

April 11/12

Meeting re: Pub Report - Robert, James, Brian  
Glenda, Ed, Charles, JPK

① Release report immediately in morning

② Full and open debate in HOD =

③ Pub report - extension working have not had  
9 months and nothing done yet  
no conclusion - must be done  
within 6 months

see pub  
letter

④ G3 #s - keep a complete package  
- have time frame  
- public review  
= we decided to have  
some extra pub work to;

⑤ update Holyrood #s

⑥ other options - network gear  
wind gear

pubs - agree w/ Volcan and NEM that based on G2  
#s Interconnected Option could be used to have a  
lower risk based on analysis a feasibility level estimate  
↓  
Board does not believe, however, not conclusion made  
is determining whether least-cost option  
= pp. 79-80, → possible conclusion

April 2/12  
PUB Report

# Newfoundland Labrador

## Cabinet Room

- ① discussed and approved that after 9 months and couple of million dollars no recommendation from PUB → nothing new in there
- ② knew that DG2 numbers were being reviewed, as did MHI and CA (no problem currently question)
- ③ although extension requested, no time frame would be allowed for completion of DG3 numbers
- ④ 1.29 - time to determine least-cost option is when info (DG3) is available

↓ THREAT FOR - full debate in HSA

→ having of independent expert → MHI

→ all DG3 numbers made available

→ studies and reports made available

HSA always emphasized the importance of DG3 #s, will consider (EA, MHI, CA, PUB, Emore agreements, Fed loan guarantee) ⇒

Apr. 13/12

VOCM Interviews

Marked Felle - back to service

- Lower Churchill project has been examined for 40 years  
 - Vic Young, then chair of NE Hydro, recommended proceeding with  
 Marked Felle in 1988

- John Grimes died in late 90's

- ~~John~~ Nalco working on Lower Churchill for last 8 years

- deal announced in November 10



EA Panel

Nalco

Navigator

Montrose Hydro Int'l

Wood Lake

Consumer Advocate

Federal Local  
 government

- JH's meetings - Wood Lake Kenne / HST / ZH

- Pub Report - No Recommendation

Now reports 2 wind w ~~gas~~ gas - other options

- HST hired to review project matters

- on PG3 & 4 released to public

- full debate in House & Assembly and vote  
 \* what is in best interests of people of NL? \*

OPTIONS

- ① do we need the project
- ② lowest cost option
- ③ electricity not
- ④ tobacco then
- ⑤ economic
- ⑥ environmental

P. 17 - Time to answer best-cost option is not as high as it was  
 \* Along in Decision-Making Process when there is a higher degree  
 of Project Definition and significantly less variance around estimate  
 Capital Costs

Newfoundland & Labrador

**BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

April 4/12

- P. 2 - Terms of Reference
- P. 4 - Hydro
- P. 9-12 - Schedule and Extension
- P. 13 - Public report was a key component to the review
- P. 14-18 - Two options reviewed ISL
- P. 19 - other supply options
- P. 20 - broad
- P. 21-24 - Upper Churchill
- P. 24 - Hydro
- P. 25 - re-forecasting of Hydro
- P. 27 - Board forecasts or power to allow fuel
- VC power of 9 months
- P. 27-29 - Nelson's De before Ontario did not have
- \* to review NG2 determination and info available at the time
- P. 30-41 - Load Forecast / System Capability
- P. 30 - Public Envision
- P. 31-33 - Utility load forecast
- P. 34-35 - Industrial load forecast
- P. 36-39 - System capability
- P. 39-41 - Board forecast
- P. 41 - No CPPCL no energy deficit
- no immediate need for large incremental supply

- ① Report on Wind
- ② Report on Natural gas
- ③ Electricity Rates
- ④ Labrador Mining
- ⑤ Oil Forecasting
- ⑥ Recall Power
- ⑦ Upper Churchill

Vice-Chair

Dwanda Newman, LL.B.  
 Commissioner

James Oxford  
 Commissioner

→ Labrador many projects

- P. 42 - CLW analysis and forecast (fuel price review)
- Fuel price forecasting methodology
- Public
- 48 - Fuel price forecast
- 11 - Most significant for CLW analysis and main factor in CLW forecast
- Board conclusion - two price forecasts are presented and a credible price
- Capital cost of hydro
- Public vs. Govt & Service
- 6 - CLW Analysis
- Board agrees that using info, MP would be paid for
- Lower CLW → doesn't count in determining whether least cost option
- P. 66 - NG2 does not form an adequate base
- P. 66-72 - Reliability and risk analysis
- P. 72-74 - Risk mitigation
- P. 78-79 - Conclusion
- Evidence of fuel costs a critical factor



NEWFOUNDLAND AND LABRADOR  
**BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

120 Torbay Road, P.O. Box 21040, St. John's, Newfoundland and Labrador  
Canada, A1A 5B2

2012 03 30

The Honourable Jerome Kennedy, Q.C.  
Minister of Natural Resources  
Government of Newfoundland and Labrador  
7<sup>th</sup> Floor, Natural Resources Building  
50 Elizabeth Avenue  
St. John's, NL  
A1B 4J6

Dear Minister:

On June 17, 2011 Government issued a reference directing the Board to review and report on whether the development of the Muskrat Falls generation facility and the Labrador-Island Link transmission line is the least-cost option for the supply of power to Island Interconnected customers over the period of 2011-2067, as compared to the isolated Island development scenario, with both options outlined in the Terms of Reference.

We are pleased to advise that the Board has completed its review and is now submitting its report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Andy Wells'.

Andy Wells  
Chair and Chief Executive Officer

A handwritten signature in black ink, appearing to read 'D. Whalen'.

Darlene Whalen, P. Eng.  
Vice-Chair

A handwritten signature in black ink, appearing to read 'Dwanda Newman'.

Dwanda Newman, LL.B.  
Commissioner

A handwritten signature in black ink, appearing to read 'James Oxford'.

James Oxford  
Commissioner

## EXECUTIVE SUMMARY

### The Reference

On June 17, 2011 Government issued a reference to the Board of Commissioners of Public Utilities (the "Board"), pursuant to section 5 of the *Electrical Power Control Act*, directing the Board to review and report on whether the Muskrat Falls generation facility and the Labrador-Island Link transmission line represents the least-cost option for the supply of power to Island Interconnected customers over the period of 2011-2067 as compared to the isolated Island development scenario (the "Reference Question").

In answering the Reference Question the Board was directed to consider and evaluate factors it considers relevant, including Hydro's and Nalcor's forecasts and assumptions for the Island load, system planning assumptions, and the processes for developing and comparing the estimated costs for the supply of power to Island Interconnected customers. The Board was directed to assume that any power from the Muskrat Falls generation facility which is in excess of the needs of the Province is not monetized or utilized, and therefore to not include consideration of the options and decisions respecting the monetization of the excess power from the Muskrat Falls generation facility, including the Maritime Link project.

The two options to be compared were set out in the Terms of Reference as the Muskrat Falls generation facility and the Labrador-Island Link transmission line (the "Interconnected Option"), and an isolated Island development scenario (the "Isolated Island Option"). Consideration of matters such as other supply options and the potential impact on rates for Island customers was not part of the Board's review.

Thomas Johnson, LL.B., was appointed by Government as the Consumer Advocate.

This report sets out the Board's response to the Reference Question and reflects the information provided by Nalcor, the findings of the Board's expert consultants, input from presenters and other persons who participated in the review, and the final submissions by Nalcor and the Consumer Advocate.

### Review Process

The Board engaged the services of Manitoba Hydro International ("MHI") as its expert consultant to assist with the review. MHI's two-volume report was released on February 1, 2012.

A significant amount of documentation was filed by Nalcor during the review, including public and confidential exhibits. In addition Nalcor filed responses to 605 information requests.

The Board set aside two weeks commencing February 13, 2012 for presentations by Nalcor, MHI and other interested parties. A number of written comments and presentations were also received during the process. All review documentation, including transcripts, was posted to the Board's website, and the daily proceedings were webcast.



The Board's report on the Reference Question was initially required to be provided to the Minister of Natural Resources by December 30, 2011. This date was later extended to March 31, 2012 as a result of delays in receipt of critical documentation from Nalcor. This significantly impacted the Board's process and ability to answer the Reference Question as key procedural steps had to be changed or eliminated in order to meet the March 31, 2012 deadline.

The information provided to the Board by Nalcor was generally the information available as of Nalcor's Decision Gate 2 in November 2010. This information was considered to be at a concept study or feasibility level and was used by Nalcor in selecting a development scenario to proceed to detailed design. Because Nalcor did not provide information on the detailed engineering and financial analysis completed after Decision Gate 2, the Board's review was limited to the project components, costs and information as of November 2010.

### MHI's Report and Findings

MHI's mandate included a review of the work completed by Nalcor and its consultants on the two supply options set out in the Terms of Reference. MHI assembled a team of specialists in the required areas of expertise to review the technical feasibility and cumulative present worth ("CPW") analysis for the Interconnected and Isolated Island Options.

MHI determined that the studies, work and analysis completed by Nalcor and its consultants as of Decision Gate 2 had been generally completed in accordance with best utility practices with certain exceptions:

- The domestic forecasting process is inherently biased toward under predicting energy consumption. Best utility practice would incorporate end-use modeling techniques for the domestic forecast which is not currently being done.
- Nalcor did not complete comprehensive probabilistic reliability studies of the two options to compare the relative reliability of each.
- System integration studies for the Interconnected Option were not completed at Decision Gate 2 as required by good utility practice.
- Nalcor currently does not comply with North American Electric Reliability Corporation (NERC) standards which have been adopted by the majority of utilities in Canada.
- Nalcor's selected design criteria for the Labrador-Island HVdc overland transmission line was not in accordance with industry standards and best utility practice in Canada.

MHI also noted that the potential for variability in the Industrial load forecast was high and could materially impact the CPW analysis.

MHI concluded that, when considered together with the underlying assumptions and inputs provided by Nalcor, the Interconnected Option represents the least-cost option of the two alternatives reviewed. MHI noted, however, that the risks and uncertainties associated with the key inputs are magnified by the project's scope and the length of the analysis period, and changes in key inputs and assumptions can impact the results of the analysis and shift the preference for the least-cost option.

POB never  
to be reviewed  
to review  
DG3 #5

9 months on  
single 4 mil.  
dollar  
extension was  
at the other  
time to review  
DG3 #5

### **Board's Review and Conclusions**

Nalcor submits that the Interconnected Option is the least-cost option based on its Decision Gate 2 analysis and the information available in November 2010. Decision Gate 2 is a concept study or feasibility level stage of the project planning process which provides for changes in project scope and costs as detailed design progresses. The degree of project definition associated with Nalcor's Decision Gate 2 analysis is 5% to 10% for the Interconnected Option and even less so for the Isolated Island Option. This high level, conceptual understanding of the project components is associated with a range of accuracy in the capital cost estimates of +50% to -30%. MHI found that Nalcor's estimates of component costs for both options were generally within this accuracy range except that certain estimates in relation to the Labrador-Island Link transmission line were found to be at the low end of the range. As well, the gaps identified by MHI in Nalcor's analysis as set out above have the potential to significantly impact the project definition and costs for the Interconnected Option.

As required by the Terms of Reference the Board reviewed the load forecast used by Nalcor and questions whether this forecast should be relied on in answering the Reference Question. This load forecast is approximately two years old and was not updated during the review. In addition MHI noted several issues in relation to the load forecast as set out above. While the forecast shows a gradual increase in load, it does not demonstrate an immediate need for the significant amount of new generation contemplated in the Interconnected Option. Assuming no monetization of excess power, the potential supply associated with the Interconnected Option is much greater than the forecast load. The preference for the Interconnected Option would appear to be the result of forecasted fuel savings associated with the closing of the Holyrood Thermal Generating Station.

The risks of capital cost overruns and the uncertainties around load and fuel forecasts for a planning period of over 50 years were concerns during the review. The sensitivity analyses show that the CPW results are significantly affected by changes to the assumptions for fuel prices, load and capital costs. For example, each of the following scenarios would effectively eliminate the CPW preference for the Interconnected Option: i) increasing the capital costs of the Interconnected Option by 50%; or ii) decreasing load by 880 GWh with a 10% increase in capital costs; or iii) reducing the fuel price forecast by 44%.

Nalcor advised that work has been ongoing since Decision Gate 2 and that, by June 2012, it will have an updated load forecast, a CPW analysis with updated inputs including fuel forecasts, and better defined capital costs. Updated information in relation to this ongoing work was not made available to the Board during the review. According to Nalcor the degree of project definition at Decision Gate 3 could be as high as 40% and the range of accuracy of the capital cost estimates could be as narrow as  $\pm 10\%$ .

In conclusion, the information which was made available during the review was considerably less detailed and comprehensive than the information that Nalcor has today and will have at Decision Gate 3. As Nalcor explained, there can be significant changes as a project proceeds through the planning process and, further, that proceeding through Decision Gate 2 does not ensure that the project will be sanctioned. Nalcor decided in November 2010 at Decision Gate 2 to move to the next phase in the planning process and commence detailed design. The Board



was not asked to determine whether this decision was correct. Rather, the Board was asked to determine whether the Interconnected Option represents the least-cost option for the supply of power to Island Interconnected customers. The Board does not believe that it is possible to make a least-cost determination based on a concept study or feasibility level of information generally from November 2010 which was intended only to ground Nalcor's decision to move to the next phase of the analysis, especially given that so much additional work has already been done to define the project and costs and to further eliminate uncertainties.

**The Board concludes that the information provided by Nalcor in the review is not detailed, complete or current enough to determine whether the Interconnected Option represents the least-cost option for the supply of power to Island Interconnected customers over the period of 2011-2067, as compared to the Isolated Island Option.**

#### **Other Considerations**

There were gaps in Nalcor's information and analysis at Decision Gate 2, including: i) ac integration studies were not done; ii) probabilistic reliability studies to compare the two options were not done; iii) there is uncertainty with respect to adherence to NERC standards, and iv) the design return period for the HVdc overland transmission line is not in accordance with accepted standards and best practice. Nalcor has advised that it is completing the ac integration studies and assessing the implications of NERC compliance for Decision Gate 3. Nalcor does not plan to incorporate comprehensive probabilistic reliability assessments into its decision-making process as is done by other Canadian utilities for major projects. Of particular concern to the Board is the fact that Nalcor does not accept the recommendation of MHI with respect to transmission line design criteria.

Apart from the possible impact on project definition and costs these gaps relate to power system reliability and raise serious concerns in relation to Nalcor's assessment of the impact of the interconnection of the Muskrat Falls generation facility to the Island Interconnected system. Any outage on the system caused by the loss of the HVdc bipole line could significantly impact Hydro's Utility and Industrial customers and lead to additional costs for the system and customers, in addition to the possible societal and economic impacts associated with an extended outage. These deficiencies should be addressed by Nalcor in a meaningful way should the Interconnected Option proceed to project sanction.

①

April 6/12

meeting of Ed, Brian, Robert, Orlene,  
Charles w JPR re MF reaction

Will Nelson Rev. IG3 #s in time for June debate in House?

→ MF involving Member Link

June 7 cutoff — May 18 for group

risk analysis, for trying back up

- IG3 rep. posts for be done by May 18
- updated schedule
- updated flow of communication
- updated report submitted to the pub

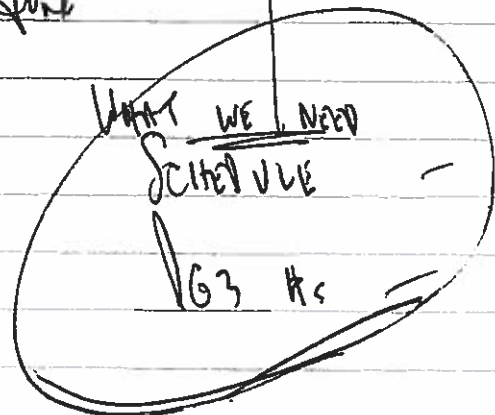
With updated report — give full information as of  
before available

Promised — \* There have to be deadline \*

→ MF involvement changes timeline.  
IG3 #s change meet to be provided 1. June

Early work

NATURAL GAS  
WIND



April 17/16

Meeting of ED and Chester

① Issue of Federal Loan Guarantee - if Enbridge does  
 follow through no loan guarantee

\* worst case scenario - if loan guarantee is given and then  
 backed 1 year down the road \*

② Many projects - need customer subsidizing  
 \* need a plan

③ Rates - importance of loan guarantee

- Failure of Enbridge and gov. to take  
 - without PG3 it's  
 - someone who has to take  
 - no problem of market → better

how to handle to sell  
 if proposed to New York  
 here

we be lining up  
 - VAB, last April & June, page 10  
 choices: ① further negotiations of Enbridge  
 ② go into market of loan guarantee

\* Long GUARANTEE - need definitive yes or no, if or if not Enbridge  
 → how to characterize level of uncertainty

④ Early works - \$25M / road / council  
 - if road built for work

⑤ PG3 presentation - technical presentation

(2)

① what if Euro falls through?

② definitely in loan guarantee

Letter from Minister  
Oliver

Moving 1/8 week back after  
commercial agreement is signed

ED → principle 1 Euro deal - 2% 1/8 week for  
→ ~~VARB~~ limit - 2% 1/8 week for

reaser / loan to maintain deal outlined in Term Sheet  
There will be a transition Link

- need to nail down Federal loan Guarantee.
- need to nail down Euro agreement

ISSUE of FATES

Apr. 16/12

# Conference call re: HQT Debate

① Planning for debate in HQT → Special session that will have defined terms / agreed by Opposition / Speaker / public  
→ resolution  
→ information that has to be provided to Opposition / public

② outline for debate → 1 week vs 1 month  
→ full days - 5 day

③ JPK's concerns re: timelines →

④ Ed - will have estimates for 163 numbers for HQT  
including Mth's review → at minimum, mid - July

⑤ critical piece - do not go to penitence of debate in HQT  
Opposition will be given time to prepare → 2-3 weeks

⑥ Isolated Extd vs Interconnected  
NATURAL GAS  
WIND  
↓ feed power  
Upper Churchill  
LOAD forecast  
rates

\* CBAPL \*

⑦ Mth - Terms & reference are important / Scope & work

Two Groups — ① Valer / NR / Premier's Office - DG's

② Debate in HQT / Penitence / Info provided  
It's temporary — that will lead!



(2)

① What if Enron falls through?

② definitely no loan guarantee

Letter from Minister  
Oliver

Marking 1 & 8 week clock after  
commercial agreements are signed

ED → principle 1 Enron deal - 20% 1 per for  
→ ~~VARB~~ limit - 20% 1 per for

Premier / Gov. to maintain deal outlined in Term Sheet  
There will be no financing link

- need to nail down federal loan guarantee.
- need to nail down Enron agreement.

Issue of rates

April 18/12

Meeting of Executive

Fairmont

CONFIDENTIAL

Options:

- ① Hydrogen versus MF / Nelson
- ② Natural gas / LNG / Wes
- ③ Wind / Charles
- ④ Labrador Mining / report / Dave / Paul
- ⑤ electricity rates / Paul / Walter
- ⑥ fresh power / Pierre
- ⑦ Upper Churchill - varying / Charles / Paul
- ⑧ good faith action / Pierre
- ⑨ Gull Island /
- ⑩ power imports from Quebec /
- ⑪ Labrador Mining rates / Charles

\*  
= 30 days for preliminary reports =

June 12/12

## Conversations w/ Munster Oliver

- headsets to negotiate loan guarantees
- Committee to supporting LC project
- led African meeting w/ NE, NS, Euse, Nolani
- proposed term sheet → based on language from [unclear]
- financial advice → due diligence
- objectives to include ~~for~~ as fully as possible.
- NS & negotiating term → only the world
- Munster get involved
- no progress → approach is facilitator of the process

For

NS/NE

Person has go ahead.

- understand work has. et data.

Oliver

- want to know that look into go ahead.
- want through relevant

## FINANCING ISSUES

- ① Financing through combination of <sup>equity</sup> debt & borrowing
- ② Cost of debt does not go to net debt b/c  
     reserve generating asset
- Reserve borrowed in many years
- Making the investment

May 8/12

# NEB BOARD Report - April - June 2012

Note that we have been using prices of 4¢ or 5¢ in country  
 → updated in October 2011  
 → includes basic energy charge  
 energy efficiency  
 transmission & distribution  
 without proper recovery for connection cost  
 10.4 kWh / \* when you add on 4 you get 11.8 kWh

get people like from every province → all publicly  
 available from regulators in each province

## Version NEB Report

does not take into account the full picture  
 gives some information but not a complete picture  
 10. Alberta is particularly low b/c they do not include basic charges, transmission or distribution

NR October 2011 is still accurate  
 and will be updated for 10th debate

\* 10.4¢ kWh is not  
 where Alberta and Ontario don't include Alberta  
 Ontario would be higher



National  
Energy BoardOffice national  
de l'énergie

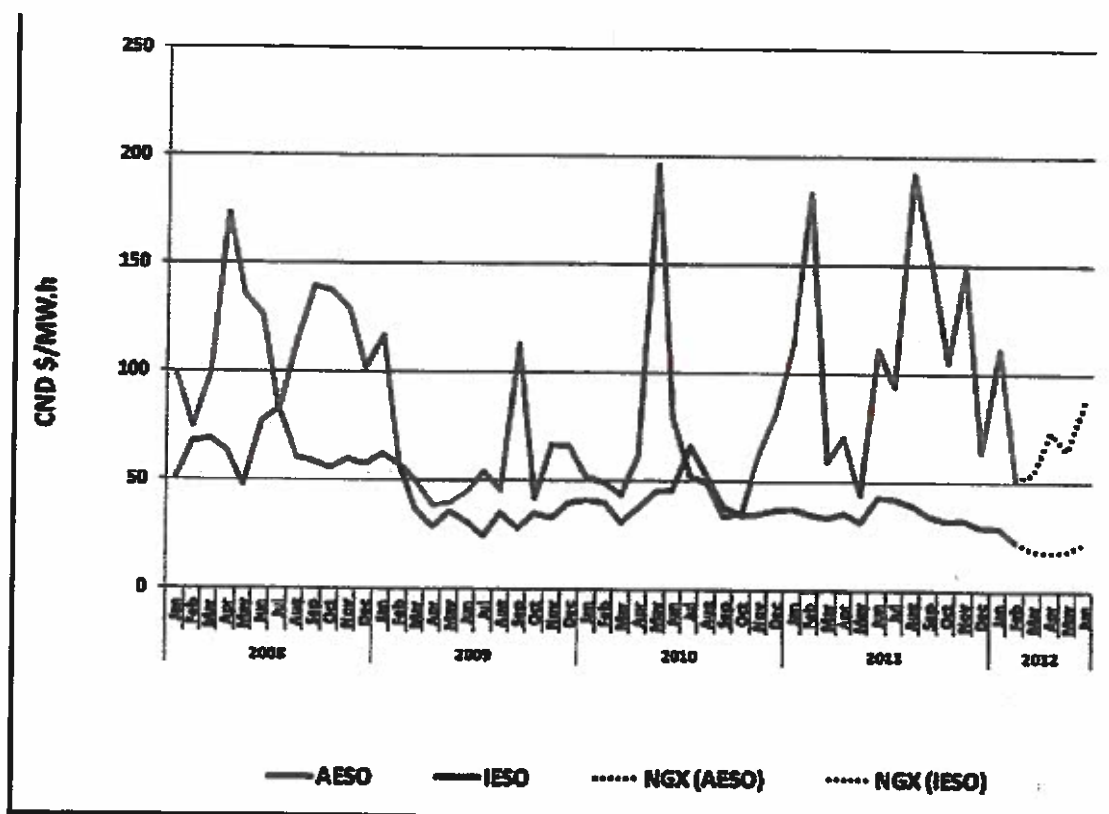
Canada

**National Energy Board****Electricity - Current Market Conditions April-June 2012**

In the first quarter of 2012, the Alberta on-peak power price averaged about \$72 per megawatt-hour (MW.h), with March as a partial estimate. Mild weather and low natural gas prices contributed to lower the price from the \$106/MW.h average during the fourth quarter of 2011. As of March, the futures prices for on-peak power in Alberta are averaging over \$75/MW.h for the April to June period, close to the average price over the same period one year ago.

The Ontario wholesale market price is expected to remain lower than Alberta's over the first quarter of 2012. Compared to Alberta, Ontario is more interconnected with other provinces and neighbouring American markets, and thus its prices are affected more by other markets. The greater capacity to trade also dampens the price effect of outages within the market. The eastern markets are settling at levels lower than last year. Ontario's on-peak price in February was \$23/MW.h, with the Global Adjustment adding about \$56/MW.h. The Global Adjustment accounts for payments made to contracted and regulated generators; the adjustment is greater for months when the wholesale price is relatively low, and can be negative if the wholesale price is quite high.

**Figure 1: Wholesale Electricity Prices in Alberta (AESO) and Ontario (IESO)**



Price variations in the wholesale market are usually not immediately passed on to consumers. Consumer prices need to go through a review process in all provinces and be approved by each province's respective regulatory authority (e.g., provincial energy board or public utility board). See FAQs for more information on pricing.

Consumer prices or "rates" vary for several reasons:

- variation in generation costs; prices in hydro-based provinces tend to be lower (e.g., British Columbia, Manitoba and Québec);
- customer class (e.g., residential, commercial, industrial); residential rates tend to be higher than commercial and industrial rates;
- amount of energy consumed in a given period (e.g., rates may vary based on customer consumption);
- time-of-use pricing (e.g., some consumers have access to time-of-use meters that show lower charges for electricity during off-peak periods); and
- capability to switch to lower cost fuels (e.g., industrial customers).

Information on specific rates is available from local distribution companies or provincial utilities. In most provinces the electricity bill is composed of a fixed or "basic" charge (including transmission, distribution and miscellaneous billing and metering charges) and an energy charge,

which varies with the amount of power consumed (mainly generation costs). The total power bill is the sum of these two costs. A tabular summary follows. See the Helpful Links section on our Web site for more information.

## Current or Applied-for Residential Electricity Rates\* (March 2012)

### British Columbia

BC Hydro	
Basic Charge Per Day	14.48¢
Energy Charge (cents/kW.h)	
kW.h ≤ 1350 bi-monthly	6.67
kW.h > 1350 bi-monthly	9.62

### Alberta

Regulated Rate Option - RRO	
Energy Charge (cents/kW.h)	8.5
*The rates shown for the restructured markets in Alberta and Ontario include only energy charges; other charges such as transmission and distribution costs are not shown for these provinces. These costs are typically included in the "basic charge" for vertically integrated utilities.	

### Saskatchewan

SaskPower, Saskatoon Light & Power			
	City, Town, Village, Urban Resort	Rural, Rural Resort	Saskatoon
Basic Charge Per Month	\$19.28	\$27.83	\$21.21
Energy Charge (cents/kW.h)	10.61	10.84	11.67

### Manitoba

Manitoba Hydro			

<b>Basic Charge Per Month</b>	$\leq 200$ amps	$> 200$ amps
	\$6.85	\$13.70
<b>Energy Charge (cents/kW.h)</b>	6.62	

## Ontario

Regulated Price Plan		
	Energy Charge (cents/kW.h)	
<b>Two-tiered option</b>		
Winter Season (1 November to 30 April)	kW.h $\leq 1000$ monthly	7.1
	kW.h $> 1000$ monthly	8.3
Summer season (1 May to 31 October)	kW.h $\leq 600$ monthly	7.1
	kW.h $> 600$ monthly	8.3
<b>Time-of-use (TOU) consumers</b>	On-Peak	10.8
	Mid-Peak	9.2
	Off-Peak	6.2
*The rates shown for the restructured markets in Alberta and Ontario include only energy charges; other charges such as transmission and distribution costs are not shown for these provinces. These costs are typically included in the "basic charge" for vertically integrated utilities.		

## Quebec

Quebec (Hydro-Québec)		
<b>Basic Charge Per Day</b>	40.64¢	
<b>Power above 50 kW</b>	Winter	Summer
	\$6.21/kW	\$1.26/kW
<b>Energy Charge (cents/kW.h)</b>		
	kW.h $\leq 30$ daily	5.39

kW.h &gt; 30 daily

7.51

**New Brunswick**

Énergie NB Power		
Basic Charge Per Month	Urban	Rural/Seasonal
	\$19.73	\$21.63
Energy Charge (cents/kW.h)	9.85	

**Nova Scotia**

Nova Scotia Power	
Basic Charge Per Month	\$10.83
Fuel Adjustment Mechanism	\$0.376
Demand Side Management Cost Recovery	\$0.548
Energy Charge (cents/kW.h)	12.638

**Prince Edward Island**

Maritime Electric		
Basic Charge Per Month	Urban	Rural
	\$24.57	\$26.92
Energy Charge (cents/kW.h)	kW.h ≤ 2000 monthly	
	12.05	
Energy Charge (cents/kW.h)	kW.h > 2000 monthly	
	9.2	

**Newfoundland and Labrador**

Newfoundland Power, Newfoundland and Labrador Hydro	
Basic Charge Per Month	\$15.71



	Domestic Service Plan	Optional Domestic Seasonal Plan	
Energy Charge (cents/kW.h)	10.407	Winter (December through April)  10.407 + 0.953	Summer (May through November)  10.407 - 1.297

## Nunavut

Qulliq Energy Corporation		
Energy Charge (cents/kW.h)	Lowest rate (Iqaluit)  52.39	Highest rate (Kugaaruk)  102.71

## Northwest Territories

Northwest Territories Power Corporation			
	Energy Charge (cents/kW.h)		
Yellowknife	22.08		
Outside Yellowknife			
September-March	kW.h ≤ 1000 monthly  kW.h > 1000 monthly	lowest rate  highest rate	22.08  16.36  47.39
April-August	kW.h ≤ 600 monthly  kW.h > 600 monthly	lowest rate  highest rate	22.08  16.36  47.39

**Yukon**

Yukon Electrical		
Basic Charge Per Month	\$14.65	
Energy Charge (cents/kW.h)		
kW.h $\leq$ 1000 monthly	12.14	
1001 $\leq$ 2500	12.82	
> 2500 kW.h	Other than Old Crow	Old Crow
	13.99	30.77

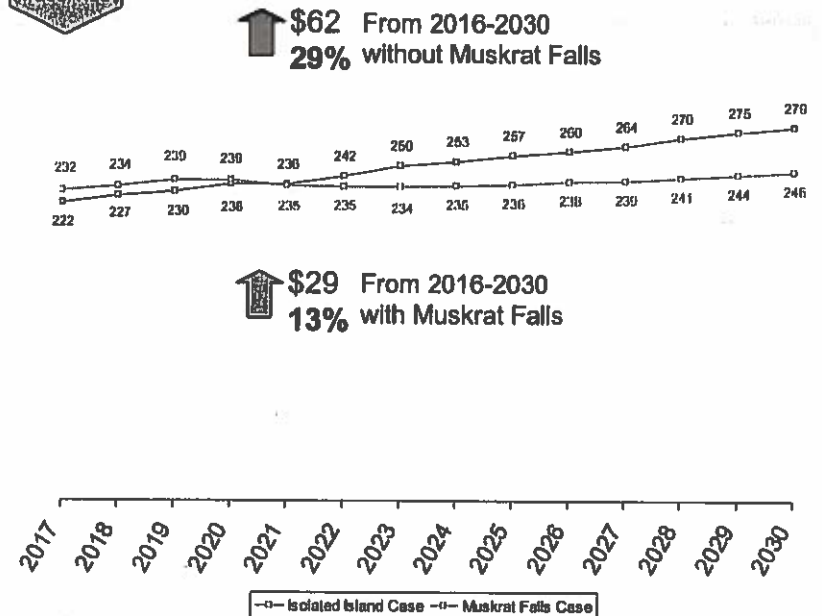
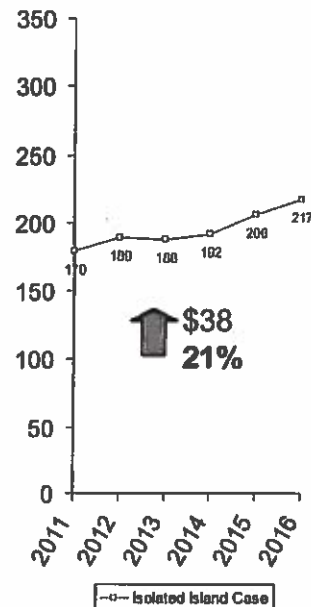
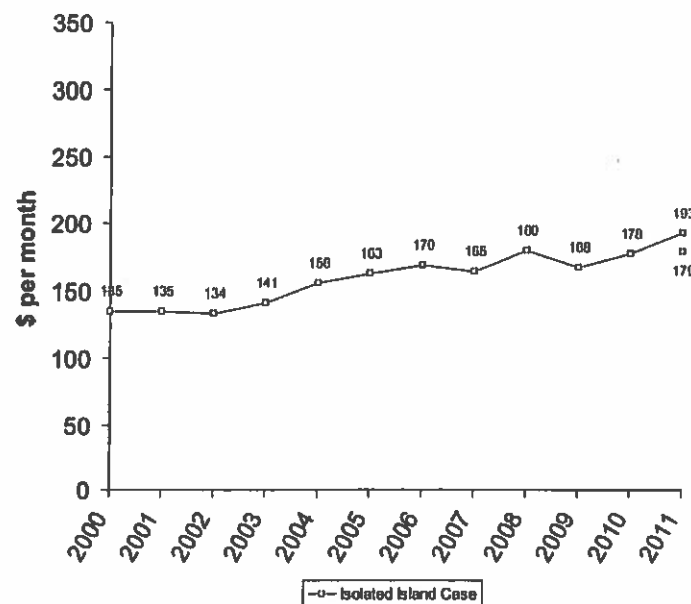
For further electricity pricing data and information, please see our *Helpful Links*. The following sections are also available: *How Canadian Markets Work*, *Canadian Industry* and *FAQs*.

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Date Modified: 2012-04-16

# 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 Includes Hydro's RSP increase scheduled to take effect July 1; data for 2013 and later is based on forecasts as per Decision Gate 2 data (November 2010).

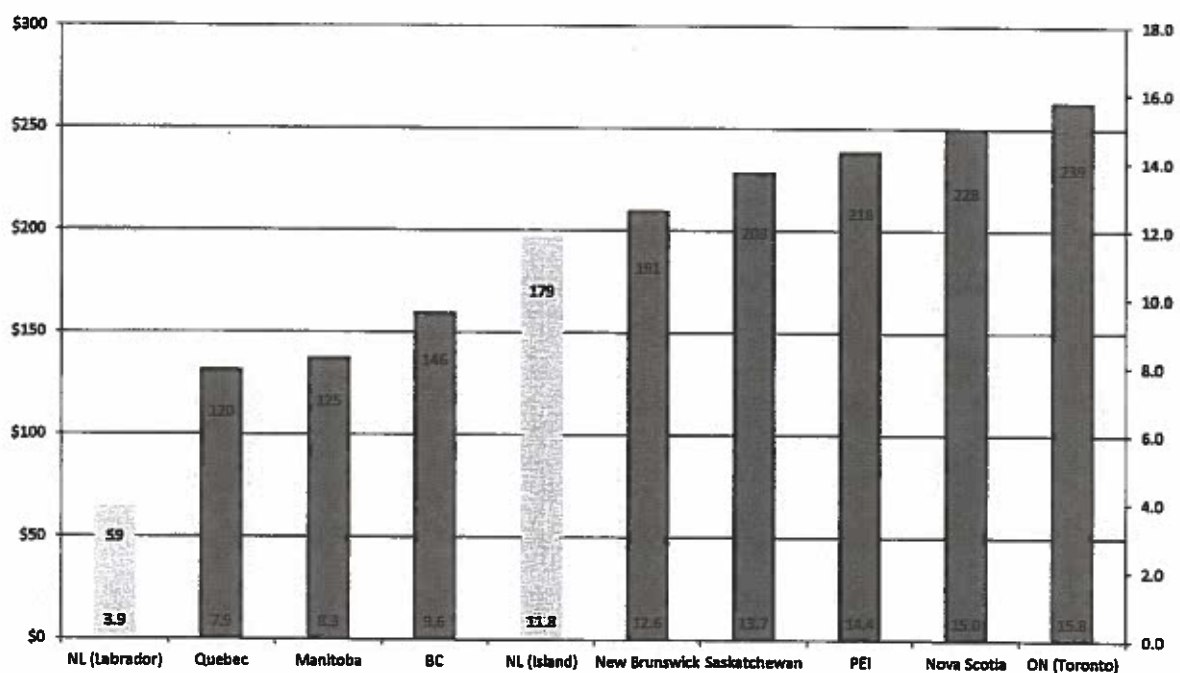
## Electricity Rates in NL: Muskrat Falls and the Isolated Island

### How Rates are Set

In Newfoundland and Labrador, as in most regulated jurisdictions in North America, electricity rates are set according to a utility's annual revenue requirement, that is the amount of money it must take in to cover all legitimate expenses (including the cost of capital) and to maintain a sound financial position. The PUB determines Hydro's revenue requirement by examining its capital and operating costs. It also sets the allowed rate of return on rate base (i.e. the physical assets purchased through capital such as power plants, transmission lines, substations, vehicles, and buildings). Rates are then set at a level that will provide the total required revenue.

### Comparison with Canadian Jurisdictions

At present, residential electricity rates in Labrador are the lowest in Canada and tax-included rates on the Island are lower than all other provinces besides British Columbia, Manitoba, and Quebec (the jurisdictions whose electricity generation is largely from hydroelectricity). The following chart shows the average monthly bill as of April 2012 for an electricity customer using 1,517 kWh per month (the average residential consumption on the Island of Newfoundland) on the left axis and the price per kWh on the right axis.



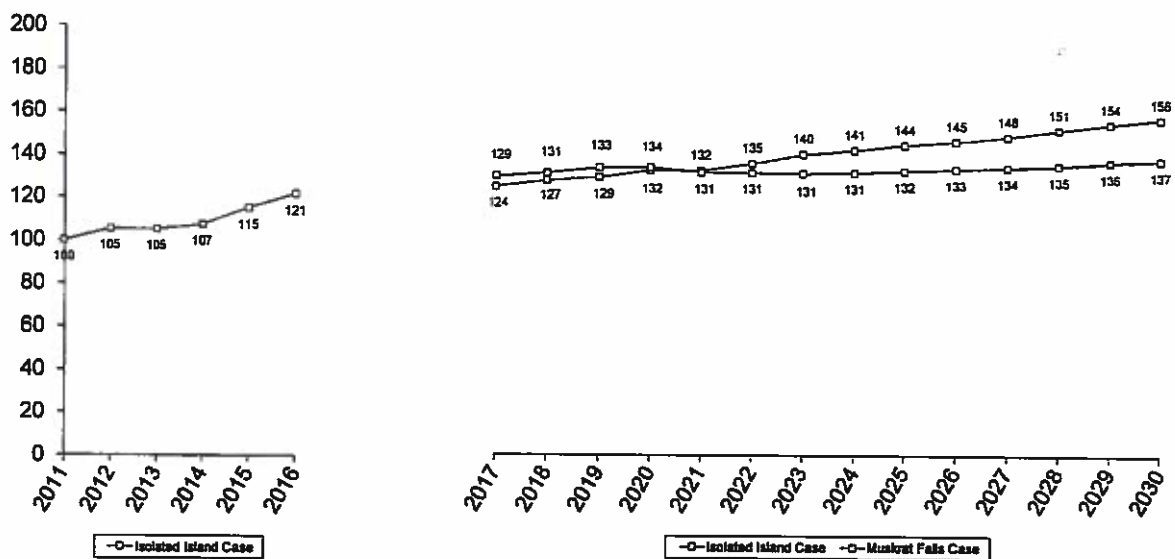
### Rates Projections

Since Hydro maintains a forecast of all costs associated with each generation expansion plan, it can calculate the annual revenue requirement for each future year in each of the two alternative scenarios in the Muskrat Falls decision gate two (DG2) analysis. In the Isolated Island plan, 40 to 50 percent of the

total revenue requirement in each future year is directly attributable to fuel costs at Holyrood. In the Muskrat Falls plan, fuel costs drop to near zero in 2017 and 55 to 65 percent of the total revenue requirement is driven by power purchases from Nalcor's Muskrat Falls subsidiary and the associated transmission costs.

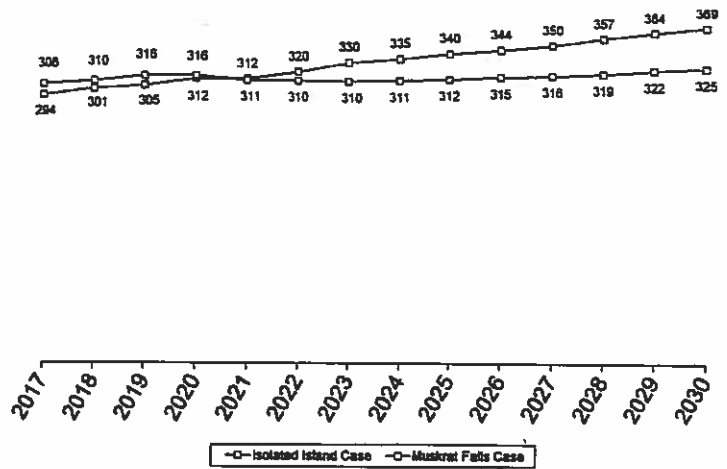
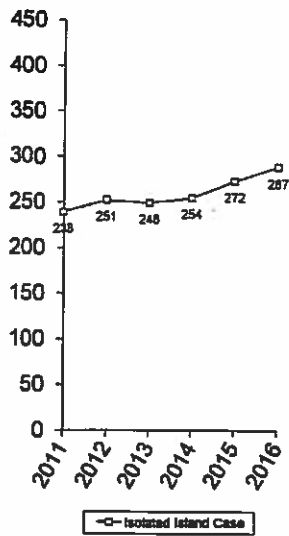
To illustrate the effects of each scenario on residential ratepayers, average monthly bills are then calculated for three unique residential demand profiles. The first profile represents an average customer who does not use electric space heating. About 90,000 Island electricity customers meet this definition. The second profile is for the average customer with electric heat. About 140,000 Island customers fall in this category. And the third profile is the all-in average consumption level for all residential electricity accounts on the Island (1,517 kWh of electricity per month). The average monthly bill for each of these customer profiles, by year, is shown below. All figures include taxes, and reflect the provincial HST rebate for years 2011 and beyond. Data points up to 2011 indicate actual rates in effect at July 1 of each year and 2012 shows current rates plus the recently-announced fuel-related adjustments which take effect July 1, 2012. Data for 2013 and later is based on forecasts as per DG2 data (November 2010).

Profile 1: Average of 90,000 customers without electric heat

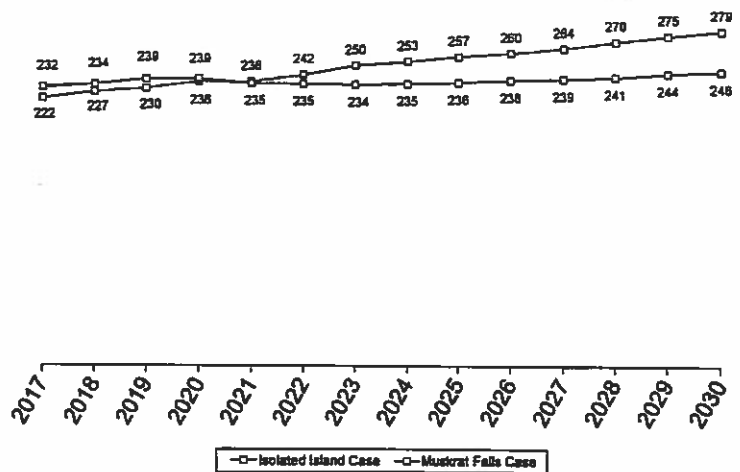
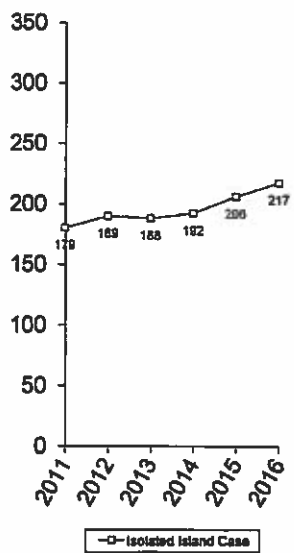


Profile 2: Average of 140,000 customers with electric heat





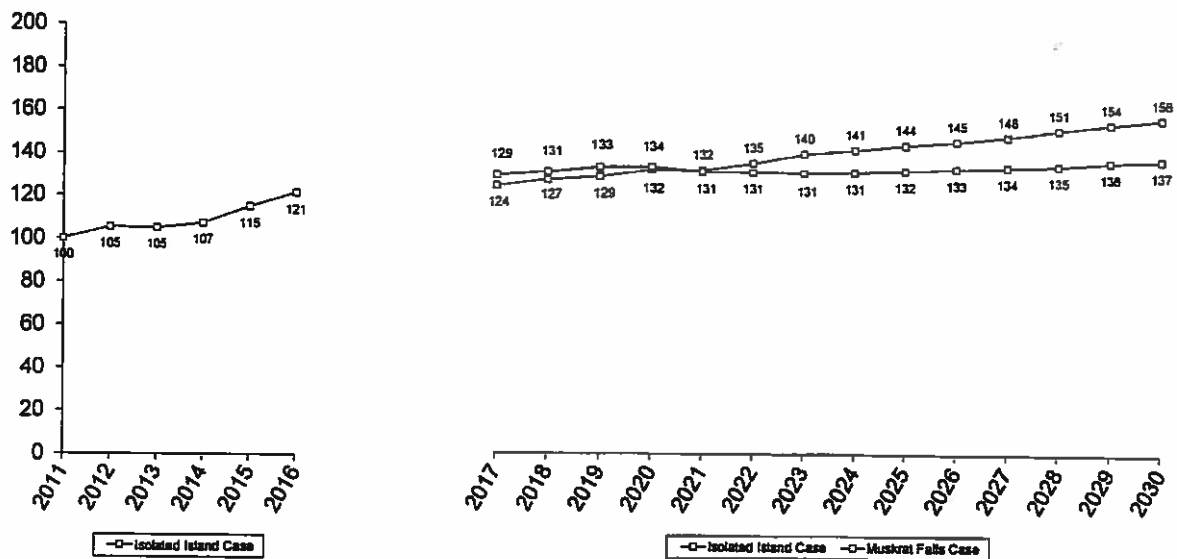
Profile 3: Average of all Island residential customers



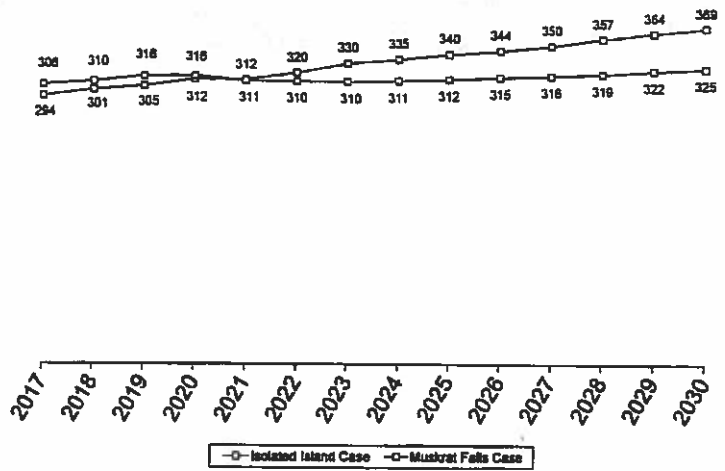
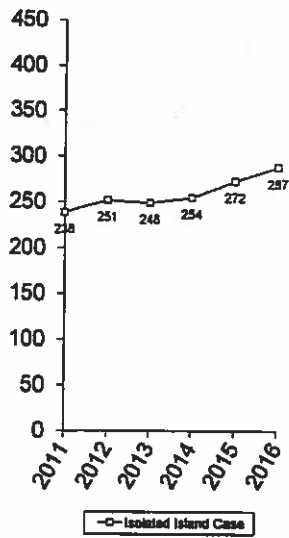
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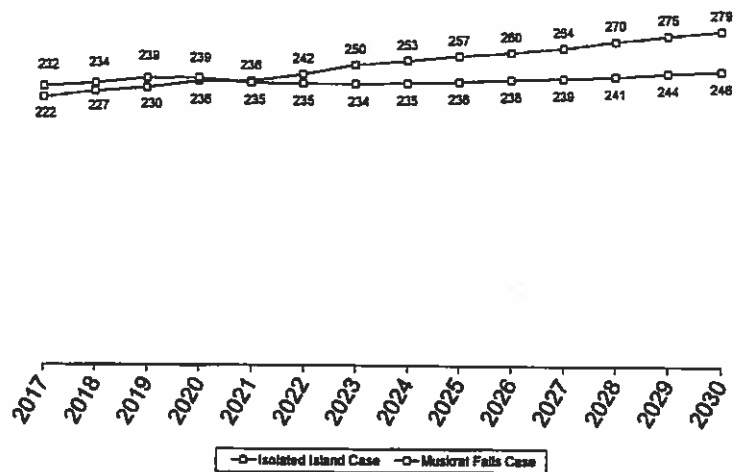
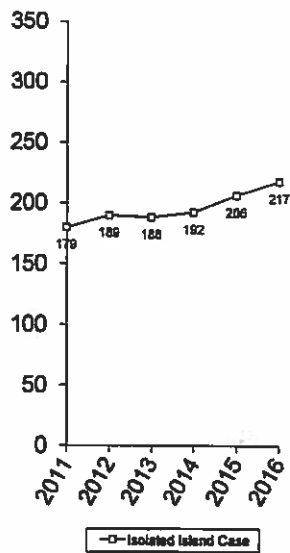
Profile 1: Average of 90,000 customers without electric heat



Profile 2: Average of 140,000 customers with electric heat



Profile 3: Average of all Island residential customers



~~met~~ May 28/12

Meeting w/ Charles, Peter, etc.

Walter - n

Fairmont  
HOTELS & RESORTS

www.fairmont.com

Electricity Peter

Methodology

Northwest

Peter

London

Current presentation

Economic benefits

Environmental benefits

Recent hydro increase

lower Peter with doubt

Methodology

3 phases

CG2 numbers

Recent hydro increase

Method for person

June 29/12

Meeting w/ Wood MacKenzie in London -  
David Bernadine, Alan Gelder, Maximo  
Charles, Brian, Stu, Tracy, Maria

- Alan Gelder - oil price outlook
- Essential to oil demand, oil supply, spare capacity
- Relatively weak demand outlook
- OPEC spare capacity will remain high
- \* Looking for Brent to soften to \$90 in 2015
- Fear of collapse in Europe
- Long-term forecasts in 1 year not as very unclear
- 1.2% GDP growth in Europe
- China - 7.3% growth
- Global GDP growth 2.5%

3 mths ago  
predicting  
\$113 / yr  
\$93 in 2014  
\$92 in 2015

- Global oil demand growing - 1 mbd / day
- 2012/13/14

- Global oil demand - 90 mbd / day
- China - 10.0 m / day
- US - 18.7 m / day
- 2015 - 11.8 mbd / day
- 2020 - 14.4 mbd / day
- 2030 - China almost equal to US.

- Income growth in the developing world
- January / Feb
- Market responding to fear of low oil prices
- Brentian reaction

(2)

- Saudi provided forecast that they could replace Yemen oil
- Yemen export - 2.5 mbb/d
- petrol subsidized at \$120/bbl
- first 1 week economic growth in Spain, Greece, China
- IMF (Baker) - other fundamental have changed?

Oil price capacity in 2010 - 5 m bbl/day  
 2011 (Lubys) - 3 m bbl/day

\* Things are always driven by events

\* Price for oil up 25% before the end of 2012 -  
 back to \$120/bbl

long-term view  
 can still hold

- \* Demand not going below \$70/bbl
- \* Oil price - needs \$85/bbl to work (Baker)

- Short-term forecast - Grid 20

2015-16	- \$90/bbl	→ \$100 nominal
2020	- \$98/bbl	→ \$118 nominal
2030	- \$120/bbl	→ 175 nominal



(3)

- Asgn. heavy growth in light oil (Mak oil) is vs -
- Wetching Office near Ohio.
- \*4.1 bbl/day Mak oil in 2022 -

Re of heavy source  
↓ non-oil  
growth

- need for supply to satisfy demand
- growing demand for global economy growing
- after 5-10 year period significant growth in supply
- downward pressure on markets

### NATURAL GAS

- Europe a very different market than North America
- long term import contracts - normally will link to oil prices
- more competition in Europe
- oversupply of gas - surplus LNG
- UK LNG imports
- disconnects b/w import prices and oil index prices

↓  
Russia about 25% of market in Europe

- carbon price ↓ 1 euro / ton, in EU - very low
- carbon price - need 30 euros to market new power
- low fuel

① is there sufficient supply in Europe?

② any import new from North America?

③ price -

④ long-term contracts vs spot prices

(4)

- Cap and trade system
- Electricity prices - 80 euros / MWh - 100 MWh
- Not enough considering changes from coal to gas
- 1 euro / MWh price - add 0.5 MWh

UK - 50% gas  
 - 20% coal  
 - 15-20% nuclear

France - 80% electricity  
 Nuclear - 50,000 MWh  
 hydro almost depleted

Germany - lot of coal

Hydro - 8% of overall production in Europe  
 (Italy, Spain, Norway)

European market - 60 MWh/day market

- indigenous - 1 MWh
- Norway - 1 MWh/day
- Algeria - 1 MWh/day
- Russia - 1.5 MWh/day

(5)

Appt price in European market - \$9.00 - 10. / mbbtu  
 lost-indexed price - 1200 mbbtu

Chenier - Heavy Hub + 15% premium  
 taking free (lower in Chenier) - \$2.0 mbbtu  
 transportation - \$1 - 1.50  
 gas price \$10.0 mbbtu

- American gas not being brought into ~~market~~ at present - 2015  
 \* Chenier already 107% booked

- Australia, US, East Africa  
 - These will develop shale gas - supply being developed next 5 years.  
 - Not optimistic about gas demand in Europe. oversupply in Asia

\* With view that post 2020 there will be a lot of supply into the market  
 - Take the view that not as volatile market as there

- Qatar the biggest gas supplier in the world  
 = before this time 20 year contract at 167. 1 point

6,

- Timing is important - really trying to understand the Asian market
- if you see into the market and you are making a lot of money
- Chinese will break even in 3 1/2 years



- ① Timing extremely important - opportunity if you are in the market now // \*\*
- projects already in the queue
- market post-2020 is difficult, unless China doesn't develop \*
- Asian market will not be able to absorb the supply \*
- ② Economic point of view - competition will increase //

July 21/2

Meeting of Professor Butler - Mr. Charles, Tracy, (

Professor Bernard Butler - Chair & Renewable Energy → in 2020 21 years  
 - 2020 target → 15% renewable energy  
 - deeply involved in renewables

- The outline market falls into → Charles further outline electricity need for island (isolated electricity grid)

Charles take at Holyrood - 99% renewable

- Objectives: ① better electricity demand

② replace Holyrood

- 2 small wind projects - 25 years old → 40%

Professor Butler - closest experience would be Orkney & Shetland

Islands: Orkney

- Orkney

- recent wind turbines operat. better → wind provides most of its electricity < demand  
 to get better wind turbine technology continues

- offshore turbines - 2-3 years

- offshore turbines

- 5-8 years

→ cost do big rise offshore

- offshore wind farm → put up capacity by 50%

- UK & UK → having trouble plan also 30-40% power from wind

- most of the time wind is blowing properly

- by putting them in different places

- will interconnectors of Ireland to France - or any given day

2-4% power from France

- looking for hydro power from Norway

(2)


- trying to increase good connection
- \* believe interconnection is economic thing to do → 2 500 pps links  
to Ireland  
→ 1 1500 pps link to Norway
- multiple purposes
  - best renewable target
  - access power for Norway (excess power)
  - avoid exporting to power from Norway
  - cost-effective approach
- UK - doesn't have cheap natural gas
- heavy with coal
- few nuclear
- major commitment to offshore wind
- conversion of coal-fired stations to biomass
- 2% of electricity from hydro.
- To back-up wind → gas-fired = biomass
- UK considers large hydro as part of renewable package
- preservation demand // smart meters
- hander = 12 pence / kWh
- = 18 d / kWh



3

- Once you get above ~~base~~ 20% <sup>of</sup> your electricity needs -

Ja - Putra : Nakar - Jang

- surface wind  the path of surface gas

UK - 5-6 pgs w/ks  
goal for 2020

5,000 - 6,000  
13 pgs w/ks 1 inch.  
18 pgs w/ks 1 1/2 inch.

(4)

- problem of Germany → clustered together

On do wind increasingly

- political analysis in UK is consumer links

July 13/12

MF - Hobert, Ed, Premier, Glenda, Brian, Sherie, Jan

- ① IGHS - Mitti Review
- ② Debate in House & Assembly
- ③ Professor Pustka - guest speaker in NL
- ④ Dr. Mark Schwartz - NOAA - \* IFA update
- ⑤ \* Economic benefits - Dr. Wade Locke
- ⑥ Muskox Fall Debate website

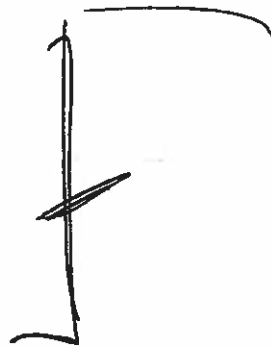
Voisey's Bay  
discussion w/ Premier  
discussion w/ Ross  
importance of infrastructure  
hydro u k

① 'Champions' for Muskox Falls - in control of our own destiny

② \* Environmental paper \*

Wing ① is wind feasible?

② what is port?



July 17/12

Meeting of Nunavut Kooruk (NKO) - Lab and Ab,  
Hv-GB

- Minister Mc Gough, Mr. Keith, for power, Audrey Coker
- Todd Foxen, George Foxen, Tara Mc Keen, Jim

Ken Meeker - prayer and opening comments - 26 years old

- need to come together more
- our ancient land -> being taken over then name
- should never be right to who we are and where we are from
- green is the big problem today
- always go back to the traditional ways of life

Todd Foxen - about relationship of province - good at times  
but, at other times, poor relationship

- BCE -> Native govt not acceptable
- > need to look at a different approach
- represents 5-6,000 people -> common citizenry
- decreasing # of options at their disposal -> keep options open
- facts that are undeniable -> that history is clear
- archaeology increasing more a small fact of Labrador
- trust delinquency is -> Munkook folk
- contemporary use and frequency -> use of maps
- most of the agreements of province have been in process mode
- forestry agreements

① See  
Lynn

② Can do

way to  
recognized  
aboriginal  
group  
Native

Federal govt

any meeting  
in 2007-

Court to  
order

(2)

- 2007 per pr consultation
- \* agreement of laborator from Mexico which will be discussed Monthly
- Management of next 1-2 weeks

\* NCC has interpreted per in broad context →

- involved of applications - offering stream, from permits,
- heavy mountain park forest - agreement of forest lands
- agreements of forestry: DFO,

in fragment of  
changed opt  
was from land  
: aboriginal &  
interchangeably

- \*\* per province later into more structured process?
- \* province has needed protection that then land of

- plan in Ottawa → land claim, - don't title

- \* Ed Martin says he has no mandate to negotiate →
- to negotiate from province

changed opt  
: treaty right

→ is there a process?

→ per we have a process? as opposed to crisis approach.

- want to avoid unpredictable solutions

3

- Lower threshold - interesting defense
- under pressure as Council members
  - beg to differ w/ Gilbert Bennett

- how market claim over area in which den has been br. it.

economic development agreements

1	not	1	5	-	do development
1	not	1	5	-	never
3	not	1	5	-	against development b/c no process

involvement

- no breach to them

Trade, environment

- fear as if they don't have breach for labor

① how take / negotiation / table  
 ② is there enough agreement to move forward?  
 ③ Govt.



August 3/12

Meeting re. Muskogee Falls

(Chester, Edm, Jann, Brian C., Lynette, Edw, Lynn, Brian T., Jan)

= Nalcor videos - ① front-end loading video  
- ② transmission line

= householder -

- from: C/W updates

- Emission overruns - generally go into lake bed  
- if not included there when 1st 5%  
Nalcor 2nd 5%  
then 1st 50-50  
- VAFB  
if general B. resolved  
Ed makes N. per

- full portion of the piece - Nalcor has full overruns part  
→ to take full portion you pay the part

down to equity - MF - 60-40  
LL - 75-25

Change in port estimates

- transmission - \$600M  
- MF down w/ power house - \$300M

West Nova - company not in Houston - pick analysis  
- has been working ~ for 5 years

- internal reports  
- EPC (engineering, procurement)  
→ total S/WC contract - \$250M  
\$300-500M

Ed w. - in New  
work for project

Ed M - No.

(4)

Lynn - groups will meet 2 weeks from now - 1st week of  
Vaughn - specific areas of MF  
- 1/2 day for each group  
for Crowley - good project of lot of benefits  
- big picture - not just rates or debt  
- lot of benefits for MF.

August 22/12

Meeting re. MR - Premier, Brian T. Robert,  
Lyons, Heather, Charles, Ed W, Jean, Brian C.

(1)

① general discussion

- both groups want public to pay more money
- vision for the province → Energy Plan
- opponents have in the past they lose sight of the bigger picture
- alternatives → higher fuel & hold hostage to Quebec

② focus policy re. communications - public awareness / policy

- people want more info
- MR

- JPK re. Quebec → has to be a major participant, otherwise nothing says
- social media / YouTube

③ JPK's process re. co-ordination (Nakor / defined roles)

④ MNL - Ed with 90 minute technical presentation

- Premier will speak to bigger issue / economy / political

- Nakor - technical
- Govt. - political

⑤\* JPK re: plan for press paper not compelling (note → need Nakor involvement)

⑥ AWW → biggest issue is timing of public education campaign

⑦ release of info - timing

⑧ Brian F. re. release of info -

⑨ Premier - release of natural gas / wind reports -

(2)

John - screen with technical briefings of media

Ed W - who is co-ordinating political messaging?

- Local secretariat briefings → 9 regions w/ up to 20 members → grass roots

- 3rd party endorsement

→ positioning of LDC / home page

→ press release et al.

→ Board of Trade

→ Mr. John's City Council

→ CBS / Hollywood Town Council

→ Churchill / Harry Steele

- Jenny Price

FLG update - Fed's work on independent engineer \*\*\*

\* JPK conversation of Minister Oliver - phone call

August 23/12

3rd party endorsement

①

① \* Mike Robbin - JPK to follow up - BUSINESS  
→ John Steele - sector

② St. John's City Council -

③ St. John's Board of Trade -

④ Chris Verbeke / Brian Dutton / Joe (Zoe)

⑤ Chris Kenny / Harry Steele - premier to follow.  
→ Ed Hyatt

⑥ John Crocker -

⑦ Bob Fudge - MIA

⑧ Eugene -

⑨ Nf Employers' Council  
→ Penny Mahoney

⑩ Fred Fehm / Frank Coleman

⑪ FAC / Gene Fudge -

⑫ Cathy Bennett - EW to follow

Verbeke  
→ Bill Hogg  
↓  
\* Peter Woodward - JPK to follow

(13) George Peyton  
Lloyd Wilkes } Nick to talk  
Meet Jim to Lakeland people

(14) NLODE

(15) Perth. Sullivan

(20) MNL - talk to the Harker

(21) \* Great River Iron Sunde / JAK.

(22) Vole Inco

(23) \* Peru Peru, APP / JAK.

(24) NL Construction Assoc.

(25) NATI

(26) HV-GB - Leo Abbasi //

(27) Joseph Fick // Danu Notia,

(28) MWN

(29) Hays / CBS - Environmental //

(2)



①

JFK's Summary

August 31/12 - meeting of Wood MacKenzie in London re: Ziff reports

- ① Natural gas versus development of nuclear power - fact if #1.08  
 - conversion of Hollywood to gas-burning feasibility

WAG information

- Are points outlined by Ziff accurate?
- any concerns about Ziff report?
- description of power amount of gas needed - long-term contract versus spot prices
- what were critics argue?
- Heavy hub price versus purchase of Hollywood

Pipeline from Grand Beach

- accuracy of cost estimates
- feasibility of building pipeline
- any new technology
- production licenses for gas for oil companies?
- availability of European markets for excess gas
- is either option feasible?

Ziff

- overall expertise
- accuracy of numbers
- Motivated principles
- independent view to resolving?

intense debate of very vocal critics

(2)

# Wood price freeze

## ① domestic option (pipeline)

- economics just don't make sense
- cost's numbers may be low → not excessively
- land complete w/ US - \$10.00 market
- would cost \$20 (subv) to develop (very low price)

broadly agree w/ report

- cost of producing gas too high for either domestic market or export market
- market not accepting prices.

## ② import option - general report is correct

- heavy loss with oil @ \$2.50 forever
- price with oil exceed \$5.50-6.00 in longer term
- tolling port - reasonable assumption
- NBL (Notional balancing port) - European gas price  
→ \$10.00 - \$11.00 in longer term
- regas. costs - \$10.00 per MCF  
→ doubling to port  
→ \$11.00 - \$22.00
- \* \$1.0 - 2.0 way too high - should be low
- \* \$500 - 700 M

generally fine w/ heavy loss (\$ price + premium + transport @ 2.50-3.00)  
\$8.85, call be \$9-10.0

(3)

- building regeneration terminal
  - storage facility - where you would store LNG
  - size depends on level of peak demand
  - 2.5% capacity re: peak & 12 tank
  - is way too high
- Refex is way too high

- tank, berth, regeneration facility
  - 300 mch'd - Refex is 1/2 the cost
  - 10m<sup>3</sup> port

4 3.00 - 5.00 versus  
11.00 - 22.00

\* Attn of 4 11-13 Mbtu \*

is project economical  
of 4 11-13 Mbtu

### Conclusion #1

- Long term firm supply - Wm doesn't necessarily agree
- (depends on the size of the tank)
- if you are willing to pay European price you can get long term contract before regeneration
- 8.85
- 16M is 12-13 price range

4 19.50 vs 4 12-13.00

4

Conclusion of Wm.

① 8.85 perhaps too low — 10.00 - 10.50 now  
p/p/p/p/p/p

② reg. fire cost too high  
11.00 is too high — 3.00 - 5.00 — 4.00  
14.00

Difference b/w Wm and Liff

19.00 (Liff)

14.00 (Wood Mac)

→ \* Need to permit Wood Mac's 45.75

11.3-4 OK  
11.5

Then LNG not under construction → need to be updated from recent changes

\* 11.6 OK  
11.7 LNG reg. fire cost — REAL ISSUE \*\*  
11.8 2b seems to be trying to pump up 12. costs.  
11.9 OK in general

(5)

11 p. 10 - \$ 2.50 (liquor factor toll should b. higher  
 (should use \$3.00 - \$3.50)  
 - would agree that have to b. European price

11 p. 12-13 - gas to oil → (oil price rise, which keeps  
 into higher being better)

\* at what number does natural gas become  
 more economically feasible than market toll? (1)

\* → if it was locked \$ 5.75 or  
 higher # 2 (3)

---

\* Liff regulation (2)

(6)

Pipeline Report —

p. 5 - ok

p. 6 - 7 - ok

p. 8 - ok

p. 9 - port (also decision making) - note & return

p. 10 - regulating process

p. 14 - 17 - ok

p. 18 - 21 - ok. - numbers in p. 19 per line

p. 22 - extracted parts -

have been a bit in the low part -

p. 24 - pipeline part

~ 182,000 (incl - note CVD for low  
(average estimate for North America)

- house pipeline ~ 1,000 km

~ 400,000 - 500,000 /  
incl - mb

p. 24 - figure 4 -

p. 26 - factoring

if it is 20% or 30% then it is economically  
feasible.

~ 33 (Mcf)