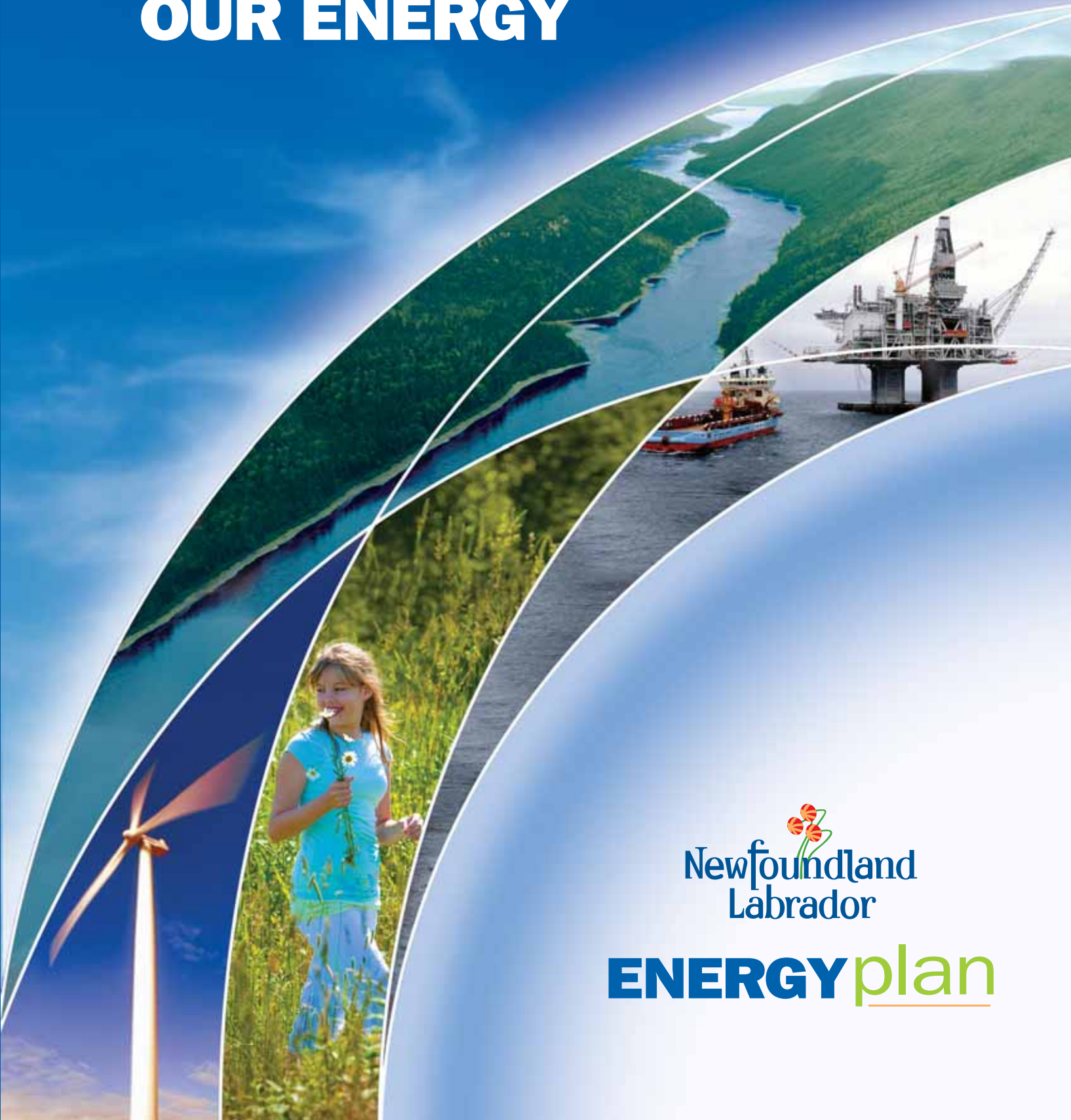


Focusing **OUR ENERGY**



Newfoundland
Labrador

ENERGY plan

FOCUSING OUR ENERGY

Table of Contents

Section:

- 1 Focusing Our Energy1 ■
- 2 Newfoundland and Labrador’s Energy Warehouse5 ■
- 3 Oil and Gas15 ■
- 4 Electricity29 ■
- 5 Energy and Our Environment49 ■
- 6 Energy and Our Economy63 ■

Conclusion: Focusing Our Energy To Shape our Future75 ■

Sources and Notes:80 ■

Appendix:

- A Offshore and Onshore Exploration Maps80 ■
- B Provincial Climate Change Action Plan83 ■
- C Northern Strategic Plan for Labrador85 ■
- D Natural Gas Royalty Regime87 ■
- E Glossary88 ■
- F Acronyms92 ■
- G Energy Plan Public Consultations93 ■

LETTER FROM THE PREMIER

Newfoundland and Labrador is blessed with rich and diverse natural resources. Few jurisdictions in North America can match the immense value of our vast energy warehouse of oil, gas, hydro, wind and other energy sources.

The one and only responsible way to ensure we are properly prepared to seize every opportunity for maximum economic benefit from these resources is to move forward on the basis of a comprehensive, long-term strategic Energy Plan for our province. Until now, we have never had such a plan. History reveals the price we have paid. Benefits we should have gained have been lost and deals that were destined for greatness were in fact inadequate.

The days of our resources primarily benefiting others are gone. A bold new attitude of confidence has taken hold in our province. Since 2005, when we finally became principal beneficiaries of the Atlantic Accord, we have been more determined than ever to harness our vast energy resources for the benefit and long-term self-reliance of Newfoundlanders and Labradorians. Focusing Our Energy lays the strategic direction for development, with far-reaching implications for our economy and our people. Responsible decision-making means basing our choices on the clearest possible understanding of our needs and the long range implications of our options. Getting it right is especially important for our non-renewable resources. The finite nature of these valuable assets means that once they are exploited they are gone forever. So, ensuring revenues from these resources today will benefit future generations is a core component of this plan.

Focusing Our Energy embraces developments currently on the horizon and reaches out to the exciting period beyond the expiration of the current Upper Churchill power contract in 2041 when the province will be in the position to receive the full benefit from this resource. It minimizes uncertainty and creates a climate attractive to investment partners interested in maximizing growth. The plan also builds on our province's Climate Change Action Plan, to ensure that our energy development and planning complements our climate change initiatives. This will ensure we are acting in an environmentally conscientious and responsible manner.

In a time when energy supply and demand are key international issues, we have taken an approach that will harness our resources in a responsible manner, while positioning our province as a key energy player – particularly in the North American market. With sound planning and strong leadership, Newfoundland and Labrador will reap a rich harvest of benefits from our Energy Warehouse for generations to come.

We have the resources. We have the ingenuity. We have the skills and the experience. And, most importantly, we have the determination to move forward boldly and proudly, with the strength of our resources and the conviction of our principles.

Sincerely,



Danny Williams, Q.C.
Premier of Newfoundland and Labrador



“We have the resources. We have the ingenuity. We have the skills and the experience. And, most importantly, we have the determination to move forward boldly and proudly, with the strength of our resources and the conviction of our principles.”



“We believe we now have the best plan for the future development of our energy resources that achieves our two objectives – economic self-reliance and environmental sustainability... We are ready to lead the way towards global energy solutions for the twenty-first century and beyond.”

LETTER FROM THE MINISTER

Focusing Our Energy represents a fundamental opportunity for us as a people to achieve self-reliance and prosperity. It is a crucial policy document for this government and for the people of the province. It is built on the firm belief that to achieve our goals and realize our potential, we need to have a plan that reflects the views, hopes and dreams of all those who have a stake in our energy resource future. It is a living document that will evolve based on changing global circumstances and innovative and technological advancements, but always following the same goals and principles.

The first part of the Energy Plan process was the release in November 2005 of *Developing an Energy Plan for Newfoundland and Labrador: Public Discussion Paper*. It contained a statement of energy plan principles and major strategic objectives to guide the development of the Energy Plan. Its purpose was to stimulate discussion and debate on the issues, options and decisions facing the province in setting the future direction of the development of the energy sector.

Following the release of the discussion paper, we engaged the entire province in the Energy Plan process by holding public consultations at 11 locations around the province, as well as individual sessions, including with the Combined Councils of Labrador at L'Anse Au Clair and with the Nunatsiavut Government in Nain. We also accepted written submissions from a wide range of organizations and individuals. In addition, we conducted our own research and analysis and engaged our energy advisors, Wood MacKenzie, who provided information and analysis on the international context of energy developments and the environments in which companies operate in other jurisdictions.

In total, we received 86 formal submissions from a broad spectrum of stakeholders, including our energy industry, government and regulatory agencies, Aboriginal governments and groups, labour, development organizations, environmental groups, educational institutions and the general public. The ideas and feedback provided were carefully considered during the development of this Energy Plan and many of the policies and actions contained in this Plan were generated from this guidance.

We believe we now have the best plan for the future development of our energy resources that achieves our two objectives – economic self-reliance and environmental sustainability. This Energy Plan will help ensure that our legacy is a sustainable economy built around renewable, clean energy. It is a future that will provide our people and industries with reliable, competitively-priced green energy, while exporting our valuable surplus to help meet energy demands elsewhere. We are ready to lead the way towards global energy solutions for the twenty-first century and beyond.

Sincerely,

Kathy Dunderdale
Minister of Natural Resources

WHY AN ENERGY PLAN?

Newfoundlanders and Labradorians are a proud, resourceful people. Our Aboriginal and European ancestors were attracted to this rugged land by its abundance of natural resource wealth. Too often in our history, however, this wealth was managed and controlled for the benefit of outside interests rather than for the people who live and work here. This Energy Plan will ensure that Newfoundlanders and Labradorians become the principal beneficiaries of our great supply of energy resources, which we refer to as our Energy Warehouse.

Long-term and comprehensive stewardship of our energy resources is critical to the future of our people, our environment and our economy. As we have learned over the course of our history, the choices and decisions we make today will significantly impact future generations. It is therefore essential we base our future actions on the clearest possible understanding of our needs and the long-term implications of our decisions. Getting this right is especially important for our non-renewable resources as once these resources are depleted, they are gone forever.

Energy is an essential part of our lives today and will be a significant part of our future. With good planning and leadership, we have the resources and the ability to use the proceeds from our present assets to *invest wisely for tomorrow*.

We have developed this Energy Plan with our eyes clearly on 2041, when the Upper Churchill contract expires and the province is in the position to receive the full benefit from this resource. Between now and 2041, we will carefully plan and make decisions, not only to ensure Upper Churchill's success in the future, but also to maximize benefits from our current and future resource developments, including Hibernia, Terra Nova, White Rose, Hebron, other oil and natural gas developments, the Lower Churchill, Voisey's Bay, wind developments, and refining and processing opportunities.

Two objectives define this Plan: protecting the environment and developing our resources in the best long-term interests of the people of the province. In our Plan, these objectives are not mutually-exclusive; we believe our actions can and must achieve both of these objectives. In fact, we have the opportunity to improve the environment through energy developments. The Provincial Government believes that the best interests of Newfoundland and Labrador are served by converting the value of our non-renewable energy resources into renewable, environmentally-friendly sources of energy that address our current social and economic priorities and provide a legacy for future generations. We will use our energy resources to contribute to building a strong, sustainable economic base, while ensuring we are an environmentally-responsible province.

Our Energy Plan takes a long-term view, including up to and beyond the expiration of the Upper Churchill power contract in 2016 and the related renewal contract, which expires in 2041. Over this time period, major industry forecasters expect average energy prices to rise, despite occasional fluctuations. Therefore, we base our plan on the reasonable assumption that energy prices will continue to trend higher compared to historical averages.

The Provincial Government's plan for our energy future complements or builds on other recent initiatives that reflect a confident new vision for the province: the Skills Task Force; the Innovation Strategy; the Poverty Reduction Strategy; the Immigration Strategy; and most significantly, the Climate Change Action Plan and the Northern Strategic Plan for Labrador.

This plan takes a long-term view and gives us the opportunity to develop the many components of our vast energy warehouse. It outlines the fundamental decisions about how we will develop and utilize our energy resources to benefit the people of the province today as well as future generations.





SECTION

Focusing our Energy



Vision

To ensure our energy resources contribute to a vibrant and sustainable Newfoundland and Labrador where people are proud to live and work, the standard of living is high, and the environment is protected now and into the future; and to ensure that the people of Newfoundland and Labrador take pride and ownership in our energy resources and strategically develop them in such a way that returns maximum benefits to the province for generations to come.

OUR ENERGY

Newfoundland and Labrador produces enough energy for its own use and exports far more to consumers outside the province, providing opportunities shared by few other North American jurisdictions.

In 2007, Newfoundland and Labrador is expected to produce almost 45 per cent of Canada's conventional, light crude oil and generate 12 per cent of Canada's hydroelectricity. More importantly, our undeveloped energy potential is even greater than the energy we now supply.

In addition to petroleum, our great store of clean, renewable energy resources means we have the capacity to not only provide for our long-term energy security, but also to be environmental leaders in the energy sector. We have the potential to replace greenhouse gas-emitting energy sources with our clean hydroelectricity and wind, both here at home and in the North American marketplace.

Energy is an extremely important industry for Newfoundlanders and Labradorians. In addition to the thousands of direct and spin-off jobs in our energy-related industries, the sector also generates significant fiscal benefits that are shared by all Newfoundlanders and Labradorians. Energy accounts for more of our exports than any other sector in the province and is the largest component of our Gross Domestic Product (GDP).

OUR ENERGY PLAN VISION

To ensure our energy resources contribute to a vibrant and sustainable Newfoundland and Labrador where people are proud to live and work, the standard of living is high, and the environment is protected now and into the future; and to ensure that the people of Newfoundland and Labrador take pride and ownership in our energy resources and strategically develop them in such a way that returns maximum benefits to the province for generations to come.

To support this vision, we have established principles, goals and policy actions.

Our **principles** are the anchors for all future decision-making on energy issues. They will hold true even in changing times throughout the province, the country and the world.

Our **goals** describe what we want to achieve in the long term. They consider the realities and the challenges we face. The goals are flexible, so they can evolve with our energy industry and our society.

Our **policy actions** are the detailed, measurable steps we will take to achieve our goals. The actions recognize the tools we have at our disposal and address constraints that might limit our ability to take action in certain areas.

Our principles and goals are described in more detail in this section. The specific policy actions to achieve our goals are identified in the sections that follow.

Our Principles

1. Sustainability

Energy developments must be environmentally and economically sustainable. We will protect and enhance our environment. We will also ensure the economic benefits from the development of our energy resources will be shared with future generations.

2. Control

We will exercise appropriate control over the development of our resources to ensure they are managed and used in the best interest of the people of Newfoundland and Labrador. We will assume an ownership interest in the development of our energy resources where it fits our strategic long-term objectives.

3. Cooperation and Coordination

We will add value to our resource development through effective cooperation and coordination with key stakeholders and partners.

Our Goals

Making the most of our energy assets and ensuring we use them wisely require long-term goals. These goals provide the structure for developing the individual policy actions to ensure consistency with the province's energy principles. These goals were developed in the context of protecting our environment while maximizing opportunities to the province from current and future developments, including after 2041 when the province is in the position to receive the full benefit from the Upper Churchill.

1. Environmental Leadership

We will ensure our environment is continually protected and improved, through the responsible development of clean, renewable sources of energy, including, but not limited to, hydroelectric and wind generation, investing in energy efficiency and conservation programs, and funding energy innovation.

2. Energy Security

We will ensure we have a secure, reliable and competitively-priced supply of energy for current and future needs of the people of Newfoundland and Labrador.

3. Sustainable Economic Development

We will develop our energy resources to help meet our social and economic responsibilities. We will reinvest the value we receive from our energy sector to secure our prosperity today and for future generations. We will ensure energy developments capitalize on our competitive advantages: our people, our industrial infrastructure, our geographic location and our political stability.

4. Maximizing Electricity Export Value

We will ensure we are positioned to maximize value over the long term from any electricity available for export and to invest the proceeds strategically.

5. Maximizing Long-Term Value of Oil and Gas

Oil and gas, once produced and consumed, are depleted forever. We will maximize and effectively invest the value received from these resources to ensure current and future generations benefit from their development, while still providing a fair return to oil and gas companies that participate in the development of our resources.

6. Effective Governance

We will ensure that we have an effective and efficient regulatory and governance structure to properly manage the development of our energy resources. We must ensure there are no unreasonable impediments to development and establish rules and regulations that are prudent and clear. We will strive to establish certainty and stability for our energy sector investors provided the needs of the province are not compromised.

A CONSULTATIVE APPROACH

This Energy Plan has been developed following extensive consultations with a broad spectrum of stakeholders, including our energy industry, government and regulatory agencies, Aboriginal governments and groups, labour, development organizations, environmental groups, educational institutions and the general public.

This consultation process provided input to key issues and priorities from the broad experience and thoughtful expertise of our stakeholders and partners. Much of the advice is reflected in the strategies and actions in this Plan and helped breathe life into our vision, principles and goals.

In addition, 86 formal submissions and/or presentations were received, including many from the general public. Submissions are available on the Energy Plan website at www.nr.gov.nl.ca/energyplan.

This Plan also relies on the extensive research and analysis of many government agencies and departments, ensuring consideration of provincial, national and international contexts, as well as the social, economic and environmental implications of our strategies and actions.

Implementation of the Energy Plan will require the participation and support of all of these groups as we move forward.

Our assets are strong. Our principles are firm. Our goals are set.

The details that follow in this Plan provide the Policy Actions we will take to achieve our goals.

SECTION

2

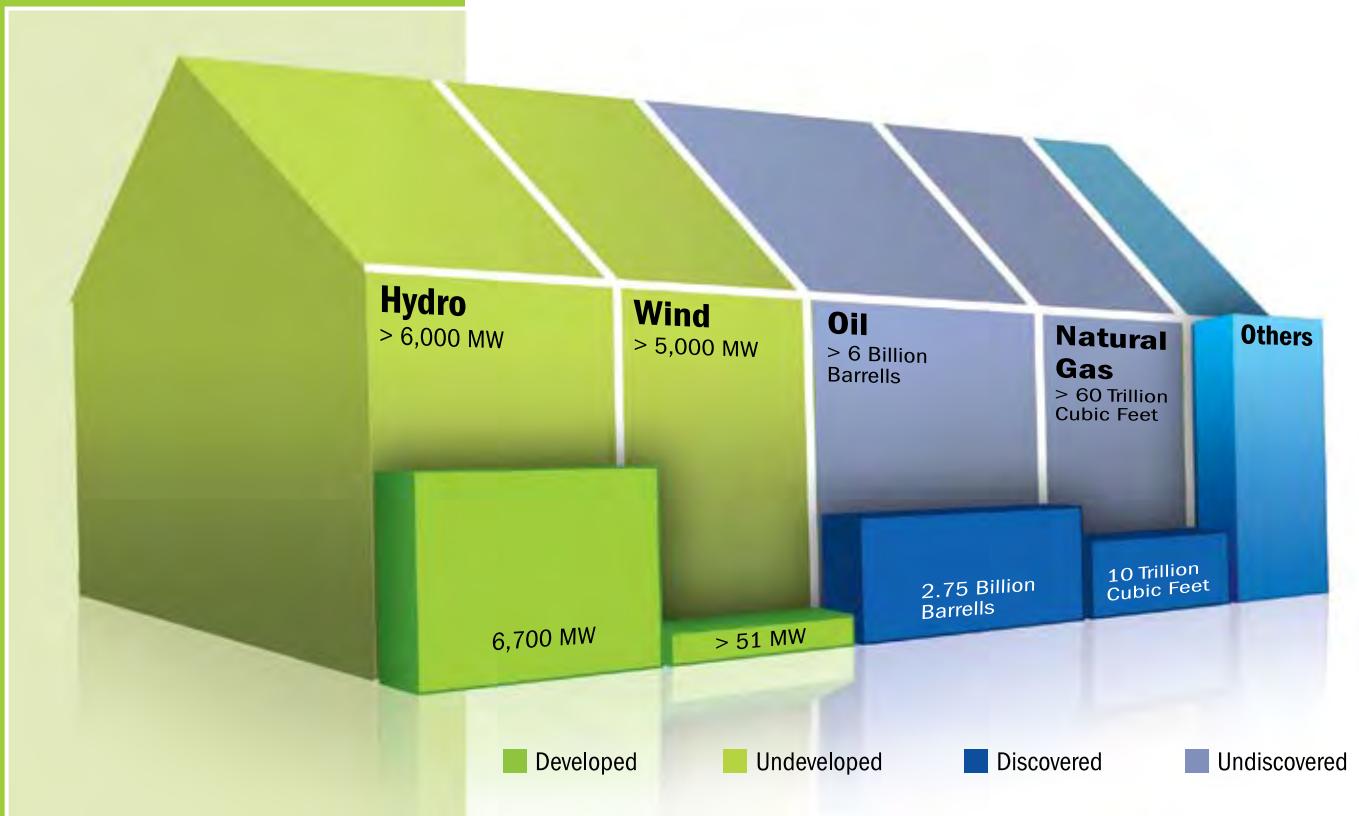
Newfoundland & Labrador's Energy Warehouse



NEWFOUNDLAND AND LABRADOR'S ENERGY WAREHOUSE

Newfoundland and Labrador has an abundance of oil, natural gas, hydroelectricity and wind resources, as well as the potential to supply energy from other sources such as uranium, biomass, hydrogen, wave and tidal.

Figure 2.1
Newfoundland and Labrador's Energy Warehouse



This substantial inventory of energy sources makes this province an Energy Warehouse. We have the ability to meet all of our own energy needs and still provide significant energy for export to other jurisdictions where energy demand also continues to grow.

Some of the resources – oil and gas – are finite and non-renewable: when they are depleted, they cannot be replaced. Other resources, such as hydroelectricity from the upper and lower Churchill River and our wind resources, are renewable – they are elements of our Energy Warehouse that are continuously replenished. The total of our developed clean, renewable electrical generation plus our identified additional potential is 18,000 Megawatts (MW). Today, we require only 2,400 MW annually to meet our own electricity needs. In addition, our discovered and potential oil and gas resources total over eight billion barrels of oil and 70 trillion cubic feet (tcf) of natural gas. Untapped potential also exists in other energy sources, such as wave and tidal energy, wood, peat, methane captured from landfills and solar energy in some areas.

Figure 2.2
Potential Opportunity for Petroleum Production: 2007-2060

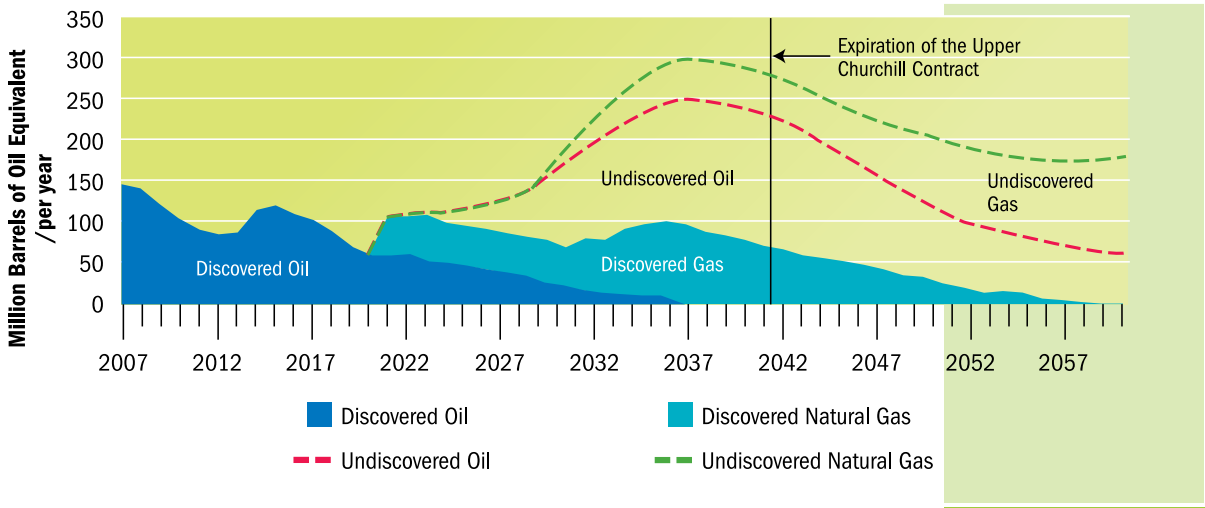
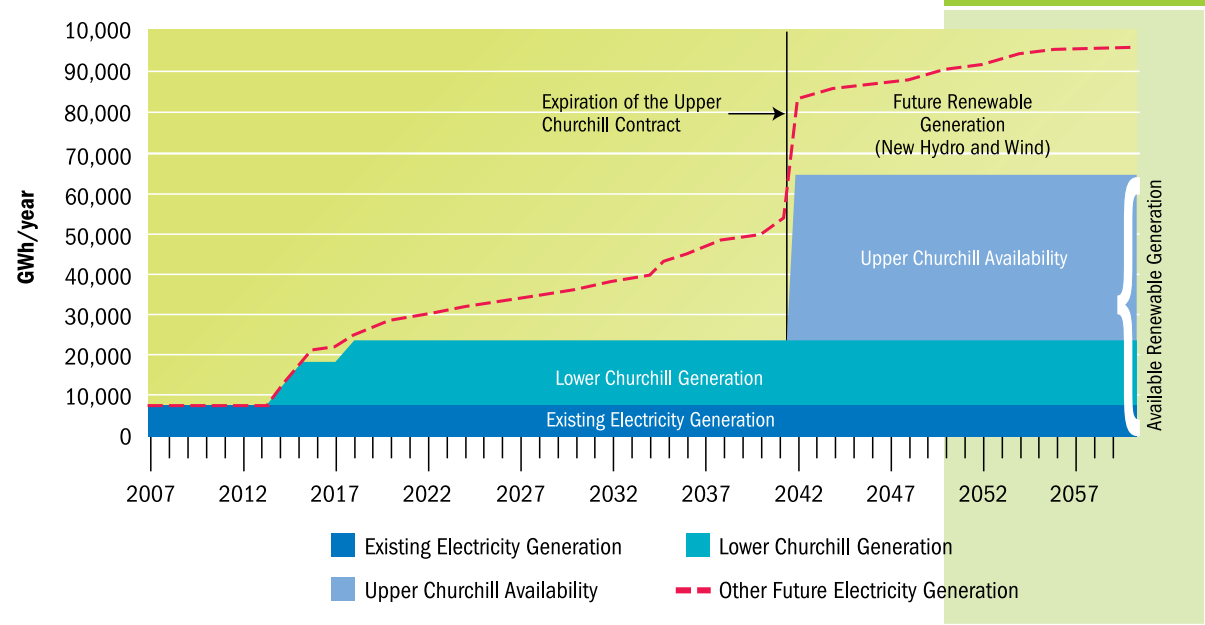


Figure 2.3
Potential Opportunity for Renewable Electricity Generation: 2007-2060



Figures 2.2 and 2.3 show the amount of energy available over the next several decades from the major components of our Energy Warehouse. Each developed resource further increases our energy security and also increases the amount of energy we have for industrial development and for export. Considered together, the figures clearly show the particular importance renewable energy will play in the long-term as our non-renewable resources are depleted.

As seen in Figures 2.4 and 2.5, we are the largest producer of electricity and one of the largest producers of petroleum in the world on a per capita basis.

Figure 2.4
Electricity Generation GWh per year/1,000 population – 2006

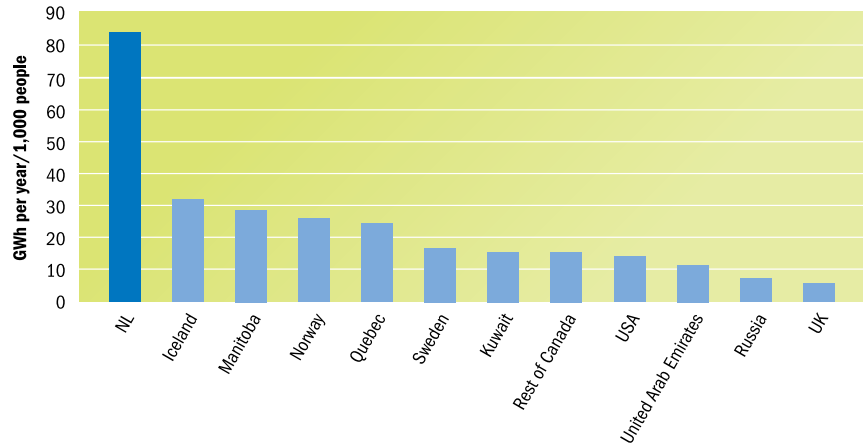
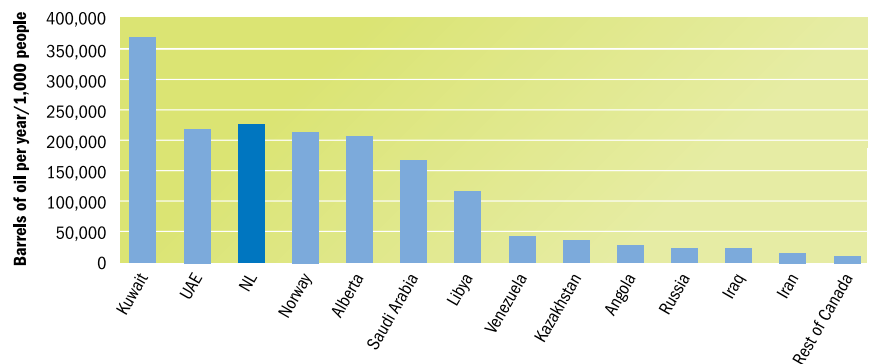


Figure 2.5
Crude Oil Production per year/1,000 population – 2006



As seen in **Figures 2.4** and **2.5**, we are the largest producer of electricity and one of the largest producers of petroleum in the world on a per capita basis.

Our Energy Warehouse consists of more than the development and primary production from our renewable and non-renewable resources. Newfoundland and Labrador is strategically positioned on international shipping lanes, giving us unique access to global petroleum markets. We currently have a 115,000 barrels of oil per day refinery and a second 300,000 barrels of oil per day facility is proposed. We also have a three million barrel transshipment terminal that services the offshore petroleum industry. To facilitate these primary and secondary energy projects, and to increase our benefit from their development and operation, we have the ability to complete large-scale fabrication projects at a number of facilities throughout the province. These key assets, as well as more detailed information on our renewable and non-renewable resources, are shown in the following maps.

Figure 2.6
Non-Renewable Energy Assets and Key Industrial Sites

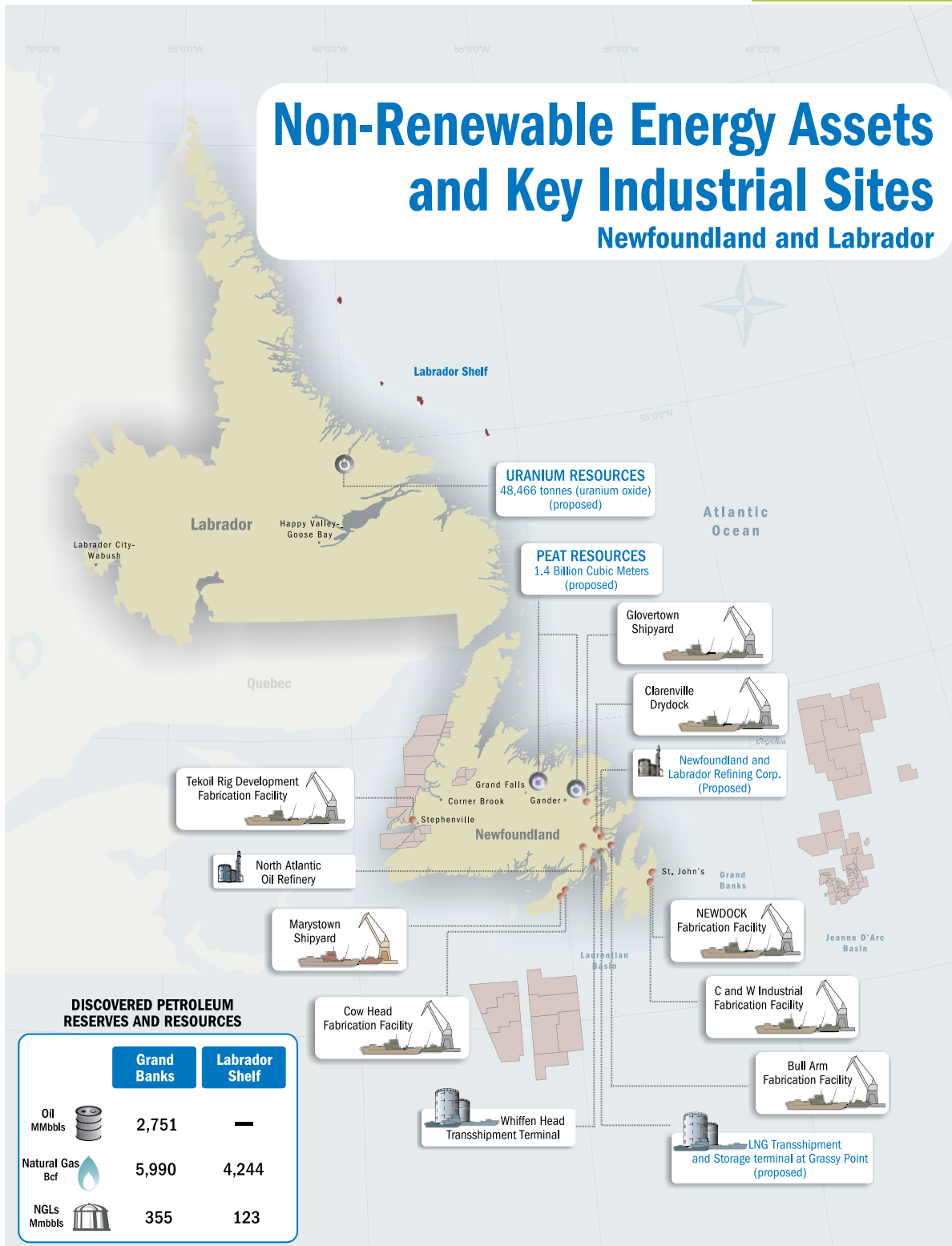
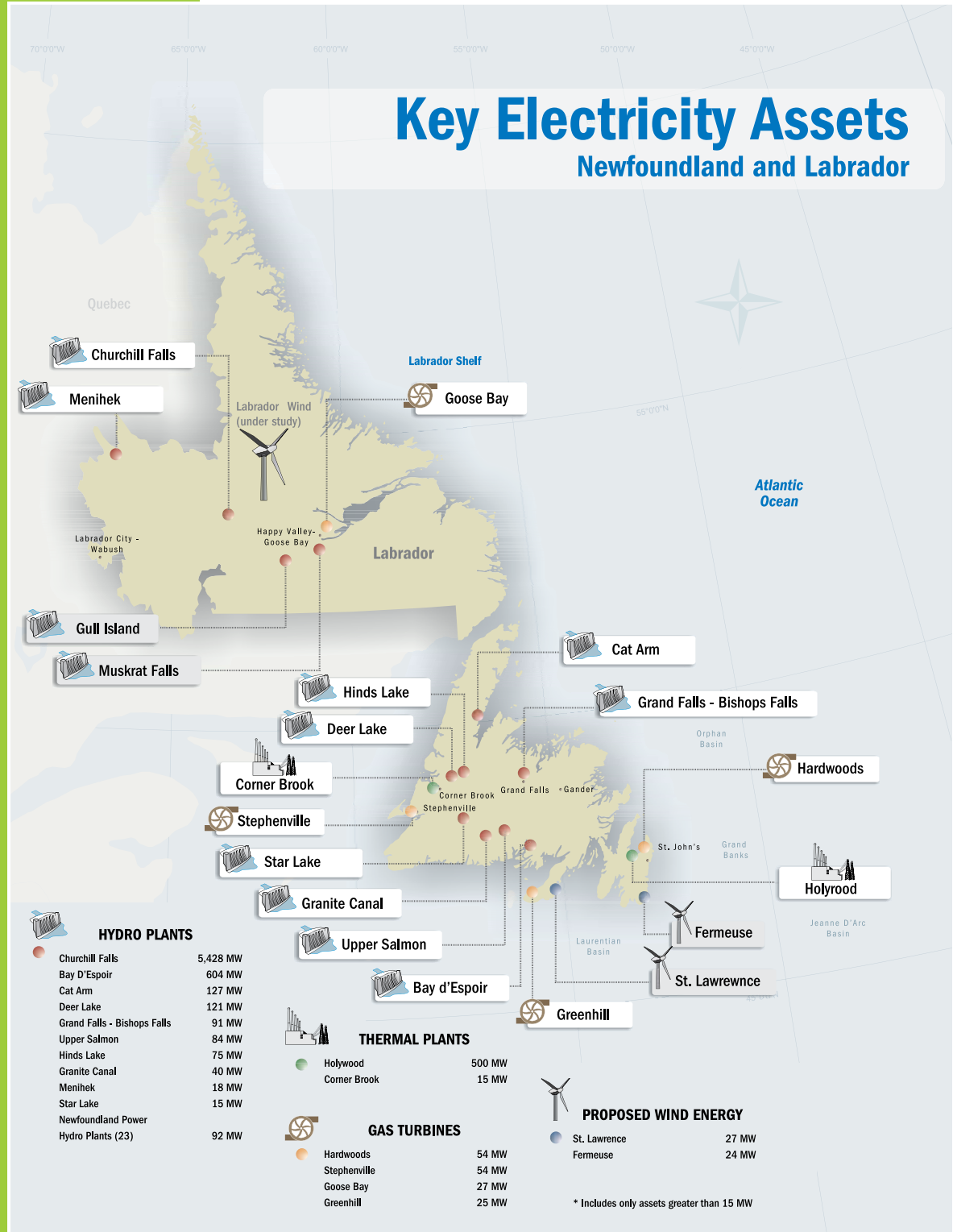


Figure 2.7
Key Electricity Assets



VALUING THE ENERGY WAREHOUSE

The Provincial Government obtains value from our energy projects through a variety of different sources such as royalties, corporate income taxes and profits from our Crown corporations. The revenues generated from our energy resources are determined by the price at which they are sold, the costs to develop them and the agreements or legislation in place to secure the Provincial Government's share of the resulting net revenues. Previous agreements and regimes that govern our energy resources have not provided the province with a fair return on the use of our resources. **Figure 2.8** outlines the net revenues received to date from our key energy projects and the Provincial Government's share of these revenues. **Figures 2.9** and **2.10** show the breakdown of net revenues for the Upper Churchill project and the offshore petroleum projects.

The fiscal regimes for future energy projects will be designed to respond to changing circumstances in the energy sector. This approach will ensure we receive a maximum return from our resources and that Newfoundlanders and Labradorians are the principal beneficiaries from their development. These regimes will also ensure that the companies that invest in the development of these resources will also be able to achieve a fair return on their investments.

Figure 2.8
Energy Project Net Revenue
Summary To Dec 2006 (Billions \$CDN – Nominal)

Total Net Revenue \$38 B CDN

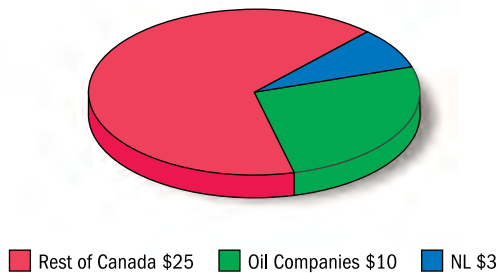


Figure 2.9
Upper Churchill Project Net Revenue
Summary To Dec 2006 (Billions \$CDN – Nominal)

Total Net Revenue \$20 Billion

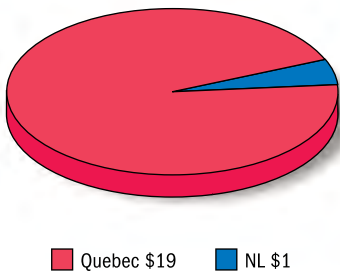
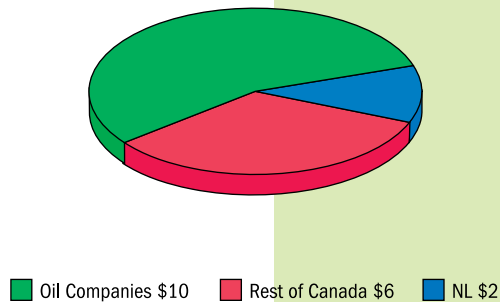


Figure 2.10
Offshore Petroleum Projects Net Revenue
Summary To Dec 2006 (Billions \$CDN – Nominal)

Total Net Revenue \$18 Billion



As worldwide energy demand continues to rise, our energy assets continue to increase in value; the key to our success is to unlock their potential by finding the most economic ways to develop our Energy Warehouse in the best interests of the province.

As seen in Figures 2.11 to 2.13, a number of major shifts in the global energy market have significantly increased energy prices. These high prices are forecasted to continue, which will further increase the value of our Energy Warehouse.

As worldwide energy demand continues to rise, our energy assets continue to increase in value; the key to our success is to unlock their potential by finding the most economic ways to develop our Energy Warehouse in the best interests of the province.

Figure 2.11
WTI Crude Price Forecast (Nominal \$US)

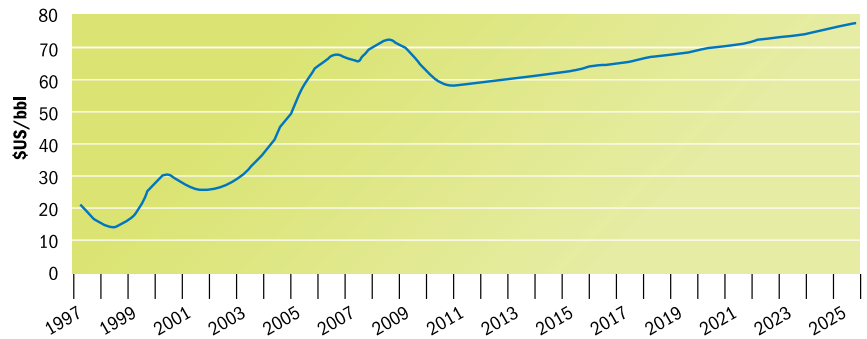


Figure 2.12
Natural Gas Price Forecast (Nominal \$US)

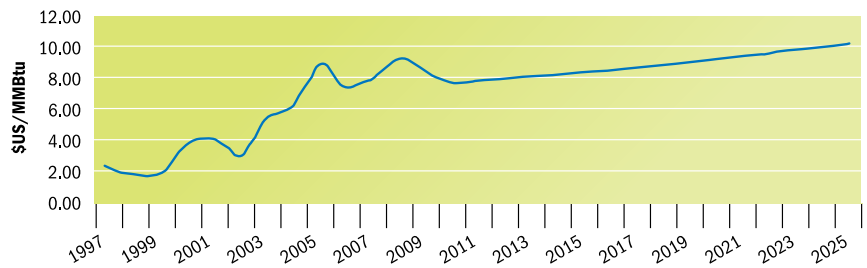
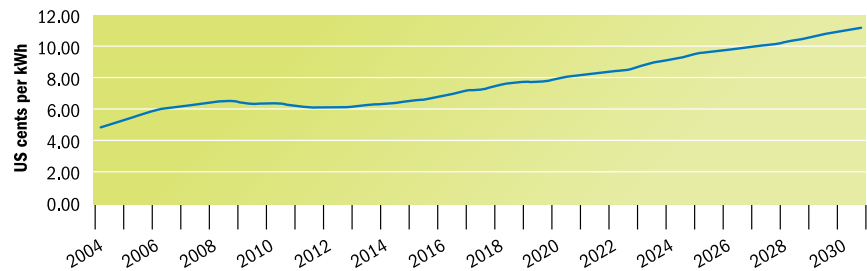


Figure 2.13
U.S. Electricity Generation Price Forecast (USDOE, Feb 2007)



MANAGING OUR ENERGY WAREHOUSE

We are at a turning point in our history. We have an abundance of energy resources in an energy hungry world. We are financially stronger as a result of the revenues generated by our non-renewable resources and the 2005 Atlantic Accord agreement. We have access to a skilled workforce of Newfoundlanders and Labradorians, both here and throughout the world, and we are working to attract others. We have a strong business community. We have strong educational and research institutions to build on our research and development capacity.

We also recognize that we face significant challenges in developing our energy projects. Some of these challenges are beyond our control, including interest rates and currency fluctuations. Higher interest rates mean higher costs to construct or develop energy projects, while a strong Canadian dollar reduces the return from energy exports to the United States.

To accomplish our Energy Plan goals, we need to continue to encourage private sector investment and effectively engage partners to assist in developing our resources. We need to build relationships and continue to work with investors, industry, educational institutions, labour, aboriginal governments and groups, other governments and customers.

We will take more control than in the past over the development of these resources and the benefits they generate. We will not rely on outside interests to determine our destiny – this is our responsibility. We will protect our environment and ensure resource developments benefit our economy now and for future generations.



POLICY ACTIONS

Managing Our Energy Warehouse

The Government of Newfoundland and Labrador will:

- Ensure that any future fiscal regimes provide maximum returns to the people of this province and are designed to respond to changing circumstances.
- Assume an ownership interest in the development of our energy resources where it fits our strategic long-term objectives.
- Leverage our non-renewable oil and gas wealth into a renewable future by investing a significant portion of our non-renewable resource revenues in renewable energy infrastructure and development.
- Actively seek resource development partners and work with those partners, other governments and customers to develop these resources for our mutual benefit.

(continued)

POLICY ACTIONS

Managing Our Energy Warehouse

The Government of Newfoundland and Labrador will:

- Increase strategic investment in information gathering on our energy resources and options for their development.
- Ensure that our policies and legislation provide us with the tools to responsibly control the pace of development and benefits we receive from our resources.
- Plan and make decisions between now and 2041 to ensure Upper Churchill's success in the future as well as organizing our current and future energy resource developments to maximize benefits while minimizing fluctuations in our economy.
- Ensure the Energy Corporation takes a lead role in the development of our energy resources.

We will maintain our focus on 2041, when the Upper Churchill contract expires and the province is in the position to receive the full benefit from this resource. Between now and 2041, we will carefully plan and make decisions to ensure Upper Churchill's success in the future, as well as organizing our current and future energy resource developments, to maximize benefits while minimizing fluctuations in our economy.

To manage our Energy Warehouse, we will make the right resource management decisions by being knowledgeable about our resource potential and the options for developing it. We will work to overcome any barriers that may prevent us from unlocking our potential. We will ensure our policy and legislative structure provides us with the appropriate tools to responsibly control the pace of development and the benefits we receive from our resources. We are also prepared to make investments in strategic infrastructure and resource development, after giving due consideration to the associated risks.

We have already begun implementing one of the key initiatives of this Energy Plan. In June 2007, we passed legislation to create the new provincial Energy Corporation. It will take a lead role in the province's participation in the development of our energy resources. This Energy Corporation will be wholly owned by the province and will be the parent company of Newfoundland and Labrador Hydro (NLH), Churchill Falls Labrador (CF(L)Co) Corporation, other subsidiaries currently owned by NLH and new entities created to manage the province's investments in the energy sector. This will provide a structure that permits both regulated and non-regulated activities to exist and grow within separate legal entities. The direction and mandate of this corporation is further defined throughout this Energy Plan.





SECTION

3

Oil & Gas



The keys to advancing our oil and gas sector are to encourage additional exploration activity and to manage the development of these resources so that investors can earn a fair return while the province maximizes the benefits it receives from these resources.

OIL AND GAS

Throughout the world, oil and natural gas are becoming increasingly strategic commodities. Conventional petroleum production in many countries is maturing or is in decline. Complex geopolitical issues affect other major producing areas, such as those in the Middle East and Russia. At the same time, world demand for energy continues to rise.

Newfoundland and Labrador is located on the edge of the North American continent in a stable political setting with a good environmental record. We have substantial amounts of discovered oil and gas and considerable potential for more discoveries. Currently there are three very successful offshore oil projects in production, a Memorandum of Understanding in place for the Hebron Project, several other significant discoveries and continued exploration off our coasts. From Hibernia first oil in 1997 to the end of June 2007, more than 800 million barrels of oil have been produced in our offshore from an overall discovered resource estimate of 2.75 billion barrels. Western Newfoundland also shows great promise for oil and gas development, where there is already small-scale production.

Exploration efforts in Newfoundland and Labrador following the discovery of Hibernia were focused on the Jeanne d'Arc Basin on the Grand Banks. Several other areas hold great potential as indicated by early seismic exploration results and the high level of exploration commitments. There have been seismic acquisition programs off Labrador every year since 2002 and new surveys are planned for the next three years. The first Call for Bids in this area since the 1970s was issued in 2007 and will close in 2008. Offshore eastern and southern Newfoundland, exploration is continuing in the Orphan and Laurentian Basins. Onshore and offshore western Newfoundland also holds much promise with a number of finds onshore, excellent resource potential offshore and new seismic and drilling programs planned in both areas. Maps of these areas are included in Appendix A.

While many of our offshore and onshore areas are now being actively investigated, it is essential that we encourage seismic and exploration activity in all basins to maintain a high level of industry interest. Without new exploration, there can be no new developments other than those already discovered.

The keys to advancing our oil and gas sector are to encourage additional exploration activity and to manage the development of these resources so that investors can earn a fair return while the province maximizes the benefits it receives from these resources.



ENCOURAGING EXPLORATION ACTIVITY

The ability for Newfoundland and Labrador, and indeed any jurisdiction, to compete for exploration investment depends on a number of factors, including: geological prospectivity (the chance of finding oil or gas and proceeding to development); access to lands available for development; infrastructure access; availability of quality well and seismic data; market access; petroleum prices; capital costs; and competitive fiscal regimes.

Most oil and gas companies look worldwide when considering how and where they will use their financial and human resources. In general, the areas that tend to attract the major oil and gas exploration expenditure are those which offer a competitive balance of political risk, prospectivity and fiscal terms. At a company level, investment opportunities are also considered in the context of the additional criteria of resource potential and strategic fit.

The existing data for our offshore and onshore areas have been acquired over a 50 year period using a variety of technologies. As a result, exploration companies have to develop regional geological models based on seismic data of varying age and quality. These models, therefore, may be incomplete and lacking fresh detail.

It is also critical that existing oil and gas producing regions be fully explored before existing installations are decommissioned to ensure resources in nearby satellite fields are developed in an economic manner by tying into existing infrastructure. Finding and assessing these satellite fields is a challenge that requires the most accurate seismic data possible.

To fill in these important gaps in our offshore knowledge, the Provincial Government will make an initial investment of \$20 million over the next three years through the Energy Corporation to purchase existing proprietary seismic data for reevaluation and acquire new data. In the oil and gas industry, new opportunities are often identified through this process. The acquisition of quality seismic data facilitates the evaluation of exploration risk in new areas. This information plays a key role in attracting exploration and development capital.

In the onshore sector, the Provincial Government is investing \$5 million, through the Energy Corporation, in a Petroleum Exploration Enhancement Program (PEEP) to boost new petroleum exploration in western Newfoundland. The Energy Corporation will use this investment to acquire and assess seismic data to be potentially utilized in consideration for an equity interest in onshore projects.

The Provincial Government recognizes the importance of an efficient and effective data management system for both the offshore and onshore petroleum sectors. We are currently making a substantial investment in the development of an offshore data management repository within the C-NLOPB. We will assess the appropriate approach for the storage and collection of onshore information, including whether synergies can be achieved by incorporating the data into the C-NLOPB repository.

POLICY ACTIONS

Encouraging Exploration Activity

The Government of Newfoundland and Labrador will:

- Establish a working group comprised of the Provincial Government and petroleum industry representatives, including the Energy Corporation, to develop regulatory and fiscal measures for Provincial Government consideration to promote targeted exploration activity and address other industry needs.
- Make an initial investment of \$20 million over the next three years through the Energy Corporation to purchase existing proprietary seismic data for reevaluation and acquire new data to fill in gaps.

(continued)

POLICY ACTIONS

Encouraging Exploration Activity

The Government of Newfoundland and Labrador will:

- Make an initial investment of \$5 million over the next two years through the Energy Corporation in a Petroleum Exploration Enhancement Program to boost new onshore petroleum exploration in western Newfoundland.
- Develop data management information repositories for onshore and offshore resources.
- Develop and implement a comprehensive petroleum resource marketing plan.

The Provincial Government is also committed to working with industry to develop regulatory and fiscal measures to increase exploration activity. The acquisition of seismic data, and the encouragement of exploration through regulatory and fiscal measures, are areas where the Federal Government has the opportunity to invest further in the province's oil and gas industry.

The Provincial Government realizes that companies need to understand the structure of the regulatory and fiscal regimes prior to making specific exploration decisions. This Plan provides direction as to what the royalty and regulatory structure will be as we move forward.

We need to educate the world petroleum industry about the resources off our shores. This will require continued and enhanced efforts to market the potential of these resources and our ability and capacity to participate in developing them.

RESOURCE MANAGEMENT LEVERS

Governments, as resource owners, have four levers at their disposal to ensure sound and effective management and to maximize benefits over the long term.

1. Equity Ownership

Taking equity ownership in projects to ensure first-hand knowledge of how resources are managed, to share in that management, to foster closer government/industry alignment of interests and to provide an additional source of revenue.

2. Fiscal Regime

Implementing a progressive fiscal regime, including royalties, that provides an appropriate sharing of the downside risk, the upside potential, as well as clarity to potential investors.

3. Regulatory Framework and Land Management

Ensuring we have an effective and efficient regulatory and governance structure to encourage responsible, timely and effective resource development.

4. Local Benefits

Encouraging industry sustainability by strategically capturing local benefits through business development, technology transfer, job creation and increasing the level of processing, refining and other value-added activities in the province. This will also result in the expansion of local capabilities and increase our competitiveness.

To date, the province has concentrated its efforts on maximizing benefits from its resources by using three of these four levers: fiscal regimes, regulatory framework and land management, and local benefits.

We will improve how we use these levers as we move forward as well as implement the use of the fourth lever – equity ownership, as we have done in our Memorandum of Understanding for the Hebron Project. Equity ownership means taking an interest stake in development projects, through our Energy Corporation, as a partner with the private-sector developers.

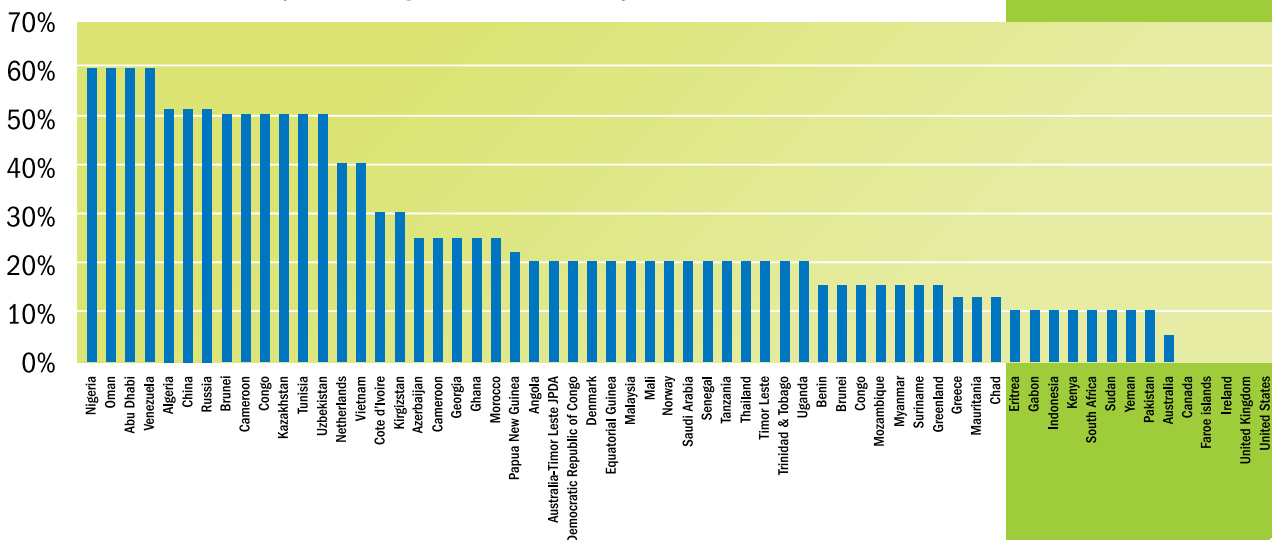
Using all four levers, we will have the flexibility to understand and assert the appropriate amount of influence on the development of our resources to ensure good management in the interest of our citizens. These levers can also provide the means to expand our interests beyond exploration and development, into other facets of the petroleum industry such as transportation, refining and processing, which will broaden and increase the economic return to the people of Newfoundland and Labrador.

The Government of Canada has an 8.5 per cent equity share in one upstream project, the Hibernia Project offshore Newfoundland and Labrador.

Equity Ownership

Equity ownership will provide an additional source of revenue to our existing fiscal regimes, one that is more closely tied to the profitability of a project and, accordingly, to its risk. In addition to the economic value this will bring, the knowledge and information that will accrue within the Energy Corporation through equity ownership will help ensure better alignment between the provincial interest and the partners in the projects. The revenues and the expertise gained from participation will also allow the Energy Corporation to develop the capability to pursue the strategic development of long-ignored oil and gas reserves, which otherwise might not be developed. Finally, the Energy Corporation’s equity participation will not be restricted to the development projects themselves, but may also expand into the associated infrastructure, such as pipelines, refineries, gas processing and gas-to-wire power generation. As seen in **Figure 3.1**, governments in many jurisdictions have benefited from equity participation.

Figure 3.1
Government Equity Percentage in Upstream Projects



POLICY ACTIONS

Equity Ownership

The Government of Newfoundland and Labrador will:

- Establish a policy to obtain a 10 per cent equity position in all future oil and gas projects requiring a Development Plan approval, where it fits our strategic long-term objectives. The Energy Corporation shall negotiate payment of its share of the historic exploration and pre-development costs incurred by the license co-venturers as well contribute its share of subsequent development and operations costs.
- Continue to pursue the acquisition of the 8.5 per cent federal interest in the Hibernia Project.

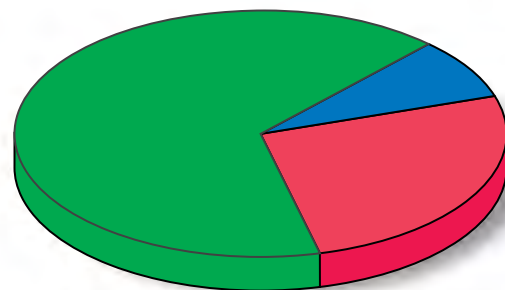
The Provincial Government will require a 10 per cent equity position in future offshore petroleum projects that require Development Plan approval, where it fits our strategic long-term objectives. This equity will be held and managed by the Energy Corporation. This level of participation strikes the appropriate balance between participation and risk. It will give the province sufficient standing in these development projects to participate with a strong voice, while providing a reasonable level of risk mitigation for the Provincial Government that is inevitably involved with any such investment.

In addition to pursuing equity positions in future development projects, the province will also continue to pursue the transfer by the Federal Government of its 8.5 percent ownership in the Hibernia project to the province. The Federal Government has recouped its initial investment with a significant return and the time has come to return this asset to the province. As shown in **Figure 3.2**, the Government of Canada has enjoyed tremendous benefits from the province's resources and has been the primary beneficiary of the Hibernia project based on the dividends and corporate tax revenues it has received to December 2006. This is inconsistent with the Atlantic Accord. While the Atlantic Accord 2005 was a historic and significant step towards remedying this inequity, it is the province's position that the transfer of the Hibernia shares to the people of Newfoundland and Labrador would further rectify the historical inequity that existed prior to the renegotiated 2005 Atlantic Accord.

The Federal Government will also have an option, through agreements negotiated in the early 1990s, to receive an additional Net Profits Interest in the Hibernia project of between 10 per cent to 12.5 per cent starting in the near future. Sales revenue generated from the Federal Government's working interest in the Hibernia Project has tripled its equity investment, excluding revenues from Petro-Canada sale. The time is long overdue for the Federal Government to transfer its share of Hibernia to the people of Newfoundland and Labrador.

Figure 3.2
Hibernia Project Net Revenue
Summary to Dec 2006 (Billions \$CDN – Nominal)

Total Net Revenue \$14.8 Billion



Oil Companies \$8.8 Rest of Canada \$4.8 NL \$1.2

Fiscal Regimes

In our current environment of increasing oil and gas prices, it is important to ensure that our fiscal regimes reflect the increasing value of our petroleum resources. On the whole, our existing regimes do not adequately share this value between project developers and government. It is time to adjust the fiscal regime to reflect both the new economic environment for oil and gas exploration and production and the lessons learned from a decade of production under existing fiscal terms.

Offshore Natural Gas Royalty Regime

The province's offshore contains large natural gas deposits. The Provincial Government has developed an Offshore Natural Gas Royalty Regime that will ensure these resources are developed in the best interests of Newfoundlanders and Labradorians, while at the same time providing those investors who develop the resource with a fair return.

The Provincial Government developed the Offshore Natural Gas Royalty Regime by looking at best practices from around the world and at lessons we learned from our own experience over the past 10 years. We engaged Wood Mackenzie, a highly regarded international consulting firm, to provide international consulting assistance and benefited from ongoing consultation with industry participants.

In designing our Offshore Natural Gas Royalty Regime, the province had five principal objectives:

- Encouraging development of economic projects.
- Obtaining higher royalties from a project when prices and profitability are higher and providing “downside protection” for developers in low price environments.
- Creating a predictable and transparent system.
- Designing a system that is sufficiently flexible to adapt to different types of projects.
- Ensuring the regime is internationally competitive.

The Offshore Natural Gas Royalty Regime is attached as Appendix D. The royalty has two components: Basic Royalty and Net Royalty. These components exist in the current oil royalty regimes, however, the mechanics of the Natural Gas Royalty terms are quite different.

Basic Royalty provides a revenue stream to the province at all stages of a project. The basic royalty rate is linked to realized prices, rather than volumes or project economics as under existing oil royalty terms. This means that the province's percentage share of the gross revenue from each project will be largely driven by price. This approach leads to greater transparency and ensures that the interests of the Provincial Government and industry are well-aligned.

POLICY ACTIONS

Fiscal Regime

The Government of Newfoundland and Labrador will:

- Implement the Offshore Natural Gas Royalty Regime when industry consultations are complete.
- Establish an internationally competitive Generic Offshore Oil Royalty Regime in line with the principles and structure of the Offshore Natural Gas Royalty Regime.

Net Royalty is based on project profitability and reflects the revenue and costs associated with a particular project. Where profitability of a project is higher, the province will share in that profitability. Where profitability is less or declining, the Net Royalty Rate will be lower and the province's share will decline.

Both the Basic Royalty rate and Net Royalty rate will be determined by a smoothing formula, rather than the existing "step" based system. This enables the new system to respond quickly to falling or rising prices, sending a positive message to investors and demonstrating that the province is prepared to share in price risk.

It is a challenge to develop a uniform regime to meet the needs of all parties as we have diverse regions like the active Jeanne d'Arc Basin, deepwater regions like the Orphan and Laurentian Basins, and remote regions like the Labrador shelf.

We have designed an Offshore Natural Gas Royalty Regime that recognizes the cost and shares the risk associated with various natural gas developments. The Regime will automatically provide a lower royalty return from the more costly and remote natural gas projects and a higher return from lower risk /lower cost projects. For a project that develops new infrastructure and is the pioneer project, the province is prepared to consider modifications to the rate structure within the Offshore Natural Gas Royalty Regime to reflect that higher project risk and infrastructure investment if economics warrant such consideration.

New Generic Offshore Oil Royalty Regime

The Provincial Government will also establish a new Generic Offshore Oil Royalty Regime based on principles and structure similar to the Offshore Natural Gas Royalty Regime. In the case of satellite field developments that use existing field infrastructure, adjustments to the regime may be made to reflect the robustness of satellite field economics, including consideration of recoverable reserve size and the potential that costs of existing field infrastructure may have already been recovered.

Regulatory Framework and Land Management

Regulatory Framework

This province's onshore and offshore oil and gas resources are regulated by two different systems. Resource development onshore is regulated by the *Petroleum and Natural Gas Act*. This provincial regulatory structure has generally proven to be an efficient and effective tool in managing onshore assets as witnessed by the increased level of activity and new entrants in the area. We will review this legislation to ensure it continues to be an effective tool to manage these resources while meeting the needs of the petroleum industry and other stakeholders.

Offshore petroleum resources are jointly managed by the federal and provincial governments through the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB). The C-NLOPB manages the regulatory regime established by the Atlantic Accord in 1985 and the subsequent implementation legislation.

It is time for the provincial and federal governments to conduct a joint comprehensive review and update the regime. Since 1985, regulatory complexity and overlap has increased significantly, complicating the administration of resources in the offshore area. Recent attempts to streamline the efficiency of the regulatory process have generated some positive results, however, this process has still proven to be complex and slow. It is clearly time to update the framework to ensure that it is efficient and effective for the future, applying the lessons learned over the last 20 years. This modernization will benefit both the province and the Federal Government and promote development of the offshore resources.

Land Management

Land management refers to the process followed whereby governments provide the opportunity to oil companies to explore and develop lands on which oil and gas potential exists. Effective land management is a key component to accelerating development of oil and gas opportunities.

There are three critical periods to consider when designing a land management system, the exploration phase, the discovery/development phase, and the producing phase.

Onshore, the Provincial Government views a competitive, market-driven land management system as a requirement for a healthy petroleum exploration and development industry. Ensuring there are no impediments to this will form part of the review of our onshore regulatory framework discussed above.

In the offshore, the province proposes to improve the existing exploration phase process. Currently, companies identify lands they wish to explore and nominate those lands to the C-NLOPB. The C-NLOPB decides which lands will be posted for bid, depending on the level of interest expressed. Following posting, companies “bid” on the lands by offering to spend a specific amount on seismic and/or drilling activity. If an Exploration License is awarded, the company then has five years (extendable to nine years if an acceptable plan is agreed to) to expend the bid amount. If the bid amount is not fully expended, and a significant discovery has not occurred, the companies must return the exploration rights plus the C-NLOPB retains 25 per cent of the unexpended commitment. The province proposes to improve this phase by ensuring companies outline detailed plans and timelines for execution for exploration activity, and to establish a reporting and monitoring program which will ensure the activity is being pursued as planned.

If exploration yields a significant discovery, the discovery/development phase is entered and the company applies for a Significant Development License (SDL), which requires special attention and substantive revision. Under the existing Atlantic Accord regulatory regime, these SDLs do not expire, allowing companies to hold their discoveries without developing them. Therefore, the timing of the development of these discoveries is left solely to the discretion of the company holding the SDL; neither governments nor other interested parties have effective means to either force development or to have the property released to be available for acquisition by other interested parties.

POLICY ACTIONS

Regulatory Framework

The Government of Newfoundland and Labrador will:

- Review the onshore petroleum regulatory structure to ensure it responds to the needs of industry and the province.
- Continue to work with the Federal Government and stakeholders to improve the efficiency and effectiveness of our current offshore regulatory structure, consistent with the principles of the Atlantic Accord.
- Work with the affected Aboriginal governments and groups to ensure that developments in areas under claim or subject to a treaty are managed efficiently and effectively for the benefit of those Aboriginal peoples and other residents of the province.

POLICY ACTIONS

Land Management

The Government of Newfoundland and Labrador will:

Encourage the Federal Government to work with us to:

- Establish time limits for developing new and existing significant discovery licenses offshore.
- Ensure companies outline detailed plans and timelines for execution for exploration activity and to establish a reporting and monitoring program which will ensure the exploration activity is being pursued as planned.
- Facilitate the development of satellite fields including reduced cycle time approvals
- Develop open-access requirements to existing facilities by third parties.

This system benefits the discoverer, but ignores the value of the development of the resource to the ultimate owners, the people. It is also unique; other jurisdictions have recognized that a different balance between the interests of the exploration companies and the resource owners is necessary. Wood Mackenzie offered the following comment when comparing our land tenure system with other international jurisdictions:

“Based on our extensive databases and knowledge, we can think of no other jurisdiction whose current upstream license terms enable investors to hold onto discoveries without time limit or significant financial commitment, as they are in Atlantic Canada.”

The equivalent licenses in other jurisdictions normally have fixed terms, rapidly-escalating rentals, or a combination of both to ensure that discoveries are developed in a timely fashion. Up to recently, neither fixed terms nor escalating rentals have existed in our offshore area. Effectively, current SDL holders can delay development here indefinitely without consequences, while investing their money in other parts of the world where they must develop in order to keep their discoveries. To achieve the Energy Plan goal of maximizing the value the province receives from oil and gas development, this disincentive must be eliminated.

The Provincial Government will continue to pursue this issue with the Federal Government and industry, to obtain recognition of the seriousness of the problem and the need for change. The objective is a system in which SDLs are actively evaluated and developed or sold within a set time frame. This system would also establish a process for marketing inactive lands and would provide certainty to new entrants or license holders adjacent to existing infrastructure. At the 2006 Council of the Federation, all Premiers stated that economically viable energy projects should not be permitted to remain fallow but should be moved towards commercial production.

During the producing phase, the Provincial Government intends to ensure that the development of small fields close to existing developments can benefit to the greatest extent possible from the existing infrastructure. This will require working with industry to develop processes designed to establish internationally competitive development cycle times for these satellite fields.

One key process is the provision of non-discriminatory open access to existing infrastructure. Another is ensuring the associated processing tariffs are low enough to encourage exploration and development of new fields while compensating existing owners for costs incurred to facilitate satellite development. Negotiated commercial agreements among producers and infrastructure owners are preferable provided the province's interests are not compromised. However, the Provincial Government must ensure open access and fair tariffs are established where industry participants cannot agree. In addition to open access, it is also important to streamline approval processes and provide certainty regarding fiscal issues.

These initiatives are not meant to interfere with normal, competitive business practices. However, to be fair to all potential participants and to protect the province's interests, these policies will ensure that offshore developments occur in a market-oriented environment competitive with other jurisdictions worldwide.

Local Benefits

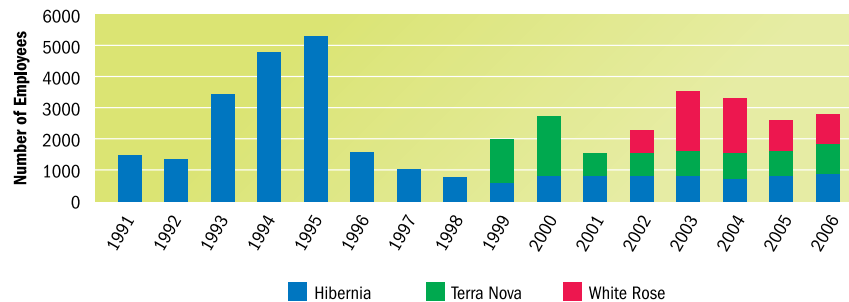
We need to broaden our local benefits focus to encompass all stages of petroleum exploration, development, production, transportation and processing. We also need to design our benefits strategy and negotiations to increase investments that have the best chance of creating long-term industries in Newfoundland and Labrador. We then need to ensure that relevant stakeholders share this vision and are aligned to implement the strategy.

Employment and Industrial Fabrication

The petroleum sector employs approximately 4,000 people in our province. It provides significant construction employment benefits when projects are in the development phase. Our three current oil projects alone provided 65 million person-hours of construction employment or the equivalent of over 3,100 people working full time for 10 years.

Figure 3.3 shows the employment from our petroleum projects since the start of Hibernia construction in 1991, demonstrating that although producing operations have resulted in some employment stability, our employment history has been characterized by a number of construction phase peaks and valleys.

Figure 3.3
Number of Employees in Offshore Projects 1991-2006 (not including Hebron)



For this reason, a major focus of this Energy Plan is to make the employment generated from our energy projects more long term and sustainable by being more strategic in the industrial and employment benefits we request. We need to focus our efforts in areas where we can sustain a competitive advantage and on products that we can export to other parts of the world. We also need to focus on employment opportunities that ensure the skills developed can be adapted to our longer term renewable energy-based future.

POLICY ACTIONS

Employment and Industrial Fabrication

The Government of Newfoundland and Labrador will:

- Focus on benefits requirements that target maximum sustainable supply and service industries and employment where we have the potential to create or capitalize on our competitive advantages. To accomplish this, we will work with our stakeholders and partners, including unions, fabrication yards and oil and gas companies.
- Establish a fund with an initial \$5 million investment to provide financial incentives for export-based petroleum fabrication and manufacturing opportunities. These financial incentives will be based on clear guidelines, targets and program parameters.
- Develop and implement a comprehensive capability marketing plan to be used in conjunction with our supply and industrial fabrication industry companies to sell our expertise inside and outside the province.

A significant amount of money is spent locally by our energy sector. This helps support our local businesses that in turn employ Newfoundlanders and Labradorians. As with employment, expenditures by local energy companies, including those that supply and service the sector, decline when the construction phase of projects are complete. One of the key objectives in this Plan is to make these local energy expenditures more sustainable and long term. We will do this by helping our local suppliers and businesses to use the capabilities they develop through large-scale projects in this province to compete for export-oriented opportunities. This will assist companies to thrive even when we do not have a large-scale project in development.

We also need to be strategic in the development and marketing of our fabrication infrastructure. The major industrial fabrication facilities in the province are located at Bull Arm and Marystown with other smaller but important facilities located around the province. These facilities have gained considerable experience during the development of our offshore projects and contribute to our provincial fabrication capacity. Tentative plans have been put forward by industry to expand this capacity and the Provincial Government is prepared to play a role in this expansion if it supports our strategic efforts in areas where we can create a competitive advantage in the long-term.

During the past 15 years, our skilled and professional workforce has gained world-class experience in the design, fabrication, construction, integration and commissioning of GBS and FPSO production platforms with the successful completion of Hibernia, Terra Nova and White Rose construction projects at Marystown and Bull Arm.

Our impressive accomplishments in construction and fabrication are testaments to the expertise and hard work of our skilled trades people and their union leadership. Continued cooperation between our unions, industry, fabrication facilities and the province is essential as we continue to grow our energy industry. As well, we need to work with stakeholders to market our capabilities worldwide.



These activities helped to develop a mature and well-experienced local engineering and fabrication community. We must now focus on benefits requirements that target sustainable supply and service industries where we have the potential to create or capitalize on our competitive advantages. We will focus on activities that can be exported or result in skills, expertise, facilities or capacity that support our long-term aim of sustainable development, such as smaller, readily transportable module fabrication packages where we have the potential to build a competitive advantage. To assist in strategically building our export capacity, the Provincial Government will establish a fund with an initial \$5 million investment to provide financial incentives for export-based petroleum fabrication and manufacturing opportunities. These financial incentives will be based on clear guidelines, targets and program parameters.

Refining, Secondary Processing and Other Value-added Activities

One of the longer-term strategic objectives of this Energy Plan is to work with all stakeholders to achieve growth in value-added and secondary petroleum industries.

At this stage, while the local economy has been expanding its capability and business operations to support offshore projects, there have been few opportunities identified or developed for adding value to these products and services. To expand our opportunities and options for growth, the Provincial Government will actively pursue and encourage opportunities arising from our oil and gas resources to attract investment in refining and petrochemical industries, as well as in related service businesses. The Provincial Government will request that companies provide an assessment of the feasibility and provincial benefits of refining oil and/or other secondary processing opportunities in Newfoundland and Labrador prior to submitting a Development Plan.

One example of a successful secondary processing petroleum business is the province's only refinery, located at Come By Chance. Built in the early 1970s, and operated by North Atlantic Refining Ltd. (NARL), the refinery currently employs over 700 people and produces petroleum products mainly for the export market. These are primarily sold into premium markets on the United States east coast but can also be transported to other markets. Since 1994, NARL has invested about \$600 million in capital expenditures to improve refinery reliability, safety and performance, and environmental compliance, placing the refinery in a position to produce some of the cleanest petroleum products in the world. The refinery is configured to process a medium gravity sour (high sulphur) crude oil. Because our offshore crude oil produced to date is a high quality sweet (low sulphur) crude oil, it is not practical for it be refined at Come By Chance. Rather, the oil is sold on the open market where it can capture the best price.

POLICY ACTIONS

Refining, Secondary Processing and Other Value-added Activities

The Government of Newfoundland and Labrador will:

- Aggressively pursue refining, petrochemical, and other value-added secondary processing opportunities.
- Request that companies provide an assessment of the feasibility and provincial benefits of refining oil and/or pursuing other secondary processing opportunities in Newfoundland and Labrador prior to submitting a Development Plan.

POLICY ACTIONS

Landing Natural Gas

The Government of Newfoundland and Labrador will:

- Request that all companies provide a detailed assessment of the feasibility and provincial benefits of landing gas in Newfoundland and Labrador prior to submitting a Development Plan.

We have already begun the process of increasing our refining capacity by studying potential opportunities in the province and holding discussions with possible refinery investors. This strategy also makes sense from a business opportunity perspective. According to the International Energy Agency, worldwide demand is expected to grow from nearly 84 million barrels a day in 2005 to 116 million barrels a day by 2030. Demand in the United States and Canada alone is expected to grow by almost 5 million barrels a day over the same period. We need to increase our processing capacity to help meet this demand.

Work is already underway to increase the refining capacity in the province. In February 2006, the Newfoundland and Labrador Refining Corporation (NLRC) initiated a Feasibility Study for the construction of a new refinery in the province. As a result of positive market studies, NLRC undertook a site selection process and is now in the environmental assessment process. The \$4.6 billion project would have an initial production capacity of 300,000 barrels per day and the option to expand to 600,000 barrels per day if market conditions allow. The refinery would provide approximately 750 direct jobs and generate significant indirect employment and spin-off opportunities for the creation and expansion of companies providing goods and services. The development phase of the project would also create significant employment for the region, with approximately 3,000 employees during construction.

Landing Natural Gas

Natural gas is in the early stages of development in Newfoundland and Labrador. To succeed, we need to gain a clear understanding of the strategic importance of landing gas in the province. Natural gas can be used in industrial processes such as oil refining, secondary gas processing, petrochemical manufacturing, and in the generation of electricity. All viable options must be fully assessed for the development of our gas resources to ensure they provide an appropriate level of benefits to the province and a fair return to the investor.

The Provincial Government understands the unique challenges of using this resource within the province, but there are also opportunities. To ensure these opportunities are fully assessed, the Provincial Government will request that companies provide detailed “landing in the province” options prior to submitting a Development Plan. More information on potential natural gas development is found in **Section 4 – Electricity** and **Section 6 – Energy and the Economy**.



SECTION

4

Electricity

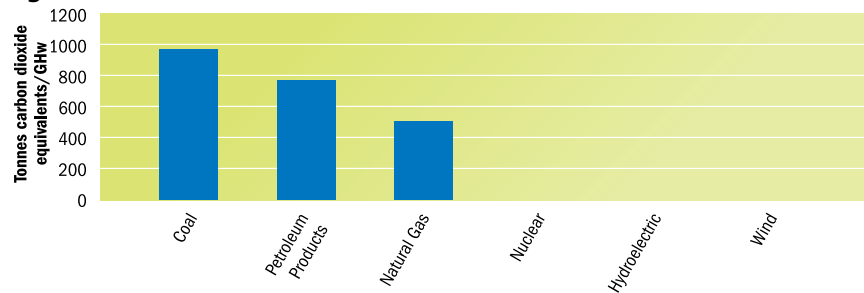


Jurisdictions outside of Newfoundland and Labrador can also benefit from our clean, renewable electricity to offset a significant amount of GHGs and other harmful emissions from burning coal or other hydrocarbons.

ELECTRICITY

Newfoundland and Labrador has tremendous clean renewable electricity generation assets, including hydroelectric projects at Bay d’Espoir, Cat Arm, Upper Salmon, Hinds Lake and, of course, Upper Churchill. As well, we have significant undeveloped potential, most notably the Lower Churchill. Today, we export three times more electricity than we use domestically and our undeveloped sources give us the potential to export even more when our domestic needs are met. As shown in **Figure 4.1**, hydroelectricity and wind energy resources are essentially free of GHG emissions. They are also renewable and relatively stable from a long-term cost perspective, making them extremely valuable assets in both environmental and economic terms.

Figure 4.1



Greenhouse Gas Intensity of Electricity Generation, 2004

By making the right decisions, Newfoundlanders and Labradorians can have a cleaner environment *and* a solid and sustainable electricity industry, with a secure supply of competitively-priced electricity for economic development and domestic use. As energy continues to increase in demand and value, this province will have a competitive advantage and be an even more attractive place in which to live and do business.

Jurisdictions outside of Newfoundland and Labrador can also benefit from our clean, renewable electricity to offset a significant amount of GHGs and other harmful emissions from burning coal or other hydrocarbons.

Developing our renewable energy potential and getting it to domestic and export customers will be a long-term, challenging process. It involves planning and building some very large-scale projects, including transmission lines over great distances and challenging terrain and completing complex agreements to secure access on other transmission systems. This will require time, a tremendous amount of development and construction work employing Newfoundlanders and Labradorians and a significant amount of investment.

A major decision in this Energy Plan is the strategic investment of a significant portion of our non-renewable resource revenues in renewable energy infrastructure, such as transmission, hydro developments and wind generation. Sharing the benefits of today’s activities with future generations is sustainable development in action.

Increasing our participation in North American electricity markets will also begin the necessary process of positioning the province and its Energy Corporation appropriately for the day when the renewal of the Upper Churchill power contract expires in 2041.

Although this section of the Energy Plan focuses on the Lower Churchill and other future electricity developments, it also indicates how the Provincial Government aims to support and improve our existing interconnected and isolated electricity systems and the services they provide to our people and industries.

As Newfoundland and Labrador's renewable electricity resources will be the foundation for a sustainable economy, the province will maintain control over them. Once our investments in renewable generation projects are recovered, they can produce electricity at very low cost. Through ownership, the people of the province will be the principal beneficiaries.

Through these actions, we can deliver a clean, secure supply of electricity, a lasting stream of economic benefits and a sustainable future for the people of Newfoundland and Labrador.

FACING CHALLENGES, MAKING CHOICES

In addition to the great opportunities our electricity resources present, we have to meet a number of challenges and make specific choices on how to develop and utilize our resources wisely for the greatest benefit to the environment and our citizens.

Our first priority is to ensure we are able to meet our current and future electricity needs with environmentally friendly, stable, competitively priced power. We are thinking long term and making critical choices and investments with respect to our power supply options. Currently, about 85 per cent of our electricity capacity comes from clean, stable and competitively priced hydro power. On the Island, however, approximately 65 per cent of electricity capacity comes from hydro power, while 35 per cent comes from thermal-fired generation that is subject to price volatility and emits GHGs and other pollutants. In Labrador, most electricity is hydroelectric, with the exception of a small amount of isolated diesel and gas turbine generating capacity.

Both electrical systems in the province have adequate generation to meet the demand of existing customers. This demand is forecast to grow at a fairly steady, moderate pace over the next several years. This would result in a need for new sources of supply on the Island prior to 2015, and later in Labrador. As a result, we plan to develop the Lower Churchill project, which will include a transmission link between Labrador and the Island. This major initiative is discussed in detail in the following section.

POLICY ACTIONS

Lower Churchill Project

The Government of Newfoundland and Labrador will:

- Lead the development of the Lower Churchill Hydroelectric Project, through the Energy Corporation.
- Ensure that first consideration for employment will be given to qualified personnel adjacent to the resource.
- Conduct a comprehensive study of all potential long-term electricity supply options in the event that the Lower Churchill project does not proceed.

Together with our existing hydroelectric and some wind power, the Lower Churchill project will meet our long-term electricity needs. There are, however, potential industrial developments both in Labrador and on the Island that could result in a sharp rise in demand before Lower Churchill is developed. NLH is actively working with existing and potential new industrial customers to ensure their needs can be met.

To ensure that we can meet our future electricity needs, we must also have an alternate plan in the event Lower Churchill does not proceed as planned. In this case, we will provide future electricity needs from the most economically and environmentally attractive combination of thermal, wind and smaller hydro developments. These sources could provide an additional 100-200 MW of power. The remainder would come from thermal generation. NLH is studying these sources in parallel with planning for the Lower Churchill to ensure the future energy supply for the province is secured. NLH is also studying the potential for landing gas in the province from our offshore resources to fuel a thermal electricity generating plant.

In Labrador, in addition to available recall from the Upper Churchill, wind and other hydro developments are potential power supply options to be considered in the event that the Lower Churchill Project is not sanctioned.

GENERATING ELECTRICITY

Lower Churchill Project

The Lower Churchill Hydroelectric Project is the most attractive undeveloped hydroelectric project in North America. Its two installations at Gull Island and Muskrat Falls will have a combined capacity of over 2,800 MW and can provide 16.7 Terawatt hours (TWh) of electricity per year – enough to power 1.5 million homes without a requirement for significant reservoir flooding. The project will more than double the amount of renewable electricity available to the province and will dramatically increase the amount of power available for economic development in Labrador and on the Island. The project is expected to have a capital cost of \$6 to \$9 billion, is expected to create over 10,000 person years of employment during its construction, and provide economic benefits from generation for decades to come.

To ensure this project has every opportunity to move forward, the Provincial Government is leading its development through the Energy Corporation. The Energy Corporation has established a comprehensive and clearly-defined project execution plan and will continue to advance the project on multiple fronts, including engineering and the environmental assessment process, analysis of market access options and market destinations, and a financing strategy. The project is targeting sanction in 2009, with in-service of Gull Island in 2015.

The Provincial Government will develop a Memorandum of Understanding with the Federal Government for a joint panel review process and will ensure that Aboriginal groups in Labrador are consulted appropriately through this process.

Labrador residents will be primary beneficiaries of the Lower Churchill project. Jobs and business activity from the construction and operation of the project are the first and most tangible benefits. A significant portion of the jobs and business spin-offs will occur naturally in Labrador. We will focus our efforts on maximizing benefits to Labrador through training and supplier development and will ensure that qualified Labrador residents have first consideration for employment on the project.

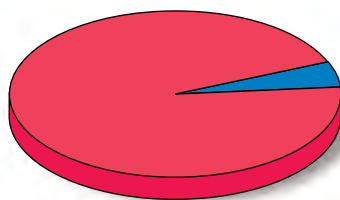
In addition to the significant construction benefits that will accrue to the people of Labrador from the Lower Churchill, the Provincial Government - with the input of people from all parts of Labrador - will also make investments now that will secure greater benefits from the project development (such as job training), help build a sustainable economy and continue to improve access to quality public services. The vehicle through which the Provincial Government will make these investments is the Northern Strategic Plan (NSP) for Labrador, released in April 2007. The Provincial Government will renew and update the NSP regularly to ensure that it remains relevant and responsive to Labradorians' needs. More information on the NSP for Labrador is available in **Appendix C**.

Upper Churchill

The 5,428 MW Churchill Falls power station is a world-class facility. It is the third largest hydro-electric generating station in North America and is the second largest underground power station in the world. However, because of agreements negotiated in the 1960s, the province does not enjoy the full economic or electrical benefit of this enormous asset. As shown in **Figure 4.2**, while the project has generated estimated net revenue of \$20 billion to the end of 2006, Newfoundland and Labrador has received about \$1 billion. As a result, the Upper Churchill development has been the subject of much controversy, including several legal challenges, in the past 30 years. The widespread dissatisfaction with these arrangements within the province is one of the primary motivators behind our resolve to ensure that, in the future, our resources are developed for the benefit of the people of Newfoundland and Labrador.

Figure 4.2
Upper Churchill Project Net Revenue
Summary To Dec 2006 (Billions \$CDN – Nominal)

Total Net Revenue \$20 Billion



■ Quebec \$19 ■ NL \$1

POLICY ACTIONS

Upper Churchill

The Government of Newfoundland and Labrador will:

- Ensure CF(L)Co continues to maintain the Upper Churchill facility to a proper operating standard.
- Position the province to take full advantage of Upper Churchill power for provincial and export customers after the power contract expires.
- Explore opportunities for Upper Churchill to make a greater economic contribution to the province.

POLICY ACTIONS

Other New Hydro Developments

The Government of Newfoundland and Labrador will:

- Maintain the moratorium on small hydro developments, subject to a review in 2009 concurrent with a decision on proceeding with the Lower Churchill project.
- Ensure the Energy Corporation continues to work on feasibility and environmental studies of additional hydroelectric prospects.
- Implement a new policy on the issuance of water rights for new hydroelectric developments, making the Energy Corporation responsible for coordinating and controlling all new hydroelectric developments in Newfoundland and Labrador.

Churchill Falls (Labrador) Corporation (CF(L)Co) will continue to operate and maintain the facility so that it remains fully functional well beyond the expiry of its current commitments in 2041. The Provincial Government will continue to explore opportunities for this facility to make a greater economic contribution to the province.

Other New Hydro Developments

Although the Churchill River has a vast hydroelectric potential compared to our provincial electricity needs, we must continue to study other supply options to ensure adequate supply. Even at a higher unit cost of power than the Lower Churchill, other hydro projects could help to ensure that we are able to meet our needs under a number of possible future industrial development scenarios. A portfolio of projects smaller than the Lower Churchill exists in Labrador, although significant transmission infrastructure would have to be built and Aboriginal Governments and groups would need to be consulted appropriately before many of these developments could occur.

The Island system may need more generation before Lower Churchill and the transmission link are completed to supply increasing demand. In 2006, NLH completed feasibility studies for two potential hydroelectric projects at Island Pond (36 MW) and Portland Creek (23 MW) that could potentially be developed to meet increased demand. As well, there are other potential sites on existing and undeveloped systems that may be viable for small hydroelectric development on the Island.

In 1998, the Provincial Government imposed a moratorium on small hydro projects on the Island. We will decide by 2009 whether we will have to implement an alternate plan for electricity supply on the Island. If that is the case, small hydro may be an effective source of renewable supply and the Provincial Government will review the current moratorium to ensure availability of sources that are environmentally appropriate for the province.

If the Provincial Government lifts the moratorium, it will institute a policy that the Energy Corporation will control and coordinate the development of small hydro projects that meet economic thresholds and are viable for an isolated island system. Project selection criteria will be developed at that time to ensure projects selected will provide electricity users with cost-effective energy.

One of our goals is to maximize our benefits from resource developments. We believe this means the Energy Corporation should control the development of all small hydro developments for the benefit of all electricity users and determine whether to do this alone or with private sector partners. However, in the long term, the province, through the Energy Corporation, must maintain full control over any new hydroelectric generation assets. We will do this by adopting a policy that no new water rights for hydroelectric generation will be issued except to the Energy Corporation or another company acting in partnership with the Energy Corporation.

Hydroelectric Power Production Coordination

To ensure hydroelectric facilities operating on the same river work together to optimize the value of the resource to the province and power generators, the Provincial Government has taken steps to regulate the coordination of water management and power production on provincial rivers. In June 2007, the House of Assembly passed an amendment to the *Electrical Power Control Act, 1994* (EPCA), which provides authority for the Board of Commissioners of Public Utilities (PUB) to regulate the coordination of power production (water management) agreements. The amendment provides that all relevant delivery commitments under existing power contracts can be honoured, including the 1969 power contract for the Upper Churchill.

Such production coordination arrangements are a necessity on rivers with more than one operator. As stewards of the resource, the Provincial Government is taking its responsibility over this valuable resource seriously by ensuring optimal benefits for all parties from its development.

Wind

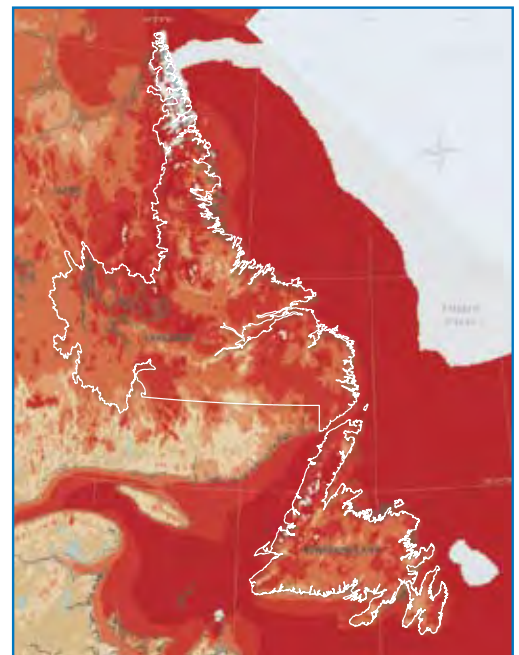
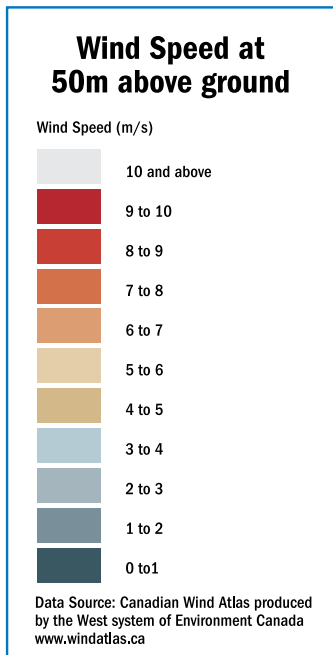
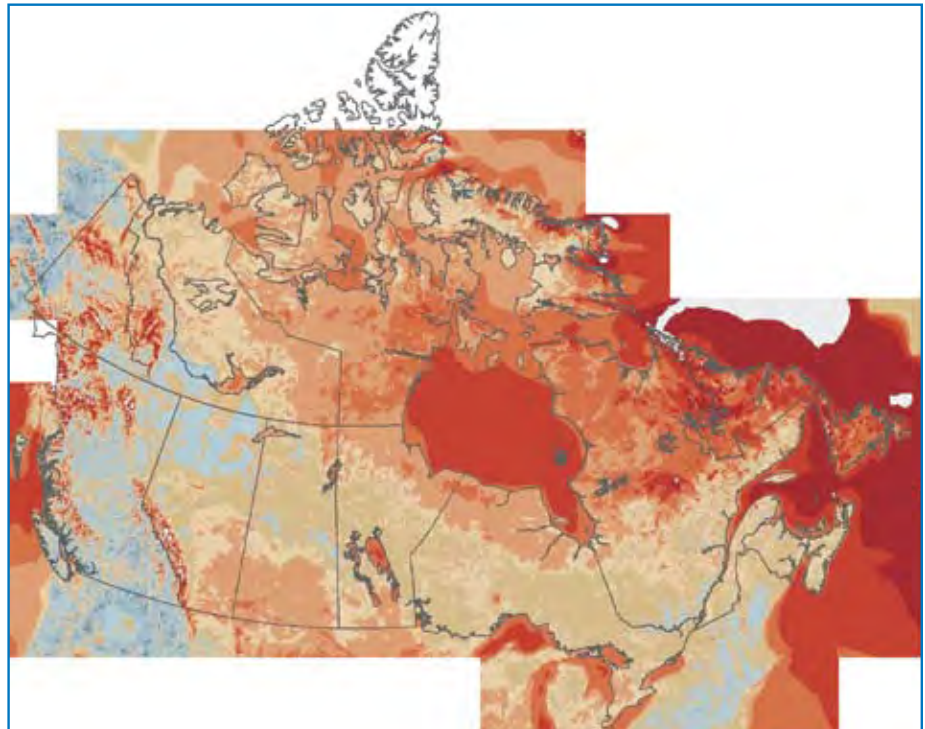
Wind is an excellent source of clean, renewable electric energy and Newfoundland and Labrador is a potential wind energy powerhouse. The Canadian Wind Energy Atlas indicates our wind resources are among the best in North America, positioning us to become leaders in the development and use of wind power.



Figure 4.3
Wind Energy Potential

Wind Energy Potential

Newfoundland and Labrador



POLICY ACTIONS

Wind

The Government of Newfoundland and Labrador will:

- Adopt a new policy on Crown Lands issuance for wind power that only the Energy Corporation, or a company selected by it, will be able to obtain a Crown lease for a wind power development.
- Work with Aboriginal governments and groups in areas where potential wind developments are subject to an Aboriginal treaty or a land claim.
- Pursue opportunities for locating manufacturing and fabrication of wind turbine components such as towers, tower bases, and turbine blades in the province.

In recent years, advances in wind turbine technology and higher turbine production numbers have reduced the cost of wind generation. However, wind does not always blow, and therefore does not provide energy that can be dependably scheduled to meet demands. Unlike hydro, there is no “reservoir” of wind we can adjust to ensure a steady flow. This aspect of wind power can be largely offset by linking it with hydro generation so that on windy days, wind contributes more power to the system, reducing hydroelectric output and allowing more water to stay in the hydro reservoir for use on calmer days. Our excellent wind regime and extensive hydro resources provide the foundation for a substantial wind development, in the order of thousands of megawatts. Even with excellent maintenance, wind turbines are not expected to last as long as hydroelectric facilities. Because the resource is renewable, however, wind farms can be readily refurbished or rebuilt, taking advantage of existing infrastructure and transmission.

Planning and implementation activities are currently underway both in Labrador and on the Island for wind developments. In Labrador, the Energy Corporation is studying the feasibility of a large-scale wind development, assessing the wind resource and preparing a business case for a multi-phase development. The planning for this potential development is taking place in parallel with the Lower Churchill Project and the results of market and market access studies from the Lower Churchill Project will be incorporated into the wind business plan. As development in Labrador proceeds, and transmission capacity out of Labrador is developed, there will be potential to add even more wind power. When developing wind projects, the province will consult appropriately with Aboriginal governments and groups, as well as fulfill the obligations included under land claims agreements.

The amount of wind generation that can be integrated into the current Island system is limited to approximately 80 MW. This is primarily because the Island’s hydro reservoirs have a finite capacity and the Island is not yet connected to any larger markets that can absorb short-term excess power. Until the Island is connected to the North American grid, the main reason for having Island-generated wind power will be to reduce generation and emissions at Holyrood and help meet demand growth. As attractive as wind power is from an environmental perspective, without a transmission link it is not feasible to replace all of the power generated at the Holyrood facility with wind generation.

A transmission link between the Island and Labrador providing access to the rest of the continent will facilitate development of the substantial wind resources on the Island for export under the same conditions as Labrador wind power. NLH has already awarded two contracts for the supply of a total of 51 MW of wind generation.

POLICY ACTIONS

Holyrood

The Government of Newfoundland and Labrador will address environmental concerns related to Holyrood by either:

- A. Replacing Holyrood generation with electricity from the Lower Churchill through a transmission link to the Island; or
- B. Installing scrubbers and precipitators, and maximize the use of wind, small hydro and energy efficiency programs, to reduce reliance on Holyrood.

One of the goals of this Energy Plan is to maximize the value from resource developments, including the benefits from wind generation. To maximize these benefits, the Provincial Government believes the Energy Corporation should control the development of all wind projects and determine when to develop alone or with private sector partners. We will enable this by adopting a policy that no new leases for wind development on crown land will be issued except to the Energy Corporation or another company acting in partnership with the Energy Corporation.

The wind industry can also be a major employer in the province if we capitalize on the significant manufacturing and fabrication opportunities associated with large-scale wind projects. We can utilize the skills and infrastructure we have developed in our manufacturing and fabrication sector to expand into activity related to the wind power industry.

Holyrood

In an average year, the Holyrood Thermal Generating Station (Holyrood) provides about one-quarter of the electric power capacity on the island of Newfoundland. It burns heavy fuel oil, also referred to as Number 6 fuel oil or Bunker-C and, on average, emits 1.3 million tonnes of GHGs and significant amounts of other pollutants. However, this facility is essential to the Island system. As the only major generating facility on the Avalon Peninsula, it provides generating capacity to meet peak winter demand and voltage support within the largest load centre. During dry periods, when less water is available for hydro generation, Holyrood use increases significantly.

Holyrood presents the biggest challenges for the Island system in the near-term. The cost of operating Holyrood has increased along with world oil prices, resulting in a large portion of the rate increases for Island customers in recent years. Because it produces significant amounts of polluting emissions and GHGs, it also creates a negative impact on the environment. In a preliminary effort to address this issue, the province, through NLH, has assessed several options, leading to the decision by the Provincial Government to mandate the use of lower-sulphur fuel at Holyrood in the short-term. This action is expected to reduce sulphur dioxide (SO₂) by 50 per cent and particulate emissions by 40 per cent. In addition, NLH's recent awards for 51MW of wind generation will reduce the requirement for thermal generation and related emissions by approximately 15 per cent. Our renewed efforts to improve energy efficiency will also lower the emissions from Holyrood. Depending on the outcome of an assessment of emissions from burning lower-sulphur fuel, the maximum sulphur content of the fuel may be lowered further in the future, though this measure will result in an increase in fuel costs.

In the long-term, the current level of emissions from the Holyrood facility is unacceptable. The Provincial Government, through NLH, has investigated the long-term options to address Holyrood emissions and decided to replace Holyrood generation with electricity from the Lower Churchill through a transmission link to the Island. This replacement provides an excellent opportunity to partner with the Federal Government to reduce GHG emissions.

In the event that the Lower Churchill Project does not proceed as anticipated, scrubbers and precipitators will be installed at the Holyrood facility. This will clean up many of the pollutants, however, it will not reduce the GHG emissions. As previously discussed in this Section, part of this alternate plan will be to increase the amount of wind and small hydro on the Island system. Natural gas conversion will also be assessed as a potential option if and when it is available.

The earliest date for the full commercial delivery of Lower Churchill power is 2015 and the earliest date for the scrubber and precipitator installation option would be 2013. Both options require the commitment of certain expenditures through the 2009 timeframe and Government will keep both options proceeding until the 2009 decision date for the Lower Churchill. In addition, NLH will continue to assess small hydro potential and wind opportunities on the Island system.

Isolated Diesel Systems

Communities that are not connected to the Labrador or Island power grids depend on small diesel-generating plants. Despite the substantial operating costs of these systems, the cost of interconnecting them and developing renewable generation is typically still greater. Therefore, many isolated communities will continue to be served by diesel generation, as it is the most feasible and cost-effective way to provide reliable electrical service. The costs of these isolated systems are currently being subsidized in the order of 75 per cent by other residential rate payers in the province. The Provincial Government has also recently provided an additional subsidy to residential customers in Coastal Labrador communities as part of the NSP for Labrador. This additional subsidy will make the effective rates that residential customers in these communities pay for basic customer service and the lifeline monthly block of electricity equal to Labrador Interconnected rates. Furthermore, the NSP committed to a review of commercial rates in these communities in conjunction with the sanctioning of the Lower Churchill project.

In time, when the cost of connecting a community to the electricity grid becomes less than maintaining its isolated diesel system, these communities will be connected. This was done in Rencontre East in 2006, and previously in such communities as Burgeo, St. Anthony, Fogo-Change Islands, Petite Forte, Grand Bruit and others.

Although diesel generation is the least expensive method of supplying electricity to isolated consumers, it is still costly. In terms of energy use, it is also inefficient. Space heating with an oil-fired furnace, for example, is more than twice as efficient as burning diesel fuel for power generation for electric heating. The Provincial Government's Home Heating Rebate program helps to offset the cost of heating, however, conservation measures could have an additional benefit to customers whose heating bills are high. The Provincial Government's renewed efforts in energy efficiency and conservation programs will help in this regard. An innovative technology that may allow NLH to reduce the use of diesel-generated electricity in remote communities is combining wind power and hydrogen. This is currently undergoing research and development in Ramea and is discussed in more detail in **Section 6 – Energy and the Economy**.

POLICY ACTIONS

Isolated Diesel Systems

The Government of Newfoundland and Labrador will:

- Review commercial rates in Labrador coastal communities in conjunction with the sanctioning of the Lower Churchill project.
- Work with the Aboriginal governments and groups to reduce the reliance on diesel energy in their communities where possible.
- Continue to compare interconnection and diesel generation costs as operating costs change.
- Support research and development into wind and/or wind/hydrogen integration for isolated communities.

POLICY ACTIONS

Gas-to-Wire

The Government of Newfoundland and Labrador will:

- Explore options for gas-to-wire generation and delivery.

POLICY ACTIONS

Other Generation Technologies

The Government of Newfoundland and Labrador will:

- Pursue other generation opportunities when they are technologically and economically feasible.
- Develop and implement a net metering policy for small generation developers.
- Encourage exploration and development of our uranium resources.

Gas-to-Wire (Natural Gas-Fired Generation)

When natural gas is produced from our offshore it could be transported to customers, either as gas in a pipeline, as gas in a Compressed Natural Gas (CNG) tanker, or as a liquid in a Liquefied Natural Gas (LNG) tanker. Landed in the province, it could be used to make electricity, which can then be transported to domestic and external markets by transmission lines. This process is known as gas-to-wire. Natural gas-fired generation can be significantly more efficient than systems fuelled by coal or, like Holyrood, heavy fuel oil and produce far less GHGs and other emissions. If natural gas can replace these other fuels, it will yield significant environmental benefits. Section 3 of this Energy Plan stated that the Provincial Government will request companies complete an analysis of landing gas options prior to submitting a Development Plan.

The economic feasibility of gas-to-wire will depend on a variety of factors, such as the total cost of producing, delivering and converting gas to electricity, compared to the current market value of electricity in the targeted marketplace.

Other Generation Technologies

A number of other technologies, including gas cogeneration (using natural gas from offshore or, on a smaller scale, methane recovered from landfills), cogeneration, biomass (wood), peat, tidal, small-scale wind, solar power and micro-hydro, might be able to contribute to our electrical supply. Some of these, notably cogeneration, are mature alternatives. Others are still in the developmental stages. Long-term business cases are required to support their use and they are highly sensitive to the sale price of the electricity. Together, they offer the potential to supplement our renewable electricity portfolio.

Some homeowners and small business operators have requested permission to install small generation units to produce power for themselves with the ability to feed some back into the system when they can produce more than they need. The Provincial Government will ensure that regulatory support is in place for customers who wish to develop these alternatives themselves on a small scale, through a net metering policy. NLH and Newfoundland Power have told Government they will make a joint proposal to the PUB to implement net metering for small-scale renewable energy sources, with due regard for safety, the environment and the community.

Since electricity prices, and therefore the economic feasibility of these other generation technologies, will be strongly influenced by the availability of power from the Lower Churchill, Provincial Government support for these alternatives will be limited until certainty for the Lower Churchill Project is achieved and the long-term supply situation is known.

No role is foreseen for nuclear generation in the province. Even if provincial legislation prohibiting nuclear generation were not in place, more cost-effective and flexible hydro alternatives are already available to us and are well understood. This does not diminish the value of the province's uranium deposits for export. Nuclear generation is enjoying a renaissance and can be more attractive than fossil fuel generation in many markets. New nuclear plants are under consideration in many parts of the world, driving ongoing demand for uranium ore.

TRANSMISSION AND DISTRIBUTION

Newfoundland and Labrador is blessed with abundant, environmentally attractive hydro and wind generation potential. To realize the full economic and environmental value of this potential to the people of the province, transmission access to both domestic and export markets is essential.

Labrador-Island Transmission Link

Connecting the Labrador and Island electricity systems is the most effective way to address many of the major issues affecting the Island system.

The cost of oil used at the Holyrood facility is forecast to increase significantly over the long-term. This increase in the fuel cost, combined with expected growth in the Island load requirements, is anticipated to result in significant rate increases on the Island over the long-term.

Constructing the transmission link, and delivering Lower Churchill power to the Island, is a more cost effective alternative to an isolated Island grid increasingly dependent upon oil-fired thermal power resources. It is also consistent with the goal of energy security in the province, as the cost of electricity from the Lower Churchill through the link would not be subject to external factors such as world oil market pressures.

Although the transmission link from Labrador has a significant initial capital cost, the annual cost will be essentially fixed, resulting in long-term rate stability and certainty on the Island. While there could be an initial increase in rates as the transmission link is phased-in, the long-term lower rates and rate stability more than offset any short-term phase-in rate impact.

The lower rates are expected to be very competitive when compared with other jurisdictions that will be reliant on higher costs sources of electricity. This cost advantage will be an important tool in attracting new industry to the province.

The link also provides a tremendous opportunity to increase the amount of electricity generated by clean, renewable hydropower, reduce fossil fuel reliance on the Island and provide rate certainty.

This transmission link will also allow two-way transmission of power, which depending on available transmission routes, could assist large-scale wind generation on the Island or facilitate the use of natural gas to generate electricity. This will enable us to achieve greater benefits by adding Island resources to the overall electricity supply for our use and for export.

Therefore, we will build new transmission infrastructure to link our electricity systems in Labrador and on the Island. The Labrador-Island link will enable us to meet almost all our electricity demand with clean, renewable electricity, essentially with no emissions.

POLICY ACTIONS

Labrador-Island Transmission Link

The Government of Newfoundland and Labrador will:

- Build a transmission link between Labrador and the Island in conjunction with the Lower Churchill development and seek Federal Government financial assistance in the context of GHG emission reduction initiatives.

POLICY ACTIONS

Island and Labrador Transmission

The Government of Newfoundland and Labrador will:

- Use our electricity resources to actively pursue new industrial development in the province, particularly Labrador.
- Work closely with potential developers to ensure transmission costs are understood and timelines are addressed.

This link will also improve the viability of the maritime route option, which would transmit power from the province into the Maritimes. This Labrador-Island link is an important first step in this transmission infrastructure. The maritime route option is discussed further in the Transmission for Export section below.

Island

On the Island, the existing 230 kV transmission system is adequate to meet current demands. NLH and Newfoundland Power currently own the distribution systems - the low-voltage network that directly feeds customers – in different areas of the province where customers are served effectively by their respective utilities. The good cooperation existing between them to ensure effective operation and minimum costs is expected to continue.

Labrador

In Labrador, the transmission lines from Churchill Falls to Labrador West and Lake Melville meet the current electricity needs of these areas. However, the province is actively pursuing new Labrador industrial development and if developments proceed, additional transmission capacity will be required. This new infrastructure will be constructed as needed and funded through the Labrador rate system with costs allocated to customers who benefit. Lead times are required to identify needs, complete the design and build new infrastructure. NLH will continue to work closely with potential developers to ensure costs are understood and timelines are addressed.

Figure 4.4
Lower Churchill Generation Facilities

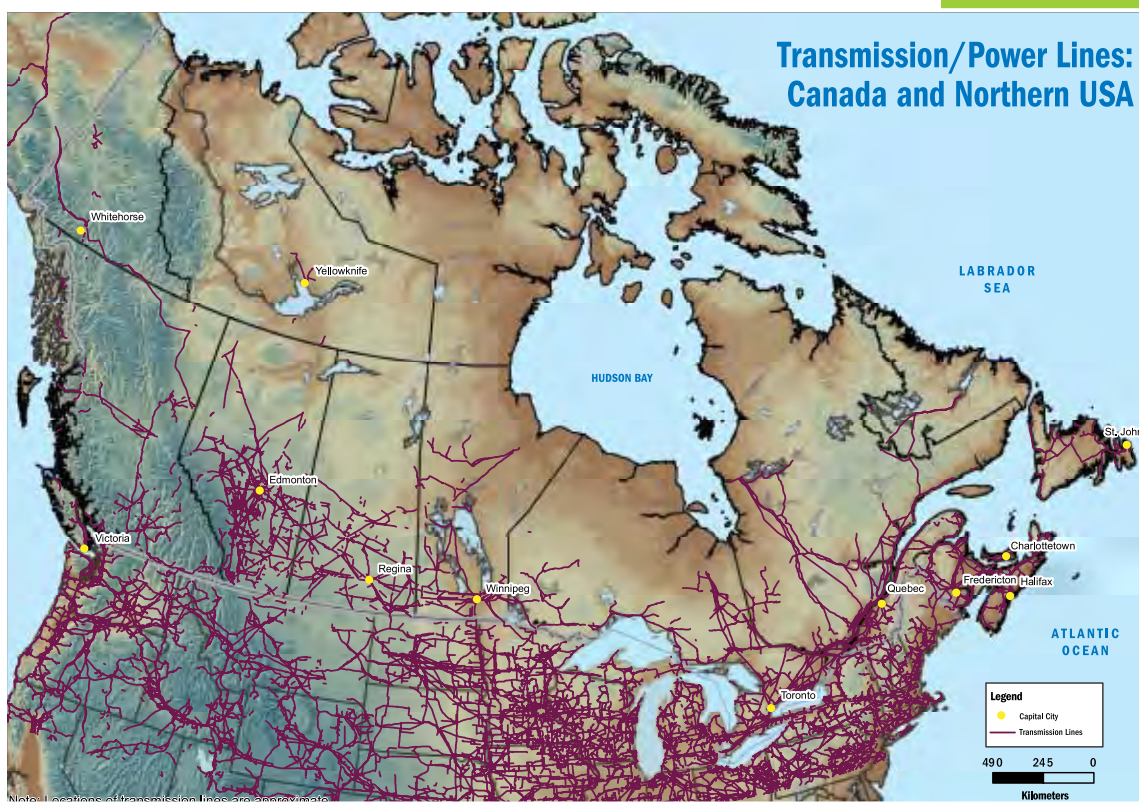


As part of the Lower Churchill Project and included in its cost, new transmission lines will be constructed between Churchill Falls, Gull Island and Muskrat Falls as shown in **Figure 4.4**. With the completion of Gull Island, high voltage transmission will be within 100 km of Happy Valley-Goose Bay, and when Muskrat Falls is completed, high voltage transmission will be within 40 km of Happy Valley-Goose Bay. This will improve the economics of adding transmission capacity, and reduce the consequent rate impact, should the future needs of the Lake Melville area increase.

Transmission for Export

As shown in **Figure 4.5**, Newfoundland and Labrador's direct transmission access to export markets is extremely limited. Many parts of Eastern Canada and the United States face a growing energy crunch and prefer to meet it with clean electricity sources. The total output of the Lower Churchill project could, for example, displace half the capacity produced from coal-fired generation in Ontario or almost all of the thermal generation in the Maritimes, as well as the associated emissions of GHGs and other pollutants. Just with respect to GHGs, this would be the equivalent of taking over 3 million cars off the road.

Figure 4.5
Transmission/Power Lines in North America



The Lower Churchill and Newfoundland and Labrador's other renewable energy assets provide a unique investment opportunity for Canada. Our electricity resources are significant enough to fulfill the needs of our province and provide a competitive, long-term, clean, reliable source of electricity at a reasonable price to the rest of the country and parts of the United States. In any event, Newfoundland and Labrador will choose destination markets and make infrastructure choices based on the best option, or combination of options, for this province.

We recognize that developing long-distance inter-jurisdictional transmission is a complex process that must address many factors and mitigate numerous risks. Nevertheless, NLH is well-advanced in this process with respect to Lower Churchill and on schedule to present the Provincial Government with the opportunity to sanction the project in 2009.

Our export focus will be on achieving direct access to both long and shorter-term customers in a number of markets, including Ontario, New Brunswick, Quebec, Nova Scotia, P.E.I., New England and New York. Achieving direct access is necessary to ensure we:

- a. Secure a fair share of the economic upside potential of developments over the long term.
- b. Position ourselves properly for realizing the long term value of the Upper Churchill development.

Two export routes are being investigated and pursued:

1. An overland route through the Province of Quebec, using Hydro-Quebec's Open Access Transmission Tariff (OATT) process into New Brunswick, Ontario, Quebec, Nova Scotia, New England and New York.
2. A subsea route from the Island into the Maritimes or Northeast United States, building on the transmission link from Labrador to the Island. This type of link would be similar in nature to subsea links currently in existence around the world. For example, the NorNed link between Norway and the Netherlands is a 700 MW capacity line stretching 580 km subsea, as compared to an 800 MW line between Newfoundland and Labrador and New Brunswick, a distance of 425 km.

Figure 4.6
Potential Export Routes



Canadian OATTs were mostly implemented in response to the United States Federal Energy Regulatory Commission (FERC) requirement that electricity companies making use of open access provisions in the United States, such as Hydro-Quebec, must provide reciprocal access on their own systems and those of all affiliates. Within Canada, there is no national regulatory agency that can require or enforce inter-provincial transmission access. The National Energy Board could do this, as it does with oil and gas pipelines, but only if specifically allowed by the Federal Government. To date, this has not occurred.

The United States has made great strides towards creating a national grid system, which allows the sharing of power supplies among all areas. The continued absence of an effective inter-provincial electricity transmission system in Canada,

POLICY ACTIONS

Transmission for Export

The Government of Newfoundland and Labrador will:

- Work to establish appropriate transmission access to Canadian and U.S. national electricity grids.
- Work with other governments and industry to establish an effective national electricity transmission system.

POLICY ACTIONS

Industry Structure

The Government of Newfoundland and Labrador will:

- Maintain the current industry structure for the management of electricity distribution activities between Newfoundland Power and Newfoundland and Labrador Hydro with an increased focus on identifying potential synergies.
- Identify which standard practices in the North American electricity industry are necessary for us to adopt as we become more electrically integrated, and how best to implement them in this province.

the “East-West grid,” means we cannot always develop the best projects across the country, including major clean renewable energy projects, for the benefit of all Canadians. This puts our country at a competitive disadvantage. We strongly encourage all Canadians, including the Federal Government, to seize the opportunity to aggressively implement a national electricity grid.

INDUSTRY STRUCTURE, REGULATORY PROCESS AND RATE SETTING

The past two decades have seen relative stability in this province’s electricity sector, with low levels of load and generation growth. Recently, oil prices have resulted in upward pressure and uncertainty with electricity pricing on the Island. The regulatory process has also proven to be time-consuming and costly to rate payers.

The next two decades will see dramatic changes to our electricity sector. We will see significant investment in generation and transmission projects for both domestic and export markets. This will include developing the Lower Churchill and building the transmission link between Labrador and the Island resulting in a significant reduction in our reliance on volatile fuel prices. The province will also become a significant exporter of electricity and player in the North American marketplace which will require it to abide by the relevant North American market rules.

Our overall goals within the electricity sector are to ensure that a reliable supply of clean electricity is available to our people and industries at competitive rates and to maximize the value of any surplus power we choose to export. There are three key areas that need to be addressed to fulfill our goals: industry structure, regulatory process and rate setting.

Industry Structure

Currently, NLH (including CF(L)Co) and Newfoundland Power are the key industry players in the province’s electricity generation, transmission and distribution business. NLH generates over 90 per cent of the electricity in the province and is responsible for all main transmission lines. Although Newfoundland Power has some generation capability, it is primarily responsible for power distribution on the Island. The delivery of electricity to consumers in the province is shared between NLH and Newfoundland Power with the distribution systems currently managed by NLH being located primarily in rural areas and in Labrador.

Due to the strategic importance of generation and transmission to the future of Newfoundland and Labrador, the province, through NLH, will retain ownership and control of its existing transmission and generation assets. NLH will also continue to manage rural and Labrador distribution assets to support the province’s commitment to rural development and continue to work with Newfoundland

Power to identify synergies to ensure that all consumers are being served appropriately. Newfoundland Power, and its parent company Fortis, are strong and committed Newfoundland and Labrador based companies that manage their assets efficiently and effectively. Urban electricity distribution activities are not critical to the mandate and strategic priorities of NLH and will continue to be managed by Newfoundland Power. In summary, the Provincial Government is not contemplating changes to the current industry structure within the province.

The Provincial Government will continue to monitor the development of standards of practices in the North American electricity industry, particularly market rules, transmission access rules and reliability oversight. This will ensure we are prepared to appropriately adopt these practices when we become more electrically integrated.

The Fortis Corporation

Fortis Inc. has been a generator and distributor of energy for more than 120 years through its operating companies. On December 29, 1987, the Corporation was created as the holding company of Newfoundland Power to pursue profitable growth and diversification. Today, Fortis is the largest investor-owned distribution utility in Canada with its head office based in St. John's, Newfoundland and Labrador. Since 1987, the Fortis Group has grown to ten companies with approximately 5,600 employees. Fortis utilities serve approximately two million gas and electric customers in five Canadian provinces and three Caribbean countries.

With assets approaching \$10 billion, Fortis has holdings in regulated and non-regulated businesses. Its regulated holdings include a natural gas utility in British Columbia and electric utilities in Newfoundland, Prince Edward Island, Ontario, Alberta and British Columbia. Its Caribbean electric utilities are located in Belize, Cayman Islands and the Turks and Caicos Islands. The Corporation's non-regulated businesses include hydroelectric generation assets in Newfoundland, Belize, British Columbia, Ontario and upper New York State. Fortis also owns hotels across Canada and commercial real estate primarily in Atlantic Canada.

Regulatory Process

With a couple of exceptions, electricity rates in Newfoundland and Labrador are set through a regulatory process governed by the PUB. This process has focused on maintaining low cost, reliable electricity service to customers, while balancing the financial requirements of the electrical utilities, NLH and Newfoundland Power.

Over the past number of years, this process has become increasingly complex and time-consuming. For example, between 2000 and 2004, NLH and Newfoundland Power incurred approximately \$20 million in costs in the process; these costs were passed on to electricity consumers. It is generally recognized that a more streamlined, timely and less costly regulatory model would significantly benefit the rate payers of the province. The regulatory process must continue to protect consumers by ensuring that electricity supply is adequately planned and is provided on a reliable basis at the most reasonable cost. The process should also incorporate broader considerations such as conservation and environmental protection, in addition to cost and reliability. These important additions will ensure that the electricity industry can address their responsibilities in a more comprehensive way.

POLICY ACTIONS

Regulatory Process

The Government of Newfoundland and Labrador will:

- Streamline the regulatory process governing the electricity sector.
- Maintain the fundamental regulatory principles that currently exist, but incorporate broader considerations such as conservation and environmental protection.
- Affirm the lead role of NLH as the long-term planning entity for the electricity sector.
- Ensure that the regulatory process can appropriately accommodate Lower Churchill and other power for use in both domestic and export markets.

POLICY ACTIONS

Rate Setting

The Government of Newfoundland and Labrador will:

- Maintain least-cost power as the primary objective in electricity rate setting in the province.
- Ensure isolated diesel customers continue to have their basic household requirements and preferential rates for specified facilities.
- Negotiate with both existing and new industrial developers in Labrador to ensure that the electricity rates paid are in the best interests of the province.

As Lower Churchill power becomes available for use within the province, it should serve to simplify the rate-setting process. We need to ensure that the regulatory process appropriately accommodates this new circumstance. The regulatory process must also be reviewed to ensure that we are in compliance with North American standards.

Rate Setting

The two key issues for the PUB in setting rates in the province are determining the appropriate costs to provide electricity service and determining how to allocate these costs to the various customers.

The primary principle in setting rates is to provide power at the lowest possible cost. This will be maintained as an objective, however, we must also have the flexibility to encourage other important priorities such as energy conservation and environmental considerations.

The other issue for the PUB in setting rates is to determine how costs are allocated. Rates are currently set separately for Labrador customers, Island customers and isolated diesel customers. In Labrador, the phase-in of a new rate structure is underway and is expected to be completed by 2011. At that time, there will be one rate system for customers on the Labrador transmission system. Any additional generation or transmission costs required in Labrador will be recovered through this rate structure.

The Island transmission system will continue to be treated as a separate system for cost allocation purposes even in the event of a transmission link between Labrador and the Island. Isolated diesel customers will continue to have their basic household requirements and preferential rates for specified facilities subsidized by other consumers.

Electricity costs for existing major industries in Labrador are generally exempt from regulation by the PUB; historically they have been set through contractual arrangements. The generation components of Labrador industrial rates will continue to be exempt from regulation. In the future, the province will negotiate with both existing and new industrial developers in Labrador to ensure that the electricity rates paid are in the best interests of the province. The principles of these negotiations will be:

- Consideration of the market value of energy resources;
- The extent to which the power rate will leverage viable industrial development; and
- Long-term power supply arrangements will only be considered where the opportunity for escalation of the power rates exists.

In conjunction with development of the Lower Churchill, the Energy Corporation is in discussions with various parties on potential power sale arrangements. For existing customers, this may require that the province assess the costs and benefits of continuing these historical arrangements, considering a combination of existing and future generation sources. These arrangements will be designed to balance the realities of market conditions with the need to encourage support of industries which significantly contribute to the provincial economy.



SECTION

5

Energy & Our Environment



Development of our clean, renewable hydro and wind resources will provide us with the opportunity to reduce air pollution in our province and make a significant contribution to the battle against global climate change.

ENERGY AND OUR ENVIRONMENT

In an increasingly environmentally-conscious world, we recognize that everything we do impacts and affects our environment to some extent. We have a shared obligation to make responsible decisions. Central to the health of our environment are initiatives that will reduce air emissions, protect our land, water and wildlife, promote energy conservation and efficiency, and result in sustainable energy projects that balance development with protection of the environment.

Newfoundlanders and Labradorians enjoy a natural environment that would be the envy of many people in the world, however, we do have environmental concerns. Air pollutants from the United States and other parts of Canada affect our air and water quality. GHGs emitted in this province from non-renewable energy use in cars, furnaces, factories and thermal electricity generation plants, like Holyrood, contribute to the world's climate change challenge. These issues also directly affect the health of our people and how we live.

Development of our clean, renewable hydro and wind resources will provide us with the opportunity to reduce air pollution in our province and make a significant contribution to the battle against global climate change.

We will continue to pursue the development of our oil and gas resources and use proceeds from these projects to support the development of renewable energy infrastructure that will enable us to have a sustainable clean-energy future. At the same time, we will promote and facilitate increased energy efficiency throughout the province's economy. We will also maintain strict environmental rules to minimize impacts on the environment from energy developments.

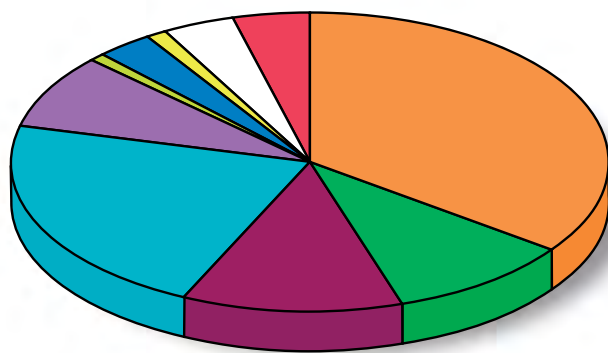
By 2020, we envisage a Newfoundland and Labrador that is both a highly efficient consumer of clean energy, and a net producer of clean energy. Development of our vast renewable energy resources in an environmentally sustainable manner will bring lasting benefits to the people of this Province and ensure our place as a net contributor to a healthier global climate.











Our Energy Plan builds on the initiatives outlined in the province's 2005 Climate Change Action Plan and introduces new actions to ensure that growth in the energy sector and in the economy as a whole, does not come at the expense of our environment. Instead, these actions must contribute overall to improving the environment. The Climate Change Action Plan is discussed in more detail in **Appendix B**.

AIR EMISSIONS

In 2005, Newfoundland and Labrador's GHG emissions were approximately 15 per cent lower than the average for Canada on a per capita basis. Nearly 37 per cent of these emissions came from transportation, while 12 per cent came from oil-fired generation of electricity to supply electricity to customers on the Island and in isolated communities province-wide. The Holyrood generating plant, the largest heavy-fuel oil consumer in the province, also releases significant levels of other pollutants, such as sulphur dioxide. Holyrood is ranked as the 42nd heaviest polluter in Canada in terms of kilograms of emissions released. In addition, offshore petroleum projects release emissions from flaring (burning off) natural gas during times when gas cannot be re-injected back into the reservoir or to generate power for their own use. The petroleum industries account for some 22 per cent of all GHGs released in the province.

Figure 5.1
GHG Profile for NL 2005



 Fossil Fuel Industries 2278 kt 22%	 Commercial & Institutional 444 kt 4%
 Mining 861 kt 8%	 Residential 390 kt 4%
 Agriculture & Forestry 46 kt <1%	 Transport 3920 kt 37%
 Manufacturing Industries 270 kt 3%	 Electricity & Heat Generation 1240 kt 12%
 Construction 17.6 kt <1%	 Non Energy Sources (Waste & Agriculture stc.) 1072 kt 10%

POLICY ACTIONS

Air Emissions

The Government of Newfoundland and Labrador will:

- By 2015, target the elimination of 1.3 million tonnes of GHG emissions per year, as well as all other pollutants from Holyrood, by building Lower Churchill and the Labrador-Island Transmission link. This will ensure more than 98 per cent of electricity generated for our own use comes from renewable sources.
- Join the Climate Change Registry to ensure consistent and verifiable measurement of GHG emissions as per the commitments from the August 2007 Meeting of the Council of the Federation.
- Release an updated Climate Change Action Plan by 2008 incorporating specific targets and commitments which build upon initiatives being undertaken by the province through the Council of the Federation and the New England Governors and Eastern Canadian Premiers.
- Work with industry and other stakeholders to develop a GHG strategy for the energy sector.

(continued)

While these factors present challenges, there are opportunities for improvement. We can advance the development and use of more clean, renewable sources of electricity to reduce our future dependence on fossil fuel. We can also make a major contribution to the environment beyond our borders through our capacity and potential to develop and deliver renewable electric energy to other North American markets after our own needs are met.

The Lower Churchill project alone has a combined capacity of over 2,800 MW of clean energy and has the potential to reduce GHG emissions by nearly 13 million tonnes every year if it displaces or avoids oil-fired generation like that at Holyrood or up to 16 million tonnes if it displaces coal generation. This provides the opportunity to displace approximately 11.8 million tonnes of GHG emissions beyond the 1.3 million tonnes generated by the Holyrood thermal plant. Likewise, development of our wind resources, both on the Island and in Labrador, can also generate thousands of Megawatts of additional capacity. By linking the Labrador and Newfoundland transmission systems, we will be able to supply more than 98 per cent of the electricity used in the province from clean, renewable sources compared to approximately 85 per cent today.

Newfoundland and Labrador also has an opportunity to utilize additional sources of energy that produce lower levels of GHGs and other air pollutants than emissions resulting from oil-fired generation. These include natural gas and renewable energy sources such as smaller hydro, wind and tidal.

A significant growth area for GHG emissions in the province in recent years has been offshore oil production. Some emissions are inevitable, for example from use of produced gas as fuel on the platforms and diesel fuel for supply ships. Also, when production is starting or restarting, some flaring has to be allowed. A limited amount of ongoing flaring of mixed gases is also allowed, within limits imposed by the C-NLOPB. The C-NLOPB has recently endorsed the World Bank's Voluntary Standard for Global Gas Venting and Flaring Reduction, committing it to ensuring best practices are followed to reduce flaring to the absolute minimum. Reduced flaring conserves an important resource and reduces GHG emissions.

Landfills are also a significant source of air emissions as they emit GHGs in the form of methane. To reduce the province's GHG emissions, the Provincial Government will use a portion of its Newfoundland and Labrador Green Fund to help assess the feasibility of a landfill methane capture and recovery facility at the Robin Hood Bay Landfill.

These initiatives will help the province continue with collaborative efforts with provinces and U.S. states under the 2001 New England Governors and Eastern Canadian Premiers (NEG-ECP) Climate Change Action Plan. The NEG-ECP Plan called for a short-term reduction of regional GHG emissions to 1990 emissions by 2010; a mid-term reduction of regional GHG emissions by at least 10 per cent below 1990 emissions by 2020; and, a long-term reduction of regional GHG emissions sufficiently to eliminate any dangerous threat to the climate.

In the immediate term, Newfoundland and Labrador is committed to achieving a significant reduction in its GHG emissions and will pursue the targets established through the NEG-ECP on a provincial basis. While we will not be able to achieve the short-term target of a reduction to 1990 emission levels by 2010, the development of the Lower Churchill hydro project will contribute to our goal of reducing emissions to 10 per cent below 1990 levels by 2020 and could, given the supply of clean energy, also contribute to reductions in other jurisdictions. As referenced earlier, Newfoundland and Labrador's 2005 Climate Change Action Plan outlined numerous actions aimed at reducing GHG emissions in the province. The Provincial Government will provide a 2008 Update of the Climate Change Action Plan, which includes specific targets and builds upon collaborative efforts through the Council of the Federation and the NEG-ECP.

In order to assess our progress in reducing GHG emissions it is crucial to have the ability to accurately measure emission levels. The Climate Registry is a multi-state and province collaboration aimed at developing and managing a common GHG reporting system to provide an accurate, complete, consistent, and verified set of data from reporting entities. As a member of the Council of the Federation, Newfoundland and Labrador will join the Climate Registry.

The Newfoundland and Labrador Centre of Excellence for Environmental Science, Research and Technology (CEE), located in Corner Brook, carries out long-term work on activities related to sustainable forestry, freshwater ecology, terrestrial ecosystems and other elements of the environmental sector. To further address the GHG reduction goals outlined in this Energy Plan, the Provincial Government, through the new Newfoundland and Labrador Research and Development Council, will task the CEE and its partner post-secondary institutions to give appropriate consideration in this area. More information on the Research and Development Council can be found under Energy Innovation in **Section 6 – Energy and the Economy**.

The Provincial Government will also continue to advance the priorities outlined in the Council of the Federation Energy Strategy, released in 2007, to accelerate the development and deployment of energy research and technologies that advance more efficient production, transmission and use of clean and conventional energy sources, including energy development in harsh climates.

POLICY ACTIONS

Air Emissions

The Government of Newfoundland and Labrador will:

- Continue to require that new offshore project developers follow best practices with regard to flaring levels.
- Provide funding through the Newfoundland and Labrador Green Fund for feasibility studies on, and potential implementation of, methane capture from large existing landfills and utilization as an energy source, for heating, electricity generation, or municipal vehicle fleet fuel.
- Task the Centre of Excellence for Environmental, Science, Research and Technology (CEE) and its partner post-secondary institutions, through the Newfoundland and Labrador Research and Development Council, to give appropriate consideration in developing further environmental sector partnerships aimed at addressing GHG reduction goals.
- Work within the Council of the Federation to accelerate the development and deployment of energy research and technologies that advance more efficient production, transmission and use of clean and conventional energy sources.

CAPTURING THE VALUE OF OUR RENEWABLE ENERGY

As nations around the globe focus on finding ways to transition their economies to reduce, and ultimately eliminate, greenhouse gas emissions, increased demand for renewable energy sources will increase the value of our portfolio of renewable hydro and wind generation.

In the long term, we will set a goal of greatly reduced GHG emissions. While caps on emission intensity (where caps are set per unit of production), and ultimately fixed emission caps will limit GHG emissions, various mechanisms have been proposed to help emitters make this transition. These include the purchase or trading of another party's reductions (offset credits) as well as investment in projects that can definitively reduce emissions through a technology. We must take actions that are both environmentally progressive and economically prudent as we take the necessary steps to reduce emissions.

Policy actions that either limit the use of GHG emitting fuel sources or favour investments in renewable projects will facilitate the development of our renewable energy resources.

Carbon Offsets and Trading

Controlling emissions of harmful substances through issuing allowances, also called permits or credits, which can be traded among regulated companies, is an increasingly common approach to reducing emissions in many jurisdictions. Provided the overall number of allowances is limited and the regulatory regime is enforced, a tradable emission allowance scheme should result in the reduction of emissions in the most economic manner. We recognize, however, that this approach must ensure flexibility for each jurisdiction in the country.

Greenhouse gases (GHGs) play a major role in global climate change regardless of where in the world they are emitted. This makes them excellent candidates for control through tradable allowances. A GHG emission trading scheme for Canada has been the subject of discussion for almost a decade. In April of this year, the Federal Government released a Regulatory Framework for Air Emissions. Under this Framework, several elements of which are still in a consultation phase, firms will be allowed to meet their emission regulatory requirements through domestic inter-firm trading of emission credits and the trading of offset credits. Offset credits are provided for emission reductions that take place outside of regulated emitting activities. Industrial emitters would also have access to qualifying credits from the Kyoto Protocol's Clean Development Mechanism.

As limitations on GHG emissions are progressively imposed in Canada and the U.S., the cost of electricity production from thermal generation that emits GHGs will increase. As a result, clean, electricity sources such as the proposed Lower Churchill project, will benefit from an increase in the market value for electricity. A GHG emission trading scheme will create a market value for emission credits - driven by supply and demand for credits in the market. If these credits were issued to generators of clean power, these credits may be able to be applied against emissions from thermal generation within a company or sold to other companies that cannot reduce their emissions enough to meet their regulated targets. The province is in favor of implementing this type of trading program, provided our abundant renewable resources, particularly the Lower Churchill and wind opportunities, are clearly able to obtain a reasonable, market based value for the credit opportunities they generate.

A number of American states, including all of New England as well as New York, have joined together to create the Regional Greenhouse Gas Initiative (RGGI) which sets limits on emissions of carbon dioxide (the primary GHG) from the electricity sector and creates tradable GHG emission allowances. The provinces that belong to the New England Governors – Eastern Canadian Premiers Conference have committed to consider whether to join RGGI and Newfoundland and Labrador looks favorably upon this option.

Technology Fund Options

The concept of a Technology Fund as a compliance mechanism has been outlined in Canada's Regulatory Framework for Air Emissions, and provides a means for emitting entities who cannot achieve reduction targets to make payments to a technology fund which invests the proceeds in projects and assets which will reduce GHG emissions over the long term.

This concept could be an important mechanism to facilitate the development of transmission links between Newfoundland and Labrador and Canadian markets that require renewable energy, such as the Maritime Provinces and Ontario. Projects such as the Lower Churchill Project are excellent candidates for such investments, given their proven ability to reduce GHG emissions over the long term.

The province is in favor of implementing the concept of a technology fund, provided reasonable timeframes are allowed for industry to prepare and adjust to new GHG emission targets, and the technology investments are targeted at facilitating obviously high value opportunities such as the Lower Churchill and the province's wind development opportunities. Such projects will have the ability to contribute not only to our province, but also to the GHG reduction objectives of the Maritime Region and Ontario.

POLICY ACTIONS

Capturing the Value of Our Renewable Energy

The Government of Newfoundland and Labrador will:

- Strongly support mechanisms for investment in renewable energy projects and work to ensure that technology fund investments are directed towards regional and national initiatives, such as east-west transmission projects, with proven ability to reduce emissions.
- Work with the Government of Canada and other provinces, as well as with industry to develop a technology fund that will invest in transmission for the Lower Churchill Project and wind opportunities.
- Work through the New England Governors – Eastern Canadian Premiers Conference to consider participation in the Regional Greenhouse Gas Initiative, while allowing the appropriate amount of time to allow a prudent economic transition.

(continued)

POLICY ACTIONS

Capturing the Value of Our Renewable Energy

The Government of
Newfoundland and Labrador will:

- Support and advance initiatives to regulate and limit GHG emissions in a manner that promotes renewable energy development
- Ensure that the province captures the incremental value of our renewable energy as a result of emissions regulation.

Intensity based and Fixed Emissions Caps

In the long term, the province must set caps on the amount of emissions allowed from various GHG emitting entities. Such caps will potentially have both a positive environmental impact and a negative economic impact in some sectors. The implementation of any such emissions caps must be approached in a balanced manner, allowing the appropriate amount of time to properly facilitate a prudent economic transition while ensuring the proper long-term stewardship of our environment.

As we develop the Lower Churchill and other clean renewable energy projects, the Government of Newfoundland and Labrador and the Energy Corporation will pay close attention to the development of GHG emission regulations and trading in Canada and the United States. Furthermore, the Energy Corporation will advocate its interests to ensure that it is positioned to capture the increase in value that is attributable to the regulation of GHG emissions in the electricity sector.

LAND, WATER AND WILDLIFE

GHGs are a critical environmental challenge facing the global energy sector and we must play our part in dealing with this challenge. It is also essential that we preserve and protect our land, water and wildlife to the greatest extent possible as our energy sector is developed. These resources are this province's natural legacy for future generations.

Development of our energy resources creates the potential for environmental impact and has to be carefully managed. For example, oil and gas exploration and production carry a risk of oil spills and introduce issues associated with site restoration; hydroelectric project reservoirs flood land and can disrupt river flows and fish habitats; wind farms are spread across considerable areas (even though the land in between the wind turbines can be used for some activities); and, electricity transmission lines and gas pipelines can interfere with wildlife migrations. The new *Sustainable Development Act* will ensure renewable and non-renewable resources are developed to maximize benefits for the province, while protecting the natural environment so that future generations have the ability to meet their own needs.

In addition, energy exploration and development projects are subject to rigorous environmental impact assessments under the provincial *Environmental Assessment Act* and/or the *Canadian Environmental Assessment Act*. Such assessments thoroughly examine the impacts energy activities might have on the environment and ensure they are mitigated. These processes also provide for significant opportunity for public input on the impact of these developments. The processes are effective, but can take considerable time. The Provincial Government is working with other jurisdictions through the Council of the Federation, the Council of Energy Ministers and the Canadian Council of Ministers of the Environment to improve the timeliness and certainty of regulatory approval decision-making processes while maintaining rigorous protection of the environment and public interest.

Offshore petroleum exploration and development activities occur in areas that have been traditionally the domain of the fishery. In inshore waters, such as Placentia Bay, transshipment and refining operations share areas with other users, including transportation, fishery, other industry, recreational vessels and tourism operations. We recognize the need for cooperation among these users. A good example of such cooperation is One Ocean, a liaison organization established by the fishing and petroleum industries of Newfoundland and Labrador. Under the direction of a board with representation from both industries, One Ocean promotes mutual understanding and provides a forum for communication, information exchange and exploring shared opportunities.

In advancing energy development activities, it is important to consider and respect the environmental and economic interests of Aboriginal peoples and all Newfoundlanders and Labradorians. Many stakeholders, communities and Aboriginal peoples are seeking increased opportunities to provide input into energy policy and resource management. Aboriginal governments and organizations are and will be consulted on resource developments in areas subject to land claims or settled treaties. Aboriginal peoples bring their traditional knowledge to the assessment of resource development and management, including the environmental acceptability of, and impact mitigation for, proposed energy projects in the province.

ENERGY EFFICIENCY AND CONSERVATION

Reducing our energy use is the most direct way of reducing our energy footprint. The difference between energy efficiency and energy conservation is often overlooked, but these are two different approaches. We can be more efficient in how we use energy and we can conserve energy by avoiding its use.

The advantages of both energy efficiency and conservation are clear: they help protect our environment – locally and globally – by minimizing pollution and GHGs. They also decrease energy costs both for individuals and businesses, and help us make our resources go farther, benefiting our people today and into the future.

Greater energy efficiency combined with conservation measures will lower our reliance on oil today, thereby reducing the amount of emissions released into the environment. Such measures can also help to ensure we have sufficient electricity until the completion of the Lower Churchill development and the transmission link to the Island.

In addition to protecting and preserving our environment, energy efficiency and conservation can preserve our incomes and protect our economy. Around the world, rapidly-rising energy prices and shortages in many areas have made conservation and energy efficiency necessary parts of doing business. For industry, more efficiency means a more competitive economic environment.

POLICY ACTIONS

Land, Water and Wildlife

The Government of Newfoundland and Labrador will:

- Ensure that renewable and non-renewable resources are developed in a manner which both maximizes benefits for the province while at the same time protecting the natural environment, including our land water and wildlife, to the greatest extent possible.
- Continue to work through the Council of the Federation, the Council of Energy Ministers and the Canadian Council of Ministers of the Environment to improve the timeliness and certainty of regulatory approval decision-making processes while maintaining rigorous protection of the environment and public interest.
- Ensure that stakeholders, communities, Aboriginal governments and groups are consulted appropriately on the development of energy projects.

POLICY ACTIONS

Planning and Coordination

The Government of Newfoundland and Labrador will:

- Establish an Energy Conservation and Efficiency Partnership (ECEP) to develop a coordinated and prioritized, five-year Energy Conservation and Efficiency Plan by March 2008.
- Provide an initial investment of \$5 million to the ECEP to coordinate and assist with energy conservation and efficiency initiatives.

Improved energy efficiency and conservation deserves effort on the part of all people, businesses and institutions in the province. The Provincial Government will continue to promote and facilitate energy efficiency and conservation programs to encourage energy consumers to make the effort and investments required.

Planning and Coordination

As part of our energy conservation and efficiency strategy, the Provincial Government will establish the Energy Conservation and Efficiency Partnership (ECEP) with an initial investment of \$5 million to coordinate and assist with energy conservation and efficiency initiatives and will put renewed emphasis on the actions in our provincial Climate Change Action Plan. The ECEP will be chaired by the Department of Natural Resources and will include the Department of Environment and Conservation, other Provincial Government departments and agencies and the Energy Corporation. Newfoundland Power, other private sector participants, and non-governmental organizations will be invited to join the Partnership.

The ECEP will investigate and develop collaborative approaches, share best practices and coordinate the measurement and evaluation of various efficiency and conservation initiatives. The first major task of ECEP will be to develop, by March 2008, a detailed plan for energy conservation and efficiency programs, including priorities and targets. This plan will include consideration of whether energy conservation/efficiency programs, and potentially other climate change programs, would be best delivered by a dedicated agency, as is the case in a number of other Canadian jurisdictions.

NLH and Newfoundland Power have jointly commissioned a study to examine the conservation and demand management potential within the electricity market. In addition, the ECEP will also ensure a focus on conservation measures for oil heating and transportation and recommend appropriate actions in these areas.

The Provincial Government, through the Department of Natural Resources, will also continue to work with regional and national counterparts to investigate and develop collaborative approaches, share best practices and coordinate the measurement and evaluation of efficiency and conservation initiatives.

Efficiency and Conservation Programs

To encourage reductions in energy consumption through conservation and increased efficiency, the Provincial Government will establish a series of targeted programs, following a focused set of consultations. Different energy consumer categories have very different energy efficiency and conservation needs:

Transportation

Because the transportation sector is our largest consumer of hydrocarbons, initiatives in this area offer a significant potential for improvements in energy efficiency and benefits for the environment. However, energy conservation and efficiency in transportation is a difficult issue, particularly in jurisdictions like Newfoundland and Labrador with large rural areas. The largest centres in this province are too small to economically support many forms of mass transit, such as commuter rail systems. As a result, energy conservation and efficiency in this sector depends largely on thousands of individual decisions concerning vehicle purchases, driving habits and distance traveled. As an initial step, the Provincial Government will consider the implementation of a rebate to encourage the purchase of highly efficient automobiles such as hybrids and diesels. The Provincial Government will also investigate additional ways to influence buyers' choice towards more efficient vehicles, such as sales tax rebates or a scaled annual license fee for vehicles based on energy efficiency. As a member of the New England Governors and Eastern Canadian Premiers Conference, Newfoundland and Labrador has committed to investigate the adoption of advanced vehicle energy efficiency standards at the state and provincial level.

The transportation sector also includes aircraft, fishing vessels and ferries and freight transportation on land and water. We will examine best practices in these parts of the transportation sector to encourage greater energy efficiency and conservation. Federal jurisdiction in some parts of the sector will require national policy decisions, but there are ways that we as a province can act to reduce energy consumption in this sector. Buying more local products, for example, provides an opportunity to conserve some of the energy used in the freight industry.

The Provincial Government will lead by example through a vehicle policy that Departments "buy what they need," and by adopting an initial target that 25 per cent of all cars and SUVs purchased in the next four years will be energy-efficient vehicles, including, but not limited to, hybrids. This target will be extended to pickup trucks when the availability of hybrids in this class improves.

POLICY ACTIONS

Efficiency and Conservation Programs

The Government of Newfoundland and Labrador will:

- Consider the implementation of a rebate program to encourage the purchase of hybrids and other fuel-efficient cars and SUVs.
- Investigate ways to influence vehicle choice towards more efficient vehicles.
- Investigate the adoption of advanced vehicle energy efficiency standards as a member of the New England Governors and Eastern Canadian Premiers Conference.
- Continue to implement transportation conservation initiatives as outlined in the Climate Change Action Plan.
- Develop a program to assist large industrial operations to perform efficiency/conservation audits.
- Explore the introduction of commercial and residential lighting conservation and insulation enhancement programs.

(continued)

POLICY ACTIONS

Efficiency and Conservation Programs

The Government of Newfoundland and Labrador will:

- Allocate \$500,000 to provide grants of up to \$250 to homeowners for pre and post retrofit residential energy audits.
- Allocate \$6.9 million over 3 years to the Newfoundland and Labrador Housing Corporation to fund an energy efficiency and conservation program for low-income homeowners.
- Lead by example in energy efficiency and conservation by:
 - Adopting policy that 25 per cent of all new Provincial Government car and SUV purchases during 2008-2011 period will be energy efficient vehicles.

(continued)

Industrial

In 2005, industrial customers consumed about 30 per cent of total end-use energy used in the province, much of it electricity. The ECEP will investigate new ways to encourage these customers to reduce their total power use. In the short term, this would reduce emissions from Holyrood but with the development of Lower Churchill and a transmission link between Labrador and the Island, this would allow more electricity for economic development in Newfoundland and Labrador and for export. In assisting industrial energy users, work is required to examine new energy-efficient technologies, it is also necessary to assist with energy auditing and to introduce innovation through Provincial Government partnership with companies to determine how best to manage their specific energy consumption.

Commercial and Institutional

Many institutional users face challenges in providing services to the public in the face of rising costs of energy. To respond to their issues and to those of small and medium-size businesses, the Provincial Government will explore the viability of different tools to increase energy efficiency and educate users about conservation methods.

Residential

For residential consumers, we will focus on reducing total energy consumption. As we develop a detailed plan for energy efficiency and conservation, we will consider a variety of mechanisms, such as retrofit rebates, new heating technologies, basic home weatherization, programs to switch to more energy-efficient lights and net metering. More information on net metering is found under Other Generation Technologies in **Section 4 – Electricity**. The Provincial Government will also implement a variety of public education and awareness initiatives.

As part of this Energy Plan, the Provincial Government will support residential pre- and post-retrofit energy audits for Newfoundlanders and Labradorians with an initial investment of \$500,000 towards the program in this fiscal year. In addition, the Provincial Government will provide significant funding to the Newfoundland and Labrador Housing Corporation for energy audits and retrofits in low-income households and continue to support the Provincial Home Repair Program.

Building Energy Codes

The province will also promote the application of energy codes for residences, businesses and public buildings. For most areas of the province, building standards are a municipal responsibility. Because buildings of all kinds are long-lived assets, their energy efficiency at the time of construction potentially affects energy use for a long time. They are often occupied through their lives by different users and the original owners may not have a strong incentive to make them as efficient as possible. As a result, some other provinces have adopted overall energy codes or standards. The application of energy codes across Newfoundland and Labrador will be investigated for new residences, businesses and public buildings. The Provincial Government will lead by example and implement a policy, where appropriate, that all new government and government-funded buildings, and major renovations, must be 25 per cent more energy-efficient than required by current codes, and must achieve, where possible, a Silver Standard under the Leadership in Energy and Environmental Design (LEED) program.



POLICY ACTIONS

Efficiency and Conservation Programs

The Government of Newfoundland and Labrador will:

- Strive to implement a policy that starting in 2008, where appropriate, all new buildings and major renovations receiving funding from the Provincial Government or built by Provincial Government corporations or agencies exceed the current Model National Energy Code by 25 per cent and, where possible, also qualify for a minimum Silver standard in the Leadership in Energy and Environmental Design (LEED) program.
- Ensure that reduced energy costs from efficiency measures beyond the commitment on Energy Codes are considered against any increased capital cost in new public sector buildings and major renovations.
- Continue to implement other initiatives for Provincial Government operations as described in the Climate Change Action Plan.

POLICY ACTIONS

A Culture of Conservation

The Government of Newfoundland and Labrador will:

- Continue to support the Climate Change Education Centre as a way to provide effective public education on energy conservation and efficiency opportunities.
- Establish and implement a comprehensive energy efficiency and conservation marketing strategy.
- Support programs that focus on engaging young people through outreach and education through an innovative annual \$200,000 education fund.
- Continue updating and expanding the environmental science component in the K to 12 curriculum.
- Continue to support our initiatives outlined in the Council of the Federation's "Climate Change: Leading Practices by Provinces and Territories in Canada," and considers implementation of best practices from other jurisdictions in the country.

A CULTURE OF CONSERVATION

Improving our energy efficiency, eliminating energy waste and reducing consumption requires the participation of all people and businesses in the province in their daily lives. Such a permanent change in the way we consume and conserve energy requires a shift to an energy-conservation culture. Education is a fundamental component of this shift in attitude.

The Provincial Government will encourage this change through continued support of the Climate Change Education Centre outlined in our Climate Change Action Plan. The Centre's vision is to dramatically increase knowledge and understanding of climate change and to be the catalyst for actions necessary to help address this issue by targeting schools, youth organizations, educators, non-governmental organizations, industry, and the general public. We intend to bring the climate change message to the people of Newfoundland and Labrador through a province wide information and education campaign.

Our young people are the future of our province and are keys to any initiative to foster sustainable change. Because of this, we have initiated revisions to the environmental science component of the K to 12 curriculums that will include outcomes related to climate change, energy conservation and efficiency and sustainable development. The Provincial Government will provide \$200,000 towards innovative programs and organizations that engage young people in energy-conservation and climate change and their relationship to sustainable development.

In 2007, the Council of the Federation released *Climate Change: Leading Practices by Provinces and Territories in Canada*, which identifies several best practices by Newfoundland and Labrador in the area of citizen involvement. These include funding provided for non-governmental organizations' outreach programs such as the Newfoundland and Labrador Climate Change Education Centre and Ocean Net, an exhibit and scientific discussion panel at The Rooms museum, a government employee awareness program, and the incorporation of climate change and sustainable development issues into the high school science curriculum. The Provincial Government will continue to support these initiatives.



SECTION

6

Energy & Our Economy



The energy sector not only generates significant revenues, but is a major employer in our province. This employment activity is expected to increase dramatically over the next several years, which will present us with the challenge of having enough skilled tradespeople and other qualified professionals to support this growth.

ENERGY AND OUR ECONOMY

Newfoundland and Labrador's energy sector contributes more to this province's real Gross Domestic Product (GDP) than any other. In 2006, the energy sector's contribution to the Newfoundland and Labrador economy (as a percentage of total real GDP) exceeded that sector's contribution in all other provinces, including Alberta.

The energy sector not only generates significant revenues, but is a major employer in our province. This employment activity is expected to increase dramatically over the next several years, which will present us with the challenge of having enough skilled tradespeople and other qualified professionals to support this growth.

Figure 6.1
Percentage of GDP from Energy Activities, 1997 - 2006

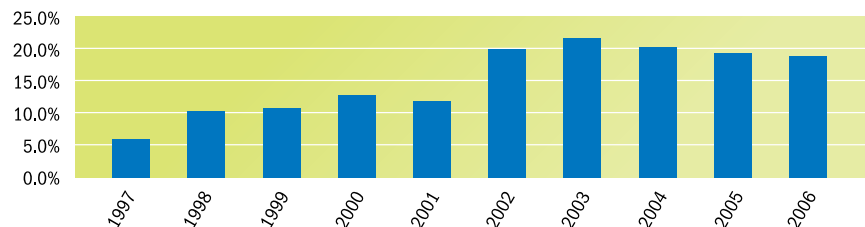
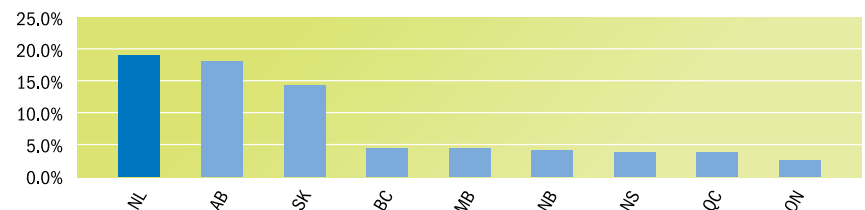


Figure 6.2
Energy Sector Contribution to GDP by Province, 2006



The energy sector is also a key driver of innovation within the province. This activity has driven our businesses, as well as our research and educational institutions, to be leaders in innovation. Our innovation commitment continues, as there is the potential to do much more.

We will also use our Energy Warehouse as a tool for economic and rural development. With it, we can provide industries carrying out work in our province with necessary power at a competitive price.

PROFESSIONAL AND SKILLED WORKERS

Our vision is to build a self-reliant, prosperous province where everyone contributes and benefits from our economic development. As a province, we benefit from varied experiences, backgrounds and opinions contributing to that prosperity. We also have a skilled work force with strong union leadership that has worked cooperatively with project developers to successfully complete multi-billion dollar projects right here at home. As new projects are developed, the energy sector will continue to provide the people of the province with many economic opportunities.

Energy developments provide the Provincial Government with the opportunity to improve the economic future of the people of this province. Our ability to develop energy projects is currently challenged by shifting demographics and other factors. For example, we face population decline, an aging workforce, limited immigration, decreasing numbers of youth pursuing skilled occupations and increasing competition from outside the province for labour. We have demonstrated that we can mobilize the necessary skilled and professional work force to complete major projects in the province. We are confident we can access the necessary human resources to successfully complete future major projects in the energy sector.

The Provincial Government has already undertaken a number of initiatives to ensure we have the skilled and professional workers we need. We have developed strategies to support human resource development and we are focused on strengthening the province's post-secondary education system. We have created a Skills Task Force and we developed a Poverty Reduction Strategy to help address barriers that limit the participation of underrepresented groups in the labour market. We have created a Division of Labour Market Development and Client Services to assist people looking for employment. We are working closely with our skilled trade unions and leaders to attract and retain skilled workers. Finally, we released an Immigration Strategy in March 2007 that will encourage more skilled professionals to immigrate and stay in Newfoundland and Labrador.

The Skills Task Force report, released in May 2007, provides a complete analysis of our workforce and the means to address labour challenges. Recommendations from this report focus on addressing skills gaps, improving education opportunities, embracing and encouraging workforce diversity and identifying potential workers outside the province.

While each of these initiatives helps to address current and future human resource requirements in the energy sector, other targeted human resource development strategies are still required. We must ensure we have all the skills necessary to support our future growth so more people can fully participate in resource development. Specifically, we need to develop a strong, educated labour force and increase the number of available workers in the province.

POLICY ACTIONS

Professional and Skilled Workers

The Government of Newfoundland and Labrador will:

- Support and implement the recommendations of the Skills Task Force.
- Work closely with our skilled trade unions and leaders to attract and retain skilled workers.
- Continue to update the labour demand and supply analysis of the Skills Task Force for current and future energy projects.
- Encourage secondary and post-secondary students to participate in our energy sector by promoting existing programs.
- Promote opportunities in our energy sector to skilled workers outside the province.

(continued)

POLICY ACTIONS

Professional and Skilled Workers

The Government of Newfoundland and Labrador will:

- Increase the number of educated and skilled workers in the province by:
 - Working with the Nunatsiavut Government and Aboriginal groups to identify potential employment and training opportunities.
 - Seeking to partner with the Federal Government to improve the educational outcomes for Aboriginal students and facilitate their participation in post-secondary education.
 - Working with stakeholders to ensure that underrepresented groups have full access to employment opportunities.
 - Identifying and facilitating programs to increase the participation of women in professional and skilled trades in the energy sector.
 - Identifying and facilitating programs to increase the participation of Aboriginal peoples in professional and skilled trades in the energy sector.

(continued)

Aboriginal Peoples

Aboriginal peoples are significantly underrepresented in the energy sector. With Newfoundland and Labrador poised to advance a significant number of new energy developments, Aboriginal peoples are positioning themselves to take full advantage of these opportunities.

Recent initiatives to support educational opportunities for Aboriginal peoples include Memorial University's programs in Native and Northern Education. College of the North Atlantic, at the request of Aboriginal groups, provides training programs at the Happy Valley-Goose Bay campus, as well as Adult Basic Education at Learning Centres in Northwest River, Nain, Hopedale, Natuashish and Rigolet. To provide further opportunities and address increasing demand, the Provincial Government recently initiated a \$5.5 million expansion for the Happy Valley-Goose Bay campus and committed \$18 million for a college in Labrador West. Aboriginal peoples also have access to federal human resource development programs.

These and other initiatives highlighted in this Energy Plan including Impact Benefits Agreements, as well as employment initiatives included in the Northern Strategic Plan for Labrador, will further increase opportunities for Aboriginal peoples to participate more fully in energy resource development.

Women

Women continue to face barriers that limit full participation in professional and skilled positions in the energy sector. The Newfoundland and Labrador Skills Task Force Report indicated that while women make up 60 per cent of the total enrolment at Memorial University and approximately 47 per cent at College of the North Atlantic, they accounted for 20 per cent of enrolment in engineering and applied science programs, 17 per cent of registered apprentices and 3 per cent of apprentices in non-traditional trades. Women need better access to the emerging opportunities in our energy sector.

The Provincial Government has undertaken several initiatives designed to increase the number of women involved in non-traditional occupations. For instance, in October 2006, the Provincial Government signed a contract with the International Brotherhood of Electrical Workers (IBEW) to increase female representation in electrical trades through the creation of a mentorship program. The IBEW will also work to match female students in their first year of apprenticeship with appropriate employers. The Provincial Government has also directed funding for scholarships to be applied directly to women involved in trades programs and is piloting a new *Futures in Skilled Trades and Technology* program for secondary students.

An available and diverse workforce is critical to the success of our energy projects and the growth of the provincial energy economy. For large-scale projects fully within our regulatory jurisdiction, the Provincial Government will require proponents to include employment plans for women, stating corporate objectives to achieve employment equity for women in all project phases. Employment equity will give women equitable access to all employment opportunities and eliminate barriers that create discriminatory practices.

These employment plans would outline the elements of an employment equity program, set quantitative goals to achieve employment equity and set qualitative goals that identify barriers to be eliminated. These plans would also specify any special policies and practices to achieve employment equity and outline the proponents' plans to report on progress. For projects where jurisdiction is shared with the federal or other governments, as in our offshore, the Government of Newfoundland and Labrador will work to obtain agreement for similar requirements.

In preparing these employment plans, proponents will need to consider the current and projected availability of women for jobs associated with an energy project. Greater availability of women will exist in some occupational categories than others. Special measures to attract and secure women for occupations where women are under-represented will be required. Employers will be required to set initial goals based on the availability of women in these occupational categories, as identified by Statistics Canada's Employment Equity Data Report, and longer term goals to increase representation of women in each occupational group where under-representation has been identified. The plan as a whole should be sufficiently comprehensive and well-designed to achieve a more gender-balanced workforce within a reasonable period of time.

These steps exemplify the province's efforts to ensure that women can more fully participate in the energy sector. The Provincial Government remains committed to removing barriers that face women.

ENERGY INNOVATION

Innovation is about finding new ways of doing things. It includes doing familiar things in new ways, or doing something new altogether. Innovation can also help us adapt to change and even turn challenges into advantages. In the energy sector specifically, it includes developing new and better ways to find and develop our resources. It brings us ever closer to developing resources that were previously out of reach, or simply not feasible.

Although Newfoundland and Labrador is a relatively small community, we are fortunate to have several world-class research, development and innovation facilities. The most notable are our "Centres of Excellence" - including those at Memorial University, the Marine Institute, Sir Wilfred Grenfell College and College of the North Atlantic. As a result, Newfoundland and Labrador is already recognized as a world leader in marine science and ocean technology.

POLICY ACTIONS

Professional and Skilled Workers

The Government of Newfoundland and Labrador will:

- Develop a strategy to retain our educated and skilled workers that will:
- Encourage continuous employer-driven investment in job training and skills upgrading.
- Encourage higher enrolment and graduation rates for post-secondary institutions.
- Address specific labour market challenges related to retention in the energy sector.
- Require large-scale energy project proponents within our jurisdiction to include employment plans for women that address employment equity and work with other governments to accomplish the same goal where resources are jointly managed.

The province is also home to the Centre for Marine Compressed Natural Gas (CNG), the world's first research and development centre for large-scale CNG transportation. We have a large natural gas resource in a challenging ocean environment and successful development of CNG technology will provide a valuable new alternative for transporting this gas to market. The Provincial Government was a founding member of the Centre and continues to support its work.

We are also a partner in Petroleum Research Atlantic Canada (PRAC). PRAC is a partnership amongst industry, governments and academia created to build regional petroleum-related research and development capacity. This approach shows how we can work together to grow the industry. The Provincial Government is providing \$100,000 in funding to PRAC in each of the next three years.

While these research and development facilities and partnerships provide us with a solid foundation and a record of achievement, we still face some innovation challenges. These include limited human resources in some critical areas, limited access to private-sector financing for commercialization, a reliance on primary resources in rural areas and a variety of geographic challenges.

There has been significant research and development in the provincial energy sector, particularly in the petroleum sector. There are significant opportunities to increase expenditures in this area. The Atlantic Accord legislation provides for spending on research and development and authorizes the C-NLOPB to issue guidelines with respect to such spending. These guidelines are expected to result in oil companies spending several million dollars per year on research and development in the province. This additional spending will further increase the province's stature as a location for energy-related research and development in areas where we have or can build a competitive advantage.

The Provincial Government has already begun to address these challenges, with the release of the Innovation Strategy in 2006. In April 2007, the Provincial Government announced the development of a province-wide, comprehensive research and development strategy and the establishment of a Research and Development Council. The Provincial Government, in collaboration with Memorial University, College of the North Atlantic and the private sector, will develop a strategy to give Newfoundland and Labrador a competitive edge in various sectors such as ocean technology and alternative energy technologies. Under this strategy, the Provincial Government aims to increase private and public sector research capacity and enhance the provincial research and innovation environment.

Focusing on Our Best Opportunities

Research and development spending in itself can have a significant economic impact in the province. The ultimate goal, however, is the increase in opportunities for Newfoundlanders and Labradorians to become global experts and provide services on world-wide scale.

From an energy perspective, some of the research and development opportunities to consider will be things such as:

Increasing hydrocarbon recovery

As oil is extracted from reservoirs, it becomes more difficult to access the oil that remains in the field, due to decreased pressure or different geological constraints. To ensure we receive the maximum value from offshore oil production, we need to develop or adapt technologies to increase recovery from both existing and future fields. Current research and development efforts could also help develop our natural gas resource by reducing a variety of technical hurdles.

Oil and natural gas exploration and development in harsh northern environments

Developing hydrocarbon resources offshore Newfoundland and Labrador will become more challenging as efforts move northward to Labrador and to the deeper waters off the Grand Banks. Our Centres of Excellence, including those at Memorial University, pursue ongoing research activities that strengthen this province's position as a world leader in harsh, ice-prone water operations. The recruitment of researchers, faculty and students for these efforts has created a concentration of highly-qualified personnel who further advance our reputation and capabilities as a centre for oilfield operational excellence in harsh environments.

We will continue to strengthen our position as a world leader in harsh-environment technology. Several local companies have made significant progress towards this goal; they and others will be able to capitalize on new opportunities as the global petroleum industry looks to deeper waters and the Arctic for future production. With this expertise, Newfoundland and Labrador will play a growing role in the global search for oil and gas.

Wind power in harsh environments

Wind power has already achieved a significant breakthrough in the energy marketplace and increased research and development efforts will help to increase its potential and its role in the energy supply.

Newfoundland and Labrador's wind resources are among the best in the world. More research and development activities are needed, however, to overcome challenges posed by weather, icing and corrosion. We must also find ways to ensure better reliability and accessibility and deal with maintenance requirements.

POLICY ACTIONS

Focusing on Our Best Opportunities

The Government of Newfoundland and Labrador will:

Invest \$5 million to provide detailed advice and recommendations on planning, implementing and financing energy innovation. This investment will be used to:

- Pursue a strategic, coordinated approach to energy innovation focusing on areas of a competitive advantage.
- Create an Energy Innovation Roadmap for the province by the end of 2008 to provide direction, focus, and priorities for our future energy technologies.
- Identify and work with various groups to promote focus on key opportunity areas.
- Leverage existing strengths and energy expertise at Centres of Excellence and elsewhere by encouraging a common, coordinated approach to executing energy research.
- Address the lack of venture capital and other funding necessary to move ideas into implementation.

Hydrogen

Hydrogen is often characterized as the fuel of the future, because it is clean and can be made from a variety of sources. The province's abundant wind and hydroelectric resources provide us with a natural advantage for the clean production of hydrogen using electrolysis powered by renewable energy. At the smaller scale, our interest in hydrogen has already led to Ramea's wind-diesel-hydrogen integration project.

NLH has become a member of the North Atlantic Hydrogen Association (NAHA), which undertakes hydrogen research and development projects, including those related to harsh and remote environments and the North Atlantic region. NLH will also work with other companies from Canada, Iceland, Greenland, Denmark and Norway to study hydrogen as an energy carrier, with specific emphasis on the ties between renewable energy resources and hydrogen. In the future, Newfoundland and Labrador could be among the lowest-cost large-scale producers of hydrogen. These other partners share our need for breakthroughs in hydrogen storage and transportation and the NAHA will provide a forum for collaboration on these issues.

Ramea

A remote, wind-swept island off the south coast of Newfoundland is perhaps not the first place that you would look for a demonstration community for the future. But this small island community of Ramea with 618 inhabitants is where one of the most exciting projects ever developed by NLH and its partners will be tested. The project looks towards a future largely independent of fossil fuel.

Its windy situation makes Ramea a natural choice for wind power production, and the wind turbines installed will produce a significant excess of power under optimal conditions. However, power production from wind is unreliable; when there is too little or too much wind, the turbines won't run.

NLH is looking for a way around this problem. At Ramea, excess power will be stored as chemical energy in the form of hydrogen. When it is windy, electrolyzers will produce hydrogen for storage, and when it is calm, a hydrogen engine will convert the hydrogen back to electricity. The power consumption of the islanders varies, but the stored hydrogen will ensure that sufficient renewable power can be generated at any time – even when consumption is high and wind activity is minimal. As a first demonstration community, the efficient and cost-effective integration of wind power, hydrogen and diesel will be pursued before new communities are added. Ramea will be a model for the hydrogen economy.



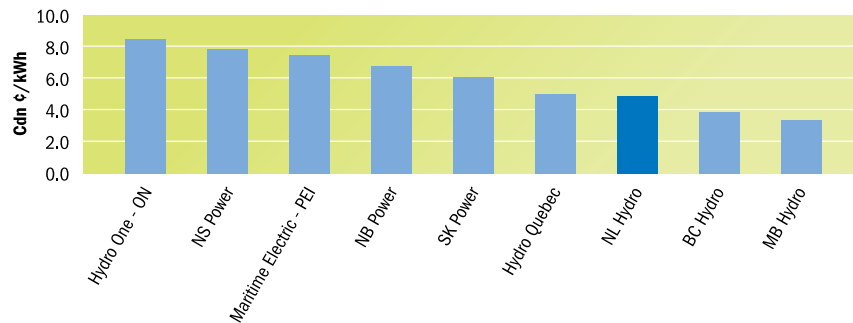
The province will monitor other energy innovation opportunities to determine their applicability to the Newfoundland and Labrador energy sector. Potential opportunities include ocean energy (including tidal), biomass and methane hydrates.

The Government of Newfoundland and Labrador will provide a \$5 million investment to begin this research effort, including the development of an Energy Innovation Roadmap for Newfoundland and Labrador.

ENERGY AS A TOOL FOR ECONOMIC DEVELOPMENT

In addition to providing significant direct fiscal and employment benefits, access to energy can also drive economic activity in a more indirect manner. For many industries, having a secure, long-term supply of competitively priced energy is critical. As shown in **Figure 6.3**, NLH provides competitively-priced energy to a number of large industrial customers, including Abitibi Consolidated Inc., Corner Brook Pulp and Paper, Aur Resources and North Atlantic Refinery. The Iron Ore Company of Canada and Wabush Mines are not included because they get their power from Churchill Falls under contractual arrangements.

Figure 6.3
Average Monthly Electricity Cost Comparison (Jan. 1, 2007); Industrial Service at 100 MW; 58,000 MWh



With the development of additional energy projects, such as the Lower Churchill, the opportunity exists to advance more industrial development activity in the province over the longer-term. These developments are likely to be either energy-intensive and/or based on the other resources of the province.

The Provincial Government will also ensure energy is supplied to support industrial development in the province. Providing competitively-priced energy to potential industrial customers throughout the province is consistent with our vision of a strong and prosperous Newfoundland and Labrador and is an investment in our future. However, we must ensure that these industries provide an appropriate level of value back to the people of this province.

Regional Economic Development

Until the past few decades, the provincial economy was based on comparatively strong resource-based industries - fishing, forestry and mining - which supported a robust rural population. While resource-based industries are still very much a part of our rural economy, we also need to focus on diversifying and innovating our economy to increase our options and opportunities. This is also necessary if we are going to encourage young, educated people to explore economic opportunities in our rural areas.

In developing this Energy Plan, we have drawn on the principles of our Regional Diversification Strategy, which recognizes that economic development must emphasize regional industrial development and link industrial development to small business creation. The strategy also recognizes that innovation and technology are the cornerstones for industrial development, and acknowledges the important links between social and economic planning. These principles will help to optimize the benefits from our energy projects for the people of this province.

This Energy Plan is focused on ensuring that development of our energy resources benefits our rural areas as well as our urban centers. The revenues that this sector generates, the employment opportunities that are created and the industries that it may attract must benefit rural areas of the province.

Labrador

Labrador is unique in its geography, history, culture and heritage. This is reflected in the Northern Strategic Plan (NSP) for Labrador, a provincial investment of more than \$250 million. The NSP respects the objectives and aspirations of Labradorians, as well as the Provincial Government's commitment to the social and economic development of Labrador. While it is home to vast developed and potential energy resources, Labrador also creates special challenges from an energy perspective, such as supplying electricity to remote communities at a reasonable cost.

Building on the NSP, this Energy Plan highlights the critical role Labrador will play in shaping the province's future and how the people of Labrador will benefit from energy development. In particular, the people of Labrador will benefit greatly from the development of the Lower Churchill. Jobs and business activity from the construction and operation of the project are the first and most tangible benefits. Most of the jobs and business spinoffs will occur in Labrador and the province will make every effort to maximize the benefits to Labrador through training and supplier development.

Labrador residents will also benefit from the availability of energy to maximize economic opportunities. The location of the Lower Churchill and other renewable resources in Labrador will provide a significant longer-term cost advantage for industries that locate in the area and will help offset the costs of operating in a location that is remote from major markets.

The number of energy developments on the horizon in Labrador, combined with an aging workforce, means that the requirement for new tradespeople in Labrador will be high. We will work to ensure a fully-qualified workforce is available to meet the needs of our energy developments and to maximize the benefits to Labradorians.

Aboriginal Peoples

As we proceed with energy development, the Provincial Government is committed to the engagement and participation of Aboriginal peoples in developing the province's energy resources as appropriate and we will work with the Nunatsiavut Government and Aboriginal groups to ensure there are opportunities for involvement in the development of projects and that skills training is available where required.

POLICY ACTIONS

Energy as a Tool for Economic Development

The Government of Newfoundland and Labrador will:

- Ensure our energy resources, where appropriate, are used as a tool to promote economic development, particularly in rural areas and Labrador.
- Work with the Nunatsiavut Government and Aboriginal groups to ensure opportunities for involvement in the development of projects are pursued and skills training are available.

POLICY ACTIONS

Long-Term Project Planning

**The Government of
Newfoundland and Labrador will:**

- Work with industry, unions, fabrication facilities and education institutions to have a full understanding of the scheduling, timing and employment infrastructure requirements for large-scale projects with a view to facilitating the successful completion of these projects in the province.

LONG-TERM PROJECT PLANNING

In the next decade, we anticipate a number of significant projects proceeding in the province. These include Hebron, the Lower Churchill and associated transmission, the nickel processing facility in Long Harbour, a new refinery and LNG transshipment facility in Placentia Bay, several mining projects in Labrador and a number of major offshore petroleum developments. We acknowledge there is a challenge if the timing of large-scale projects overlaps.

These projects will require skilled and professional workers and access to fabrication facilities. The Provincial Government has undertaken a major planning exercise with the Skills Task Force with a view to ensuring we have the necessary human resource to meet the coming needs. This Plan expands on this initiative, with an aim to increase the workforce available for energy projects.

We have major fabrication capacity in the province which has proven its ability to support large-scale projects on time and on budget. The Provincial Government is doing the necessary planning to ensure these facilities can complete as much of the work on these projects as possible in the province and is prepared to play its part to expand these facilities if necessary.



CONCLUSION Focusing Our Energy To Shape Our Future



CONCLUSION

This Energy Plan reflects the hopes, dreams, aspirations and confidence of the people of Newfoundland and Labrador. It also represents one of our most fundamental opportunities to achieve our goals of self-reliance and prosperity.

The Plan balances two objectives – economic self-reliance and environmental sustainability – neither of which is possible without the other. With Newfoundland and Labrador's first comprehensive Energy Plan, we stand ready to make the most of every development opportunity so that Newfoundlanders and Labradorians today and generations to come will at last enjoy the full benefits of living in a land so rich in energy resources.

We will harness our resources to fuel and to capitalize on industrial expansion, innovation, infrastructure development and critical social advances. We will seize opportunities to draw power from clean energy sources for local use and profitable sale. And we will champion the most responsible management practices in order to protect our environment for future generations.

Our Energy Plan builds upon and complements our other major initiatives, including the Skills Task Force, the White Paper on Public Post-secondary Education, the Innovation Strategy, the Immigration Strategy, the Poverty Reduction Strategy, the Climate Change Action Plan and the Northern Strategic Plan for Labrador. Everything we are doing is designed to build on our strengths and to seize every opportunity to achieve sustainable economic growth.

Energy is indispensable in the modern age and we stand proudly as a strategic Energy Warehouse. This strength provides us with the opportunity to take charge of our future as masters of our own house. With this Energy Plan in hand, we will move forward and develop our energy resources more effectively and creatively to build strong, thriving regions throughout our province.

This Energy Plan represents our strategic direction for the next several decades, and working collaboratively and consultatively with our partners and stakeholders, we will succeed. The Government of Newfoundland and Labrador will face our challenges, maximize our returns and embrace our opportunities. This determination, strength and bold new approach will pave the path to prosperity and self-reliance for Newfoundland and Labrador.

SOURCES AND NOTES

Section 2 Managing Our Energy Warehouse

Figure 2.1 Source: Department of Natural Resources, Newfoundland and Labrador Hydro and Canada–Newfoundland and Labrador Offshore Petroleum Board; Note: Others include peat, uranium, biomass (wood) and other energy sources.

Figure 2.2 Source: Department of Natural Resources and NLH

Figure 2.3 Source: Department of Natural Resources and NLH

Figure 2.4 Source: BP Statistical Review of World Energy June 2007, except NL, MB, Quebec & Rest of Canada (Statistics Canada) Population – Population Reference Bureau, except NL, MB, Quebec, Rest of Canada – Statistics Canada 2006 Census of Population; Notes: “Rest of Canada” production is calculated as: BP daily production converted to annual production level LESS NL production LESS MB production LESS Quebec production; “Rest of Canada” population is calculated as Canadian population LESS NL population LESS AB population.

Figure 2.5 Source: BP Statistical Review of World Energy June 2007, except NL, MB, Quebec & Rest of Canada (Statistics Canada); Population – Population Reference Bureau, except NL, MB, Quebec, Rest of Canada – Statistics Canada 2006 Census of Population; Notes: “Rest of Canada” production is calculated as: BP daily production converted to annual production level LESS NL production LESS MB production LESS Quebec production; “Rest of Canada” population is calculated as Canadian population LESS NL population LESS AB population.

Figure 2.6 Source: Department of Natural Resources, C–NLOPB and Jacques Whitford

Figure 2.7 Source: Department of Natural Resources, Newfoundland and Labrador Hydro and Jacques Whitford

Figure 2.8 Source: Government of Newfoundland and Labrador and NLH
Notes: Includes Hibernia, Terra Nova, White Rose and Upper Churchill; Rest of Canada includes Federal Government and other Canadian provinces and territories.

Figure 2.9 Source: Newfoundland and Labrador Hydro

- Figure 2.10** Source: Government of Newfoundland and Labrador; Notes: Includes Hibernia, Terra Nova and White Rose; Rest of Canada includes Federal Government and other Canadian provinces and territories.
- Figure 2.11** Source: Sproule Associates Limited, June 30 2007
- Figure 2.12** Source: Sproule Associates Limited, June 30 2007
- Figure 2.13** Source: 2007 Annual Energy Outlook, U.S. Department of Energy, Energy Information Administration, February 2007. Note: Assumes 2 percent annual inflation.

Section 3 Oil and Gas

- Figure 3.1** Source: Wood Mackenzie Government Take Study (2007); Note: The Government of Canada has an 8.5 per cent equity share in one upstream project, the Hibernia Project offshore Newfoundland and Labrador.
- Figure 3.2** Source: Government of Newfoundland and Labrador; Note: Rest of Canada includes Federal Government (including CHHC) and Corporate Income Tax to Other Canadian provinces and territories.
- Figure 3.3** Source: Department of Natural Resources

Section 4 Electricity

- Figure 4.1** Source: Environment Canada
- Figure 4.2** Source: Newfoundland and Labrador Hydro
- Figure 4.3** Source: Canadian Wind Energy Atlas
- Figure 4.4** Source: Newfoundland and Labrador Hydro
- Figure 4.5** Source: Jacques Whitford
- Figure 4.6** Source: Newfoundland and Labrador Hydro

Section 5 Energy and our Environment

- Figure 5.1** Source: Department of Environment and Conservation and Environment Canada

Section 6 Energy and Our Economy

Figure 6.1 Source: Statistics Canada

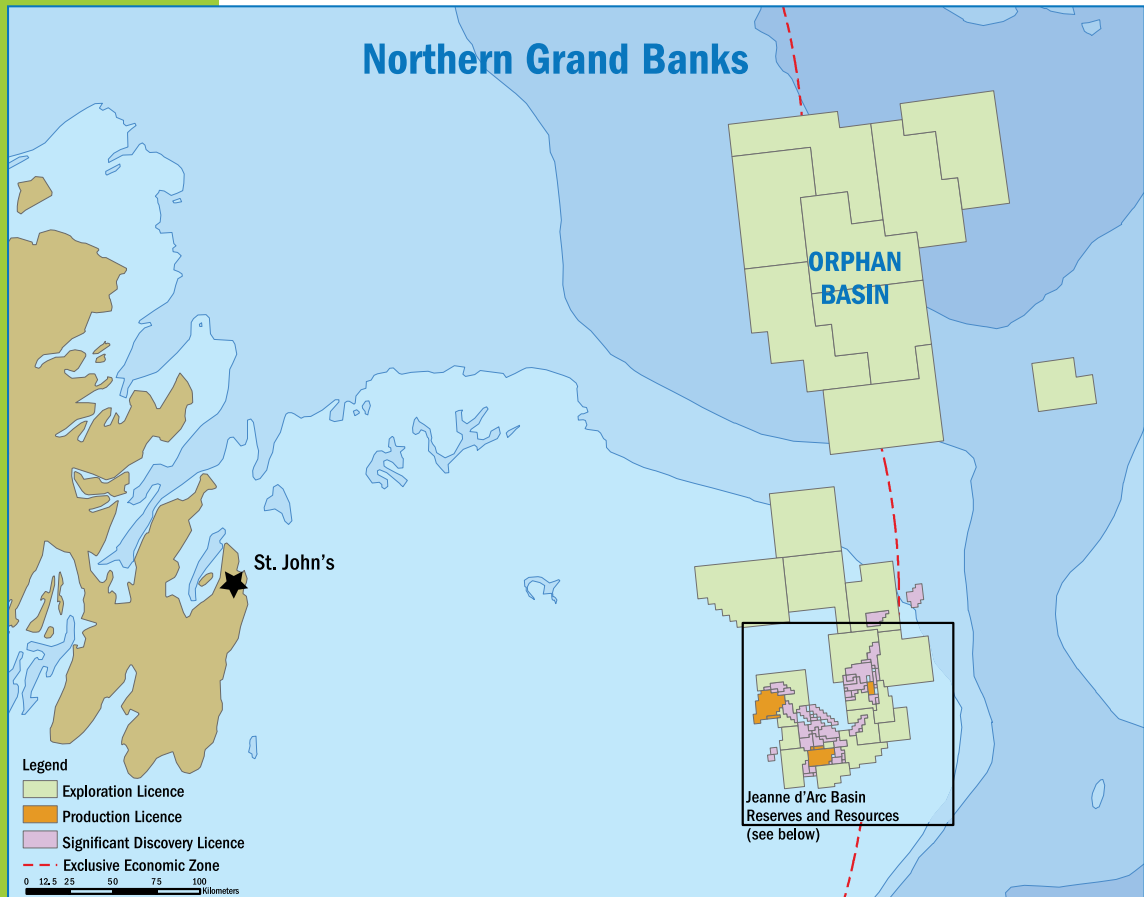
Figure 6.2 Source: Statistics Canada

Figure 6.3 Source: Newfoundland and Labrador Hydro

Photo Credits: Special thanks to Canada–Newfoundland and Labrador Offshore Petroleum Board, ExxonMobil, Husky Energy, Newfoundland and Labrador Hydro and WesternGeco for photos provided in this document.

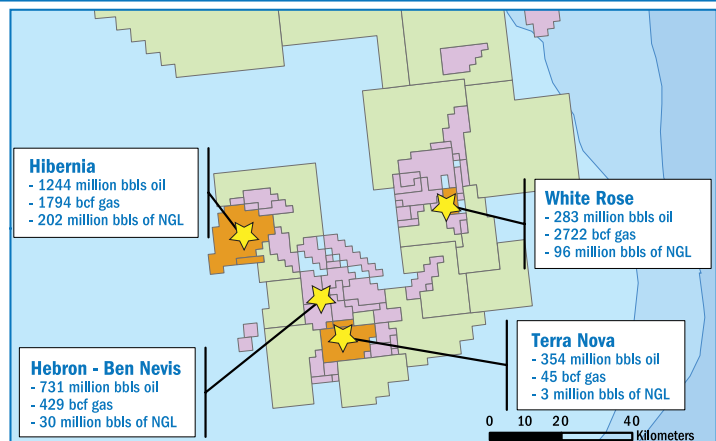
APPENDIX A

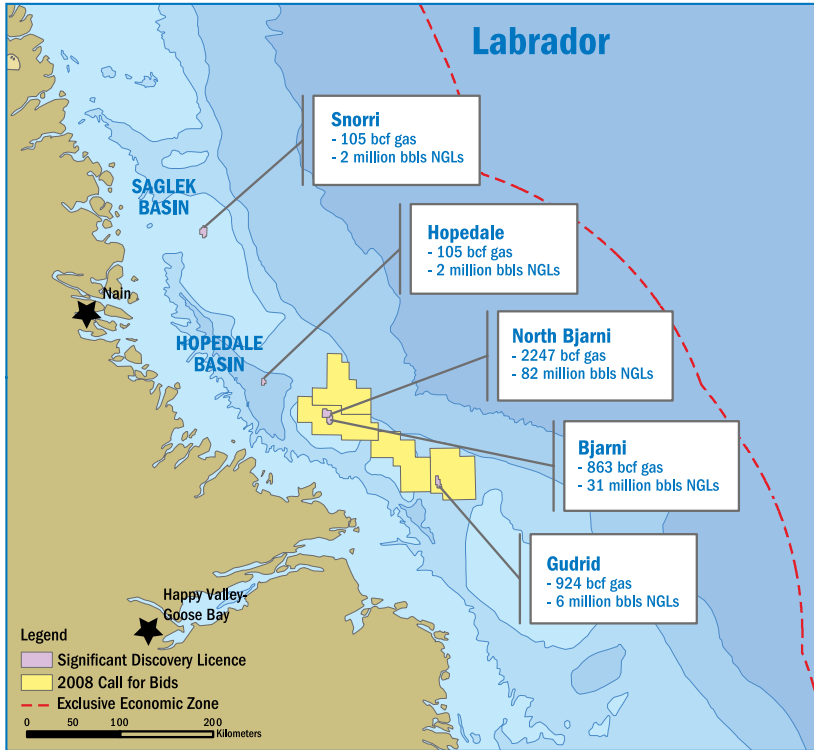
Offshore and Onshore Exploration Maps



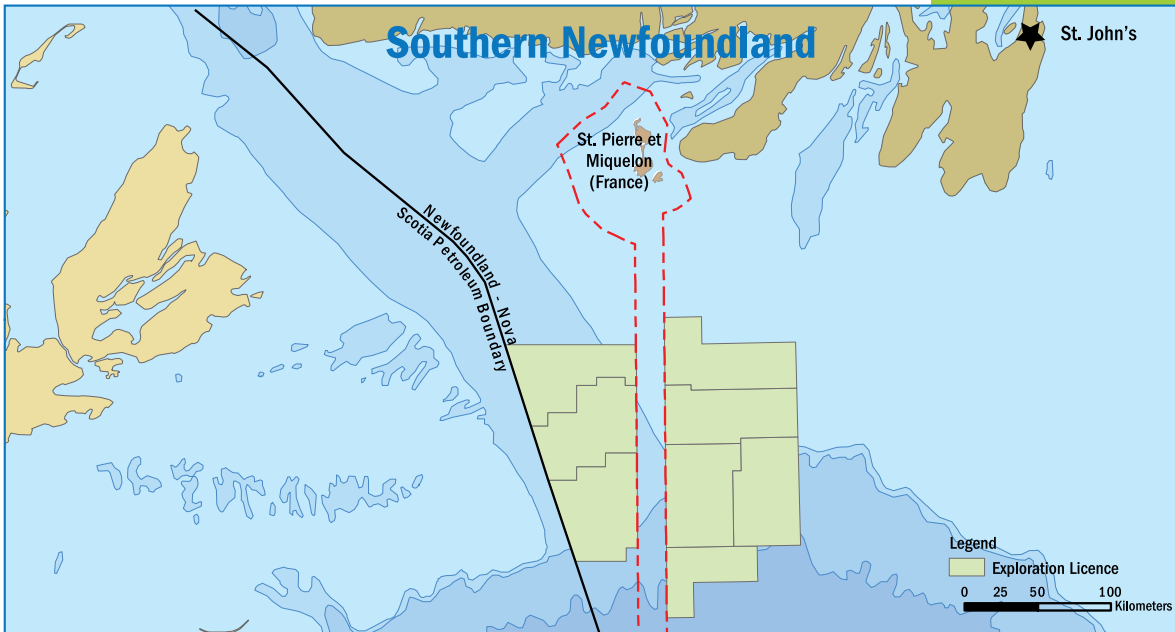
Northern Grand Banks Fast Facts

- 3 producing fields
- 2018 million bbls of proven oil reserves remaining
- 5990bcf of gas reserves
- 355 million bbls of NGLs
- 2.9 million hectares under licence
- \$816 million in outstanding work commitment bids for existing exploration licences





- Labrador Fast Facts**
- 4244 bcf of gas
 - 123 million bbls of NGLs
 - 36,144 kms of seismic data acquired since 2002
 - Call for Bids NL-07-2 for 4 parcels closes August 2008



- Laurentian Basin Fast Facts**
- 2.5 million hectares under EL
 - \$19.5 million in outstanding exploration commitments
 - GSC Resources estimates are 600-700 million bbls of oil and 8-9 Tcf of natural gas

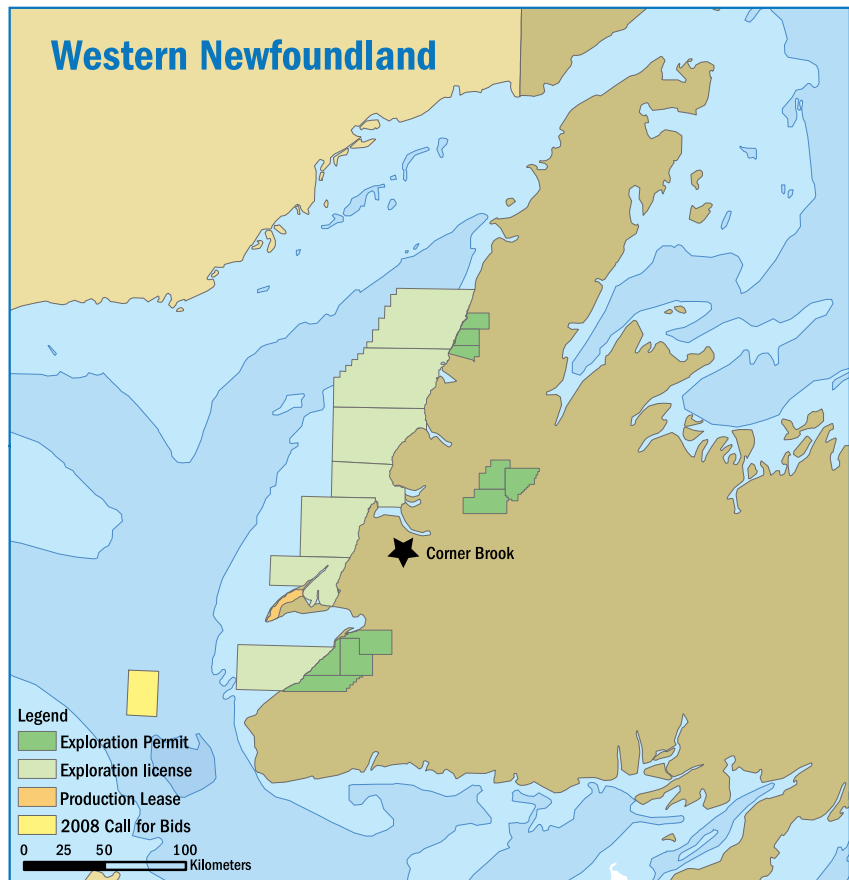
Western Newfoundland Fast Facts

Offshore Western Newfoundland

- Over 1 million hectares under EL
- Call for Bids NL07-1 closing in November 2007
- \$2.3 million in outstanding exploration commitments

Onshore Western Newfoundland

- 0.28 million hectares under EP
- 25 wells spudded since 1994
- 2002 Request for Bids received \$3.3 million in exploration commitments



APPENDIX B

Provincial Climate Change Action Plan

The provincial Climate Change Action Plan (CCAP) was released by the Provincial Government in June 2005. The CCAP acknowledges the inextricable link between the production and use of energy and the emissions of greenhouse gases. The impacts can be both positive and negative, for example, the use of fossil fuels as an energy source will lead to the emission of greenhouse gases, while improvements in energy efficiency and the use of clean energy, such as hydroelectricity, will lead to reductions in GHG emissions.

Our Climate Change Action Plan contains 40 action items of which 12 relate directly to energy use and to the Energy Plan. In fact, Action 38 is a commitment by the Provincial Government to implement an energy plan. Specific linkages include:

Action 4: As per commitments under the New England Governors/Eastern Canadian Premiers (NEG/ECP) Climate Change action Plan, the Provincial Government will dedicate resources to compile data on energy consumption, vehicle use and emissions from government operations.

This action is currently been initiated on a regional basis.

Action 5: The Provincial Government will develop a House-in-Order Strategy which will include elements of the commitments under the NEG/ECP, in particular fleet management and purchase of low emissions office equipment.

A “greening of government” strategy is now being developed. Standards for Provincial Government vehicles are also addressed under the Energy Plan.

Action 6: The Provincial Government will establish an energy use reduction target for provincial buildings and work towards its implementation.

As noted in the Energy Plan, the Provincial Government will adopt, where appropriate, LEED standards for new buildings. A strategy for existing buildings will be developed.

Action 7: The Provincial Government will examine the possibility of “bundling” remaining public buildings to take advantage of economies of scale in retrofitting smaller facilities that otherwise would not be economical to retrofit.

Action 9: The Provincial Government will develop an information campaign aimed at motorists to make them aware of linkages between climate change and automobile usage.

Action 10: The Provincial Government will establish idle-free zones around public buildings to reduce emissions of greenhouse gases and other contaminants.

Action 11: The Provincial Government will conduct a feasibility study for development of commuter parking areas at key junctions.

Action 12: The Provincial Government will study the energy efficiency of provincial ferry fleet in an effort to reduce fuel consumption and greenhouse gas emissions.

As noted in the Energy Plan, new provincial ferries are being designed and built to incorporate the latest energy-efficient technologies.

Action 17: The Provincial Government will continue to provide funding for the Newfoundland and Labrador Climate Change Education Centre.
This is also a specific commitment under the Energy Plan.

Action 25: The Provincial Government will promote energy efficiency in public and low-income housing.
This is also a specific commitment under the Energy Plan.

Action 26: The Provincial Government will partner with academic institutions, industry and stakeholders to promote local research initiatives on carbon management.
This is also a specific commitment under the Energy Plan.

Action 38: The Provincial Government will implement an energy plan to ensure that all energy sources are used first to provide a reliable, affordable supply of power for domestic use and for Province wide economic development, and then to take advantage of business opportunities in export markets to sell energy that is excess to our needs on terms that secure maximum benefits for the Province.

These action items are at various stages of implementation and others have been incorporated into the Energy Plan.

APPENDIX C

Northern Strategic Plan for Labrador

Through the Department of Labrador and Aboriginal Affairs' (LAA) work on the Northern Governance Models, it was determined that other provinces in Canada have developed Northern Strategic Plans to address priorities and issues relevant to the North, particularly as they relate to social and economic development. These plans emphasize the importance of coordination and advocacy for northern departments and the necessity for dedicated programs and services that demonstrate the Provincial Government's commitment to support northern issues. The success of these plans reflects clearly-defined mandates that emphasize the progression of northern issues and Provincial Government structures that provide a focused approach to service delivery in the region.

In the 2005 Speech from the Throne, the Government of Newfoundland and Labrador committed to securing a brighter future for Labrador and mandated LAA to develop a Northern Strategic Plan (NSP).

The NSP was launched on April 20, 2007 and proposes 145 actions divided among eight underlying themes including Transportation; Natural Resources and Environment; Tourism and Cultural Development; Education and Employment; Health; Access to Programming and Services; Aboriginal Partnerships; and Working Together. The Province will invest more than \$250 million in existing and new Labrador initiatives over five years to support the goals outlined in the plan.

There are a number of initiatives outlined in the NSP that complement and enhance this Energy Plan. These include:

Education and Employment

- Establish two Resource Facilitators at College of the North Atlantic in Labrador to assist persons with disabilities
- Build on recommendations of the Philpott Report by working with Indian and Northern Affairs Canada and the Labrador Innu on an implementation plan
- \$50,000 over two years to continue the *Labrador: Come Work and Play* awareness campaign for recruiting purposes
- \$750,000 to work with partners, Aboriginal governments and organizations to enhance K-12 initiatives to prepare Aboriginal young people in Labrador for post-secondary education

Access to Programming and Services

- \$1.6 million annually for an energy rebate to address one of the most pressing issues for rural isolated communities in Labrador. The rebate will reduce the cost of basic electricity consumption needs of Labrador rural isolated residential customers to a level on par with the Labrador Interconnected Rates. Customers in the Labrador Straits area will receive a similar rebate to achieve the same goal.
- Review Labrador isolated commercial customer electricity rates, with a view to introducing a comparable rebate when the Lower Churchill project is sanctioned for development.
- Provide funding to follow-up on the recommendations from the Business Retention and Expansion Program.
- Continue preliminary discussions on the concept and feasibility, including engineering and environmental-related work, of a fiber optic link throughout Labrador.

Working Together

- Pursue potential economic opportunities and partnerships with Nunavut, in conjunction with the Nunatsiavut Government.

APPENDIX D

Natural Gas Royalty Regime

Offshore Natural Gas Royalty

Royalty comprised of two components: basic and net. Basic and net royalty rates change through a smooth progression in between a low and high tier bandwidth.

Basic Royalty:

- to begin with project production
- basic royalty rates driven by netback value of production

Netback Price (NP)	Basic Royalty Rate (BRR)
< Cdn\$4 (NP_{min})	2% (BRR_{min})
> Cdn\$8 (NP_{max})	10% (BRR_{max})

where Netback Price is the calculated price to the project net of transportation costs

$$BRR = BRR_{min} + \{[(NP - NP_{min}) \div (NP_{max} - NP_{min})] \times (BRR_{max} - BRR_{min})\}$$

Basic Royalty = (revenue – transportation costs) x BRR

Net Royalty:

- to begin with project cost recovery
- net royalty rates driven by revenue to cost index

R Factor (R)	Net Royalty Rate (NRR)
< 1 (R_{min})	0% (NRR_{min})
> 4 (R_{max})	50% (NRR_{max})

where $R = (\text{cumulative revenue less cumulative transportation costs less cumulative royalty paid}) \div (\text{cumulative project capital \& operating costs})$

$$NRR = NRR_{min} + \{[(R - R_{min}) \div (R_{max} - R_{min})] \times (NRR_{max} - NRR_{min})\}$$

Net Royalty = (revenue – transportation costs – project capital & operating costs – basic royalty paid) x NRR

APPENDIX E

Glossary

BCF (Billion Cubic Feet)

Unit of measure for volume of natural gas.

Biomass

Energy resources derived from organic matter. These include wood, agricultural waste and other living cell material that can be burned to produce heat.

Capacity

The maximum power that a generating unit, generation station or other electrical apparatus can supply, usually in megawatts. The maximum power output or the load for which a generating unit, generating station or other electrical apparatus is rated. Common units include kilowatt (KW) and megawatt (MW).

Cogeneration

The combined production of electricity and useful heat. Cogeneration is often employed at industrial plants where the heat produced can be utilized in the manufacturing process for general space heating. Cogeneration facilities use significantly less fuel to produce electricity and thermal energy than would be needed to produce them separately.

Development Well

A well drilled for crude oil or natural gas within a proven field or area for the purposes of production.

Discovery Well

An exploratory well that encounters a previously untapped oil or natural gas deposit.

End User

A person or company who consumes energy (as opposed to one who sells or resells it).

Environmental Impact

Any alteration to the environment affecting human, animal, fish or plant life. Pollution results in an adverse environmental impact because it is detrimental to human, animal and plant life.

Exploratory Well

A well in an area where petroleum has not been found or one targeted for formations above or below known reservoirs.

GHG

Greenhouse gas / gasses. The principal GHG are carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and halocarbons and water vapor.

Greenhouse Effect

The increasing mean global surface temperature of the earth caused by gases in the atmosphere (including carbon dioxide, methane, nitrous oxide, ozone and chlorofluorocarbon). The greenhouse effect allows solar radiation to penetrate but absorbs the infrared radiation returning to space.

Gigawatt (GW)

Unit of electrical power, used to measure the generating capacity on an electrical system, or the maximum demand of electricity consumers. Equivalence: 1GW = 1,000 MW or 1,000,000 kW.

Gigawatt Hours (GWh)

A standard unit for measuring bulk electricity transfer. Equivalence: 1 GWh = 1,000 MWh or 1,000,000 kWh.

Hydrocarbon

An organic compound containing only hydrogen and carbon. There are hundreds of these compounds and they may occur as gases, liquids or solids.

Interconnected System

Two or more individual transmission systems that have one or more interconnecting tie lines.

Kilowatt (kW)

Unit of electrical power, used to measure the generating capacity of a generating station or the maximum demand of an electricity consumer.

Kilowatt Hours (kWh)

A standard unit for measuring electricity. Residential customer rates are usually expressed in cents per kilowatt hour.

Load

The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the energy-consuming equipment of the consumer.

Megawatt (MW)

Unit of electrical power, used to measure the generating capacity of a generating station or the maximum demand of a large commercial or industrial electricity consumer. Equivalence: 1 MW = 1,000 kW

Megawatt Hours (MWh)

A measure of the energy produced by a generating station over time. Equivalence: 1 MWh = 1,000 kWh

MMcf (Million Cubic Feet)

Unit of measure for volume of natural gas.

Natural Gas Liquids (NGLs)

Liquids obtained during petroleum production, including ethane, propane, butanes and condensate.

Petajoule

One million gigajoules.

Petroleum

A naturally-occurring mixture of hydrocarbons in gaseous, liquid or solid form.

Petroleum Products

Products obtained from the processing of crude oil, and unfinished oils, NGLs and other hydrocarbon compounds. These include gasoline, kerosene, jet fuel, distillate fuel oil, residual fuel oil, liquefied petroleum gas, lubricants, paraffin wax, asphalt and other products.

Potential Resources

The volume of crude oil or natural gas, based on geological knowledge proven to exist.

Refinery Capacity

The maximum amount of input to crude oil distillation units that can be processed in an average 24-hour period.

Regulator

An entity that, through power of law or some other legitimate means, has the authority to impose regulation.

Renewable Resources

Sources of energy which are inherently self-renewing, such as water power, solar energy, wind energy, tidal energy and geothermal energy. Wood, garbage and waste burned as fuel are also considered renewable.

Reserves

Volumes of hydrocarbons, measured in Bcf, Tcf or billions of barrels that are considered to be economically recoverable using current technology.

Resources

Volumes of hydrocarbons that are deemed to be technically recoverable, but may not have been delineated or may not presently be economically produced.

Retailer

An entity that purchases a product at the wholesale level for the purpose of reselling to a consumer or acting as agent or broker for a consumer or another retailer.

Royalty

The amount paid to the owner of petroleum resources or mineral rights as payment for the resource removed.

Tcf (Trillion Cubic Feet)

Unit of measure for volume of natural gas.

Transmission

The movement or transfer of electric energy or natural gas over an interconnected group of lines and associated equipment between points of supply and points at which it is transformed for delivery to consumers, or is delivered to other electric systems. Transmission is considered to end when the energy is transformed for distribution to the consumer.

Transmission System

Wires or pipelines that transport energy over long distances, usually from supply to market regions or to other transmission systems.

Terawatt (TW)

Unit of electrical power, used to measure the generating capacity on an electrical system, or the maximum demand of electricity consumers. Equivalence: 1 TW = 1,000 GW or 1,000,000 MW or 1,000,000,000 kW.

Terawatt Hours (TWh)

A standard unit for measuring bulk electricity transfer. Equivalence: 1 TWh = 1,000 GWh or 1,000,000 MWh or 1,000,000,000 kWh.

APPENDIX F

Acronyms

bbls	Barrels of oil
BCF	Billion Cubic Feet
C–NLOPB	Canada–Newfoundland and Labrador Offshore Petroleum Board
CEE	Centre of Excellence for Environmental Science, Research and Technology
EL	Exploration Licence
EP	Exploration Permit
GDP	Gross Domestic Product
kW	Kilowatt
kWh	Kilowatt Hours
MW	Megawatt
MWh	Megawatt Hours
MMcf	Million Cubic Feet
NGLs	Natural Gas Liquids
NLH	Newfoundland and Labrador Hydro
NSP	Northern Strategic Plan
OATT	Open Access Transmission Tariff
PL	Production Licence
PUB	Board of Commissioners of Public Utilities
SDL	Significant Discovery Licence
TCF	Trillion Cubic Feet
TW	Terawatt
TWh	Terawatt Hours

APPENDIX G

Energy Plan Public Consultations

Labrador City–Wabush	January 16, 2006
Happy Valley–Goose Bay	January 17, 2006
St. John's	January 30, 2006
Clarenville	January 31, 2006
Gander	February 2, 2006
Hawke's Bay	February 6, 2006
Stephenville	February 7, 2006
Corner Brook	February 8, 2006
Grand Falls–Windsor	February 9, 2006
Marystown	August 10, 2006
Port Hope Simpson	September 30, 2006



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