Labrador – Island Transmission Link

- Churchill Falls to Gull Island
- Muskrat Falls to Gull Island

Maritime Transmission Link

- Bottom Brook to Lingan
- Nova Scotia to Newfoundland

Existing AC Transmission Lines

- Existing AC Transmission Lines

AC Transmission – Muskrat Falls to Churchill Falls

Proposed Expansion of NS – NB Interconnect

- Proposed Expansion of NS – NB Interconnect

Subsea component of link

- Subsea component of link

Atlantic Ocean

- Labrador – Island Transmission Link
- Maritime Transmission Link
- Existing AC Transmission Lines
- AC Transmission – Muskrat Falls to Churchill Falls
- Proposed Expansion of NS – NB Interconnect
- Subsea component of link
AGREEMENT WITH INNU NATION OF LABRADOR
BACKGROUNDER

In February 2010, representatives of the Innu Nation, Innu Band Councils, the Government of Newfoundland and Labrador and Nalcor Energy initialed the following documents contemplated by the Tshash Petapen Agreement:

- Bilateral NL-Innu Nation land claims agreement-in-principle (federal issues to be resolved)
- Lower Churchill Project Impacts and Benefits Agreement (IBA)
- Upper Churchill Redress Agreement

Negotiations had been ongoing between the Innu Nation and the Government of Newfoundland and Labrador for many years. The bilateral Land Claims Agreement-in-Principle, the Lower Churchill Innu IBA and the Upper Churchill Redress Agreement were finalized and initialed in February, 2010 and were negotiated at the most senior levels of Innu Nation, the Government of Newfoundland and Labrador and Nalcor Energy.

Highlights of the initialed agreement include:

**Land Claim Selection**

- **5,000 square miles - Labrador Innu Lands (Category I)**
  - The Innu will have legal title to these lands
  - Jurisdiction to make laws in relation to specified matters
  - Resource royalty sharing
  - Impacts and Benefits Agreements (IBAs) on developments

- **9,000 square miles - Labrador Innu Settlement Area outside Labrador Innu Lands (Category II)**
  - Crown land, in which the Innu will have special rights and benefits concerning resource royalty sharing, consultation on environmental assessment, economic development and IBAs on major projects

- **13,000 square miles – Permit Free Hunting Area (Category III)**
  - Areas where the Innu people may harvest wildlife without having to apply for, pay for or carry a provincial license

- **9,000 square miles - Defined Economic Development Areas**
  - The Innu will be able to enter into IBAs on most major developments.
Upper Churchill Redress Agreement

- The agreement provides compensation to the Labrador Innu for impacts associated with the Churchill Falls development.
- Under the Churchill Falls Hydroelectric Development Redress Agreement, commencing on the execution of the IBA and until 2041, Nalcor will make an annual payment (the Settlement Payment) to Innu Nation of two million dollars ($2,000,000.00). This amount will be increased annually at a rate of two and one-half percent. After 2041, Innu Nation will be entitled to receive 3% of Nalcor's annual dividend share of revenues from the Upper Churchill development.
  - If the Power Contract changes prior to 2041, Innu Nation will be given the option to convert to the percentage of revenue from the Lower Churchill Project established for post 2041
- The agreement provides the Government of Newfoundland and Labrador and Nalcor Energy with a comprehensive release and indemnity against claims by the Labrador Innu relating to the Churchill Falls development.

Lower Churchill Project IBA

- The Innu Nation was given the option of taking an equity position in the Lower Churchill Project or an equivalent royalty and has chosen the royalty option:
  - 5% of net project revenue
  - $5.0 million per year payable upon Project sanction until first commercial power.
  - A guaranteed minimum royalty beyond 10 years after sanction
- Employment and training participation objectives in place for construction and operations
- A target of $400 million in contracts for Innu businesses or a penalty if target is not met
- Joint Nalcor-Innu environmental management committee responsible for:
  - environmental policies
  - Environmental Management System
  - Consideration of Innu knowledge
- Nalcor Energy and the Government of Newfoundland and Labrador receive a comprehensive release and indemnity from the Labrador Innu related to the construction and operation of the Lower Churchill

Next Steps

The three agreements are subject to ratification on a schedule to be determined by Innu Nation, and the Innu Land Claims Agreement is also subject to negotiations with the Government of Canada prior to finalization and presentation for ratification.
Agreements will become binding upon ratification by the Innu of Labrador by community referendum followed by signing of the Agreements by the relevant parties. The process for Innu ratification is set out in Chapter 6 of the IBA which provides for a community referendum following a period of public consultation. The three agreements will be approved by the Innu of Labrador if: a majority of eligible voters in Sheshatshiu and Natuashish participate in the referendum; and at least 60% of the votes cast in each community support execution of the Agreements. If the referendum fails because less than a majority of eligible voters participate in the vote, Nalcor and Innu Nation will meet to determine an appropriate course of action which may include the holding of a second ratification vote. This process has been agreed to by the Government of Newfoundland and Labrador, Nalcor Energy and Innu Nation.
Comparative Electricity Analysis:
Muskrat Falls vs Isolated Island Cases

Newfoundland and Labrador Hydro: Island Regulated Revenue Requirements

- Thermal Power Future (excluding CO₂ costs)
- Long Term Superior Value Associated with Labrador Option
- Holyrood Replacement
- Renewable Energy Future

Lower Churchill Project
BACKGROUNDER LOWER CHURCHILL PROJECT ECONOMIC BENEFITS
DEVELOPMENT OF MUSKRAT FALLS - NOVEMBER 2010

Infrastructure

• The Muskrat Falls development of the Lower Churchill Project will begin in 2011 and is expected to take approximately six years. The benefits modeling is based on the following components:
  o The Muskrat Falls Generating Facility.
  o The Labrador Transmission.
  o The Labrador – Island Transmission Link.
  o The Maritime Transmission Link.

Project Benefits

• Construction of Muskrat Falls will create significant employment, income and taxation benefits for Newfoundland and Labrador, as well as Canada.

• Economic impacts, including employment, income and taxation benefits, are categorized as direct, indirect and induced.
  o Direct impacts are associated directly with the Project including engineering and construction activities such as erecting transmission lines or operating heavy equipment on site.
  o Indirect impacts are associated with materials, services and equipment purchased by the Project such as workers involved with fabrication of equipment at supplier locations.
  o Induced impacts are those that occur in the services sector throughout the economy as direct and indirect income is spent.

• Direct employment benefits will reach more than 70 occupations.

Newfoundland and Labrador

• The people of Newfoundland and Labrador will be the primary beneficiaries of the Lower Churchill Project as per the Province’s Benefits Strategy for the Lower Churchill Construction Project with Nalcor, which ensures opportunities for the people of the province.

• Total direct, indirect and induced employment in the province is estimated to be 18,400 person years.

• Peak direct employment in Newfoundland and Labrador will be approximately 2,700 people in 2013.
• After construction is complete, Newfoundland and Labrador employment will continue with an estimated 120 direct full-time jobs.

<table>
<thead>
<tr>
<th>Newfoundland and Labrador</th>
<th>Muskrat Falls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment in province (person-years)</td>
<td>8,600</td>
</tr>
<tr>
<td>Direct employment occurring in Labrador (person-years)</td>
<td>5,400</td>
</tr>
<tr>
<td>Total Income to labour and business</td>
<td>$1,430 million</td>
</tr>
<tr>
<td>Average income benefits per year</td>
<td>$220 million</td>
</tr>
<tr>
<td>Taxes to provincial government</td>
<td>$212 million</td>
</tr>
</tbody>
</table>

1 One person-year represents 2,000 hours of work per year—the equivalent of someone working 40 hours per week, for 50 weeks.

Labrador

• The provincial government’s benefits strategy for the Project specifically provides first consideration to members of Labrador’s Innu Nation and then qualified residents of Labrador before those from other parts of the province.

• More than 7,500 person-years of direct, indirect and induced employment will take place in Labrador—an average of 1,150 people per year—throughout the development of Muskrat Falls.

• More than 75% of the direct labour for the Muskrat Falls Generation Facility will be undertaken in Labrador.

• Approximately $450 million in income to business and labour will be earned by Labradorians and Labrador-based businesses.

Canada

The development of Muskrat Falls and the transmission link to Nova Scotia is a national project, as reflected by the significant Canada-wide benefits that will be realized during construction and operations.

<table>
<thead>
<tr>
<th>Canada</th>
<th>Muskrat Falls</th>
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</thead>
<tbody>
<tr>
<td>Total employment (person-years)¹</td>
<td>47,800</td>
</tr>
<tr>
<td>Direct employment occurring in Canada (person-years)</td>
<td>9,825</td>
</tr>
<tr>
<td>Total Income to labour and business</td>
<td>$3,490 million</td>
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<tr>
<td>Average income benefits per year</td>
<td>$537 million</td>
</tr>
<tr>
<td>Taxes to federal government</td>
<td>$525 million</td>
</tr>
</tbody>
</table>

1 One person-year represents 2,000 hours of work per year—the equivalent of someone working 40 hours per week, for 50 weeks.
MUSKRAT FALLS

The Lower Churchill Project consists of two proposed installations, Gull Island and Muskrat Falls. The combined capacity of both facilities will be 3,074 MW, providing almost 17 terawatt hours of electricity per year.

Extensive pre-feasibility work, such as the progression of the environmental assessment process, finalization of a Water Management Agreement; negotiations for an Impacts and Benefits Agreement (IBA) with Innu Nation of Labrador; development of a financing strategy; as well as extensive engineering studies and field work have been undertaken.

The Lower Churchill Project will be developed in two phases beginning with Muskrat Falls. The Gull Island Project will proceed several years after Muskrat Falls.

The Muskrat Falls Project will include:

A. Muskrat Falls Generating Facility
   - 824 MW generating facility
   - two HVac transmission lines connecting to Churchill Falls

B. Labrador-Island Transmission Link (~1,100 km)
   - Labrador (900 MW) Converter Station (ac/dc)
   - Overhead HVdc transmission line from Muskrat Falls to Strait of Belle Isle
   - Submarine cables across the Strait of Belle Isle (30 km)
   - Overhead HVdc transmission line from the Strait of Belle Isle to Soldiers Pond
   - Soldiers Pond (900 MW) Converter Station (dc/ac)
   - Electrode sites in Labrador and Newfoundland

C. Maritime Transmission Link from the Island of Newfoundland to Nova Scotia
   - Overhead HVac transmission connecting to the Island transmission grid
   - Bottom Brook (500 MW) Converter Station (ac/dc)
   - Overhead HVdc transmission from Bottom Brook to Cape Ray
   - Submarine cables across the Cabot Strait to Lingan, Nova Scotia (180 km)
   - Cape Breton (500 MW) Converter Station (dc/ac) tying into the existing Nova Scotia transmission grid.

The development of the Lower Churchill Project is consistent with commitments made in the Government of Newfoundland and Labrador’s Energy Plan which states that the development of the Lower Churchill Project must be considered in the context of Nalcor’s broader Integrated Resource Planning initiatives. This assessment has been completed and Nalcor’s subsidiary, Newfoundland and Labrador Hydro (Hydro), has submitted a Generation Planning Issues Report to the Board of Commissioners of Public Utilities.
The report signals that a generation planning decision must be made by the end of 2010 if the appropriate planning, approvals and construction can take place to meet anticipated demand. Hydro has evaluated all practical supply options for generation sources to meet the Island’s long-term electricity needs and it has determined that Muskrat Falls, with a transmission link to the Island, provides the least cost and most environmentally friendly solution to meet this need.

The Energy Plan also states that, if a decision is made to proceed with the Lower Churchill Project then Holyrood oil-fired generation will be replaced with electricity from this project. The replacement of this facility will reduce greenhouse gas emissions by more than one million tonnes annually, eliminating the province’s dependence on the supply of imported fuel and remove future volatility in electricity prices. The project will also eliminate the requirement for additional fossil-fuel generation in the future and avoid associated emissions.

The development of Muskrat Falls will meet the energy requirements for both Labrador and the Island and also provide sufficient capacity for future industrial developments in Labrador and throughout the province. However, the power and energy of generation at Muskrat Falls is initially greater than what is required for the domestic market and the related surplus presents an opportunity for Nalcor to export power.

To monetize the value of the surplus power, Nalcor Energy has partnered with Emera, a publicly traded entity based in Nova Scotia which is the parent company of Nova Scotia Power, Bangor Hydro-Electric and Maine and Maritimes. Nalcor and Emera have reached an agreement that includes equity investments by Emera in the Maritime Link and the Labrador-Island Link, provision of power to Nova Scotia Power, construction of a Maritime Transmission Link between provinces and assignment of transmission rights in the Maritime Provinces and New England to Nalcor. This agreement will generate value for both companies and builds on Nalcor’s existing relationship with Emera for the marketing of a portion of recall power from the Upper Churchill in the United States.

This development of Muskrat Falls is financially attractive, generates a positive rate of return and ensures long-term price stability. An agreement with Emera for transmission access in Nova Scotia, New Brunswick and through to New England and the sale of additional power to export markets, further enhances the viability of the development and makes this approach the most economic solution over time. It also creates further export opportunity in the future for the other significant renewable hydro and wind resources throughout Newfoundland and Labrador.
Project Details

- Thirty-five year deal which includes construction of Muskrat Falls Generating Station, Labrador Transmission, Labrador-Island Transmission Link, and the Maritime Link.
- Emera Inc. (Emera) will contribute 20% of construction costs and provide transmission to Nalcor Energy (Nalcor) across the Maritime Link and through Nova Scotia. Emera will also pay the costs of operating and maintaining the Maritime Link to a maximum of 20% of the operating and maintenance costs of the entire project.
- Emera will invest in the Labrador-Island Link at an amount such that its total investment in the overall transmission assets does not exceed 49%. Nalcor will be provided similar investment opportunities in future Emera infrastructure.
- Nalcor will manage and execute the design, engineering, construction and commissioning of Muskrat Falls and the Labrador-Island Link.
- Nalcor and Emera will jointly manage and execute the design engineering, construction and commissioning of the Maritime Link.
- Emera to own greenhouse gas credits associated with its block of power which they cannot sell and Nalcor Energy owns the remaining credits.
- Governing law for the term sheet is Newfoundland and Labrador.
- The Term Sheet expires upon the conclusion of the formal agreements or November 30, 2011.
- Both Emera and Nalcor will formalize the agreements and conclude matters such as environmental assessments and engineering work.

Nova Scotia Block and Maritime Link

- Nalcor to provide Emera with approximately one terawatt hour per year (Nova Scotia Block) for a term of 35 years.
- Power to be provided to Emera for 16 hours per day (on peak) and Emera’s transmission rights on the Maritime Link are limited to delivery of the Nova Scotia Block.
- Emera may seek to extend the agreement beyond 35 years and Nalcor must negotiate in good faith to reach an agreement on an extension. If an agreement cannot be reached, Nalcor may sell to third parties.
- Both parties can seek to expand the Maritime Link together or separately if the other decides not to participate.
- Both parties will work together on an environmental assessment submission for the Maritime Link.
Transmission

- Nalcor will own all transmission rights on Labrador-Island Link.
- Emera will be granted transmission rights on the Maritime Link sufficient to deliver the Nova Scotia Block. All remaining Maritime Link transmission rights will be held by Nalcor.
- Emera will provide Nalcor with transmission rights from Cape Breton to the Nova Scotia/New Brunswick border up to Nalcor’s capacity on the Maritime Link. Nalcor will pay the Nova Scotia transmission tariff.
- Nalcor will be provided use of Emera’s transmission rights to transmit power through New Brunswick with Nalcor paying the associated transmission tariff when used by Nalcor. If these rights cannot be acquired or extended, Emera will purchase the power Nalcor would have sold through New Brunswick. Alternatively, at Nalcor’s option, Emera will provide Nalcor with the opportunity to acquire or use 300 MW of firm transmission if proposed Nova Scotia-New Brunswick transmission line is constructed.
- At the termination of the delivery of the Nova Scotia Block, ownership of the Maritime Link will revert back to Nalcor Energy for $1.
- Emera will hold its investment in the Labrador-Island Transmission Link in a Newfoundland and Labrador public utility.
Quick Facts
Muskrat Falls Development Generation and Transmission

Generation

- The Muskrat Falls Generating Station will have a capacity of 824 megawatts and annual energy production of 4.9 terawatt hours.

- A concrete dam will be constructed in two sections with the north dam being 32 meters high and 432 meters long and the south dam being 29 meters high and 325 meters long.

- The reservoir will be 59 km long with an area of $101 \text{ km}^2$. The area of flooded land will be $41 \text{ km}^2$ at full supply level. The current reservoir for the Churchill Falls Generating Station is $6,527 \text{ km}^2$.

Transmission

- The transmission line interconnection between Muskrat and Churchill Falls will be located north of the Churchill River, parallel to the existing right of way.

- The Labrador-Island Transmission Link will be constructed from Muskrat Falls to Soldiers Pond. It will be approximately 1,100 km long. The link will be a High Voltage direct current (HVdc) transmission system.

- The Labrador-Island Transmission Link will cross the Strait of Belle Isle and have a capacity of 900 megawatts. The sub-sea crossing will be approximately 30 kilometers long.

- The Maritime Link will run from Bottom Brook, near Stephenville and connect at Lingan, Nova Scotia. The subsea link will be approximately 180 kilometers long and will have a capacity of 500 megawatts.

Project Costs

- Estimated capital cost of the project is $6.2 billion.

- The Muskrat Falls Generating Facility and Labrador Transmission is estimated to cost $2.9 billion.

- The Labrador-Island Link and system upgrades are estimated to cost $2.1 billion and the Maritime Link is estimated to cost $1.2 billion.
Employment Benefits

- The Muskrat Falls development will result in 8,600 person years of direct employment in Newfoundland and Labrador with 5,400 person years of direct employment in Labrador during construction. The addition of indirect and induced employment means a total of 18,400 person years of work in the province, of which 7,500 will occur in Labrador.

- There will be peak employment during construction of approximately 2,700 people in 2013.

- Canada-wide employment will be 47,800 person years during construction. Direct project employment in this number consists largely of work of a specialty nature, such as steel fabrication, which cannot be completed in Newfoundland and Labrador. However, the greatest part of this number is the induced impact of spending that flows throughout the rest of Canada.

- A person year is equivalent to one person working 40 hours per week for 50 weeks.

- Muskrat Falls construction site accommodations will be designed for up to 1,000 people and will be removed when construction is complete.

Economic Benefits

- Total income to labour and business for Newfoundland and Labrador will be $1.4 billion or $220 million per year.

- Over $210 million in taxes will accrue to the Government of Newfoundland and Labrador.

- Canada-wide income to labour and business will be $3.5 billion or $540 million per year.

- Over $525 million in taxes to the Government of Canada.

Environment

- Newfoundland and Labrador will have an electricity system that will be greater than 98% carbon free.

- The development of Muskrat Falls would avoid approximately 96 million tonnes of emissions by 2065 – a significant number for a small province.