

ADVANCING THE ENERGY DIALOGUE

Prepared by: Atlantica Centre for Energy, June 2010

There are two broad ways that energy can be a vital catalyst for economic development. The exploration and production¹ of energy sources such as oil, natural gas, wind energy and biomass can generate high value economic activity from both the construction phase (short term) and ongoing operations (long term). This industry provides good paying jobs and new tax revenues for government. The use of energy across the economy can also be a driver of growth. Places with local sources of low cost energy such as electricity and natural gas have a distinct advantage when competing for global business investment.

Across the industrialized world, there are many examples of how a vibrant energy sector can transform an economy. Offshore oil has transformed the Newfoundland and Labrador economy. Average income over the past decade is up more than double the national average and royalties from oil production increased to more than \$2.5 billion in 2008 - dramatically changing the fortunes of that province.

After a number of years of economic and population stagnation, the oil and gas industry has been a major reason why the Saskatchewan economy has become one of the most dynamic in North America. From 2001 to 2009, Saskatchewan enjoyed the third fastest growth in employment among the 10 provinces in Canada. During that period, the value of oil and gas exports from Saskatchewan grew by almost \$5 billion and royalties to government grew to over \$1.2 billion per year.

ENERGY IN NEW BRUNSWICK

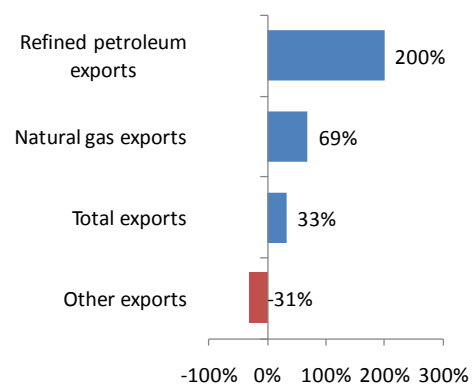
Over the last decade, New Brunswick has benefitted from over \$5 billion in new investments in the energy sector including:

- a major upgrade to the Irving Oil refinery;
- the new Canaport liquefied natural gas (LNG) receiving and regasification terminal;
- the Emera Brunswick Pipeline that delivers the LNG to markets in Canada and the US northeast;
- a new international power line from New Brunswick into Maine;
- the build out of the McCully natural gas field near Sussex;
- the refurbishment of the Point Lepreau nuclear energy facility;
- new wind energy investments across the province;
- the continued rollout of the Enbridge Gas NB natural gas distribution system.

And these investments are translating into economic dividends for the New Brunswick economy. Energy-related exports are up strongly over the past decade (Figure 1). Natural gas exports are up 69% to over \$100 million in 2009. Refined petroleum product exports are up by over \$4 billion. Other international exports from New Brunswick are down 31% over the past 10 years. Overall, energy has been driving the province's international export growth.

The growth of the energy sector has stimulated further investments in related industries such as engineering, construction, training and workforce development. For example, the new Centre of Excellence in Energy and Construction at the New Brunswick Community College will turn out graduates in a variety of energy-related occupations including power engineering and energy systems technology.

Figure 1: Growth/Decline in International Exports from New Brunswick (2000-2009)



Source: Statistics Canada CANSIM Table 228-0001.

¹ Including the processing and management of energy resources, such as refining, regasification, etc.

NEW BRUNSWICK NEEDS GROWTH INDUSTRIES

New Brunswick has suffered 18 straight years of net out-migration². We have lost many of our best and brightest to other areas. Coupled with low levels of immigration and a declining natural birth rate, this has resulted into overall population stagnation. In 2009, New Brunswick's population was back to the level it was in 1994.

Driving this population stagnation has been weak employment growth. New Brunswick has experienced employment growth well below the Canadian average for the past two decades. Further, the largest employment gains in the last decade have been in the public sector (health care, education and public administration) and customer contact centres, two areas that are unlikely to be the drivers of the economy over the next decade.

Many of the private sector industries that are growing in New Brunswick are at the lower end of the wage scale. The average New Brunswicker earns 18% less than the average Canadian - only Prince Edward Islanders have a lower average income. This translates into lower taxes paid to government which, in turn, results in the New Brunswick government being the second most reliant on federal government transfer payments in Canada.

Clearly, New Brunswick needs to find new ways to drive economic growth.

ENERGY CAN BE A HIGH VALUE GROWTH SECTOR

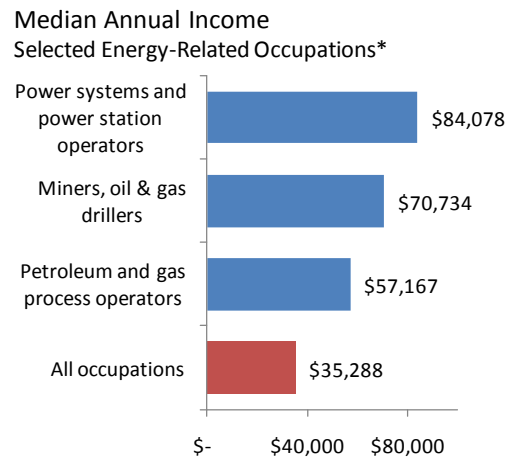
There is considerable potential for the energy sector to build on the gains of the last decade and become a major growth engine for the New Brunswick. The New Brunswick Department of Energy has already identified some \$5.8 to \$7.6 billion worth of potential energy investment in the near future.

The potential benefits of growing the energy sector in New Brunswick are great. Extracting local oil and gas reserves and profits from electricity generation provide billions of dollars in royalties to provincial governments across Canada (Figure 3)³.

In addition, many of the projects in the energy sector are capital intensive which results in more economic stability.

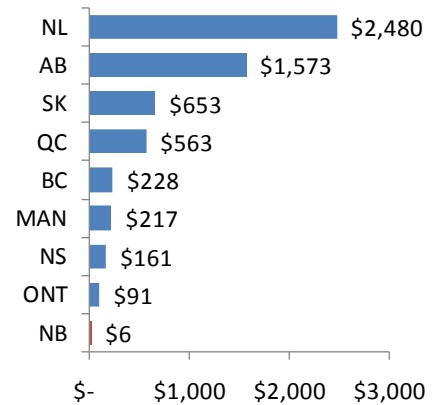
The energy sector also provides good paying, highly skilled construction, operation and maintenance jobs for New Brunswickers. The median salaries for workers in the energy sector in New Brunswick are from 50% to 100% higher than the median salary for all occupations (Figure 2).

Figure 2: Annual Income Premium



*Median annual income for full time, full year workers in New Brunswick. Source: Statistics Canada 2006 Census.

Figure 3: Energy Revenue by Province
Per Capita Contribution to Provincial Budgets (2009-2010)*



*Includes oil & gas royalties and electricity profits. Revenue attributable to the provincial budgets. 2009-2010 was an off year for oil & gas revenues. Source: Provincial budget documents.

² More Canadians and landed immigrants moving out of the province than moving to the province. This does not include immigration.

³ This only shows royalty revenue. The New Brunswick government receives tens of millions in tax revenue each year from the energy sector (corporate and personal income tax as well as HST).

Specific opportunity areas include:

- ⇒ **Foster more indigenous natural gas exploration, production and local use**
Increased investment in natural gas exploration could lead to the successful exploitation of one of the largest shale gas deposits in Canada. There is estimated to be 67.3 trillion cubic feet of shale gas just in the Frederick Brook formation in southern New Brunswick. If it can be successfully extracted, this one deposit is equivalent to 25 times the entire annual natural gas market in Canada. There is also potential to dramatically increase the local markets for both indigenous gas and Canaport LNG. Over 60% of households in Ontario use natural gas and that rises to 70% and higher in Saskatchewan and Alberta. In New Brunswick, only a small fraction of households and businesses use natural gas. Natural gas can also be used for electricity generation. Natural gas-fired electricity plants are quicker/cheaper to build and cleaner to operate.
- ⇒ **Capitalize on the growth of the renewable energy sector**
The renewable energy sector including wind, biomass/bio-energy and possibly solar and tidal energy is also a potential economic driver and at the same time it helps the province and region reduce its carbon footprint. There is also opportunity to partner with the adjacent jurisdictions of Quebec and Newfoundland and Labrador to access potentially lower cost and clean hydro-electricity.
- ⇒ **The Energy Corridor into New England**
New Brunswick is already a major exporter of energy to New England (refined oil, natural gas and electricity). There is potential to grow the energy corridor with electricity exports, additional natural gas and other opportunities.
- ⇒ **Attract new petrochemical and related-manufacturing investment**
Building on existing infrastructure, human resources and energy assets, there is potential to attract investment into chemical, petrochemical sectors. There may also be opportunity to attract investment into the manufacturing of energy systems (such as wind, solar, tidal and nuclear) because of the competitive operating cost structure and other local business environment advantages.
- ⇒ **Attract regional offices and industry support activities**
Beyond exploration, production and distribution there is significant opportunity to grow the regional office, technical and support services side of the energy industry in New Brunswick. A growing number of national and international energy firms are doing business in the province and could be targets for establishing regional offices, back offices, research and development, training and other support services in the province. While not many people realize it, the largest private sector employer in the Greater Moncton region is the largest energy company in the world, ExxonMobil. The company also operates a business service centre in Saint John. Between the Moncton and Saint John centres, the company employs over 1,300 New Brunswickers and occupies more than 300,000 square feet of office space.
- ⇒ **Be a jurisdiction with competitively priced energy**
Jurisdictions that are major producers of energy are low cost areas for energy used in manufacturing and other energy-intensive industries (such as data centres). New Brunswick has had relatively low cost electricity but that advantage is rapidly eroding (see below). Focusing on stable and competitively priced energy for local use should go hand in hand with efforts to expand energy production in the province and region.

IMPEDIMENTS EXIST

In order for New Brunswick to capitalize on the potential of the energy sector, there are a number of challenges that need to be addressed.

First, the cost of electricity for manufacturing and industrial uses in New Brunswick is escalating much faster than other jurisdictions across North America - particularly those with a high concentration of industrial activity. The New Brunswick economy is the third most reliant on its industrial sector among the 10 provinces in Canada.

According to Statistics Canada, the cost of industrial electricity in New Brunswick has increased by almost 28% since 2005 - tied with Nova Scotia for the fastest increase among the 10 provinces in Canada (Figure 4). With NB Power's aging generating infrastructure and the second highest debt load among electricity utilities across Canada, the outlook for competitive electricity prices in the province is not positive.

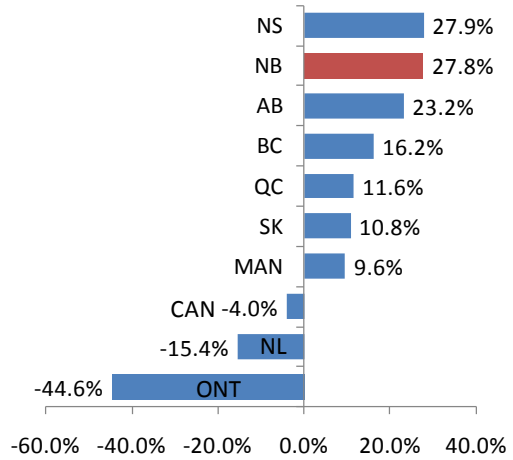
How can New Brunswick address the issue of rapidly escalating industrial electricity costs? Is there potential for New Brunswick to access low cost hydro-electricity from either Labrador or Northern Quebec? Could natural gas-fired electricity generation be part of the solution? Are there alternative ways to isolate and address the very large industrial users on a case-by-case basis such as the recent NewPage/Nova Scotia Power biomass-based electricity generation project in Nova Scotia?

Another challenge facing New Brunswick is that the cost of natural gas for companies looking to establish new manufacturing or industrial projects in New Brunswick is very high compared to other jurisdictions. A recent KPMG study looked at the cost of natural gas for various manufacturing activities and concluded that companies in New Brunswick pay more than any other jurisdiction in North America - in most cases by a wide margin (Figure 5).

There are a number of reasons why industrial natural gas costs are high including the immaturity of the local market and the slower than expected rollout/lack of customer adoption.

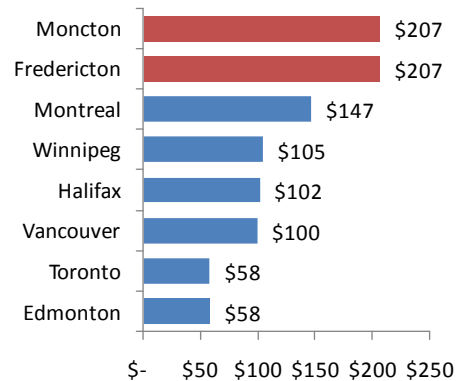
Are there ways in the near term to bring down the cost of natural gas for manufacturing and industrial users? Are there other uses for natural gas (such as in electricity generation) to broaden the local markets for gas?

Figure 4: Percentage Change in the Electric Power Selling Price Index (2005-2009)
(Non-residential Customers over 5000kw)



Source: Statistics Canada Table 329-0050 - Electric power selling price indexes (non-residential), monthly (index, 1997=100)

Figure 5: Annual Natural Gas Costs (\$000s)
Metal Components Fabrication Facility



*Assumes a monthly gas consumption of 28,895 m3. Shown in U.S. Dollars.

Source: KPMG Competitive Alternatives 2010.

New Brunswick does not have special industrial zones to accommodate and attract energy investment. Large scale energy projects require wide tracts of properly zoned and approved land that have access to complementary industrial neighbours and industrial services and suppliers such as steam, water, electricity and natural gas at competitive prices. They also require world-class transportation links for bringing in raw materials and shipping out finished goods. Learning from world-class examples such as Rotterdam and Houston can help New Brunswick understand the best ways to develop these industrial energy zones to attract new investment.

REGIONAL COOPERATION

Regional cooperation within Atlantic Canada and with adjacent jurisdictions such as the province of Quebec and the State of Maine will be needed to maximize the potential of the energy sector as an economic development driver. Building a robust, interconnected, smart electricity grid is an important part of maximizing the potential of wind energy across the region. Developing a mutually beneficial partnership with the State of Maine will be essential to the long term success of the energy corridor. Seriously evaluating the potential of Northern Quebec and Labrador hydro-electricity will also be vital to broader energy success.

DISCUSSING THE ISSUES

The Atlantica Centre for Energy has prepared a set of discussion papers intended to advance the energy dialogue and these exciting opportunities as well as the challenges associated with realizing our potential as a broad-based energy cluster with both significant energy production activity and low cost energy to drive investment in manufacturing and industrial sectors.

These discussion papers provide a series of policy options for government and industry stakeholders to consider as they grapple with both the potential and the constraints associated with moving the sector forward.