Muskrat Falls (Nalcor Energy - Lower Churchill Project)

Lower Churchill Project

The Lower Churchill Project is an opportunity for a brighter and cleaner electricity future for Newfoundland and Labrador. In November 2010, Nalcor Energy and Emera Inc. reached an agreement to develop the Muskrat Falls portion of the Lower Churchill Project. Considered the most attractive undeveloped hydroelectric resource in North America, the combined generating capacity of the Project's Gull Island and Muskrat Falls installations is over 3,000 megawatts (MW).

A deal to remember

The agreement includes the development of the Muskrat Falls generating facility in Central Labrador, the Labrador-Island Transmission Link and a new Maritime Transmission Link between Newfoundland and Nova Scotia. The Muskrat Falls development has a capacity of 824 MW and can produce 4.9 terawatt hours (TWh) annually.

Electricity from the Muskrat Falls generating facility, through the Strait of Belle Isle, will reach the island of Newfoundland to meet the island's growing electricity needs. Electricity from Muskrat Falls will also be available for recall use for industrial developments in Labrador. After the electricity needs of the province have been met, Nalcor will transmit a block of electricity to Nova Scotia Power, a subsidiary of Emera, across the Cabot Strait into Cape Breton, Nova Scotia.

Phase One

After years of planning and analysis, Nalcor's subsidiary, Newfoundland and Labrador Hydro (Hydro), determined that developing Muskrat Falls is the least-cost solution to a looming electricity shortage in

the province, which is expected in the next five to 10 years. In 2015, Newfoundland and Labrador will reach a capacity deficit when, at peak times, capacity needs may not be met. By 2019, the province will experience an electricity deficit, where the province's overall electricity demand is greater than what is available.

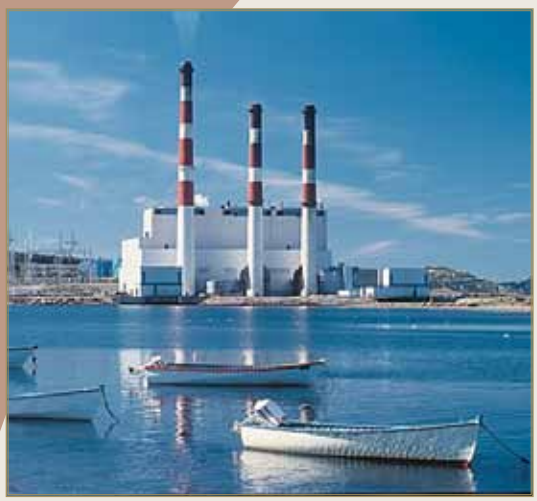
Hydro assessed the options for new generation sources to avoid the capacity and electricity deficits. The Muskrat Falls project, coupled with a transmission link project to the island, was determined to be the least-cost option. Of the 4.9 TWh of available electricity, 40% will service the needs of Newfoundland and Labrador, 20% will be transmitted to Nova Scotia under a 35-year contract with Emera, and the outstanding 40% will be sold into the market through Atlantic Canada and New England, or available to support and attract industrial development in Labrador.

Transmission access to Nova Scotia, New Brunswick and through to New England with the ability to sell surplus electricity to export markets enhances the sustainability of Muskrat Falls. Even without the Maritime Link and the ability to transmit electricity into Atlantic Canada and New England, the Muskrat Falls development is the least-cost option to meet Newfoundland and Labrador's electricity needs. The project's business case is not dependent on export electricity sales.

The agreement between Nalcor and Emera includes equity investments by Emera in the Maritime Link project and the Labrador-Island Transmission Link project, provision of electricity to Nova Scotia Power and construction of a Maritime Transmission Link project between the provinces.

Nalcor will build and own 100% of the Muskrat Falls generating facility and Labrador transmission. Nalcor will build the Labrador-Island Transmission Link and retain 71% ownership, and 51% ownership of all transmission. The ability to export electricity also paves the way for other opportunities to export and facilitate the development of the province's renewable resources, such as hydro and wind.

Out with the old, in with the clean



Hydro's Holyrood Thermal Generating Station, Conception Bay South

In its Energy Plan, *Focusing our Energy*, the Government of Newfoundland and Labrador committed to develop the Lower Churchill Project to include a transmission link from Labrador to the island to replace oil-fired generation from the Holyrood Thermal Generating Station. In the event the lower Churchill development and transmission link did not proceed, Government made a commitment in the Energy Plan to install emissions control equipment at the Holyrood plant.

The plant has been instrumental in providing electricity to island consumers for over 40 years and is nearing the end of its operating life. Once the Muskrat Falls generating facility and Labrador-Island Transmission Link is in service, the Holyrood plant will no longer burn fuel to generate electricity. The plant is required to meet the growing electricity needs on the island until at least 2017 and will require significant capital upgrades and life-extension work over the coming decade until it is replaced by electricity from Muskrat Falls. These capital investments, increased electricity demand, as well as the rising cost and volatility of fuel, are significant factors in the analysis and determination to develop Muskrat Falls to meet the province's electricity needs.

Benefits abound

Developing the Muskrat Falls site and Labrador-Island Transmission Link means the provincial electricity system will be 98% carbon-free, renewable energy – an impressive statement few jurisdictions in the world can claim. The development will avoid approximately 96 million tonnes of emissions by 2065, a substantial amount for a province of this size.

During construction, the projects will see 8,600 person years of direct employment in Newfoundland and Labrador, in more than 70 occupations. Of those 8,600 person years, 5,400 will occur in Labrador. One person year represents 2,000 hours of work per year—the equivalent of someone working for 40 hours per week, for 50 weeks. With indirect and induced employment, the number of person years of work in the province will total 18,400, of which 7,500 will occur in Labrador. The Benefits Strategy provides first

consideration to members of Labrador's Innu Nation, then qualified residents of Labrador before those from other areas of the province. More than 75% of direct labour for the Muskrat Falls generating facility will happen in Labrador.

It is estimated that peak employment during construction will reach 2,700 people in 2013. After construction is complete, Newfoundland and Labrador employment will continue with approximately 120 full-time jobs.

In addition to the labour-related benefits of the project, there are also many economic benefits. Total income to labour and businesses 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, with more than $525 million in taxes to the federal government.

These substantial benefits are for the Muskrat Falls development alone. Nalcor Energy is still actively pursuing the development of Gull Island that would provide even further benefits to the province, region and country.

Another step in the right direction

In December 2010, Nalcor issued a letter of intent to SNC-Lavalin as the consultant for the engineering, procurement and construction management contract for the Lower Churchill Project. The contract includes the Muskrat Falls generating facility and the Labrador-Island Transmission Link. It does not include the Strait of Belle Isle subsea crossing. A decision on the Maritime Transmission Link contract will be made jointly by Nalcor and Emera.

Aligning with the Lower Churchill Project's Benefits Strategy, engineering and procurement will be performed primarily in St. John's and, as the Project progresses, construction management will occur predominantly at the Muskrat Falls generating site, as well as at various transmission locations in Labrador and on the island.

To achieve Project Sanction in 2011, the Lower Churchill Project team will continue to focus on environmental assessment approval for the generation and transmission projects; final ratification of the Lower Churchill IBA and Churchill Falls Redress Agreement; conversion of the Nalcor/Emera term sheet into formal legal agreements; finalization of financing; and completion of pre-front-end engineering work. Efforts to secure markets and market access for the Gull Island generating facility will also continue.

Prepared by: Nalcor Energy