for a review of the 3% rate increase.
 - 14) 2008, June – Submission by the EUB to the Minister of Energy of *A Report Concerning the Decision by the New Brunswick Power Distribution and Customer Service Corporation to Increase its Rates by 3% on April 1, 2008* stating “*the result of our investigation highlights a very serious problem in the current regulatory structure*” and “*the current regulatory structure does not match the actual operations of the NB Power Group of Companies resulting in significant impediments to effective and credible setting of electricity rates*”.
 - 15) 2008, July – The Panel was appointed by the Minister of Energy with a direction to report on the options available for the structure of the electricity market and the impact on NB Power.

II Approach Taken by the Panel

The Panel, in discussion with the Department of Energy, established a methodology that focused on gathering information from various sources, developing an understanding of the current situation, considering potential options and testing their acceptability through interviews and discussions with many stakeholders in the New Brunswick electricity market, in the region and with various departments of the provincial government.³

An overview of the main steps followed by the Panel is summarized below:

- 1) Review of the formal process towards electric industry restructuring undertaken by New Brunswick (as outlined in the previous section) which established a consistent direction for the development of the electricity market in New Brunswick and how it would interact with neighbouring jurisdictions, private developers and large energy users while ensuring New Brunswick ratepayers received stable, reliable, reasonably priced electricity.
- 2) Development of a Situation Analysis (Appendix C) to put into context the current situation in the electricity markets in the region and internationally. This assisted the Panel in having a view of the current and emerging trends and opportunities facing the

² The Public Utilities Act was repealed in February 2007 and replaced with the Energy and Utilities Board Act which discontinued the PUB and replaced it with the EUB.

³ Initial research began in July 2008, the majority of stakeholder interviews were completed in August and September 2008, follow-up with government and drafting of the Report took place in October and November 2008 and finalization of the Report was in December 2008.

government of New Brunswick as they decide on the future direction of the New Brunswick market.

- 3) Interviews were held with over 50 stakeholder groups (Appendix A) that received an Information Backgrounder prior to the interview (Appendix B). Discussions focused on identifying concerns and possible approaches to the current electricity market that could result in improvements to the system. Various options on the structure of the NB Power Group of Companies were outlined in order to get feedback on potential impacts.
- 4) Follow-up meetings were held with various departments of the provincial government in order to identify potential challenges within government, especially with respect to financial impacts, legislative requirements and government policy initiatives.
- 5) Compilation of this Report for submission to the Minister of Energy summarizing the results of the work and identifying all reference material reviewed throughout the process (Appendix D).

III Situation Analysis Overview

The Panel was aware that many jurisdictions are working on changes regarding how their electricity markets operated and spent time assessing the direction various markets were headed, including the New Brunswick market in light of the legislative and legal direction set by the government. A more complete Situation Analysis is attached as Appendix C.

The framework of the NB market was outlined in a series of documents developed by experts and approved by the government of New Brunswick. These include the *Electricity Act* and regulations, the *New Brunswick Market Rules*, the PPAs and the corporate documents creating the NB Power Group of Companies and NBSO. Since these came into affect on October 1, 2004 an analysis of the situation reveals:

- Market evolution has progressed very slowly.
- No customer has left standard service.
- There has been no managed transition through phasing down of the PPAs as recommended by the Select Committee.
- There has been no resolution of exit fees or partial service issues.
- There have been no governance changes for the NB Power Group of Companies – they still have one common board of directors and one common President and CEO.
- Operation of the NB Power Group of Companies is still as an integrated utility under one joint management team (EUB Report June 2008).

The NBSO document *State of the Market Report - April 2007 to March 2008* provides details on the nature of the New Brunswick electricity market, the volume of transactions, the number of various types of market participants and points towards increasing future market activity.

For the fiscal year 2007/08, there was slightly less than 20,000 GWh of energy scheduled by NBSO for delivery into, out of and through New Brunswick. Of this total, approximately 18%

came from sources outside New Brunswick and 22% was delivered to parties who were not NB Power Disco standard service customers.

It is important, also, to note that the design of the NB physical bilateral market is more resistant to market power abuse than other designs such as pure pool arrangements. In a bilateral market, pricing decisions are made between buyers and sellers over longer time frames through power purchase agreements and there is less ability to influence price than in real time markets. This approach is appropriate for the Maritimes context and is supported by a vast majority of market stakeholders interviewed by the Panel. They see no reason to move away from the current bilateral design, although they generally support continued development toward a more efficient re-dispatch market as it is crucial for wind development and bilateral transaction settlements.

While no Industrial or Wholesale customers have yet opted to exit from the standard service provided by Disco, there is marginal but growing activity in the re-dispatch market. This is an important component for the efficient development of the New Brunswick Energy Hub. NBSO has gained valuable experience and has demonstrated its ability to operate both a bilateral market and a balancing energy re-dispatch market that supports the Maritimes Area.

Many major energy projects are being considered including nuclear expansion, large scale wind development, a new oil refinery, natural gas cogeneration, tidal power and in-province hydro as well as the Lower Churchill hydro project in Newfoundland and Labrador, which could potentially flow electrical energy into and through New Brunswick. All have an export component that requires transmission network access through New Brunswick and all offer opportunities to support the electricity demand of our province and contribute to the development and realization of the Energy Hub. In order to consider involvement in projects, New Brunswick must be flexible in order to address a variety of options for participation. The Panel observed a stakeholder consensus throughout the region for a desired movement toward a regional market with independent oversight that allows multiple generators to service distribution networks based on price.

The Northeast United States borders on New Brunswick and serves as a key market for electricity generated here as well as serving as a potential source of electricity during our winter peak and the Point Lepreau outage. New Brunswick must keep in close contact with this market to ensure it is available as part of the opportunity associated with the Energy Hub and as a provider of electricity.

Maintaining a close relationship with our American neighbours is important for development of the Energy Hub. New Brunswick need not give up its sovereignty and copy everything done in the United States; however, we should be cognizant of their policy directions and tailor our development accordingly. Some stakeholders have suggested that the implementation of competitive electricity markets elsewhere is slowing down and opposition to them is mounting, but the Panel has found no evidence to support this claim. On the contrary, recent developments continue towards implementation of competitive markets and regional transmission organizations (“RTOs”) as stated by FERC: *“National policy for many years has*

been, and continues to be, to foster competition in wholesale power markets.” Actions to confirm this direction in the United States are:

- Initial FERC orders 888/889 and 2000 were driving influences on the NB process from 1998.
- The United States has continued to build on that foundation with the *Energy Policy Act of 2005* as well as FERC’s *White Paper on Standard Market Design* (2003), *RTO Orders* (2004), *Order 890* (2007) and *Wholesale Competition in Regions with Organized Electric Markets* (2008).
- The desired market structure in the United States is an independent RTO where transmission and market operations are independently separated from generation.

Europe, while not electrically connected to New Brunswick, is also important to monitor as we can determine if their experiences have an application in our market area. European Union (“EU”) member countries lead the world in wind power penetration and we in New Brunswick are now moving in that direction. Climate change is a universal issue that has influence on electricity markets and the EU is developing a carbon market. European developments of significance to our region would be:

- EU policy for the desired creation of a Europe-wide electricity market.
- Pursuit began through the *Electricity Directive 2003/54/EC - Common Rules for the Internal Market in Electricity* and has been strengthened with amendments to the Directives under the *Third Legislative Package*⁴ - *Energizing Europe – a Real Market with Secure Supply* in 2007.
- The requirement is legal and functional separation of network operations from generation supply activities and oversight by independent system operators.
- The EU policy for markets is deemed to be needed
 - As a pre-condition to tackle climate change.
 - To generate the right investment signals for required new infrastructure.
 - To provide energy at reasonable prices for what is a most fundamental daily need.

The information gathered from the Situation Analysis and the Stakeholder Interviews has been used to shape the remainder of this Report based on a consensus approach.

⁴ *Third Legislative Package* includes (1) A Regulation establishing the EU Agency for the cooperation of National Energy Regulators, (2) An Electricity Directive amending and completing the existing Electricity Directive 2003/54, (3) A Gas Directive amending and completing the existing Gas Directive 2003/55, (4) An Electricity Regulation amending and completing the existing Electricity Regulation 1228/03 and (5) A Gas Regulation amending and completing the existing Gas Regulation 1775/05.

IV Observations re the New Brunswick Electricity Market

The Panel highlights the following observations which were raised by multiple stakeholders concerning the electricity market in New Brunswick:

- 1) Regulatory requirements of the *Electricity Act* and associated legislation have left stakeholders with concerns about the transparency of the rate setting process with particular attention paid to:
 - EUB decisions being subject to change by the provincial Cabinet during a 30 day review period following filing of a decision. Many felt the decision should only be subject to a judicial review.
 - Allowing a 3% rate increase without EUB approval should be terminated as it prevents the ongoing scrutiny of the cost regime in rate setting.
 - The current practice of appointing a Public Intervener on a case by case basis has led to repetition of learning by the appointee, high cost of preparation, lack of continuity in successive applications and uncertainty regarding its mandate.
 - Government policy should encourage more efficient regulation that would lead to performance based rates and settlement agreements.
 - EUB should have access to all information used in the establishment of the electricity rates and be able to test the reliability of the costs submitted by Disco.

- 2) Industry and commercial enterprises (both large and small) have many specific issues that were focused on the following elements:
 - Electricity is a key component of business operation with some identifying the cost as affecting the ongoing operation of their facilities and feeling transparency was a priority to ensure they were paying the lowest cost possible.
 - Low and stable rates are the primary expectation of the electricity provider.
 - The Energy Hub is perceived as export focused and there is concern that government will lose sight of local conditions that could result in costs being transferred to in-province ratepayers.
 - New Brunswick's very electricity intensive economy has the highest exports per capita in the country. Managing electricity rates is crucial to its success.
 - Other jurisdictions support lower industrial rates with higher residential rates, but in New Brunswick the industrial/commercial rates subsidize residential rates.
 - Support for a regional market is important to allow for diversity of supply as long as it does not cause negative results on local rates.

- 3) Energy developers and marketers were approached to assess their specific views on the operation of the current market and what they would like to see happen to enhance the

potential for investment in energy generating facilities to supply the region's needs and provide financial benefits to the province:

- Need non discriminatory access to large New Brunswick customers, system sales and the export market in order to create sales opportunities to support new facilities.
 - Concern was expressed regarding perceived preferential position of Genco and its potential market power in supplying the existing market.
 - Concerned that access to existing export transmission capacity is limited, as long term agreements control existing capacity.
 - Feel that additional transmission is necessary to create the opportunity to develop generation capability.
 - Exit fees must be eliminated to allow large customers to look at alternative supply sources with knowledge of all cost factors.
 - New transmission lines need to be built, especially to New England but also to Nova Scotia and Prince Edward Island.⁵
 - Support expansion to a regional market in order to open access to more customers and balancing options for wind projects.
 - Conflict observed between wind producers who want low cost balancing while other generators want full cost included to keep market pricing transparent.
- 4) Regional market creation was a topic that arose in a number of interviews with views expressed concerning the potential for the expanded market bringing strength and diversity to the New Brunswick customer base:
- Felt a larger market was needed for large developments to proceed, including a second nuclear reactor at Point Lepreau, importing or flowing through of Lower Churchill hydro from Newfoundland and Labrador and the pursuit of large scale wind or tidal development throughout the region.
 - Maritimes/Atlantic area as Regional Transmission Organization should be pursued in order to position the region to take advantage of large project potential and to gain size to deal with neighbouring jurisdictions that are much larger.
 - Closer integration with the Independent System Operator – New England (“ISO-NE”) market region through a coordination agreement to improve balancing of wind power and take advantage of carbon/green credit trading in the future.
 - Larger market would increase liquidity for generators, clearing price and energy balancing.

⁵ At the time of finalization of the Report it was suggested by some parties that New Brunswick should develop a participant funded line similar to the Hydro-Québec/Northeast Utilities/Nstar project that was recently filed with FERC.

- Transmission capacity to export markets (mainly New England) needs to expand in order to be more accessible.
 - New Brunswick System Operator should continue its role as set out in the *Electricity Act* and show leadership in the movement toward a regional market.
- 5) General market development issues regarding the approach in New Brunswick that must be addressed:
- Temporary structure of NBSO with seconded employees from NB Power must be resolved to make NBSO a permanent independent institution.
 - Exit fees for Wholesale and Industrial transmission customers must be eliminated in order to allow them to make informed business decisions regarding pursuit of alternative sources of electricity.
 - Rules for partial service are needed.
 - Generator settlement should be at a clearing price rather than bid price.
 - More liquidity is needed.
 - Balancing prices should be more transparent.
- 6) Clarify the individual mandates of the different government controlled companies/organizations involved in the electricity market:
- Confusion exists with respect to the role and responsibility of each of the NB Power Group of Companies and their relationship with other organizations such as Efficiency New Brunswick, NBSO, Department of Energy, etc.
 - Conflict exists between the pursuit of Demand Side Management (“DSM”) techniques and the desire to maximize generation utilization.
 - Long history of marketing electricity as low cost, environmentally friendly source of heating has created a mindset in New Brunswick that must be addressed.
 - Ratepayers are looking for a provider of in-province electricity supply at lowest cost possible.
 - Conflict exists between NB Power’s contribution to economic development through low, stable rates and the Province’s desire for increased jobs and other economic activity associated with new power projects.
 - This development conflict was evident in the Point Lepreau Refurbishment Project review where the PUB refused to accept projected environmental requirements and increased economic activity as valid drivers for the project; this conflict persists today.
 - Involvement in the export market should be separated from the rate base; if the government decides to proceed with export investment, then any financial return should be for the benefit of the Province.

V Observations re NB Power Group of Companies

The Panel received much information concerning the operation of the NB Power Group of Companies that warrants consideration when the government determines the future of the electricity market. These companies form the backbone of the electricity market in New Brunswick and must be used prudently to achieve the key element of providing reliable, safe, reasonable cost electricity. The key issues raised by stakeholders are:

- 1) There is insufficient transparency regarding cost allocation and financial reporting for NB Power companies such that electricity rate structures are not properly understood
 - No price signals exist for time of day or seasonal use; there are just average rates.
 - Cost allocation is complex and not understood.
 - PPAs result in blended costs for generating operations and mask the real costs from each generation asset.
 - Costs can be transferred between companies.
 - There are no benchmarking systems to measure performance against similar operations.
 - While industry must cut costs to compete in a global market there is no cost control pressure for the utility; they simply apply for higher rates to address cost changes without a competitive comparison.
 - Current structure is not performing and government needs to change the operational direction of the companies.

- 2) Cost of capital through public funding by government is identified as a competitive cost advantage for NB Power in the construction of large capital assets used to provide electricity in a price sensitive climate:
 - Difference of 5-7% between public and private sources allows publicly funded assets to have lower capitalization costs.
 - Rate cost impact for private capital usage is especially significant for nuclear and other conventional power plants while for qualifying renewable projects tax credits minimize the cost advantage.
 - New nuclear plant construction could cost \$200-300 million per year in additional cost of capital to finance \$3-5 billion potential capital cost.
 - In-province power costs would benefit from public capital financing if construction costs are managed with the same level of precision and control as private construction.
 - Off-setting factors need to be considered:
 - Financial risk to the Province of higher debt
 - Increased cost of provincial finances
 - Political appetite to increase the public debt
 - Risk of construction cost overruns and operational costs.

- 3) Debt size and management are considered ongoing challenges to the long term operation of NB Power:
- NB Power is 100% debt financed today; there is little or no equity.
 - Current debt of NB Power is increasing as a result of the Point Lepreau refurbishment project.
 - Current rate structure allows debt payment if assets are useful for their remaining lives, however:
 - Useful life of carbon emitting assets is questionable
 - Current rate plan could adversely affect certain industrial customers' viability
 - Emission control costs affect debt levels and ability to manage repayment.
 - Impact of debt on the rate base provides a challenge to economic growth and the quality of life for individual ratepayers.
 - There is significant potential for stranded debt associated with some carbon emitting generators.
 - Potential stranded debt of carbon assets is identified as a challenge that needs to be dealt with in a way to minimize the impact on rates so as not to curtail economic growth or affect individuals' ability to enjoy a reasonable quality of life.
 - To share the responsibility for past public policy decisions which resulted in incurring the debt, debt reallocation should be considered between ratepayers and taxpayers.
 - Establish a debt structure and repayment plan so that New Brunswick can proceed into the future with a clear understanding of what makes up the cost of electricity.
- 4) Management of electricity rate setting must be based on the actual cost with recognition of base load contribution to cost of production:
- Electricity must be priced to reflect the additional cost associated with seasonal and marginal power production.
 - Provincial industry needs the best rate possible to be competitive in a global market.
 - Rate development must be transparent to allow external input.
 - NB Power capital investments must be tested and not simply accepted.
 - Government is responsible for economic/social development, so monies intended to further these initiatives should be provided directly from dedicated government programs and not through utility rates.
 - End block rate should be at the long term marginal cost of new supply to give the proper economic signal to customers.

- A level playing field is required to allow competing energy sources (ie, natural gas, oil, wood, etc.) to be evaluated with all costs and performance fully exposed to consumers.

VI Observations re Future Issues

In addition to information more specific to the electricity market and the NB Power Group of Companies, the Panel received many comments regarding future issues that have potential impacts on the electricity industry in general and which warrant consideration. The most prominent of these future issues raised by stakeholders are:

- 1) Climate change and environmental emissions have arisen as a major challenge to the electric power sector. This will have cost implications for all major generators as emissions are priced to promote reduction of greenhouse gases and other emissions.
 - All stakeholders believe that it is a major issue that must be addressed.
 - NB Power has done well addressing SO_x and NO_x and is developing plans to attack carbon dioxide.
 - New Brunswick must reduce its dependence on fossil fuels – especially oil – in order to mitigate detrimental price fluctuations and emissions.
 - Cost of carbon must be included in the cost of electricity.
 - A cap and trade system with fixed caps is a management approach that is better suited to the generating profile of the NB Power assets than is an intensity cap based approach.⁶
 - New green resources and demand side management (“DSM”) initiatives from Disco must be encouraged.

- 2) Demand Side Management with a focus on energy efficiency is a cost effective tool to assist in controlling the growth of electricity demand and environmental emissions.
 - Electricity prices must be transparent and reflect the true costs associated with seasonal and time of use charges, especially for electric heat.
 - Disco needs to operate with a clear mandate to make energy efficiency and DSM policy priorities, and this may require separate governance of Disco from Generation and Nuclearco.
 - Efficiency NB should be funded from the rate base through a System Benefits charge and regulated as an efficiency utility by the EUB.
 - Heating system decisions for new construction must be based on overall efficiency and true cost of service.

⁶ With the election of President Obama in the U.S. and the statements in the Canadian Speech from the Throne in November 2008 that Canadian electricity production will be 90% GHG free by 2020, there is expectation in the industry that a North American Cap and Trade system will be developed that will replace Canada’s current GHG intensity framework.

- Electric heat subsidization relative to natural gas and oil heat is viewed as a problem that must be addressed.
 - Many stakeholders suggested approaches to stop new baseboard installations, such as:
 - Adding an assessment cost to make baseboard heat equivalent in cost to central heating systems with duct work
 - Not allowing new baseboard construction to be eligible for energy efficiency assistance
 - Outlaw installation of electric baseboards in new home construction.
 - Others suggested that fuel switching programs should include electric heat pumps that could be offered by Disco (or Efficiency NB) through a rental program similar to water heaters, or perhaps a long term rent-to-own program. These would be considered especially viable if the sources of electricity generation in the long term are renewable and not fossil based.
- 3) Impact on the social support network must be assessed to ensure that individuals have access to reasonable cost electricity.
- Government must have in place the necessary programs to support those who are not capable of meeting the financial requirements of the electricity rate plan.
 - The rate base should not be responsible for ongoing low income programs.
 - Low income/working poor must be protected from rate shock and disconnect.
 - There should be a focus on DSM and fuel switching energy management programs.
- 4) Divestiture of any generation assets must only be undertaken when the asset is shown to have limited value because of age, fuel source, emission level or other key criteria.
- Divestiture of all assets, including hydro and nuclear, in Maine and Connecticut has not been good for end use customers. Costs have increased and state control has been lost.
 - All advantageous non-carbon assets should be maintained for in-province customers.
 - Any consideration of divestiture should only be undertaken after critical analysis, including assessment of value, need, alternative supply source and other key elements.
- 5) Fossil fuel facilities' role in the generation of electricity on a go forward basis was a major concern, as stakeholders identified the volatility of world prices for fossil fuels and the environmental impact of carbon emissions.
- Fossil fuels are part of a world commodity market that is beyond the control of ratepayers.

- Current approach to buying fuels by NB Power is good in a rising price market but is not responsive to declining markets in the short term.
 - There is no known affordable method of reducing or containing carbon emissions from fossil fuel plants.
 - Capital costs are high for facility construction and difficult to plan in our rapidly changing world, re material, labour and other costs.
 - People want and expect energy to be available from renewable sources
 - New England customers are concerned that export of clean energy from NB Power to meet New England’s renewable and carbon targets will cause increases in fossil use and corresponding increases in carbon emissions in New Brunswick. This has been termed the “Carbon Leakage” issue.
- 6) Renewable electricity generation, especially wind, provides a great opportunity for New Brunswick if properly pursued.
- Existing approach of development by private interests through PPAs resulting from NB Power Request For Proposal (“RFP”) process limits the economic value after construction to land rent, taxes and maintenance but provides a stable energy cost with limited to no risk on construction or operating cost.
 - Added value requires some ownership interest in the projects and some stakeholders suggested an open feed-in tariff arrangement for renewable projects connected at the distribution level⁷.
 - Ownership, if considered appropriate, could be through Genco, local communities, the public or a new Green Power public private partnership driven by the Province.
 - Such a move to a Green Power corporation would be transformational change to benefit the Energy Hub.
 - Developers view the current wind power RFP process as a “race to the bottom” that does not produce the best projects.
 - There is great interest in a community wind program with feed-in tariffs but such a program should not be limited to small projects on the distribution system; rather, it should also include large projects at the transmission level with multiple community ownership.

VII Options for the NB Power Group of Companies

The Panel developed the following options for consideration guided by the Government’s stated position in the *Charter for Change* and supported by Ministerial statements that NB Power as an entity was not for sale, but certain assets may be made available under certain

⁷ At the time of finalization of the report the Panel has become aware that NB Power is developing such a program.

favourable conditions. Another key piece of information was the universal belief that the NBSO has become a vital and necessary component of the electricity market and that it would be too disruptive to return its independent function to the control of an integrated utility as existed in the past. The Panel also drew extensively, with confidence, from the information developed during previous work on the electricity market as outlined in Section I.

Having this information available, the Panel, during the interview process, proposed a number of approaches for consideration while looking for feedback to refine the concepts. The result was two distinct approaches to the future operation of the assets controlled by the NB Power Group of Companies. These distinct approaches are defined as:

Status Quo Option - Maintain operation of the NB Power Group of Companies in its current mode as an integrated utility under one Board of Directors and one President and Chief Executive Officer (“CEO”) but with increased regulatory scrutiny by the EUB over all operations.

Electricity Act Option - Continue to progress toward operational separation of the NB Power Group of Companies as set out in the *Electricity Act* in a staged approach over the next few years with a focus on ensuring the standard offer provider (Disco) has the best rates possible for New Brunswick ratepayers.

The Panel felt there were many factors to consider when determining the preferred path to follow into the future. The following is a high level outline of the key factors addressed for each of the identified options.

Status Quo – Maintain the Integrated Utility Operation

The government in the *Electricity Act* detailed the creation of a number of specific companies and how they were to operate in the new electricity market. Movement toward meeting the spirit and direction of the legislation has been stalled over the past number of years for different reasons. There is a belief among some that the ratepayers of New Brunswick are best served by having all the functions of the group of companies continue under the control of one Board of Directors and one CEO. In looking at this option the following arguments arose for and against the position:

For:

- Simple to implement, as the *Electricity Act* would only require relatively minor amendments to allow the EUB to have oversight of the entire corporate group.
- Allows the board of directors to coordinate the approach of generating and selling electricity as they have in the past.
- Government cost of capital would help reduce new asset costs when new generating assets are required.
- New Brunswickers are used to dealing with NB Power as one integrated utility.

Against:

- Leaves NB Power as a monopoly with a monopoly culture.

- Discourages private sector investors from looking at developing generating projects in the province because of real and perceived market domination by NB Power.
- Does nothing to improve transparency issues raised by stakeholders.
- Does not address rate structures for industry.
- Taxpayers are responsible for all current and future debt.
- Rate changes remain ultimately a government responsibility.
- “Carbon leakage” continues to be an export issue as all New Brunswick generation remains under NB Power control.

Electricity Act Option – Implement Operational Separation of NB Power Companies

The government in the *Electricity Act* created companies with mandates focused on electricity generation (three companies), transmission, distribution, and with a holding company providing common services to the others. The intention was to create strong operating companies that would have separate boards of directors, separate management teams and the capability to finance their operations independent of government support. This structure was based on the Select Committee on Energy Report, the Energy Policy White Paper, the Market Design Committee Final Report and work by the various internal government committees. It was also used as the basis to determine the power rates at the hearings held in 2005-06 by the PUB and in 2007-08 by the EUB.

There is strong stakeholder support for moving forward with operational separation of the NB Power companies to allow a more open market and more transparent analysis of costs at rate hearings. People felt it was necessary to separate operations in order for the Province to establish a market that can attract private sector investment. In looking at this option the following arguments arose for and against the position:

For:

- Mandate of each corporation is more clearly defined.
- Separate governance eliminates potential conflict of interest between Disco and Genco and introduces some competitive tension.
- Management and employees would become more focused on a new culture:
 - Service for Disco and Transco
 - Competition and cost control for Genco, Colesonco and Nuclearco.
- Opportunity to unbundle the PPAs to make them more transparent for both interveners and the EUB.
- Rates would be based on PPAs available for examination by the EUB.
- Can be accomplished with the operational staff inside NB Power.
- It is a policy change the public will be able to understand and support as information will be available and more easily understood, re rate makeup.

- It lessens the market dominance of Genco and increases opportunity for independent third party electricity market projects.

Against:

- NB Power existing board of directors and senior management felt the integrated utility approach has more to offer the ratepayers as discussed in Option 1.
- There would be a setup cost in human and financial terms, as staff will be required to finalize the process of corporate separation started in the late 1990s.
- Risk associated with weakening the corporate strength of NB Power at a time when corporations and utilities are tending toward getting larger and more sophisticated.

VIII Consensus of the Panel Analysis

The Panel would like to put forward their suggestions on the two main areas it was asked to review – the structure of the electricity market and the future operational structure of NB Power. The comments and suggestions are those of the Panel members arrived at as a result of the work undertaken during this assignment and through their professional experience.

These comments are intended to provide an outline of the direction required to meet the needs of the market as articulated by the stakeholders interviewed. Not all interviewees discussed every aspect of the comments, and not all will likely agree with the entire commentary.

However, the Panel is confident that the following comments reflect the positions taken by the majority of stakeholders interviewed and are intended to assist in shaping a market that is facing a number of technical, operational, legal and financial challenges.

An underlying requirement for success of any direction chosen by the Government is the need for the Premier, relevant Cabinet Ministers and senior public servants to commit the necessary personal time, energy and resources to drive the execution of the decisions.

Structure of the New Brunswick Electricity Market

It is the recommendation of the Panel that

New Brunswick continue the “controlled and deliberate” process of opening the province to energy development by ensuring transmission and certain market sectors are as open and efficient as possible without risking New Brunswick’s access to a provider of stable, reliable, safe, reasonable cost electricity.

This position is arrived at after considering the situation occurring in neighbouring jurisdictions that have moved away from the traditional state owned monopoly by embracing a private sector investment driven approach (New England, Nova Scotia, Prince Edward Island).

The location of generators and transmission infrastructure allows New Brunswick to play a major role in the movement of electricity into, through, and out of the province and adjoining jurisdictions, which creates the opportunity for the New Brunswick Energy Hub concept.

To support this direction the following specific elements should be considered:

- 1) NBSO should continue as an independent operation, properly staffed to fully carry out all its objectives as mandated in the *Electricity Act*.
- 2) The bilateral market for New Brunswick should continue under the current Market Rules with some changes, including the manner of price settlement with generators, which should be at a clearing price rather than bid prices.
- 3) Disco should continue to be identified as the standard service supplier for New Brunswick and structured in a way to maximize the opportunities to procure low cost, reliable electricity afforded by our strategic location as an Energy Hub, a flexible NB Power generation fleet and future private sector projects.
- 4) An expanded regional market encompassing all of Atlantic Canada should be pursued with the other provinces to allow for both greater reliability and for the development of major projects, particularly renewable energy and regional transmission projects.
- 5) Increased integration of the New Brunswick/Atlantic Area market with ISO-NE should be considered with an enhanced coordination agreement achieving a large “virtual” market being the focus.

The Panel position reflects the direction throughout North America and Europe as jurisdictions band together to meet the challenges of the changing economic and environmental conditions facing the electricity industry. To attempt to remain an “island” in the emerging world of “continents” would leave New Brunswick attempting to solve its problems alone while others work jointly to attain success through lower environmental impacts and stable costs.

Structure of the NB Power Group of Companies

It is the recommendation of the Panel that

New Brunswick resume implementation of operational separation of the NB Power Group of Companies as set out in the *Electricity Act* in a staged approach over the next few years with a focus on ensuring the standard offer provider (Disco) offers the lowest rates possible for New Brunswick ratepayers.

The Panel recognizes New Brunswickers are passionate in their feelings toward NB Power and the role it plays in the life of all New Brunswickers. However, decisions must be made based on the opportunities and challenges facing the shareholder of the company (Government of New Brunswick) as well as its customers.

The need to maximize the benefits for New Brunswick has been identified in many different ways but would be best defined as “providing the lowest rates at the least risk for residents

while striving to promote economic activity that generates revenue for the province and jobs for its citizens”. While broad in scope, the need to provide low rates to all users must be the highest priority as this dictates the economic success of our export oriented, electricity intensive economy and the quality of life for residents, especially those in lower income groups. However, it is not the only priority. If it was, then the *Status Quo* option would be acceptable. Development of the Energy Hub and the economic activity that it can bring through participation by third party developers requires changes to the current NB Power structure.

The approach recommended by the Panel has evolved through the interview process as different groups identified challenges and opportunities that needed to be addressed through the shape of the NB Power Group of Companies. The future of the electricity market and the structure of the companies that arise from the existing NB Power must put New Brunswick in a position to move into the electricity market as it will be and not as it has been.

Accordingly, the following staged approach is recommended:

Stage 1 - Set the Policy Direction for Operational Separation of the NB Power Companies

Immediately implement a governance structure to allow the Disco/Transco functions to operate independently from the generation companies as follows:

- Create separate boards of directors for the Disco/Transco/Holdco group (“Wires”) and the Genco, Colesonco, Nuclearco group (“Generation”):
 - Divide members of the current board of directors
 - Add new members if necessary.
- Appoint a separate President and CEO for each company group.
- Create independent senior management teams from current staff.
- Clarify the mandate of each NB Power corporation so that the ratepayers and the market are aware of what to expect. An overview of these mandates would be:
 - Disco is an intelligent procurer of lowest cost electricity resources delivered over a reliable, safe distribution system to provide ratepayers with electricity service in an environmentally sustainable manner.
 - Transco is a provider of reliable and open non-discriminatory transmission access to all market participants.
 - Genco with Colesonco and Nuclearco are to efficiently provide electricity to Disco and the market.
- The existing PPAs with Disco and the existing service contracts with Holdco continue on a interim basis.
- Actions should be implemented no later than April 1, 2009.

Completion of Stage 1 will result in separate boards of directors and management teams for the two main components of the electrical system – wires and generation – in a way that will allow

the electricity market to evolve in a more transparent manner, and will create a focus on obtaining the lowest cost electricity for ratepayers.

Stage 2 - Implement the Separate Operation of the Wires and Generation Companies during a Transition Period Over Two Years (2009-2011)

Continue with the existing bundled PPAs for fiscal year 2009-10 and work through that year to develop unbundled PPAs, NB Power debt division and Legislative changes that clarify Disco as New Brunswick's standard supplier and position Genco as a competitive supplier of electricity into the market.

- Unbundle the current PPAs for 2010-11 and beyond and replace them with asset specific PPAs as follows:
 - Current distinct PPAs for power from assets owned by third parties are transferred to (or maintained with) Disco (i.e., wind projects, Fraser biomass, Bayside winter supply, Grandview, St .George, etc.).
 - Long term rights to power produced by NB Power hydro stations and Point Lepreau go to Disco.
 - PPAs for Genco fossil assets are unbundled by station with the contract quantities reducing gradually from 2010-11 forward. The magnitude of the reduction and the implementation period will be developed during 2009-10 and must assure that Disco has the ability to competitively procure sufficient resources to meet its supply obligations. (Interconnection capacity and resource availability must be sufficient to mitigate market power potential.)
- Require Disco to develop systems and purchase any needed seasonal and marginal power shortfalls (because of the phased reductions in the Genco fossil PPAs) in a competitive manner from all available sources (ie, Hydro-Québec, New England, new generation projects, DSM, as well as Genco).
- Establish a rate structure with base load price for all ratepayers to be composed of primarily New Brunswick assets and seasonal/marginal supply to be procured competitively with a transition fund to prevent rate shock.
- Make necessary legislative changes to position Disco for the future challenges to be faced by the industry:
 - Remove the requirement for a request for proposal process to procure any future resources, subject to EUB oversight of long term contracts.
 - Provide the EUB with total oversight of any rate increase, capital expenditure above \$25 million, and prudence of supply resource procurements.
 - Implement operating mandate for Disco to perform as a not-for-profit corporation focused on providing the lowest cost power possible.
- Divide the corporate debt among the companies to reflect the market value of assets assumed by each but with strong consideration of moving all/some of the

potential stranded debt away from the base rate in order to keep rates competitive for economic development and as low as possible for all ratepayers.

- A “to be determined” portion of the debt and OM&A of Genco’s fossil fuel plants associated with the phased out portion of the PPAs with Disco become the financial responsibility of Electric Finance Corporation (“EFC”). As such, these assets are removed from the regulated rate base and become competitive.
- Establish Genco’s mandate to reflect its role as a competitive supplier in the province and export market with a clear direction on government involvement in new project development and investment.
- Disco to appear before the EUB to establish a transparent and efficient rate management system, including an energy purchasing program that balances risk and reward with a professional implementation strategy.
- Maintain the announced 3% rate increase over the transition period while the EUB and Disco establish a rate structure, then require all Disco rate increases to be approved by the EUB.

The effect of implementing these first two stages of the operational separation of the NB Power Group of Companies is significant. The positive considerations are as follows:

- The mandate of each corporation will be clearly defined.
- Management and employees become focused on a new culture:
 - Service for Disco/Transco
 - Competition and cost control for Genco, Colesonco and Nuclearco.
- Operational staff at NB Power will be able to focus on their clearly defined roles.
- There will be no immediate impact on ratepayers, but there is opportunity for future change:
 - Public understanding of the cost of power will be more transparent.
 - Disco is a fully regulated transparent supplier.
 - Rates are based on unbundled, transparent PPAs and open market purchases.
 - Base load power comes from existing assets that allow for a rate that should be stable and lower as total costs for fossil fuel plants are phased out of the rate base over time.
- Debt of Disco becomes less of an issue for government as EUB has control of rates (which will include a regulated provision for debt repayment).
- Promotes development of Energy Hub projects to satisfy Disco’s seasonal/margin demand as well as for export.
- Eliminates exit fees, as the system no longer has stranded costs.
- Encourages greater focus by Disco on energy efficiency and demand response as an alternative supply option for lowest cost to customers and for emissions mitigation.
- Positions Disco to deal with the future rather than the past.

However, any change brings with it challenges that must be met in an efficient and timely manner. These first two stages will not be without the need to undertake actions that will cause criticism as people focus on short term or personal grievances. Government must be prepared to respond to the following issues:

- The proposed resumption of separation of companies goes against the expressed desire of NB Power's existing board of directors and senior management.
- There will be costs associated with the transition, but these should be recovered through efficiencies.
- Government must accept part of Genco's debt and operational risk.
- Significant work is required to ensure that the structure of the PPAs and debt management are in line with assigned responsibilities.
- Requires creation of funding from rate base to soften the impact on seasonal rates for a transition period and to fund fuel switching options for electric heat customers.
- Requires current staff at NB Power to work in a new structure and leave the old one behind.
- Requires the government to establish the necessary policies to deal with debt management, operating guidelines and performance measurement.
- Requires the commitment and involvement of many political and operational leaders to ensure the necessary work is accomplished in a timely manner.

Stage 3 - Additional Actions for Consideration when Circumstances Allow

The following actions are not necessary in order to implement the foregoing recommendations, but they can contribute to opening and expanding the New Brunswick electricity market and the Energy Hub. They will also assist the new NB Power operating entities to best meet the individual company mandates. A number of the following additional recommendations are independent of the final chosen structure of NB Power.

- 1) Separate the governance and management of Nuclearco with a new board of directors and president, but only after the ongoing refurbishment process at Point Lepreau is successfully completed.**
 - Clarify Nuclearco's mandate to operate the existing facility at Point Lepreau and drive the nuclear option into the future for the benefit of New Brunswick.
 - Recognize the different skill sets, operational issues and development opportunities between nuclear and conventional power plants.
 - Provide opportunity to leverage existing operation with a public-private partnership for future additional reactors at the Point Lepreau site.
- 2) Develop a strategy in conjunction with the other Atlantic provinces interested in the development of a regional market with a regional System Operator that:**

- Enhances large project development potential.
- Allows for greater wind balancing and market growth.
- Allows the region to negotiate with neighbouring jurisdictions collectively.
- Creates a larger market.

3) Examine ownership options for Transco assets with a focus on maximization of the economic/reliability balance available to a regional system while supporting the potential for a Regional System Operator.

- New Brunswick is strategically located to support the efforts of all Atlantic Provinces with respect to the development of projects such as Lower Churchill, a second nuclear facility, and large scale wind and tidal projects.
- The Panel recommends the Government regulate the rate of return on transmission equity at 12.5% rather than the current 9.5%.
 - This would bring the rate in line with major transmission and gas pipeline assets in neighbouring competitive markets.
 - Could be accomplished through issuance of regulations and should not require legislative changes to the *Electricity Act*.
- Possible ownership options include the creation of a regional transmission company that is responsible for maintenance and construction region wide.
 - A regional approach should result in lower costs and greater reliability.
 - Would allow New Brunswick to select the best method of financing the regulated company.
 - Could provide a solid potential investment for provincial pension funds.

4) Incorporate an independent Green Energy company to promote the creation of new renewable energy generators in the province.

- Its initial mandate would be to sell renewable energy and greenhouse gas credits in the international market either as a broker or as a public partner in projects.
- The Green Company should be initially granted a transfer from Genco of the 188 MW of international transmission capacity identified in the OATT and by the PUB as available for projects of benefit to the province.
- Such transmission could support development of up to 50 MW of biomass power and 250 MW of wind power capacity for export to New England.
- The Green Company would be created with initial funding from the government to put in place a strategy, delivered by a dedicated team of professionals, focused on creating a marketing and delivery system for renewable energy that will attract private sector investors to New Brunswick.

- Such an independent corporation would help address the “carbon leakage” issue and eliminate the development conflict between NB Power and government.
- Over time, as successful projects are achieved, the mandate and corporate expertise could expand to include:
 - technical support for renewable R&D
 - community energy program assistance
 - supply chain procurement
 - green marketing programs
 - aggregation of balancing and energy storage services.
- Beyond utilization of the 188 MW of transmission, the Green Company could participate in projects that would support development of increased transmission to New England.
- The expected outcome would be a corporate approach with multiple financial partners creating renewable energy generators who sell “green” energy and the associated credits into all available markets. Government should allocate sufficient funding to give the company five years of operations with a review after the third year.

5) Establish the Office of the Energy Advocate to act on behalf of the public in regulatory hearings affecting the energy sector.

- The creation of this Office would address the concern of lack of continuity in the role of the Public Intervener in the oversight of NB Power rates and the absence of public intervention in other energy fields, particularly natural gas and regulated motive fuels.
- The Energy Advocate should be appointed for a ten year, non renewable term. This will allow for a strong and consistent understanding of the energy market and related consumer issues.
- The Energy Advocate would appear before the EUB at rate hearings on behalf of the retail energy consumers in New Brunswick.
- The Office would be funded through the EUB cost allocation formula and would be supported by permanent technical and administrative staff.
- The Office would fill the role currently undertaken by a Public Intervener on a full time basis with the resources to develop and maintain a knowledge level to allow strong, prompt interventions to any situation involving regulatory control of electricity, natural gas, gasoline, diesel, home heating oil, propane, pipelines, etc.
- A full time Office should result in lower overall costs to ratepayers while providing a stronger presence in the decision making process. It would also allow public intervention in “hearings” involving products regulated by the EUB that have a broad public application.
- The office would also act as an information source for other participants, a receiver of consumer complaints relating to energy products and services and a participant in streamlining the regulatory process.

IX Closing Commentary

The members of the Panel would like to thank the individuals who took the time to meet and share their views and ideas on the future of the electricity sector in New Brunswick and the staff of the Department of Energy for their ongoing support.

The importance of the electricity market to all residents of the province and the desire to ensure that ratepayers have access to the lowest rates possible was obvious. The reasons varied from the need to do business through to how lives are lived, but were delivered with a determination to see the government do what is best for the population as a whole.

The Panel feels that the strategy laid out in this report is a natural progression of the work under way since the mid-1990s and a necessary step to ensure that the province has access to the lowest rates possible while opening the province to outside investment. To go back to an integrated utility may meet the short term goals of some but not the long term needs of the provincial economy that can be better achieved through fostering and developing the Energy Hub.

The Panel is indebted to the work done in the past and has relied on the logic that has emerged through different economic conditions and political climates to reach the recommendations put forward.

The implementation of any changes will require analytical and administrative support from bureaucratic staff inside the NB Power Group of Companies and various departments of government. This may be a challenge. As stated in the Hay-Savoie Report – *Electricity in New Brunswick and Options for the Future*:

“One of the fears of many government reformers is that the bureaucracy will, as in the past, simply wait out the political crowd in power and then see to it that things get back to normal.”

Overcoming this issue will require strong leadership by government to shepherd changes forward.

Finally, the Panel recognizes that the ultimate decision is the government’s and that conditions created by overall government strategy and constraints may restrict the ability to move on some or all of the suggestions put forward in this report. However, some action to move forward is absolutely necessary, as the predominant position of the vast majority of stakeholders is that the status quo is neither acceptable nor sustainable.

APPENDIX A

Stakeholder Interview List

APPENDIX A

STAKEHOLDER INTERVIEW LIST

2008 NEW BRUNSWICK ELECTRICITY MARKET REVIEW

	Organization	Representatives
1.	Canadian Manufactures and Exporters Association - Energy Committee	David Plante plus representatives from Brunswick Mines, Xstrata, ADI, Fraser Papers, Potash Corp, JDI
2.	Fraser Papers Inc.	Ron Beaulieu, Dale Paterson
3.	Saint John Energy	Eric Marr
4.	Edmundston Energy	Charles Martin, Michael Couturier, Pierre Roy
5.	Perth-Andover Power and Light	Dan Dionne
6.	NB Power Management	David Hay, Darrell Bishop
7.	NB Power Board of Directors	Francis McGuire, David Hay
8.	New Brunswick System Operator Board of Directors	Curtis Howe, Robert St Onge
9.	New Brunswick System Operator Management team	Jean Finn, George Porter, Ross Stairs, Kevin Roherty
10.	NB Electric Finance Corp.	John Mallory, Leonard Lee-White, Catherine Mosher
11.	NB Forest Products Association	Mark Arsenault
12.	New Brunswick Energy and Utilities Board	Raymond Gorman, Cyril Johnston, Doug Goss
13.	Efficiency New Brunswick	Elizabeth Weir, Leslie Rogers
14.	New Brunswick Department of Energy	Claire LePage, Stephen Waycott, Neil Jacobson, Bill Breckenridge
15.	JD Irving Ltd	Jim Irving, Mark Mosher, Wayne Power, Chris MacDonald, Mary Keith
16.	Irving Oil Limited	Jeff Matthews, Jeff Landry
17.	Canaport LNG Inc.	Jorge Ciacciarelli
18.	A/V Nackawic	Peter Vinall, Fraser Gray
19.	EMERA	Wayne Crawley, Mark Savory
20.	Nova Scotia Power Incorporated	Rob Bennett

	Organization	Representatives
21.	Department of Energy, Province of Nova Scotia	Bruce Cameron, Scott McCoombs
22.	Utilities Review Board, Province of Nova Scotia	Peter Gurnham, Bruce Outhouse
23.	New Brunswick Business Council	Don Dennison
24.	Team CANDU New Brunswick	Joe Howieson
25.	Flakeboard Co Ltd	Barry Gallant
26.	NB Public Intervener	Daniel Theriault
27.	Maritime Electric Ltd	Fred O'Brien, Bob Younker, Ron Leblanc
28.	Department of Environment & Energy, Province of PEI	John Cunniffe
29.	NL Hydro	Gilbert Bennett
30.	Hydro Quebec Production/ HQUS	Sylvie Racine, Steve Molodetz
31.	ISO-NE	Gordon Van Welie, Carolyn O'Connor, Steve Rourke
32.	NMISA	Ken Belcher
33.	Maine PUC	Sharon Reishus, Chuck Cohen
34.	Maine government	John Kerry
35.	WPS/Integrus	Ed Howard
36.	EAEnergyAnalyses	Kaare Sandholt
37.	TransAlta Wind	Rob Schaefer, Mike Bourns
38.	Acciona Wind	Dan Dubois
39.	Suez Renewable Energy NA	Jeff Jenner, Rob Apold
40.	Scotian Windfields	Dan Roscoe
41.	Brookfield Power	Jack Burkom, Pascal Cormier
42.	Constellation Energy	Daniel Allegretti
43.	Conservation Council of New Brunswick	David Coon, Andrew Secord
44.	MZConsulting Inc.	Terry Thompson
45.	Atlantica Centre for Energy	Tim Curry, John Herron
46.	Canadian Federation of Independent Business	Andreea Bourgeois
47.	Enbridge Gas NB	Dave Charleson

	Organization	Representatives
48.	UNBSJ/Poverty Advocate	Kurt Peacock
49.	IBEW	Ross Galbraith
50.	Boralex	Nathan Hebel
51.	Enterprise Fundy	Frank Tenhave
52.	Ontario Power Authority	Jan Carr, Amir Shalaby
53.	United Illuminating Company	James Torgerson, Richard Peters
54.	UdeM Environmental Sustainability	Dr. Yves Gagnon

APPENDIX B

Interview Backgrounder Document

APPENDIX B

INTERVIEW BACKGROUNDER

The New Brunswick Department of Energy has requested William Marshall of WKM Energy Consultants Inc. and William Thompson of TASC (the “Panel”) to submit a report “Outlining Options for the Electricity Market in New Brunswick and the Impact on New Brunswick Power Group of Companies” (the “Report”).

Background

The New Brunswick electricity market has been following a “go slow” approach to meeting the changes facing the North American electricity sector since the first major changes were introduced in the early 1990s with the sale of Nova Scotia Power, a Crown Corporation, to the private sector. This sale and rapid changes made in other parts of the continent led the New Brunswick government to start looking at its options, while NB Power began preparing for future market changes by separating into individual business units based on its traditional areas of operation.

The government moved strongly in the late 1990s with the introduction of a Discussion Paper followed by the Hay-Savioe Report in 1998 and a Select Committee of the Legislature Report in the spring of 1999. This was followed by formation of a Market Design Committee made up of electricity sector stakeholders that issued recommendations on market structure and rules in 2002. These reports formed the basis of the major changes introduced in the *Electricity Act* of 2003 that resulted in the formal division of NB Power into a number of separate companies with a mandate to move toward the competitive electricity market envisioned and enabled in the new *Electricity Act*.

Movement toward the operation of a competitive market was expected to be “controlled and deliberate”. Due to rapidly escalating fossil fuel prices and other factors, the pace has been slower than anticipated and as yet no customer has left NB Power to procure its electricity supply from a third party market participant. Also, while a new structure of the NB Power group of companies was mandated in the *Electricity Act*, the operation of the group as separate companies has not occurred as envisioned. The NB Power group of companies still operates under a single president and are governed by a single board of directors. This was highlighted in a recent report by the New Brunswick Energy and Utilities Board (EUB) in June of 2008 regarding a review of the NB Power Distribution and Customer Service Corporation’s 3% rate increase for the 2008-2009 fiscal year.

In response to the EUB report and the government’s stated intention of making New Brunswick the Energy Hub of the international northeast, the Department of Energy is reviewing the available options to ensure that the regulatory and business climate necessary to meet the Province’s long range plans is created.

Objective

The Report is to review available options regarding the structure of the New Brunswick electricity market and the structure and governance of the NB Power group of companies and make recommendations to ensure the Province both maintains its momentum toward an electricity market which provides ratepayers with safe, reliable access to the most reasonable cost electricity with

minimal risk to ratepayers and taxpayers, and also provides for the future growth and development of New Brunswick as the Energy Hub for the region.

Approach

The Panel will undertake the assignment through a review of available reports and reviews conducted in New Brunswick and elsewhere concerning the challenges facing the electricity market, recommended alternative approaches and outcomes from those different approaches. This literature search will be supplemented by personal interviews with individuals involved in various aspects of the electricity market and companies/organizations that are heavily impacted by the result of changes in the operation of the electricity market.

As a key stakeholder in the regional electricity market, we would like your views on the following areas:

1. Where do you see the electricity market in northeastern North America going in the next 5-10 years?
2. What challenges with respect to the electricity market does your organization face going forward?
3. What role can New Brunswick play in your vision of (a) the overall market, and (b) your organization?
4. What should New Brunswick do to fulfill its role of creating and supporting an electricity market which provides ratepayers with safe, reliable access to the most reasonable cost electricity with minimal risk to ratepayers and taxpayers, and also provides for the future growth and development of New Brunswick as the Energy Hub for the region?
5. A number of structural options for the New Brunswick electricity market have been suggested which will impact the structure of the NB Power group of companies. These options can be roughly described as:
 - a. A fully bundled utility (as was operated in the 1990s);
 - b. A fully unbundled utility with the separate units (distribution, generation, transmission, etc.) sold to the highest bidder;
 - c. A hybrid structure where each of the separate units is treated in a way that is most advantageous to the ratepayers, taxpayers and market opportunities. This option will be more clearly defined as the review and interview process is undertaken, and your input is welcomed.

We look forward to discussing your views on the New Brunswick electricity market and its potential as you see it.

APPENDIX C

Situation Analysis Document

APPENDIX C

Situation Analysis

Background

Electricity markets have been evolving throughout the world since the late 1980's when the United Kingdom began unbundling the state owned "Central Electricity Generating Board". This was rapidly followed by restructuring of the power industry and development of markets in Scandinavia, New Zealand, and parts of Australia and the United States. The US actions were driven by the *Energy Policy Act of 1992* which provided for wholesale access and the Federal Energy Regulatory Commission ("FERC") Order 888 in 1996 which required all jurisdictional utilities to provide transmission access under a *Pro Forma Tariff*.

In Canada electricity and its regulation is a provincial jurisdiction and development has been different in different provinces. New Brunswick initiated its current electricity market structure through the *Electricity Act* and its proclamation on October 1, 2004. The New Brunswick System Operator ("NBSO") was created as an independent statutory corporation responsible for operation of the electricity market through the Market Rules and the reliable operation of the integrated electricity system. The *Electricity Act* also restructured NB Power Corporation into a number of separate companies with specific responsibilities.

Development of the electricity market in New Brunswick has been slow and is faced with many issues that must be addressed. Many of these, such as escalating fossil fuel prices, increased environmental requirements, large scale wind generation potential and increased nuclear generation interest, provide challenges and opportunities for New Brunswick. Coupled with development of the Canaport LNG facility, Brunswick Pipeline and a possible second oil refinery these collectively support the government's strategy to make New Brunswick the "Energy Hub" of the international northeast region.

Meanwhile, electric power industry restructuring and electricity markets have been evolving throughout the world. Some areas are aggressively pursuing markets while others are not. There is debate concerning the value of markets and the benefits that they bring. Review of this debate and the rationale presented may provide support for actions in New Brunswick.

This document examines the specific restructuring approach taken in New Brunswick, the current state of the New Brunswick market, the challenges and opportunities for regional development of the Energy Hub, and current international power industry trends relative to the needs of New Brunswick. Intermingled with research information on these issues are comments, opinions and reactions of the many stakeholders that were interviewed.

New Brunswick Approach

New Brunswick's initial involvement in electricity reconstruction was with the inter-provincial trade discussions in the early to mid 1990's. With the exception of Alberta who introduced a

market arrangement in 1996, the focus of inter provincial trade discussions was on cross territory transmission access and not on internal markets. Progress was slow until the US FERC issued Order 888 and Order 889 in 1996 for open non discriminatory transmission access under a *Pro Forma Tariff*. A reciprocity clause in the *Pro Forma Tariff* requires that any party taking service under the tariff is obliged to provide equivalent access to its own system. In response to the reciprocity requirement, Canadian provinces who enjoyed export benefits through interconnections to the US introduced some form of open transmission access.

NB Power initiated its “Out and Through Transmission Tariff” in late 1997 and the New Brunswick government moved strongly to consider potential market and restructuring options. The first action was introduction in February 1998 of the *Discussion Paper - Electricity in New Brunswick Beyond 2000*. The purpose of the paper was to inform and engage stakeholders in discussion of possible approaches that the Province might consider regarding electricity restructuring. It provided background information on actions elsewhere, explained various restructuring issues such as stranded costs, open access transmission, wholesale and retail market access, cross subsidization, etc and posed questions considered relevant for New Brunswick.

Following release of the Discussion Paper the government engaged David Hay and Donald Savoie to “consult with ‘stakeholder groups’ to review its discussion paper and to prepare a report on options to a Select Committee of the Legislative Assembly.” The Hay-Savoie team met with over 100 individuals to probe the following questions:

“Is the status quo viable? What is the public policy purpose of the New Brunswick Power Commission (NB Power)? Is it still valid today? What are the advantages of public and private ownership? Is there merit in defining more clearly NB Power’s three lines of activities — generating, transmitting and distributing electrical energy? What are the advantages and disadvantages of monopoly and competitive markets? Should we continue to subsidize residential rates? What about stranded costs? What are the key environmental issues?”

A report titled *Electricity in New Brunswick and Options for its Future* was finalized by Hay and Savoie in July 1998. Its prime determination was that “it will be increasingly difficult, if not impossible, for New Brunswickers to maintain the status quo in the electricity sector. Therefore, it is important to identify the options available to the province as it looks ahead and contemplates change and the best possible avenue for generating, transmitting, and distributing electricity.” The report considered generation supply issues (security, stranded costs, debt, etc), public versus private ownership, monopoly versus competitive supply, and structural options for the utility. Hay and Savoie concluded that “separating NB Power’s generation business from both the wires business and the marketing business as a logical first step in developing a competitive electricity market.” The report also stated that initially there was no need to separate the marketing to customers function from the wires business as long as they operated under an appropriate code of conduct.

In the fall of 1998 the Select Committee of the Legislature was given a mandate “to examine the future of the electric utility industry in New Brunswick and, because of the imminent arrival

of natural gas, to consider the implications of that new fuel for the province.” Four categories of goals for restructuring the electric industry in the province were considered:

- *“Additional generation competition and improved economic efficiency*
- *Improved supply diversity*
- *Elimination of cross-subsidies while maintaining affordability*
- *Improved environmental quality”*

Using the Discussion Paper and the Hay-Savoie Report as a basis the Committee held a series of public hearings throughout the province and received significant input from stakeholders of all sorts - utilities, environmental groups, municipalities, large industry, commercial enterprises and all types of end use customers. Their final report titled *Electricity Restructuring in New Brunswick* was presented to the Legislative Assembly in May 1999.

The Select Committee recommended that *“the province adopt a policy of managed transition. In light of the early stages of other restructuring efforts, the province should pursue a more deliberate and controlled restructuring policy. Such a policy will allow for the gradual transition of the electric industry from its monopoly structure today”*. Regarding the structure of NB Power the committee recommended *“that NB Power undergo a structural separation into three distinct crown corporations: NB Generation, NB Transmission, and NB Distribution. This means these three entities will remain in public hands for the foreseeable future. Each corporation will address the needs of different aspects of the electric market, and each should be required to operate as efficiently as possible.”*

Under this structure NB Generation will *“continue to own all of NB Power’s existing generating assets”* and *“will also be required to provide electricity to NB Distribution to meet the needs of all domestic electric consumers”*, NB Distribution will be responsible *“for providing electricity to retail customers in the province ... in a safe, efficient, and reliable manner”*, and NB Transmission will *“own and operate the high-voltage transmission system in the province”* and will *“serve as a common carrier, providing access to all parties wishing to use the transmission system, whether for delivery of electricity within the province, for exports out of the province, or for wheeling through by other parties.”* The managed transition to a competitive market was recommended to occur over five years by having NB Distribution’s requirement to purchase all of its domestic electric power requirements from NB Generation gradually reduced over that period. To make up any shortfall in supply NB Distribution *“will be required to develop competitive bidding mechanisms that will ensure the lowest wholesale purchase prices of generation, whether from NB Generation or elsewhere”* In addition the Select Committee recommended that a wholesale power exchange be developed over time to facilitate market transactions.

The Select Committee also recommended that regulation of the electric industry be strengthened, that demand side management programs be implemented, and that standards for “green” energy resources be developed. Lastly the committee recommended the *“immediate formation of a “Stakeholder Group” that will develop detailed recommendations and policies, and monitor restructuring efforts elsewhere to ensure that New Brunswick continues on an appropriate restructuring path.”*

Government followed with the document *White Paper New Brunswick Energy Policy* in 2000 which took account of the Select Committee recommendations and in addition to an overall energy policy provided a detailed direction for the electricity sector. It was agreed that the electricity sector would be restructured in a “controlled and deliberate” manner to include competition only at the wholesale and large industrial retail level. Customers that do not elect or are not eligible for competitive access would be entitled to a standard offer supply similar to the current service provided by their existing utility. A Market Design Committee (“MDC”) made up of various stakeholders consistent with the Select Committee recommendation would be struck to address development of the electricity market including its design, structure and rules and make recommendations to government. Also, the mandate of the Board of Commissioners of Public Utilities (“PUB”) would be expanded to include regulation of many aspects of the new electricity market structure.

The MDC was struck in June 2001, worked for 10 months with the aid of Navigant Consultants and completed its work with the *New Brunswick Market Design Committee Final Report* in April 2002. Parallel to the MDC work a separate internal government committee considered options for the restructuring of NB Power. Armed with the work of these two committees plus the reports cited above the government announced its restructuring approach for the electricity sector in late May 2002. NB Power was to remain a publicly-owned utility and be restructured into a holding company called NB Power Holding (“Holdco”), with four subsidiary companies: NB Power Generation (“Genco”), NB Power Nuclear (Nuclearco), NB Power Transmission (“Transco”), and NB Power Distribution and Customer Service (“Disco”). The rationale stated by Premier Lord was that the structure “*will encourage a more efficient operation of each company, provide benchmarking for performance and regulatory purposes, and will encourage each company to operate successfully and profitably in their own right.*” In addition the government announced its intention to continue with the opening of the electricity market for wholesale and large industrial retail competition for April, 2003. “*This follows the deliberate and controlled approach to electricity restructuring based on the principle of managed transition, recommended by the Select Committee on Energy and set out in the government's Energy Policy*” stated Natural Resources and Energy Minister Volpe.

In preparation for the impending electricity market NB Power made application in late 2002 to the PUB for the implementation of the NB Power Open Access Transmission Tariff (“NB OATT”) which was compatible with the FERC *Pro Forma Tariff*. The tariff was approved in spring 2003 and went into service in October 2003.

The resulting recommendations and policy positions of this five year review and study process formed the basis of the major changes to the electricity sector that was introduced in the *Electricity Act* of 2003. With proclamation of the Act on October 1, 2004 the NB OATT was transferred to the newly created New Brunswick System Operator (“NBSO”) and the New Brunswick Electricity Market was formed under *Market Rules* specified initially by the Minister and consistent with the recommendations of the MDC. Authority to implement and modify the *Market Rules* was given to NBSO with appeal authority given to the PUB (now reconstituted as the EUB).

The *Electricity Act* divided NB Power into the corporations announced in May 2002 plus created Coleson Cove Corporation as a subsidiary of Genco. Disco was exclusively designated as the standard service supplier for the Province. As such, it has the obligation to provide electric service at regulated rates to all contestable customers that elect to receive standard service. Alternatively a contestable customer (distribution utility or an industrial customer electric directly connected to the NBSO-controlled grid) could choose to exit standard service for a competitive third party supplier. Such an exit requires notice to Disco and may incur an exit fee to avoid shifting costs to remaining standard service customers. To fulfill its standard service obligation Disco was given heritage rights to all of NB Power's generation resources through power purchase agreements. These agreements were for the remaining life of the resources and had no provision to reduce the capacity rights over time as had been recommended by the Select Committee.

Current State of New Brunswick Market

Movement toward the operation of a competitive market following the proclamation of the *Electricity Act* in October 2004 was expected to be "controlled and deliberate". Contestable customers were given the option to leave but few exits were expected at least in the initial years. The market was expected to evolve slowly over time and this section of the report examines that evolution.

The pace has been slow for contestable customers and as yet no customer has left NB Power to procure its electricity supply from a third party market participant. This has led many market stakeholders to believe that there is no market. There are various reasons for this slow development. Rapidly rising natural gas and oil prices have made potential suppliers less competitive with the average imbedded cost structure of NB Power's standard service. Failure to resolve the issue of exit fees has made it very difficult for an eligible customer to evaluate its business case for exit and this situation continues to exist. It is a point that has been expressed to the Panel by many of the market stakeholders. Finally the lack of any phase out of capacity rights in the power purchase agreements eliminated the need for Disco to competitively procure any resources to meet standard service supply. Other than the procurement of wind generation to meet renewable portfolio requirements no competitive procurement has occurred.

While a new structure of the NB Power group of companies was mandated in the *Electricity Act*, the operation of the group as separate companies has not occurred as envisioned. The NB Power group of companies still operates under a single president and is governed by a single board of directors. This has inhibited development of competitive thinking and activities by the operating companies. Essentially the NB Power group of companies continues to operate as an integrated utility. This was highlighted in a recent report by the New Brunswick Energy and Utilities Board (EUB) in June of 2008 regarding a review of the NB Power Distribution and Customer Service Corporation's 3% rate increase for the 2008-2009 fiscal year.

The best source of information on the evolving development of the NB electricity market is the NBSO document *State of the Market Report - April 2007 to March 2008* ("NBSO Market Report"). It provides details on the nature of the market, the volume of transactions, the

number of various types of market participants and points towards increasing future market activity.

The New Brunswick Electricity market is a physical bilateral market built based on an OATT that is compatible with the FERC Order 888 *Pro Forma* tariff. NBSO is currently in the process of updating the OATT to establish compatibility with FERC’s more recent *Order 890, 890A and 890B*, which improve the basic components of the Order 888 *Pro Forma* tariff. Load-serving entities contract with suppliers for the energy and capacity necessary to serve their load and maintain system reliability. These transactions are scheduled with NBSO as the independent system operator responsible for the Open Access Transmission Tariff and Market Rules governing the use of the transmission system in New Brunswick. In addition to a day ahead balanced hourly schedule, in each operating hour NBSO performs an optimized security-constrained economic dispatch of generation and loads using bids received from those resources.

Because Northern Maine, Nova Scotia, and Prince Edward Island are only connected electrically to the remainder of North America via New Brunswick, the New Brunswick market, in many ways, serves as a wholesale market for the region. This is best illustrated through Figures 1 and 2 which have been borrowed from the NBSO Market Report.

Figure 1
New Brunswick’s Transmission Interconnections

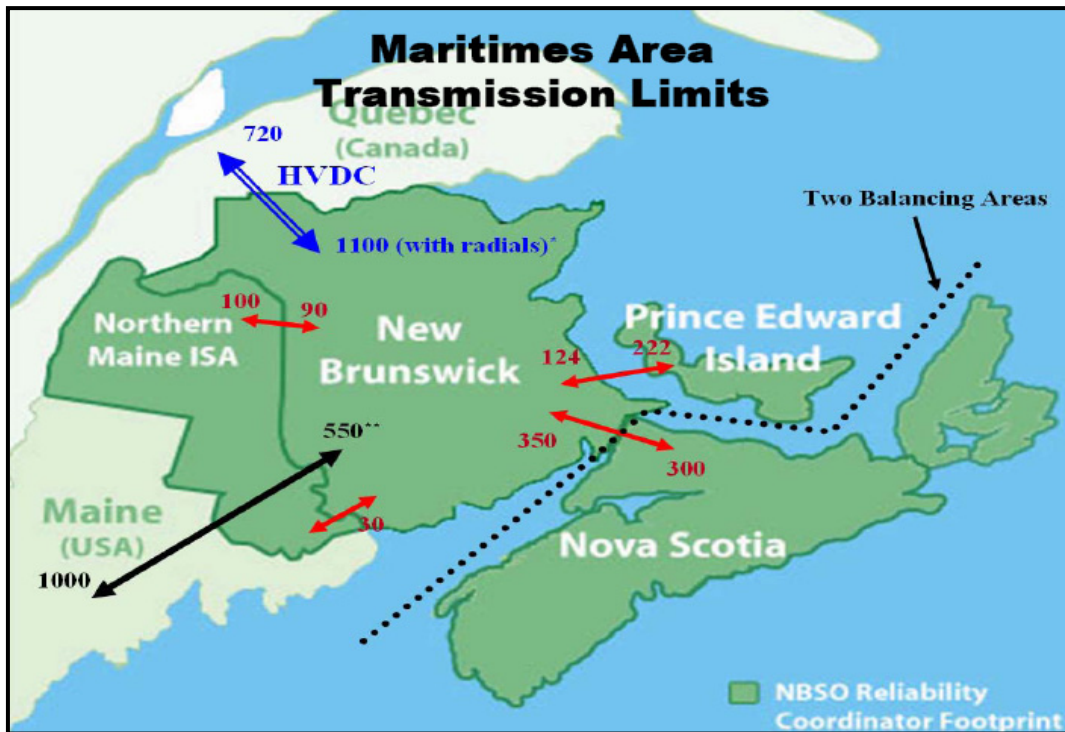
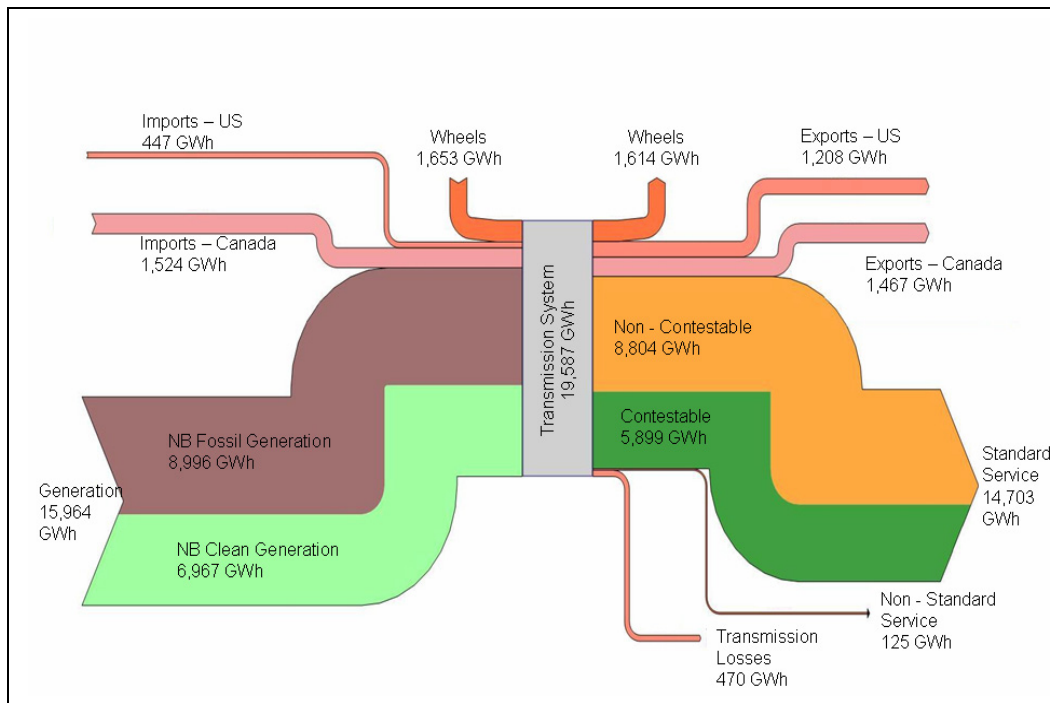


Figure 1 shows all the transmission interconnections between New Brunswick and its neighbouring provinces and states. These are akin to a hub and spoke system with New Brunswick as the hub. Quebec is connected to New England through New Hampshire and Vermont to the west but there are no connections to or from Quebec, Northern Maine, Nova Scotia, and Prince Edward Island other than through New Brunswick. This physical arrangement is a key component of the Energy Hub concept.

Figure 2 illustrates the source and destination of all energy transacted through NBSO for the fiscal year 2007/08. Of the 19,587 GWh scheduled, about 18% came from sources outside New Brunswick and about 22% was delivered to parties who were not NB Power Standard Service customers.

Figure 2
NBSO Bilateral Market Transactions for 2007/08



The level of growing activity in the bilateral market is also indicated by the number of registered facilities and the control of those facilities. When the market first opened in October 2004, there were 27 registered in province facilities all controlled by the NB Power group and one external dispatchable facility (“EDF”). At that time NB Power Generation was the only market participant submitting price and quantity dispatch data. As of March 2008 there were 35 registered facilities of which 6 are non NB Power affiliated and 7 are EDFs. NB Power Generation continues to be the dominant supplier of price and quantity dispatch data but the increasing volumes from other parties provides education and experience for market participants and NBSO. It must be noted that many market stakeholders (especially EDFs and

wind developers) indicated to the Panel that changes in the Market Rules to settle all re-dispatch at a clearing price rather than the bid price would increase re-dispatch market activity.

Development of the hourly re-dispatch market is crucial to supply efficient competitively priced energy to settle imbalances in bilateral transactions. The continued introduction of additional market participants in the re-dispatch market and increased volume of bidding and dispatch of multiple players will keep competitive pressures on bidding. This will increase balancing capability for anticipated wind generation growth, reduce the dependency on market monitoring and reduce the burden on NB Power Generation as the sole supplier of balancing energy.

In summary, while there have been no exits from standard service there is marginal but growing activity in the re-dispatch market. This is an important component for the efficient development of the Energy Hub. NBSO has gained valuable experience and has demonstrated its ability to operate both a bilateral market and a balancing energy re-dispatch market that supports the Maritimes Area

Finally, it is important to note that the design of the NB physical bilateral market is more resistant to market power abuse than other designs such as pure pool arrangements. This is especially appropriate for the Maritimes context with such a small number of active wholesale market suppliers. In a bilateral market pricing decisions are made between buyers and sellers over longer time frames through power purchase agreements and there is less ability to influence price than real time markets. The majority of market stakeholders supports this view and they see no reason to move away from the current bilateral design, albeit they support development of a more efficient re-dispatch market.

Regional Market Challenges and Opportunities

The Atlantic Canada electricity sector is comprised of three main electrical systems – the Maritimes Area system which is a portion of the Eastern Interconnection in North America and serves Nova Scotia (NS), New Brunswick (NB), Prince Edward Island (PEI) and portions of Northern Maine (NMe); the Labrador system which is a portion of the Quebec Interconnection and serves the major communities in Labrador; and the Newfoundland system that is isolated from other interconnections and serves all major communities in Newfoundland.

In the Maritimes Area system (as was discussed earlier and illustrated in Figure 1) New Brunswick is the hub with each of NS, PEI and NMe connected radially. The generation resource mix is varied with hydro, nuclear, wind, biomass, coal, oil and natural gas facilities. Each province has similar policy directions for electricity – utilize energy efficiently, pursue renewable resources and enhance economic values through the electricity sector. Each province also faces common challenges the most significant of which are:

- Unstable and volatile fossil fuel costs
- Increasing environmental requirements especially those dealing with climate change and CO2 emissions
- Integration of desired large scale wind generation

- Transmission access through Atlantic Canada and to export markets

The most reasonable way to address these challenges is to utilize more of the world class resources that are indigenous to the region. Attractive projects include Lower Churchill hydro from Newfoundland and Labrador, Point Lepreau nuclear from New Brunswick, large scale wind from all provinces and biomass from New Brunswick and Nova Scotia. These projects will provide stable priced and reliable electricity in an environmentally acceptable manner. In addition they will increase our national security by reducing reliance on imported fuels and will bring economic development to the Atlantic economies.

All of these projects (except biomass) have hurdles that need to be overcome. The most significant is that they can not be achieved solely by any one province. They are too large to be accommodated within any one provincial power grid. Lower Churchill and Point Lepreau need power purchase agreements with external customers and large scale wind needs balancing beyond the capabilities of any one provincial system. Regional cooperation and shared contracting within the Atlantic region can overcome most of these issues and reduce the risk associated with reliance on the New England market. But the benefits are not limited to Atlantic Canada. Surplus clean energy could be exported to New England to assist them in meeting their environmental requirements and surplus GHG reductions would help Canada meet its targets.

The real opportunity for Atlantic Canada is through shared development and New Brunswick with its robust transmission and independent system operator is in the best position to lead it. First and foremost there needs to be a political consensus between provinces that pursuit of a joint future vision is worthwhile. This can not be a cursory support but needs to be a major regional commitment. The most important action for New Brunswick is to maintain its market and be prepared to expand it to support and encourage investment that will enhance the energy hub.

Electricity Market Development Trends

The pursuit of competition in wholesale electricity markets has been sought throughout the world for the past 30 years. Generally this pursuit has been introduced to overcome the perceived shortcomings of traditional cost-based regulation. This pursuit has not been without controversy and still has opponents today. During our review process various opinions on the degree of balance between competition and regulation was expressed by stakeholders.

While there are markets operating in many parts of the world (including New Zealand, Australia, Argentina, and India for example) our review focuses only on activities in the United States and Europe. The direction of policy in the United States is important to New Brunswick because many market participants here also participate in US markets and access to US markets especially New England is a major requirement for development of the Energy Hub. Policy in Europe is also important to New Brunswick because Europe is leading the world in wind power penetration and wind power development is becoming increasingly important to New Brunswick and other Maritimes Area jurisdictions.

United States

The US Congress has taken many steps to encourage competition in wholesale electric power markets including the Public Utilities Regulatory Policies Act of 1978 (“PURPA”), the Energy Policy Act of 1992 and the Energy Policy Act of 2005. All of these have sought to promote competition by lowering barriers, increasing transmission access, or both. Also, all have increased FERC regulatory powers as US electricity policies seek to strengthen competition but continue to rely on a combination of competition and regulation.

In 1996 FERC issued *Order 888 and Order 889* that required public utilities to file open access transmission tariffs (“OATTs”) and to “functionally unbundle” wholesale power marketing services from transmission services. To functionally unbundle, a public utility was required to: (1) take wholesale transmission services under the same OATT as it offered its customers, (2) state separate rates for wholesale generation, transmission and ancillary services, and (3) rely on the same open access same time information system (“OASIS”) as it provided to its transmission customers. Through *Order 888*, FERC also encouraged formation of regional independent system operators (“ISOs”). Participating utilities could voluntarily transfer operating control of their transmission facilities to the ISO to ensure independent operation of the transmission and enable the ISO to achieve reliability, efficiency and coordination benefits through regional control of the grid. Participation in an ISO remained voluntary and it did not occur in all areas of the country but trade in wholesale power markets did increase as a result of the FERC Orders.

FERC issued *Order 2000* on the desired principles and functions of regional transmission organizations (“RTOs”) in late 1999. It was intended to address the expanding competitive activity and complaints that there was insufficient transmission availability and continuing discrimination against independent generators. It encouraged voluntary participation of transmission companies in an RTO that would be organized with the following characteristics:

1. Independence from market participants.
2. Appropriate scope and regional configuration.
3. Operational authority for all transmission facilities under the RTO's control.
4. Exclusive authority to maintain short-term reliability.

In addition to stating the characteristics of an RTO the order proposed eight specific functions that are to be conducted by the RTO as follows:

1. Develop and administer its own transmission tariff.
2. Create market mechanisms to manage transmission congestion.
3. Develop and implement procedures to address parallel path flow issues.
4. Serve as supplier of last resort for all ancillary services.
5. Operate single OASIS site for all transmission facilities under its control with responsibility for independently calculating total and available transfer capability.
6. Monitor markets to identify design flaws and market power.
7. Plan and coordinate necessary transmission additions and upgrades.
8. Interregional coordination.

In 2003 FERC issued a White Paper titled *Wholesale Power Market Platform* that restated its “core mission under the Federal Power Act is to achieve wholesale electricity markets that produce just and reasonable prices and work for customers.” The paper explains in detail that “our goals continue to be reliable, reasonably priced electric service for all customers; sufficient electric infrastructure; transparent markets with fair rules for all market participants; stability and regulatory certainty for customers, the electric power industry, and investors; technological innovation; and efficient use of the nation's resources. Further, providing regulatory certainty for the industry and investors in order to build needed infrastructure is a critical need facing the energy industry and requires Commission action.” The White Paper essentially reiterates the four characteristics and eight functions of *Order 2000* and proclaims FERC’s intent to move it from voluntary participation to compulsory compliance.

The industry responded to the White Paper and by 2004 seven⁸ RTOs that collectively serve about 70% of the electricity supply in the United States were approved by FERC. Along with the Independent Electric System Operator (“IESO”) of Ontario and the Alberta Electric System Operator (“AESO”) they collectively formed the ISO\ARTO Council (“IRC”) to share information and business practices, research evolving market issues and coordinate representations to governments and reliability authorities. In late 2006 the IRC increased its membership to ten with the addition of NBSO.

The *Energy Policy Act of 2005* increased FERC jurisdiction and reaffirmed a commitment to competition in wholesale power markets as national policy in the United States. FERC has since followed with *Order 890* in 2007 which reformed its decade-old open-access transmission regulatory framework (Orders 888 and 889) that will ensure transmission service is provided on a nondiscriminatory and just and reasonable basis, as well as provide for more effective regulation and transparency in the operation of the transmission grid. Most recently in February 2008 FERC issued a Notice of Proposed Rule Making to increase competition and improve operations in organized electric markets and followed with the final rule Wholesale Competition in Regions with Organized Electric Markets in November 2008. The proposed reforms address demand response and market pricing during a period of reserve shortage, long-term power contracting, market-monitoring policies, and responsiveness of regional transmission operators and independent system operators to stakeholders and customers.

In summary, the policy of the United States and FERC continues to be pursuit of competition through large regional wholesale power markets.

Europe

In Europe activities to pursue electricity markets and industry restructuring was centered mainly in the UK and Scandinavia until the late 1990’s. At that time the European Commission began pursuit of wider international markets that culminated with the issuing of *Directives to Member Countries* in July 2003. These required Member Countries to legally

⁸ The seven RTOs are ISO-New England, New York ISO, PJM Interconnection, Midwest ISO, Southwest Power Pool, Electric Reliability Council of Texas, and California ISO

and functionally separate network operations from generation supply activities in the utilities in their jurisdictions. It also set an ambitious target to create a Europe-wide electricity market by 2007. While an EU-wide market is yet to be fully achieved the EU has made progress and is working toward this goal.

The policy drivers behind the EU direction are threefold as set out in the *September 2007 Explanatory Memorandum to the Third Legislative Package – Energizing Europe* which provides the rationale for amendments to the 2003 Directives.

“Electricity and gas are at the heart of Europe’s well being. Without a competitive and efficient European electricity and gas market, Europe’s citizens will pay excessive prices for what is one of their most fundamental daily needs. The electricity and gas market is also essential for Europe’s competitiveness as energy is an important input for European industry.

Furthermore, a competitive and efficient electricity and gas market is a pre-condition to tackle climate change. Only with a functioning market is it possible to develop an effectively functioning emissions trading mechanism and a renewable energy industry that will meet the ambitious objective, agreed by the European Council of ensuring that the EU’s energy mix is sourced 20% from renewable energy sources by 2020.

Finally, a competitive EU-wide electricity and gas market is crucial to ensure the security of Europe’s energy supply, as only a Europe-wide and competitive market generates the right investment signals and offer fair network access for all potential investors, and provides real and effective incentives to both network operators and generators to invest the billions of Euros that will be needed in the EU over the next two decades.”

The components of the amended EU Directive that was issued in Sept 2007 are as follows:

1. Effective separation of supply and production activities from network operations -
2. Enhanced powers and independence of national regulators
3. An independent mechanism for national regulators to cooperate
4. Efficient cooperation between transmission system operators
5. Improving the functioning of the market
6. Cooperation to reinforce security of supply

Summary

New Brunswick has a geographic advantage that makes it a player in the larger regional market regardless of the approach that it takes. Indications are that there is more opportunity to continue forward with implementation of industry restructuring than there is in retrenching as an integrated utility. At issue is exactly how that move forward occurs.

APPENDIX D

Reference Materials

APPENDIX D

Reference Materials

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