Date : 8/8/2012 2:40:10 PM From : "McGrath, Rob" To : "Bown, Charles W." Cc : "Beckwith, Judy", "Scott, Paul G." Subject : TRIM SPEECHES & PRESENTATIONS : PRES-2153 : Muskrat Falls Presentation to Caucus - July 2012 update Attachment : Muskrat Falls Presentation to Caucus - July 2012 update.PPT;Muskrat Falls Presentation to Caucus - July 2012 update.tr5; Charles,

here is the revised presentation.

Rob

-----< TRIM Record Information >-----

Record Number : PRES-2153 Title : Muskrat Falls Presentation to Caucus - July 2012 update





Muskrat Falls Updated Presentation to Caucus

Department of Natural Resources August 9, 2012

Outline



- Energy Plan
- Muskrat Falls Project
 Overview
- Demand for Power
- Electricity Rates
- Project Alternatives
- Oil Price Forecast
- Cost of Muskrat Falls

- Economic Benefits
- Environmental Benefits
- EA Panel Comments
- The Emera Agreement
- Process
- Muskrat Falls Progress
- Summary
- Messaging

Energy Plan



- Two objectives:
 - Protecting the environment
 - Developing our resources in the long-term interest of the people of the province
- "...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 ... provide a legacy for future generations."
- Transition from a non-renewable resource economy to a renewable resource economy:
 - Hibernia will produce oil until 2040
 - Hebron will produce oil until 2036
 - Upper Churchill returned in 2041

Lower Churchill Project



- The lower Churchill River system is comprised of Muskrat Falls, with 824 MW of power, and Gull Island with 2,250 MW.
- Nov. 2010 announced the preferred development of Muskrat Falls.
- When Muskrat Falls comes on line, 98% of the province's electricity requirements will be met with stable, renewable, emission-free power.



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Lower Churchill Project





Project Overview



- Project is least-cost way to meet NL electricity demand
- Renewable energy for industrial development in Labrador and the Island
- Will stabilize electricity rates after construction eliminating island's dependence on volatile and dirty oil-fired generation
- Excess power can be exported to Atlantic Canada and US
- Mature/proven technology
- Provide long-term revenue and benefits to our province

Current Status



- Nalcor is moving towards a sanctioning "Go-No Go" recommendation this Fall
- Extensive work is underway to finalize capital cost estimates and confirm project is least cost source of energy for electricity consumers
- Manitoba Hydro International doing independent review for Government
- Estimates still being finalized lots of puts and takes but work to date has not raised any show stoppers. I remain confident MF is the best option

Do we need power?



- <u>Criticism</u>
 - Closure of mills in Stephenville and Grand Falls and reductions at Corner Brook have resulted in more power being made available
 - Population has declined

<u>Facts</u>

- Population has declined, but there has been an increase in ratepayers
- Number of residential customers has continued to grow to 230,000 with 17,000 new ratepayers since 2005
- Fewer persons per household but more households (especially the 25+ age group)
- 3,200 housing starts annually with 86% of new homes now using electric heat
- Market share for electric heat has more than doubled between 1979 and 2009 (currently 63%)
- Significant economic growth in the province with projects such as Vale and Hebron being developed
- As demand grows, Holyrood will be used longer each year

Do we need power? (con't)



- Residential and commercial growth plus the Vale project (92 MW) will require more power.
- \$10–15 billion potential investment in Labrador mining projects is possible in next decade but partly depends on availability of power
- Based on projects in construction or near sanction in Labrador, current generating capacity in Labrador will be exhausted by 2015-2017
- Labrador mining developments may absorb all residual power from Muskrat Falls and further power may be needed

Current Generating Capacity

Island Generating Capacity by Operator



Hydro's Net Generating Capacity

- The Island generating system has a total generating capacity of 1,958 MW, with NL Hydro providing 1,518 MW of power.
- The following charts show that Holyrood plays a leading role in meeting the Island's energy needs.



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NL needs power



- Island load forecast indicates system will need power by 2015 to meet peak demand in the middle of the winter.
- By 2020, energy deficit will leave a supply shortfall for the year.
- Forecasted economic activity growth leads to load growth
- Ongoing review indicates that latest load forecast is higher compared to the 2010 outlook used as part of DG2 process.
 Overall, MHI finds the latest Island system load forecast is reasonable and well founded.
- Holyrood generating facility retirement is a key goal to eliminate oil cost impact on electricity rates and eliminate environmental issues.
- Conclusion The province will need additional power supply.

Are power rates going up?



- The issue of increasing rates is the number one concern that has been expressed by the average person.
- The following profiles have been developed to provide an understanding of how Muskrat Falls will affect customers. The following charts show that under all profiles, rates have continued to increase since 2000 and until 2016. It is important to understand that these rates are going up because of oil price increases; not because of the development of Muskrat Falls.
- The following charts are based on DG2 numbers. DG3 costs will be released soon and costs have gone up, but these costs will be offset by the value of the Federal Loan Guarantee. Consequently, the charts are not expected to change significantly.
- Profile 1
 - Customer who doesn't use electric heat as primary source
 - 775 kWh per month (90,000 customers)
- Profile 2
 - Customer who uses electric heat as primary source
 - 2058 kWh per month (140,000 customers)
- Profile 3
 - Average of all Island residential customers
 - 1517 kWh per month (230,000 customers)

Historical and Projected Monthly Electricity Bills Before Muskrat Falls Profile 1: Average of 90,000 customers w/o electric heat





Based on the **average monthly electricity consumption** of Island customers who do not use electricity as their primary heat source (775 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

Historical and Projected Monthly Electricity Bills Before Muskrat Falls Profile 2: Average of 140,000 customers with electric heat





Based on the **average monthly electricity consumption** of Island customers who use electricity as their primary heat source (2058 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).



Historical and Projected Monthly Electricity Bills Before Muskrat Falls Profile 3: Average of all Island customers





Based on the average monthly electricity consumption of all Island customers (1517 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

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How does NL compare?



- NL has the fifth lowest electricity rates in Canada compared to other provinces (only slightly higher than New Brunswick).
- Labrador has the lowest rates in Canada.
- The majority of provinces with lower rates than NL have all developed large hydro resources.
- The following chart shows our rank in electricity costs across Canada.



Canadian Electricity Costs as at July 2012



Based on monthly consumption of 1517 kWh; includes taxes and rebates as applicable.

Project Alternatives



- Do we need power? Yes.
- What are the alternatives?
 - Island Interconnected: Muskrat Falls + Labrador Island Link
 - Gull Island
 - Isolated Island (Holyrood, Small Hydro, Wind)
 - No project (Holyrood by default)
 - Natural Gas (LNG/importation; pipeline from Grand Banks)
 - Wind
 - Recall of Upper Churchill (92A)
 - Wait for 2041

Project Alternatives (Cont.)



- Muskrat Falls and Labrador-Island Link
 - 824 MW
- Isolated Island (Holyrood, Small Hydro, Wind)
 - Holyrood refurbishment with continued fuel purchases
 - Island Pond 36 MW (2015); Portland Creek 23 MW (2015); Round Pond 18 MW (2029)
 - Wind projects
- Gull Island
 - 2250 MW
 - Requires QC transmission or very large industrial demand in NL
- Natural Gas (LNG imports or Pipeline)
 - MHI supported Nalcor's conclusion that natural gas was not viable
 - Ziff conducting independent review of natural gas options
- Wind
 - Technical limitations to capacity that can be reliably integrated
 - MHI preparing review of wind potential
- Recall of Upper Churchill (92A)
 - Prospects for successful legal challenge are unlikely
- Wait for 2041
 - No guarantee of access to cheap or free power in 2041
 - Requires investment in Isolated Island option until 2041

Project Alternatives (Cont.)



- Preliminary screening by Nalcor showed only Muskrat Falls and Isolated Island to be viable alternatives.
- MHI supported Nalcor's DG2 assessment that Muskrat Falls is \$2.16 billion cheaper than Isolated Island.
- The DG3 numbers, new Cumulative Present Worth, and the MHI report will be provided before the debate in the House of Assembly

How do oil prices affect electricity rates?



- The cost of oil is driving electricity prices higher.
- Holyrood
 - will be used more in future years
 - requires refurbishing to enable pollution control (\$600 million)
 - burns approximately 18,000 barrels of oil per day at peak production
 - is the significant factor in electricity rates
- Forecasting is a best estimate, and according to various oil forecasters (including PIRA Energy Group) the price of oil will continue to increase due to a number of factors (insufficient supply; volatile Middle East affecting supply; growing global middle class; China's growth).
- Important to differentiate between short term prices subject to volatility and long term forecasts whereby market fundamentals of supply and demand determine price.
- The following charts demonstrate oil price forecast trends.

Oil Price Forecast





Page 24 Newfoundland Labrador

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Oil Price Forecast

Rate effects of Muskrat Falls



- The following charts illustrate that power rates will stabilize with Muskrat Falls.
- The same three customer profiles that were used on previous slides are used for illustration.



CIMFP Exhibit P-00927 Historical and Projected Monthly Electricity Bills

Profile 1: Average of 90,000 customers w/o electric heat

Based on the **average monthly electricity consumption** of Island customers who do not use electricity as their primary heat source (775 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

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CIMFP Exhibit P-00927 Page 27 Historical and Projected Monthly Electricity Bills Profile 2: Average of 140,000 customers with electric heat Profile 2: Average of 140,000 customers with electric heat



Based on the **average monthly electricity consumption** of Island customers who use electricity as their primary heat source (2058 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

CIMFP Exhibit P-00927 Historical and Projected Monthly Electricity Bills Profile 3: Average of all Island customers





Based on the average monthly electricity consumption of all Island customers (1517 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

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Historical and Projected Monthly Electricity Bills Average monthly electricity customer usage





Based on the average monthly electricity consumption of all Island customers (1517 kWh per month); includes taxes; includes provincial HST rebate for years 2011 and beyond; Newfoundland Power own rate increases for distribution would have additional cost increases; data points up to 2011 indicate actual rates in effect at July 1 of each year; 2012 shows rates in effect as at January 11, 2012; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

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Rate Increase Projections



Period	Rate Increase (\$ per month)
2000-2011	\$58 (\$44 including provincial rebate)
2011-2016 (f)	\$38
Total 2000-2016 (f)	\$96
2017-2030 (Holyrood)	\$62
2017-2030 (Muskrat Falls)	\$29

- The greatest rate increases will occur between 2000 and 2016
- Muskrat Falls will stabilize rate increases

Economic Benefits



- Peak employment in NL in 2013 will be 2700 people.
- \$1.4 billion in total income to labour and businesses in NL.
- \$737 million in taxes during construction to governments of Canada and NL
- \$450 million in income to businesses and labour in Labrador.

Environmental Benefits



- End of emissions at Holyrood
 - No more burning 18,000 barrels of oil a day at peak
 - Elimination of toxic SO₂ and NOx
 - Reduction of GHGs by over 1 million tons annually
 - Approximately equivalent to 300,000 cars off the road
- Adding scrubbers and precipitators under the Isolated Island options does not eliminate GHG emissions
- Establishes NL as climate change leader
- NL's electricity supply will be > 98% renewable
 - the highest renewable percentage in Canada

Environmental Impact



A dam and powerhouse at Gull Island



2250 MW/ 12 TW-h/yr Reservoir length – 232 km Flood area – 85 sq km Two dams and powerhouse at Muskrat Falls



824 MW/ 5 TW-h/yr Reservoir length - 60 km Flood area – 41 sq km

Interconnecting Transmission Lines between Muskrat Falls, Gull Island, and Churchill Falls

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The Emera Agreement



- NL requires only 40% of Muskrat Falls energy in the early years.
- What do we do with excess energy?
- Emera invests \$1.2 billion to build the Maritime Link and gets 20 per cent of the energy: 20% of the energy for 20% of the cost.
- Emera also invests \$600 million towards the Labrador-Island Link.
- Emera will be responsible for 20% of operating costs for 35 years.
- Total investment for Emera of \$1.8 billion.
- <u>After 35 years, NL will own the Maritime Link and the 20% power block</u> is returned.
- Deal provides NL access to Maritime and US markets; interconnection is critical to Energy Plan.

Bypassing Quebec



- Regie de l'Energie has denied transmission access for years
- Lack of transmission access through Quebec makes Gull Island not viable at present
- Only way around Quebec is with Labrador-Island Link and Maritime Link
- Strategic and economic benefits of interconnection with North American grid
- Allows export of surplus power from Muskrat Falls until it is all required domestically
- Interconnection via Maritime Link also improves reliability and results in the more efficient operation of the Island system

Process



- LCP Deal Announced
- Loan Guarantee (MOA Signed)
- EA Panel Report Received
- PUB Report Received (extended from December 31)
- Nalcor/Emera agreements signed
- House of Assembly
- Decision on Project Sanction

November 18, 2010 August 19, 2011 August 25, 2011 March 31, 2012

July 31, 2012 Fall 2012 Fall 2012





- Significant work has already been completed and the project has considerable momentum:
 - Generation released from Environmental Assessment
 - Transmission Environmental Assessment is advancing
 - Impacts and Benefits Agreement in place with Innu.
 Land Claims Agreement and Upper Churchill Redress
 Agreement also ratified
 - Commercial Agreements concluded with Emera for Maritime Link

Progress (cont.)



- Supportive independent and external reviews completed by Navigant, Manitoba Hydro International
- Financing strategy is well advanced. The Federal Government has committed to providing a loan guarantee for the project
- Collective bargaining in progress with Resource Development Council
- Engineering, Procurement and Construction
 Management contract awarded to SNC-Lavalin, who are now fully mobilized in St. John's

Progress (cont.)



- Significant project activity is continuing in 2012, with more than 50% of engineering now complete
 - Note: 95% of all engineering has occurred in NL
- To protect schedule time frames, a minimal level of prudent construction activity is occurring in Labrador this summer in advance of sanctioning decision
 - Site clearing
 - Road construction
 - Power line clearing for construction site
 - Contracts awarded to Innu partner companies

Current Status



- Reports being prepared
- Federal Loan Guarantee being finalized
- DG3 numbers and MHI review
- Natural gas reports
- Wind report
- Other reports
- Debate in House of Assembly

Messaging



- Muskrat Falls will benefit Newfoundlanders and Labradorians first and foremost
 - Significant benefits for NL during engineering and construction
 - Hiring preference for Innu, Labradorians, Islanders
 - Designated Innu contract opportunities, full and fair opportunity for NL companies
 - Stops increases to electricity rates caused by oil
 - Eliminates emissions from Holyrood
 - Provides Government of NL with a positive return on its investment whereas Holyrood (oil) benefits multinational oil companies

Messaging (cont.)



- Muskrat Falls allows NL to finally break the stranglehold Quebec has on energy exports, truly allowing NL to control our own destiny
 - Quebec has prevented NL from using its transmission lines to export power, even though NL was prepared to pay upwards of \$400mm/year in fees
 - With Maritime Link, NL can sell power into Atlantic Canada and US
 - Initially this power will come from Muskrat Falls but this will eventually be supplemented by new wind power, small hydro (ie. NL energy warehouse)
 - This will yield significant profits for NL





- We need power on the Island and in Labrador.
- Muskrat Falls is the least cost option.
- Muskrat Falls will stabilize electricity rates.
- Enormous economic benefits to province
- Significant environmental benefits

Overriding question – Is the Muskrat Falls deal in the best interest of the people of Newfoundland and Labrador?