Énergie NB Power

NB POWER STRATEGIC PLAN

2011-2040

NB Power Strategic Plan (2011-2040)

Executive Summary

NB Power has been given the mandate from the Province of New Brunswick to operate like a commercial enterprise, to provide safe and reliable service, operate in a manner that secures competitive rates for its customers, and maintain and enhance shareholder value through efficient operations and long-term debt and asset management. This strategic plan will be the foundation for business plans, investment decisions and business initiatives.

NB Power has some of the lowest electricity rates in Canada. With approximately sixty-five percent of the cost of providing electricity being from the capital cost, interest and fuel from generating facilities, NB Power has constructed a diverse fleet of generation stations, which enabled NB Power to shelter its commercial rates from significant fuel spikes in oil, natural gas and coal. This fuel diversity has been a key to rate stability over the last thirty years. NB Power has also successfully exported electricity to neighboring customers to keep the rates lower. NB Power, as a crown corporation, benefits from the Province's low cost of capital.

Strategy One

NB Power will target being a top Quartile performer as compared to public and private utilities in North America.

With minimal capital investment required in the coming years, NB Power's opportunity to ensure long-term competitive rates is to benchmark its performance to identify opportunities to become more efficient in service delivery.

By measuring performance against the top quarter of North American utilities NB Power will provide the most cost-effective generation and delivery to its customers. Continuous business process improvement techniques will help NB Power leverage cost savings as it strives to excel in operations and customer service and to meet its debt obligations. Finally, increased transparency through regulatory oversight and community outreach initiatives will secure efficient operations and superior customer service.

Strategy Two

Systematically reduce debt to ensure that NB Power is in a financial position to invest in new generation that will ensure stable rates for New Brunswick.

With Point Lepreau nearing completion, minimal environmental investment and normal maintenance capital required in operations, transmission and distribution, NB Power is in an enviable position in that it does not require significant investment for at least the next ten years. This creates the opportunity for debt reduction. There are also many changes taking place in the energy market and the technology

available in the energy field, which may offer NB Power alternative sources of generation for future years to come.

The development of hydro and tidal power opportunities are examples, which may in future years, enable NB Power to stabilize rates for customers.

NB Power is financed almost one hundred percent by debt. With recent years' credit and financial market failures coupled with potential debt failures in several States, it was assumed that debt financing may not always be available at reasonable rates. This creates the risk of credit availability and interest rate exposure. Also, the use of extensive debt, resulting from low earning levels, leaves very little funding capabilities to deal with any significant risks or uncertainties inherent in the business.

Strategy Three
Invest in technology, educate customers and incent consumption that will ***reduce and shift demand*** *for electricity and ultimately defer the next significant generation investment.*

New Brunswick's use of energy is very seasonal and also swings significantly within any day. The peak load in the winter is double the average load of the summer and in any day the load requirements may shift by five hundred megawatts (requiring a plant the size of Belledune to be available for an hour or couple of hours). The swings are largely driven by the use of baseboard electric heat (sixty percent of residents). The average plant utilization of NB Power's generation assets is less than fifty percent and this low plant utilization is the single biggest driver of electricity costs.

Technology is now providing opportunities to take advantage of this huge unused capacity. Significant advances in technology such as smart grid enable the customer to control and manage their energy utilization. Public awareness of energy consumption, higher cost of providing electricity, and the emergence of sustainable communities and homes create an opportunity to interact differently with our customers than in the past.

The strategic plan outlines the approach and initiatives that will be used to ensure these strategies are implemented and the benefits are achieved for New Brunswick. NB Power will incorporate the measures into its management processes and will ensure strong governance to continuously assess the progress and applicability of initiatives and to deliver the expected results.

NB POWER HISTORY

In 1918 approximately 20 organizations produced power in New Brunswick with no standards to govern rates or services. Recognizing the important role electricity would play in the province's economic development, government enacted the *New Brunswick Electric Power Act* on April 24, 1920, establishing The New Brunswick Electric Power Commission.

Over the next 90 years, the influences determining NB Power's course included:

- Government policy
    - *Rural Electrification Act,* restructuring, renewable portfolio standard
- World-wide crises
    - world wars, stock market crash, oil crisis in the 1970s
- Evolving customer requirements
- Increasing/decreasing industrialization, population growth, environmental awareness/expectations
- Infrastructure challenges/opportunities
- Transmission access to neighboring markets and the resulting ability to benefit from economies of scale by constructing/refurbishing larger generating stations

Every decade since the 1920s has offered NB Power a different set of challenges, but the goal of providing a safe reliable supply of electricity for New Brunswick has remained the same.

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INTRODUCTION

New Brunswickers need a stable, secure, cost-effective, environmentally friendly supply of energy at competitive rates—today and for the future. NB Power's job is to provide that supply.

This 30-year strategic plan offers long-term direction to the utility as it continues to strive to meet its customers' requirements and expectations. It will be the foundation for all business plans, investment decisions and other key initiatives. The plan is divided into two major parts: the first sets out the issues, challenges and opportunities; the second provides strategies.

The plan will be updated regularly as a result of input from stakeholders, including First Nations, advances in technology, changing environmental and legislative requirements, as well as alternate energy sources.

SECTION 1 – ISSUES, CHALLENGES and OPPORTUNITIES

Mandate

In a letter to the NB Power Board of Directors, the Province of New Brunswick gave clear direction on how the Board should govern NB Power, requiring:

- Good governance for decision-making
- Policies and programs appropriate for a business of NB Power's size and in keeping with its responsibility to provide excellent service to New Brunswickers

NB Power's core mandate is to generate, transmit, distribute and sell electricity to New Brunswick homes and businesses and to provide safe and reliable service to all, with respect for the environment and within the legislative and regulatory framework of the Province of New Brunswick and the Government of Canada.

A key part of the Board's responsibility is to provide competitive rates to NB Power's customers, while maintaining and enhancing shareholder value through efficient operations and long-term debt management. The Province's letter directs that NB Power be run like a commercial enterprise. This is essential so that the company can generate sufficient earnings to cover costs, undertake necessary investments and reduce debt.

At times in its history, NB Power has served social policy objectives. As a result, there is public consensus that political involvement, lack of strong Board governance and lack of a strategic plan have created inefficiencies and increased costs. Without a good framework of review and governance NB Power could find

itself making big investment decisions which would have a dramatic negative impact on future operations and rates in the province. To prevent this, the Board has undertaken this strategic planning process.

Programs or policies which are not commercially viable or whose benefit is other than to the account of NB Power will, for purposes of this strategic plan, be considered government policy.

Ownership, Structure and Regulatory Oversight

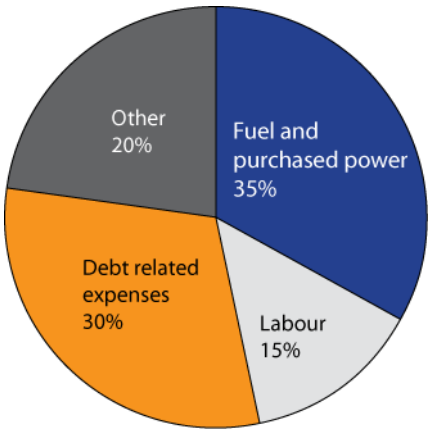
The recent Energy Blueprint brings about the reintegration of NB Power including the merging of the New Brunswick System Operator. This integration will reduce costs and allow operating efficiencies which are necessary for the company to address its debt issues in a very strategic and focused manner.

The impact of the integration, supported by a strong mandate from government provides a foundation on which to implement this new strategic plan. With Government's continuing support, a strong Board and modern governance practices, it will be possible to provide a fair return on invested assets, competitive and predictable rates, and significantly reduce financial and operational risks.

Management and Support Services

NB Power focuses on cost-effectiveness, by running assets and operations as efficiently as possible and pursuing additional revenue opportunities. In fiscal 2010/11 NB Power achieved a permanent reduction in costs of $20 million and will see additional future sustained cost reductions of approximately $30 million. *Figure 1* shows cost allocations for 2013/14, the year following the return to service of PLGS.

Figure 1: NB Power Costs 2013/14



As *Figure 1* indicates:

- **Fuel and purchased power** will represent approximately 35 per cent of costs. Cost savings in this area have resulted from new fuel blending at Belledune and Coleson Cove, and implementation of a 24-hour marketing desk to take advantage of such short-term events as peak prices in the export market.

- **Debt-related** costs, including servicing and repayment, will represent approximately 30 per cent of costs. Savings in this area have resulted from refinancing debt at lower interest rates. NB Power has also tried, in regulatory proceedings, to build earnings levels to reduce debt.

- **Labour** costs will represent approximately 15 per cent of NB Power's costs. Savings in this area have resulted from reducing management positions, non-permanent staff and overtime.

A benchmark review will help NB Power identify more opportunities to permanently reduce costs and implement best practices. The benchmarking study will identify measures for NB Power to compare itself to the best-managed utilities in North America. These measures will be part of the utility's reporting, with ongoing comparison to the best performers. The benchmarking results will allow for the setting of more specific annual cost reduction targets.

NB Power will need to invest in its enterprise-wide computer systems to keep them current and optimize efficiency. This platform must support "smart grid" billing, process improvements and other green initiatives. In addition, the business world in which NB Power operates is constantly changing, resulting in added costs. Examples include increases in security at PLGS since 9/11, evolving Canadian Standards Association (CSA) standards, changes in the Canadian Nuclear Safety Commission

fee structure and other workplace health and safety and environmental regulations. These unavoidable cost increases cannot simply be passed on to customers.

NB Power will look for further opportunities for cost savings of approximately $30 million. Areas of opportunity include:

- Optimizing assets, including converting Coleson Cove to burn natural gas
- Improving export margins
- Improving capital investment and contract governance
- Streamlining and enhancing processes and systems
- Enhancing procurement processes and supplier relationships
- Partnering with the Province of New Brunswick and neighboring utilities to synergize services
- Determining optimal levels of staffing and administration resources to align with business priorities
- Training and leadership development
- Outsourcing services
- Leveraging innovation to find new, more efficient and effective ways to do things
- Integrating the companies, eliminating administrative duplication and lack of transparency

The challenge is ensuring that, once costs are removed, savings are sustainable and permanent. Simply deferring work to future periods will not achieve permanent cost reductions and may result in overall cost increases. Savings to date have been targeted at specific areas. NB Power has not invested in business process improvement methods or other such techniques used in the manufacturing industry to leverage cost savings as end-to-end process reviews.

People

NB Power has a comprehensive, integrated Human Resources Strategy. The vision of having "People Performing at their Best" serves as the foundation for recruitment and retention. NB Power optimizes employees' ability to contribute to the success of the organization. The work environment stresses continuous improvement and learning and encourages health and safety, reducing personnel-related costs such as long-term disability and sick-time.

Nonetheless, NB Power faces challenging employment demographics. Nineteen per cent of its employees are 55+ years old and approximately 500 employees are likely to retire within the next five years. The utility must continue to attract and retain skilled resources, particularly in such highly specialized fields as nuclear energy. To address this serious issue, NB Power is establishing processes to review replacements and set optimal staff levels, and has set up partnership programs with academic institutions.

Customer Focus

NB Power is a customer-focused organization that values open and transparent communication with all stakeholders. The utility will share with stakeholders its challenges and its efforts to manage fiscal, environmental and social responsibilities while ensuring the safety and reliability of operations. It will provide measurable targets, based on North America's top quartile utilities, so customers can gauge service excellence. Communications will be two way. For example, NB Power is committed to involving customers and other stakeholders in developing its Integrated Resource Plan (IRP) and RASD plan. The utility will consult with key stakeholders, including First Nations, before any major infrastructure investments decisions are made.

In-Province Load

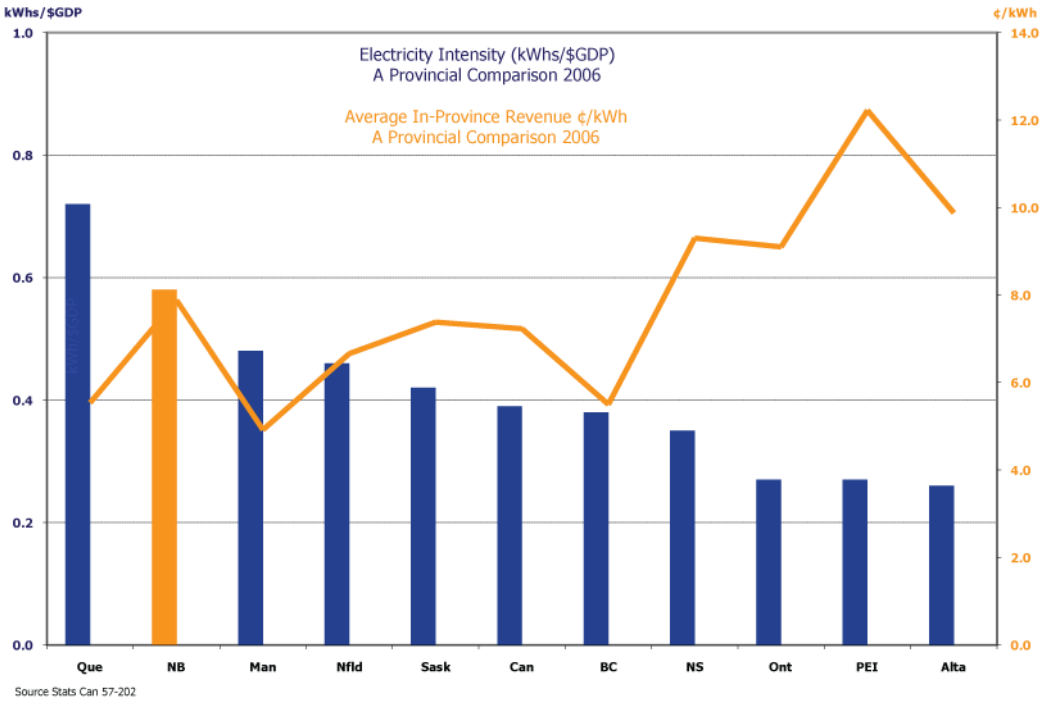
New Brunswick's in-province electrical load, like that in most regions, combines the needs of residential, commercial, industrial and municipal customers. Like all electrical utilities, NB Power's challenge is to match production with customers' needs on an instant-by-instant basis as those needs change. However, New Brunswick's in-province load is unique in two ways:

- High penetration of electric space heat (60% of residential customers; Nova Scotia, by comparison, has approximately 20% electric heat)

- High proportion of total load (historically in excess of 30%) associated with a relatively small number of energy-intensive industries (forest products, mining, petroleum)

As a result, New Brunswick is very dependent on electricity. Among the provinces, only Quebec has a more highly electricity-intensive economy (kWh per $ Gross Domestic Product (GDP)). As *Figure 2* demonstrates, provinces with the highest electricity rates generally have the lowest intensities.

Figure 2: Electrical Intensity



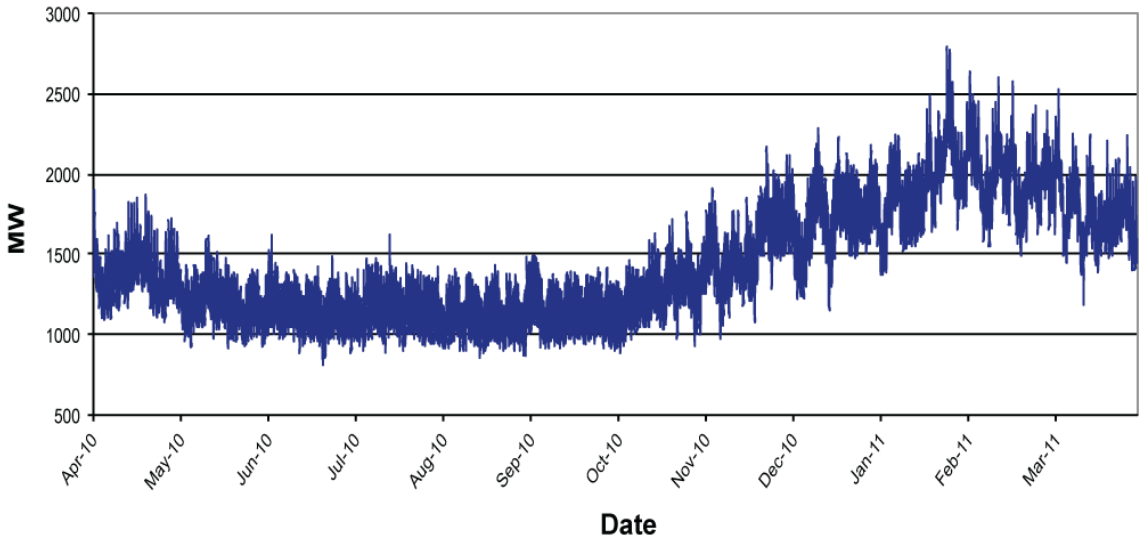
New Brunswick has always had a high proportion of industrial load with generators that were later purchased by NB Power, being originally installed specifically to serve industry. An example is the Grand Falls Plant. High-load industries have provided economies of scale that helped keep rates down.
As electrical load grew in the 50s and 60s, NB Power added generation capacity. Some of this capacity matched well with electric heat, which began to be increasingly used in the mid-70s. For instance, hydro from Mactaquac could respond to large fluctuations of electric heat load without additional cost in fuel, while Coleson Cove provided sufficient power for additional electric heat in the winter and export opportunities in the summer.

New Brunswick's unique load characteristics offer both challenges and opportunities.

<u>Electric Space Heat</u>
The use of electric heat in New Brunswick is largely responsible for peak power requirements on the coldest day of the year, nearly doubling the daily summer average power requirements.

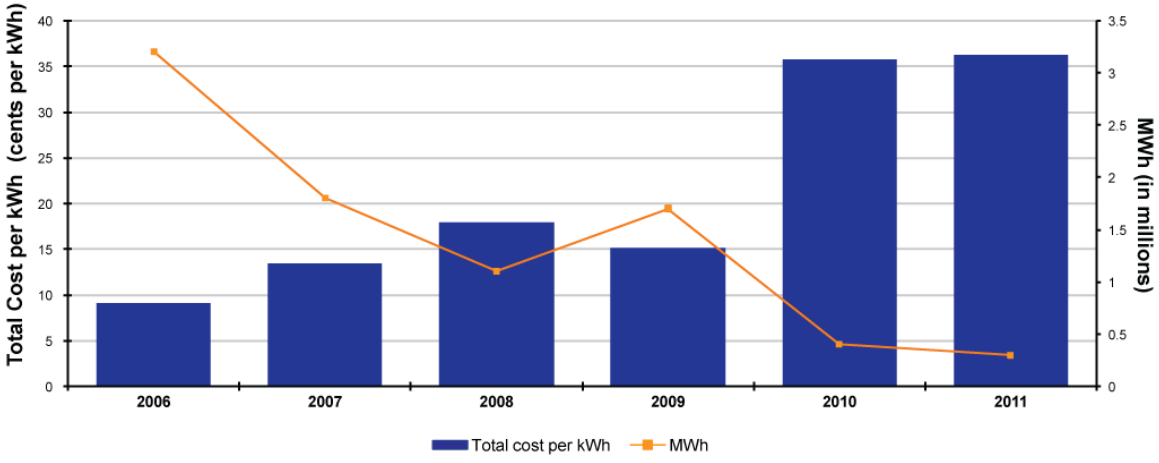
Figure 3 shows the system hourly load between April 2009 and March 2010. The graph illustrates both the seasonal variation in load (almost 1500 MW) and the typical daily variation (up to 600MW in winter). Both of these variations are largely the result of electric heat load, and add huge costs to New Brunswick customers.

Figure 3: 2009/10 Hourly System Load



This creates a significant opportunity for NB Power since more than 50 per cent of the utility's generation is only required for three to four months of the year. *Figure 4* shows the total cost per kWh for the Coleson Cove Generating Station, with year-over-year variations resulting from utilization levels. The greater the MWh output of the plant the lower the corresponding total cost per kWh. With New Brunswickers paying about ten cents per kWh, this graph shows the cost of Coleson Cove generation in 2006 was less than ten cents per kWh and in 2010 and in 2011 the cost is closer to thirty-five cents per kWh. NB Power must look for innovative opportunities to increase utilization of its generating facilities.

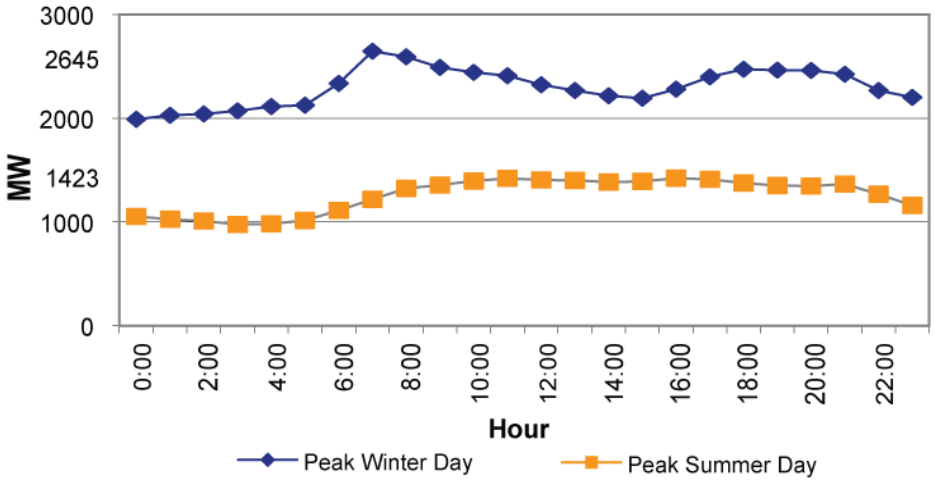
Figure 4: Coleson Cove – Total Cost per kWh



In addition to seasonal peaking, the system also experiences daily peaking between six and nine in the morning and again between six and nine at night. The result is that the highest fuel cost plant is used to meet these peaks.

Figure 5 illustrates a peak winter day swing of over 600 MW, and a summer peak day swing of 400 MW. To put this in perspective, on a cold winter day, Coleson Cove may be required to run all day yet only supply energy between six and nine twice a day.

Figure 5: Total Load Requirements



With a total system utilization of just 40-50 per cent, this is a huge cost to New Brunswick customers.

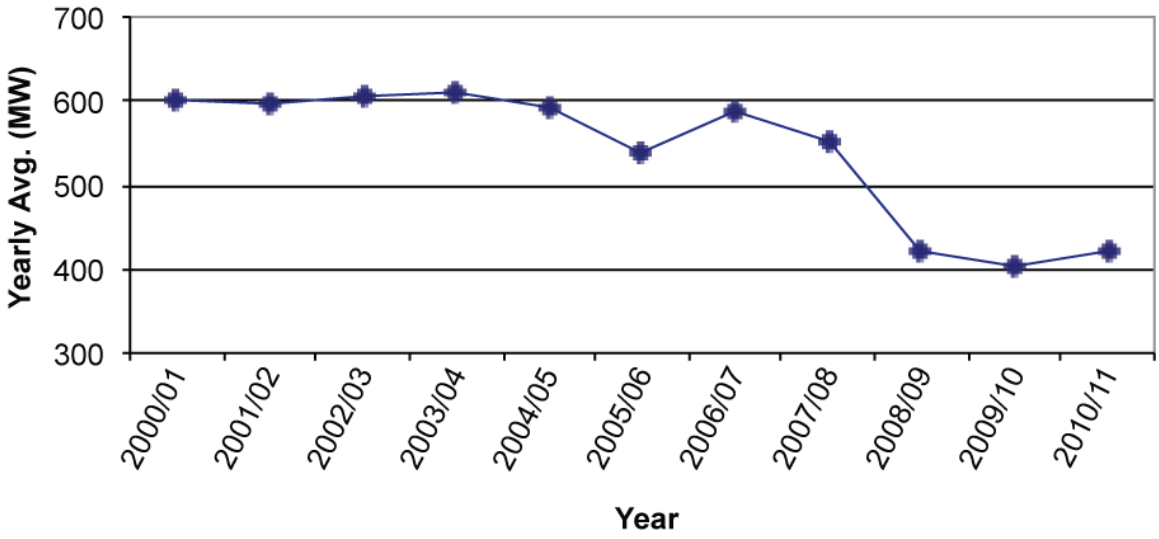
While variation of load can never be eliminated, it can be reduced. Fluctuations in NB Power's load can be leveraged so that replacement of significant generation capacity in the future can be avoided.

Large Industrial Load

In recent years, New Brunswick's large industrial customers have been under intense financial pressure; in fact, three of them have recently closed their doors. These large industrial users had stable energy requirements 12 months of the year and made significant contributions to the fixed costs of running NB Power.

Figure 6 illustrates that industrial closures and reductions since 2007 have decreased industrial loads by approximately one-third. The loss of these relatively flat loads has resulted in the overall system load becoming more "peaky" as electric heat becomes a larger portion of the total. Since an all-time high in 2003/04 of 1700MW, NB Power's average load has decreased by 10%.

Figure 6: Historical Industrial Load



While threats to the forestry industry remain, in terms of load, these may be somewhat offset by increased activity in the mining sector. As well, by taking advantage of low fuel and interest costs, the Province of New Brunswick has committed to a three-year rate freeze. This will provide rate stability and predictability for customers. It also adds considerable pressure on NB Power to manage its costs.

Supply Diversification

New Brunswick's peak load is forecast to be 3200MW. To meet this peak and system operating requirements, NB Power must have approximately 3900MW of capacity available either on-line or in-reserve, in case a generator comes off-line. New Brunswick's total capacity of 4000MW leaves little surplus. However, this capacity does not have to operate to provide value; energy purchases can be made using capacity as back-up. During the PLGS shutdown, NB Power has been successful in purchasing lower cost replacement energy using this capacity in order to avoid running high cost fossil fuel plants like Coleson Cove.

Since the oil crisis in the late 70s, NB Power has built fuel diversification into its generation portfolio.

Figure 7: Fuel Diversity

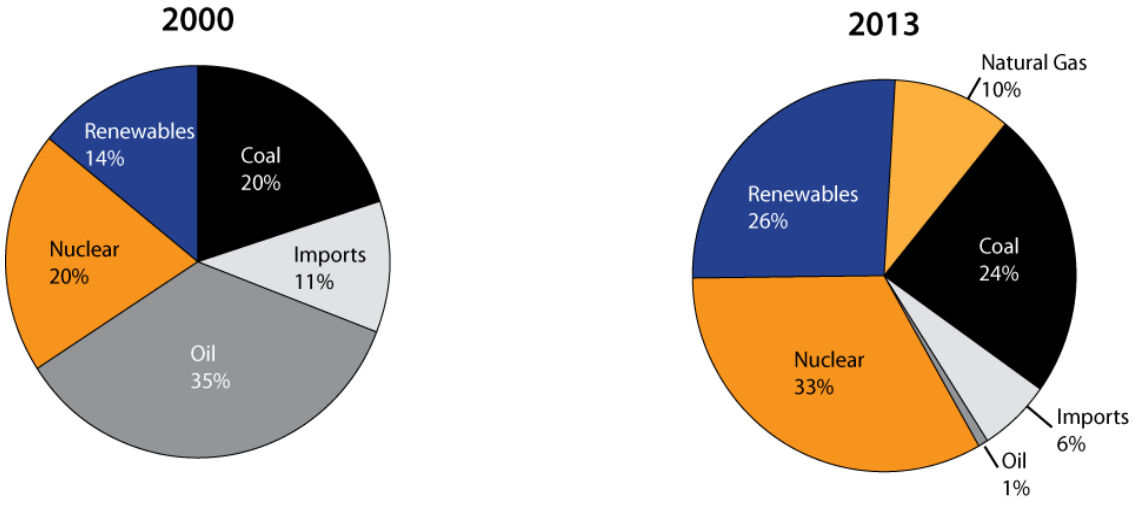


Figure 7 shows NB Power's total fuel supply diversity. This includes supply for both in and out of province requirements.

Over the last 30 years, as fuel prices have escalated and de-escalated, NB Power has been able to switch its generation to take advantage of the lower fuel cost. Today a very diverse mix of generation mitigates risks associated with volatile fuel prices and enables the utility to meet expected, challenging CO_2 targets. By 2013, once PLGS is back in operation, NB Power will require only one percent of its fuel to be oil. To illustrate the importance of this diversity, if NB Power was burning oil in 2013 as it did in 2000, fuel costs in 2013 would be hundreds of millions of dollars higher than currently forecasted with the 2013 supply mix.

Of the 26 per cent of renewables in 2013, 17 per cent will be hydro, seven per cent will be wind and two per cent will be biomass. Contributing to the increase from 2000 is the addition of large wind farms and the potential growth of community energy projects. Further growth in the longer-term is expected through the continued development of community and local small scale renewable energy projects, including First Nations projects, as well as the potential development of the Grand Falls hydro facility expansion.

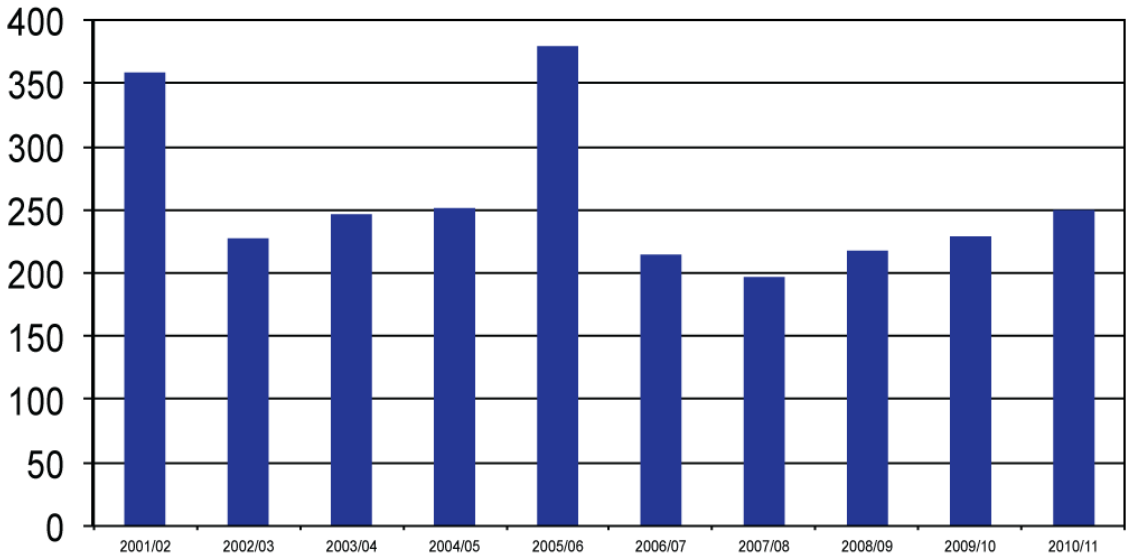
NB Power is committed to support the development of renewable energy sources while balancing the utility's supply requirements and costs to maintain rate stability for customers.

Export Sales

NB Power requires its full fleet of generation in the winter but has surplus capacity the rest of the year. To extract greater value from its generating assets, NB Power is an energy marketer, making purchases from and sales of energy and capacity to New England, Quebec, Nova Scotia and PEI. This positive margin revenue source lowers in-province rates.

Figure 8 shows that export sales over the past four years have averaged $220 million annually. As a result New Brunswickers have paid approximately seven per cent less for their power. Any energy sold for more than its variable costs of generation is positive to New Brunswick.

Figure 8: Out of Province Sales of Power



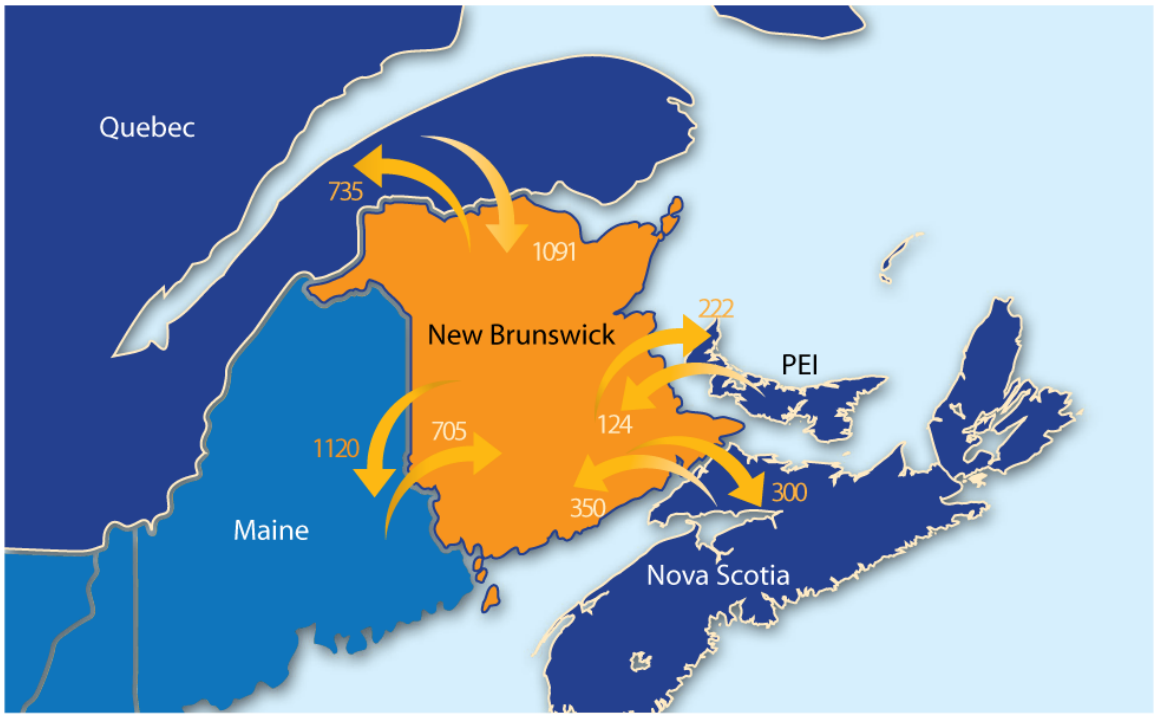
In recent years, the ability to sell energy to serve load in the Boston area has been affected by market rules in New England, declining natural gas prices, and surplus generation in the region. New England sales have also been reduced by difficult economic conditions and a strengthening Canadian dollar. Recognizing these changes were occurring, NB Power used creative strategies to explore other marketing opportunities. It is actively pursuing retail load in Maine and has become the energy supplier to various load centers. NB Power anticipates further opportunities will exist to sell into the US Northeast and Nova Scotia. The utility could potentially grow its export business up to a ten per cent contribution to in-province rates.

Distribution, Transmission and Regional Collaboration

New Brunswick's in-province distribution system has been well maintained. Continued long-range system planing and good maintenance practices are needed to ensure the reliability and good service New Brunswick currently enjoys.

NB Power has leveraged its geographic location through a number of interconnections which are shown is *Figure 9*.

Figure 9: NB Power Interconnection Transfer Capability (in MW)



The development of new generation in Labrador or Quebec may create opportunity for growth in interconnection capacity and long-term power purchase agreements. As previously stated, in the shorter term Nova Scotia's pressing need for energy creates sales opportunities for NB Power, but it may also create a requirement for transmission. As well, NB Power has a strong, long-standing relationship with Hydro Quebec, with whom it has negotiated agreements for competitive purchase and sale of energy and capacity. This continued relationship will be necessary as Hydro Quebec determines its long-term development options.

Electric utilities in the Maritime Provinces have collaborated for more than 50 years in energy and capacity purchases and sales, and in the operation of the power system to benefit customers in the three provinces. This started with the signing of interconnection agreements and continued with specific arrangements with other utilities to buy and sell energy and capacity. The introduction of Open Access Transmission Tariffs and mandatory Reliability Standards made it necessary to

demonstrate through the North American Electric Reliability Corporation (NERC) that this collaboration results in safe and reliable interconnections with neighboring utilities. By working together the Maritime utilities have been able to minimize operating costs to meet these standards.

The announcement of the Muskrat Falls development in Labrador by Nalcor broadens the vision of regional collaboration to include all four Atlantic Provinces. Nalcor has two options to transport the output of Muskrat Falls to the Maritimes and the US market in New England: either through Quebec or via a submarine cable to Nova Scotia, on to New Brunswick and then to New England. Each option has its challenges. Nalcor is working closely with both Emera and NB Power to explore the Nova Scotia/New Brunswick option, which would bring up to 500MW of capacity and 3,000MWh of energy to the Maritimes and New England.

Regional dispatch of hydro would result in better utilization of this valued resource. It would also make it more attractive to increase the amount of such renewable energy sources as wind, tidal and solar.

Load growth in southeastern New Brunswick has placed stresses on the transmission system, with both the PEI and Nova Scotia interfaces needing investment. As well, the Eel River HVDC station is beyond its life expectancy and will need to be refurbished at an estimated cost of $90 million.

Infrastructure Renewal

Estimates indicate the Canadian power and utilities sector will need to invest over $150 billion between 2007 and 2030 to renew infrastructure and keep pace with industrial evolution. With most of its generation facilities built between the late 1960s and early 1990s, NB Power has its share of renewal challenges. Adding to the difficulties, capital is forecast to be increasingly scarce and environmental, regulatory and customer demands and expectations are constantly changing.

In fall 2012, PLGS is scheduled to return to service following its refurbishment. At that time, NB Power will have 4000MW of generation capacity. Based on electricity load growth projections, NB Power has adequate generation capacity to reliably meet the province's electricity needs for at least the next ten years. This provides a real opportunity to do the necessary planning and preparation for significant generation renewal investments starting in the 2020s.

Based on the current integrated resource plan, the more significant generating stations and Power Purchase Agreements (PPA) that require replacement are:

- Mactaquac (672MW) – 2028
- Natural Gas PPA (353MW) – 2029
- Ste. Rose and Millbank (500MW) – 2030
- PLGS (660MW) – 2037
- Belledune (457MW) – 2038

The assumption in this strategic plan is that existing wind PPAs will be extended or renewed, and additional renewables will be added to support the Provincial Government's Renewable Portfolio Standard. Options may include small and large scale wind, community projects, small hydro and biomass.

Opportunities exist to convert Coleson Cove to natural gas and to generate hydro power at Grand Falls. The viability of these projects depends on future fuel prices and alternative power purchasing arrangements that result in positive commercial outcomes for NB Power.

When PLGS returns to service, NB Power will have an estimated debt level in excess of $5 billion (including the debt of the New Brunswick Electric Finance Corporation), and very little equity.* Mactaquac, which will require spending as early as 2021, would cost close to $2 billion to decommission and significantly more to refurbish. If the practice of financing the company through debt continues, renewals would see total utility debt increase substantially. The company currently finances its debt through the Province of New Brunswick and as a result has enjoyed low interest rates. There is market uncertainty about the availability of capital for provinces and states in North America. However, this plan assumes debt financing will be available and will be subject to significant scrutiny.

NB Power supports joint ventures and active participation in North American energy sector associations for the benefit of the utility and its customers.

Environmental Overview

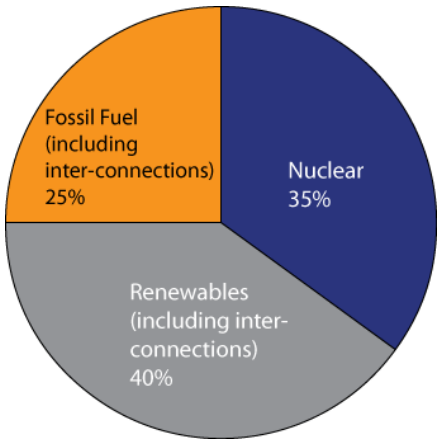
NB Power has worked collaboratively with the Department of Environment to establish emission reduction targets that meet federal and provincial guidelines. As a result, NB Power has installed the appropriate emission control equipment on its oil and coal generating facilities. NB Power is well positioned to provide its customers with electricity generated with consideration for the environment. External purchases (largely hydro) help supplement the generation mix, with the

* Approximately half of this debt will be associated with the PLGS refurbishment. Although the plant refurbishment cost more than originally planned, given that the estimated price of a new nuclear facility is in excess of $6 billion, PLGS still provides exceptional value and is positioned to serve the Province with reliable, non-emitting electricity for 25 to 30 years.

result that more than 70 per cent of in-province energy is supplied from non-emitting generation. This is essential to meeting the Province's directive to ensure that, by 2020, 40 per cent of the utility's in-province electricity sales are provided from renewable energy.

Figure 10 shows NB Power's projected in-province fuel and purchased power supply mix by 2030.

Figure 10 – In-Province Supply Mix - 2030

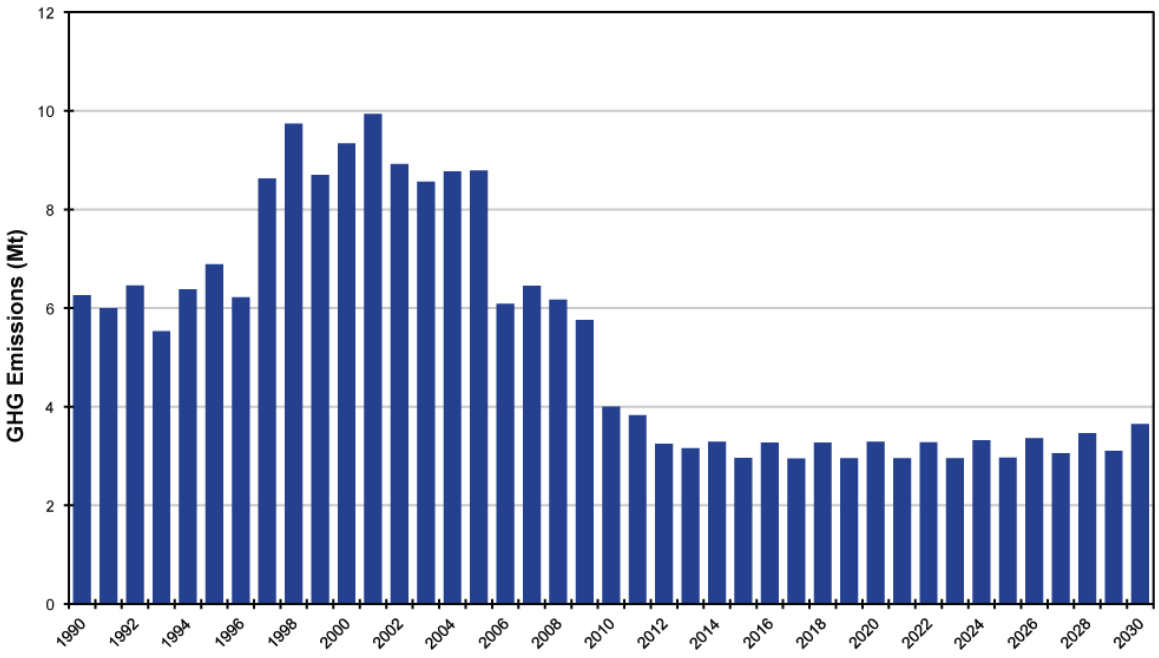


Greenhouse Gases

New Brunswick accounts for 2.5 per cent of Canada's greenhouse gas (GHG) emissions (based on 2007 data). Approximately 90 per cent of New Brunswick's carbon dioxide emissions come from fossil fuel combustion, with electricity generation making up 35 per cent (2007 data). Although NB Power produces a significant part of New Brunswick's carbon emissions, NB Power has reduced its GHG emissions from a high of 9.94 million tonnes in 2001 to a low of 5.76 million tonnes in 2009.

NB Power's energy mix and strategic decisions such as economic electricity purchases have contributed significantly to the reduction in GHG; unfortunately, however, some has resulted from the loss of 300MW of industrial load.
NB Power will continue to make economic energy purchases and, when PLGS returns to service, as shown in *Figure 11,* GHG emissions will remain very low for an extended period with small annual increases to accommodate load growth.

Figure 11: NB Power Greenhouse Gas Emissions, 1990-2010, and Projected Emissions, 2011-2041



Air Quality

NB Power has been a leader in reducing emissions of sulphur dioxide (SO_2), nitrogen oxide (NO_x) and particulate matter (PM). The utility installed the first, third and sixth flue gas desulphurization units (scrubbers) in Canada to reduce SO_2 emissions, put in control systems to reduce NOx emissions and added advanced technology such as wet electrostatic precipitators to collect PM. These investments have positioned NB Power well to meet federal and provincial emission targets.

SECTION 2 – STRATEGIES

NB Power is in the enviable position of having adequate generation to meet its energy needs for at least the next ten years. It also is well positioned environmentally because of previous emission reduction investments and a generation mix that is over 70 per cent essentially non-emitting. Demand is stable and export sales offer significant continued opportunity to utilize plant capacity and reduce power rates. Opportunities also exist to optimize use of existing assets through initiatives such as converting Coleson Cove to natural gas.

NB Power's biggest risk lies in a debt level that, without a change in course, will more than double by 2040. While both interest rates and fuel costs are now at long-term lows, that kind of debt level would put customers at risk of a dramatic rise in electricity rates. Debt levels are also impacted by other material risks and uncertainties in the business including such things as hydro flows, weather, and unplanned plant outages.

With changes to the regulatory framework, NB Power will be able to improve its financial position and make appropriate investments in long-term opportunities. The company has recently been given the mandate to operate on a commercially viable basis. These items represent a significant departure from the past and will present savings and less risk to New Brunswickers.

Based on these factors, NB Power is pursuing three key strategies:

- *NB Power will target being a top Quartile performer as compared to public and private utilities in North America*

- *Systematically reduce debt to ensure that NB Power is in a financial position to invest in new generation that will ensure stable rates for New Brunswick*

- *Invest in technology, educate customers and incent consumption that will reduce and shift demand (RASD) for electricity and ultimately defer the next significant generation investment*

These strategies will allow NB Power to replace generation as needed between 2025 and 2038, take advantage of future options, and operate as efficiently as possible. As well, customers will have the opportunity to reduce their energy costs by changing their consumption patterns. Communication of these strategies will increase the company's focus and alignment, improve transparency and help to engage and educate customers.

Strategy 1 – *NB Power will target being a top Quartile performer as compared to public and private utilities in North America*

The aggregation of the NB Power group of companies into a vertically integrated utility and the inclusion of the system operations functions from the NBSO will allow the company to reduce costs and increase transparency. The entire company will be subject to regulatory oversight and review. Increased oversight and review will become part of regular business requirements. This includes involving customers, EUB and other stakeholders.

Transparency will be further improved by issuing quarterly financial statements and appearing annually before the Standing Committee on Crown Corporations.

As part of its normal governance processes, a commercially viable organization undertakes regular reviews to ensure it is efficient and managing properly for business risk. It also ensures decisions are subject to appropriate review and scrutiny to reduce risk. By implementing commercial practices, NB Power will achieve cost reductions and best practices to help ensure cost-effective electricity generation. Continuous business process improvement techniques will help NB Power leverage costs savings as it strives to excel in operations and customer service and meet its debt obligations.

NB Power will complete benchmarking reviews to identify opportunities to reduce costs, implement best practices, compare itself to the top quartile utilities in North America and chart a path to become a top quartile cost-effective producer and distributor of electricity. These measures will be part of the utility's reporting.

NB Power will work with its large industrial customers through initiatives such as the "Large Industrial Renewable Energy Purchase Program". The potential loss of large industrial customers that have a high load year-round demand would negatively impact fixed cost recoveries. These customers have a far-reaching impact in communities, supporting local businesses and employment. NB Power recognizes the vital role it plays in many aspects of economic development within the Province.

The company will explore collaborative opportunities such as community-based projects and independent power production. Goals should include reduced backup requirement, load-shifting and other projects which will benefit New Brunswick.

NB Power will put an investment governance process in place to ensure investments are prioritized in relation to the strategic plan. Capital spending for new generation, RASD, regional collaboration and improvement projects will be subject to a thorough review to ensure all options are considered prior to approval. Capital requests will not be approved just because they have a good business case. Investments in infrastructure such as transmission will need to compete with other capital investments and although they may provide a return on investment, may not compete favorably for capital.

The Board will work with the Province to ensure good governance practices are in place and that the operation of the utility is subject to appropriate review, consultation and independent oversight.

Strategy 2 – *Systematically reduce debt to ensure that NB Power is in a financial position to invest in new generation that will ensure stable rates for New Brunswick*

NB Power will set a long-term debt reduction target based on

- tightly managed capital spending
- stringent cost controls and
- established revenue and earnings targets.

Figure 12 shows NB Power's rising debt levels since the early 1980's. Spikes represent periods of significant capital investment. Prudent financial management will allow the company to commence spending on Mactaquac replacement in 2021 should that prove the best course of action at that time.

Figure 12: NB Power's Actual and Projected Net Debt

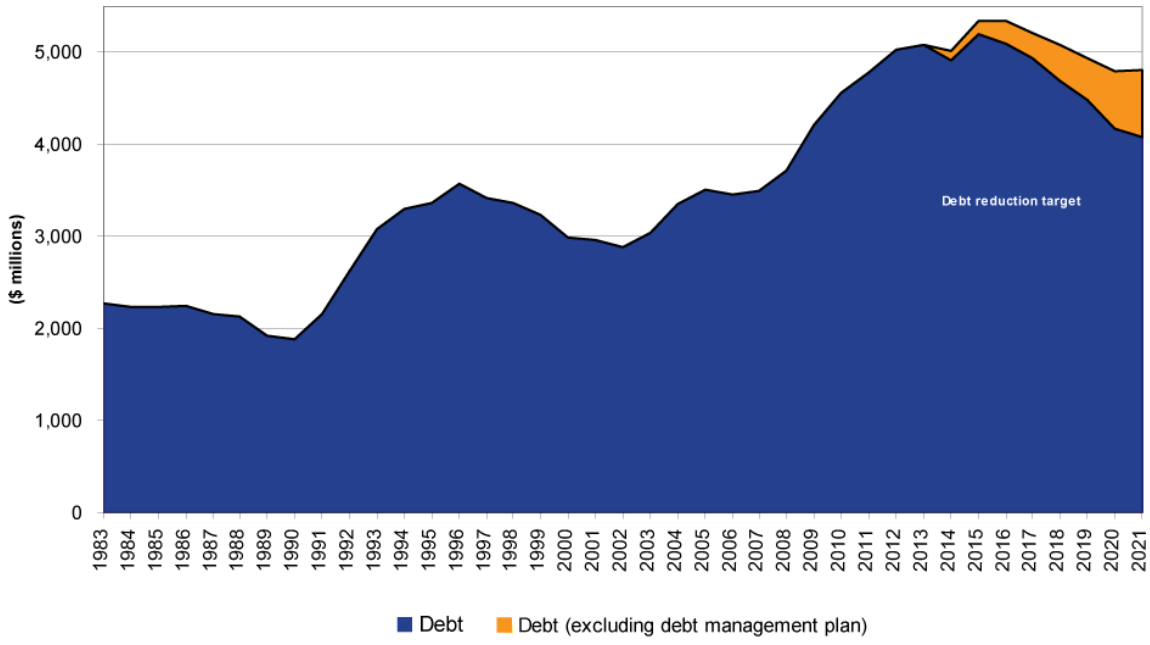
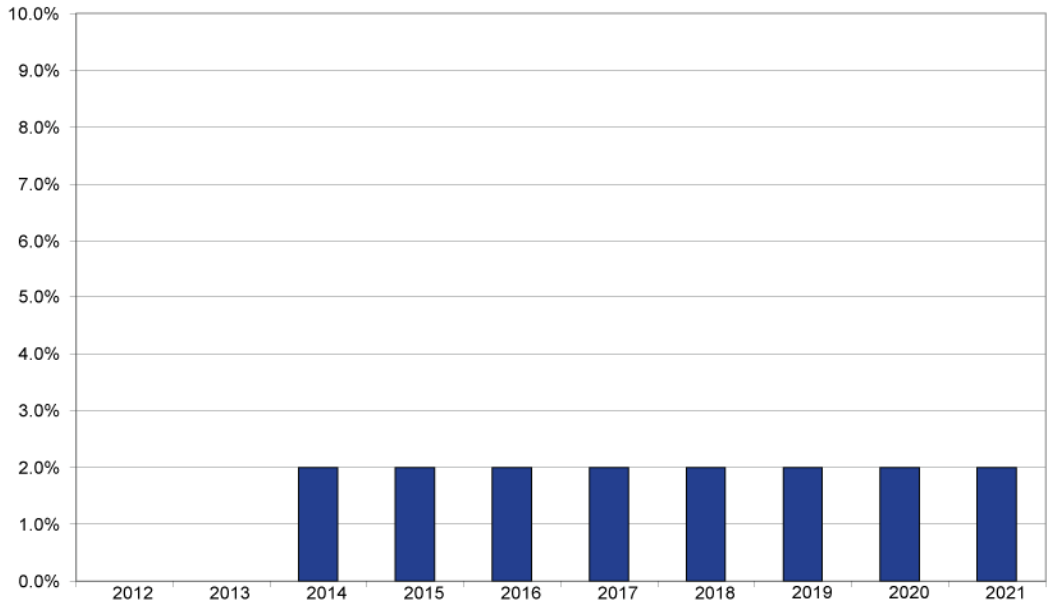


Figure 13 provides the forecast average annual rate increases to meet debt reduction targets.

Figure 13: Projected Rate Increases



By reducing debt, the company will have options when considering plant replacement, fuel purchases and purchased power agreements. As markets and technologies change and fuel costs fluctuate, NB Power will maintain the flexibility to respond thereby properly managing energy costs in the future.

NB Power has a mandate to keep rates as low as possible, a three-year freeze on rates, sufficient capacity well into the future, nominal capital investment for generation assets and 100 per cent debt financing in place today. Consequently, the utility must embark on a program to ensure it is in the best possible financial position in advance of the significant reinvestment required between 2021 and 2038.

Continued and expanded export sales are critical to making the best use of NB Power's assets and to managing debt.

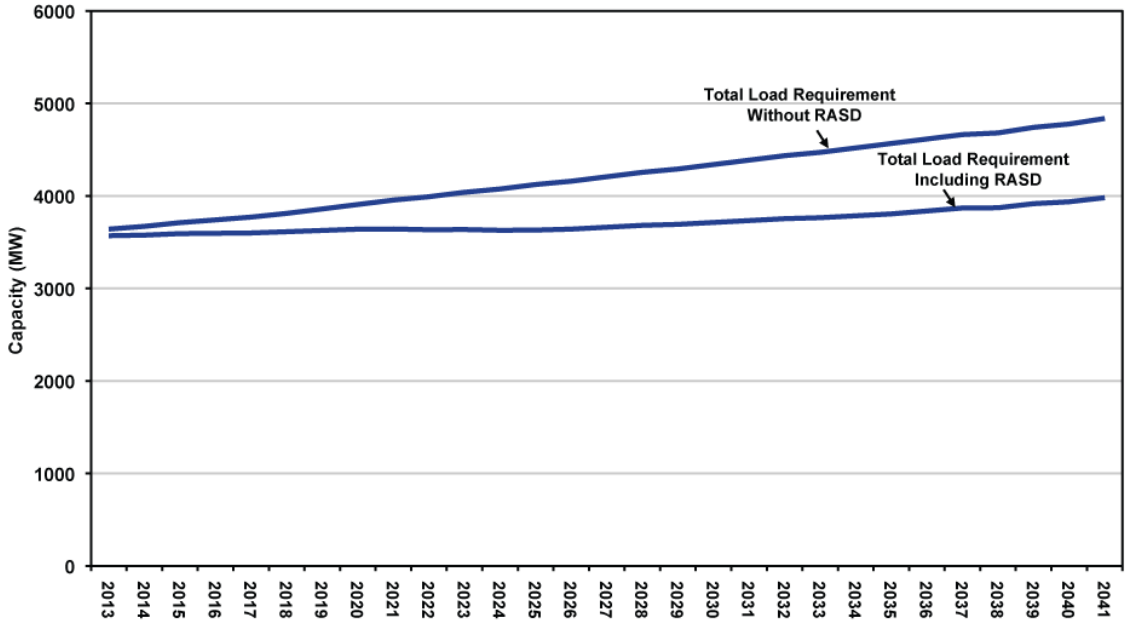
Through its communication strategy, NB Power will develop a plan to engage customers and other stakeholders to support debt management initiatives. It will be critical that NB Power's customers and stakeholders fully understand that their utility is efficient, run in a commercially acceptable fashion and needs appropriate earnings levels to reduce debt.

Strategy 3 – *Invest in technology, educate customers and incent consumption that will reduce and shift demand (RASD) for electricity and ultimately defer the next significant generation investment*

RASD depends on a holistic approach that includes education, energy efficiency incentives, the utility leading by example, changes to policy, standards and codes, and technology to realize peak demand reductions.

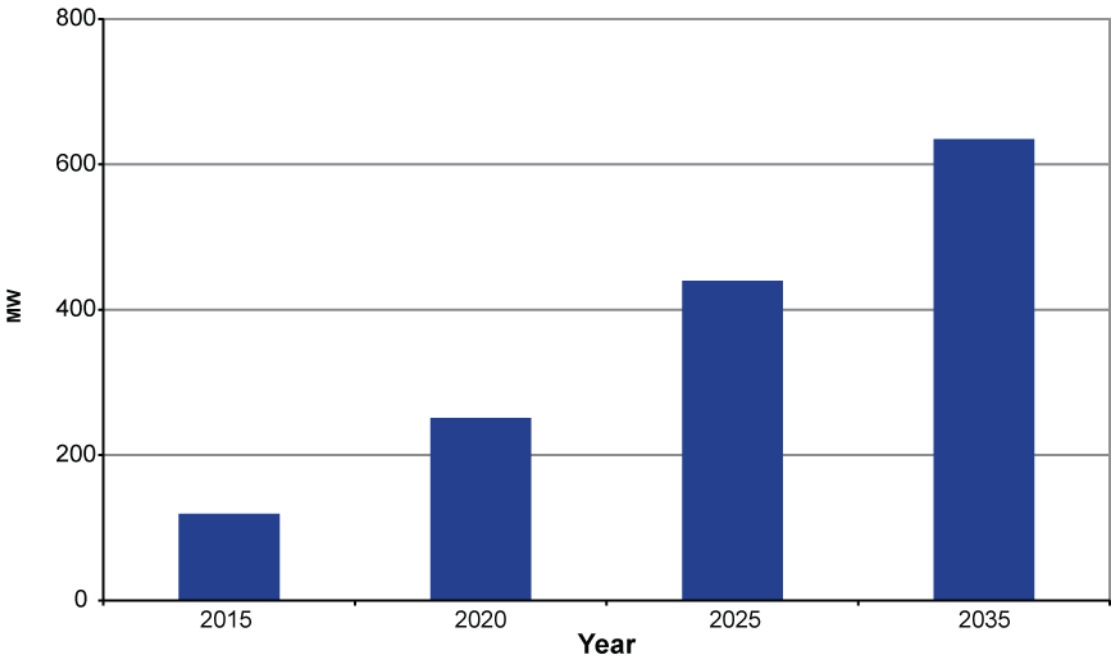
With an aggressive approach to RASD, NB Power can reach a reduction target of 1800 GWh (635 MW at a 33% capacity factor) by 2035. This is very attainable as the utility has 18 to 25 years to provide residential, commercial and industrial customers with options to reduce their electricity use, and along with it, their energy bill. The most significant opportunity available to NB Power is to reduce the peak in the winter and the daily peak during the coldest days of the year.

Figure 14: Peak Load Requirements



The delivery of specific RASD measures will be based on an independent study which reviewed commercially viable electricity efficiency technologies or measures, as well as peak load reduction and fuel-switching options. *Figure 15* provides a summary of target levels for annual demand savings by milestone years. The study identified savings with a net present value of over $1 billion.

Figure 15: Achievable Savings through Reducing and Shifting Demand (RASD), in MW



RASD can be broken down into two significant streams of activity.

The first area includes customer-made conservation and energy efficiency efforts. These kinds of efforts will help customers mitigate the effect of future rate increases. For its part, NB Power will be able to offset some of the revenue loss with savings on fuel and other costs. As well, the rate impact of the utility's investment in RASD could be lessened by allowing NB Power to recover those costs over time.

Educating customers, providing incentives and measuring change are things the Province and the utility can do to encourage those efforts. Successful programs provide a wide spectrum of options (including home retrofit, product incentives and efficient heating systems). Quebec and Ontario both have policy-driven programs encouraging customers to move electrical consumption from very expensive peak periods to substantially reduced off-peak periods. NB Power partners with Efficiency NB to deliver a range of conservation and energy efficiency programs. NB Power could also participate in selling and servicing load-shifting energy thermal storage technology and equipment, including complete heating/cooling and water heating systems consistent with its current water heater program.

The second significant area of RASD is controlled by the utility and requires utility investment in the information and communication technologies commonly referred to as the "smart grid". Smart grid technologies have the potential to reduce demand and energy requirements through:

- Advanced system controls on the distribution system (i.e. controls to reduce line losses and reduce customer consumption)
- Advanced metering infrastructure to support two-way communication with the meter
- Customer demand response with the utility incenting customers to reduce and/or shift load
- Innovative rates such as "time-of-use", sending the proper price signals
- Customer load/storage management where the customer's space heating and water heating loads are adapted to energy thermal storage loads. Some customers may even become electricity producers themselves using environmentally sustainable energy sources (e.g. wind, solar)

Very preliminary cost estimates for smart metering alone are in the range of $70 – $80 million.

NB Power is leading the PowerShift Atlantic project which will pilot an innovative technology cluster to determine if load control can provide for economical integration of variable renewable generation.

Other longer-term RASD opportunities to enhance the efficiency of the grid include developments in LED lighting, integrating large blocks of renewables through active load and storage control, community-based projects and electric vehicles. NB Power is committed to contributing to the expansion of a network of smart grid stakeholders and partnerships for the future benefit of customers.

In some cases, RASD is a less expensive option than building renewable generation. As a result, NB Power will use its RASD success to assist in meeting the Renewable Portfolio Standard.

Strategic Factors

There are a variety of factors that will influence the strategic plan

- The New Brunswick Department of Energy recently released *"The New Brunswick Energy Blueprint"*. NB Power is committed to working with the Province of New Brunswick to achieve the stated energy objectives. The detailed actions and specific policy directives will be incorporated into the key milestones and targets of NB Power's business plan. This includes, among other items, meeting the Provincial Renewable Portfolio Standard (40 per cent by 2020) and supporting the Large Industrial Renewable Energy Purchase Program.

- Technology will provide additional choices for replacement energy. These could include development of shale gas technology; smart grid technology, enabling more distributed and embedded generation; development of the Bay of Fundy tidal generation and other new technologies.

- The energy market is changing and will continue to change. Availability of electricity through regional partnerships, interconnections, hydro-generated electricity from Lower Churchill and other market opportunities will affect the utility's choices.

- The EUB will play a significant role in the regulated utility. Items such as new investments, RASD initiatives, debt management strategies, financial forecasts, earnings levels, will require EUB approval. Changes or non-approval by the EUB will impact the strategic plan results.

- Changes in customer behavior, encouraged by education and other programs, are necessary to give NB Power flexibility in future investment requirements. Public policy direction is required in areas such as building and heating standards to discourage use of electric heat and encourage RASD behavior.