Reference from the Lieutenant-Governor in Council
On the Muskrat Falls Project
(the "Muskrat Falls Review")

REQUESTS FOR INFORMATION

Exhibit 16 - Generation Planning Issues 2010 July Update

PUB-Nalcor-23 Pg. i of the Executive Summary of Exhibit 16 states: *"In order to protect the in-service date for the Island Pond hydroelectric development alternative, which has been identified as the preferred next source of generation from Hydro's portfolio, under an Isolated Island scenario, the addition of a Request for Proposal (RFP) process necessitates a decision to proceed in late 2010 to meet an in-service date of fall 2015. This is due to the need to complete the RFP evaluation and subsequent Newfoundland and Labrador Board of Commissioners of Public Utilities (Board) review and have a final decision by spring 2012".* What is the status of the RFP process for the Island Pond development which was to ensure a final decision by the Spring of 2012 for a Fall 2015 in-service date?

PUB-Nalcor-24 What preparations have Nalcor made to ensure capacity and energy requirements for the Island Interconnected System are met in the event that Muskrat Falls and/or the HVdc link are delayed or not sanctioned?

Exhibit 20 - Summary of IPA's Review of the Muskrat Falls Generation Project and Island Link Transmission Project, September 2010

PUB-Nalcor-25 Key Findings of the Review are outlined on pg. 6 of Exhibit 20. The second bullet on pg. 6 states: *"Team is highly experienced and highly involved but is misaligned on several key project elements which presents risks and challenges going forward...".* Please describe the "misalignment" referred to and the specific, several key project elements involved. Explain in detail what has been done to mitigate these issues.

PUB-Nalcor-26 On pg. 6 of Exhibit 20, the last bullet states: *"As owner ramps-up the team and contractors mobilize in next few months, lingering team issues will magnify risks and potentially erode benefits of Best Practices applied thus far...".*

Please describe the "lingering team issues" referred to in this key finding. Explain in detail what has been done to mitigate these issues.

Exhibit 23 – Historical Summary of the Labrador-Island HVdc System Configuration for the Lower Churchill Project (1974-Present)

PUB-Nalcor-27 On pg. 6 of Exhibit 23 it is stated that in August 2010 performance criteria were revisited as it was proposed that the system should not be required to withstand a three-phase fault at Bay d'Espoir. Did the criteria for the Labrador-Island HVdc system in place before August 2010 require that the system be able to withstand such a three-phase fault?

PUB-Nalcor-28 Does the current proposed criteria as of September 2011 require that the Labrador-Island HVdc system be able to withstand a three-phase fault at Bay d'Espoir?

PUB-Nalcor-29 On pg. 6 of Exhibit 23 it is stated that a three-phase fault at Bay d'Espoir was deemed an "exceptional contingency" as the number of upgrades required to withstand such a contingency would be too costly. On pg. 7 it is stated that analysis was performed to determine the upgrades required to survive such a three-phase fault and the required upgrades are listed. What is the estimated cost to complete the identified required upgrades?

PUB-Nalcor-30 Further to PUB-Nalcor-29, are these costs included in the CPW analysis?

PUB-Nalcor-31 On pg. 7 of Exhibit 23 it is stated that significant modifications would have to be made to the existing under-frequency load shedding schemes to deal with the impact of the loss of both poles of the HVdc system. Explain, in detail, the required under-frequency load shedding schemes that would be required in the event of the loss of both poles of the HVdc system and what would comprise the approximately 750 MW of load that would have to be shed in such a contingency.

PUB-Nalcor-32 Reference is made on pg. 7 of Exhibit 23 to 300 MW of available recall capacity from the Upper Churchill. How much of this is currently available and not sold under existing contracts? Please outline the terms of any contracts for sale of the recall capacity and energy, including the length of each contract.

PUB-Nalcor-33 On pg. 8 of Exhibit 23 it is stated that the HVdc link to the Maritimes would be capable of delivering up to 500 MW to the Island in the event of the loss of the HVdc system between Labrador and the Island.

Outline in detail the contractual arrangements that are in place or proposed to be put in place to purchase the required capacity and energy to be delivered over the Maritime Link in the event of the loss of the HVdc Labrador-Island system.

PUB-Nalcor-34 Outline in detail the contractual arrangements that are in place or proposed to be put in place for transmission capacity in Nova Scotia, New Brunswick and any other location to wheel power and energy for delivery from the source of purchase to the Maritime Link in the event of the loss of the HVdc Labrador-Island Link.

Exhibit 28 - Holyrood Thermal Generating Station

PUB-Nalcor-35 It is stated in Exhibit 28 that engineering judgment was used to formulate the upgrade program for the Holyrood Thermal Generating Station and that the outlined plan gives a *"conservative order of magnitude representation of the sustaining capital"* required. What degree of accuracy is associated with the projected costs in Exhibit 28?

PUB-Nalcor-36 It is stated in Exhibit 28 that the Provincial Energy Plan has committed to environmental improvements at Holyrood, should the plant continue to operate, including stack emissions clean-up equipment and the installation of low NO_x burners. Costs on pg. 5 of Exhibit 28 for these improvements total $599,476,000. Are there any current legislative or regulatory requirements that necessitate such environmental improvements to be made? If yes, outline in detail such requirements.

PUB-Nalcor-37 The response to PUB-Nalcor-6 states that it is public policy to install scrubbers and electrostatic precipitators at the Holyrood Plant which Exhibit 28 estimates at a cost of $581,976,000. Is the requirement to install low NO_x burners also a matter of public policy or Government directive?

PUB-Nalcor-38 Exhibit 28 states that the Holyrood Plant, in an Isolated Island scenario, would continue to operate as a generating station until the mid 2030's at which time it would be retired. The presentation by Nalcor dated July, 2011 on pg. 18 estimates the cost of future generation and replacement of the Holyrood Plant at $1.5 billion. What analysis or reports were completed to support this estimate? If no specific reports were completed, explain the basis for this projected cost and the degree of accuracy associated with the estimate.

Exhibit 30 - Lower Churchill Project Design Progression 1998 to 2011

PUB-Nalcor-39 What final or cut-off date was used for the selection of project components for the Project Design described in Exhibit 30?

PUB-Nalcor-40 Explain in detail the work that has been undertaken on the project components since the final date stated in PUB-Nalcor-39 which could materially affect the project design and costs of any component.

PUB-Nalcor-41 On pg. 3 of Exhibit 30 it is stated that the results of the studies outlined for Muskrat Falls were incorporated in the capital cost estimate in the fall of 2010. When will the results of the additional studies and analyses undertaken since the fall of 2010 to the present be incorporated in the capital cost estimates for the Muskrat Falls facilities, the HVac Transmission System in Labrador and the Labrador-Island Transmission Link including the Strait of Belle Isle Cable Crossing. If such updated project costs are available now, provide the most recent revised capital cost estimate for each major component described in Exhibit 30.

Exhibit 31 - Lower Churchill Project Cost Estimate Progression 1998 to 2011

PUB-Nalcor-42 Pg. 6 of Exhibit 31 states that the current capital cost estimates for the Muskrat Falls Project and the Labrador-Island Transmission Link were prepared for the purposes of Decision Gate 2 and on pg. 7 it is stated that this cost estimate is *"commensurate with a AACE International Class 4 estimate"*. What degree of accuracy is usually attached to Class 4 estimates?

PUB-Nalcor-43 What is the degree or range of accuracy used by Nalcor Energy with respect to the Decision Gate 2 estimates for the Muskrat Falls Project and the Labrador-Island Transmission Link that have been provided to the Board?

Exhibit 36 - Purchase Price of Muskrat Falls Energy by Hydro from Nalcor

PUB-Nalcor-44 What public policy directives were used in the analysis to derive the power purchase price to be paid by Hydro to Nalcor for Muskrat Falls power and energy?

PUB-Nalcor-45 What are the key policy objectives referred to in the first paragraph of Exhibit 36?

PUB-Nalcor-46 If "cost of service" ("COS") pricing were applied in determining the power purchase price, what would be the power purchase price paid by Hydro to Nalcor for Muskrat Falls power and energy in the first full calendar year of supply?

PUB-Nalcor-47 In its letter of July 12, 2011 the Board requested a copy of the report supporting the purchase price of Muskrat Falls power and energy by Hydro. No report was provided in response to this request. Exhibit 36 does not refer to a report or a study but does say Nalcor had undertaken *"a supply pricing analysis for Muskrat Falls power"*. Was a report or study completed to determine the purchase price? If so, provide it.

PUB-Nalcor-48 Provide a copy of the entire supply pricing analysis undertaken by Nalcor referred to in Exhibit 36.

PUB-Nalcor-49 Provide a copy of the report and analysis completed by PWC on the Muskrat Falls power purchase price referred to in Exhibit 15.

PUB-Nalcor-50 Has a term sheet been developed detailing how the Power Purchase Agreement (PPA) between Nalcor and Hydro will be structured? If so, please provide a copy of the term sheet. If not, please describe in detail the methodology for the determination of the selling price and how the PPA will be structured and its impact on ratepayers.

Exhibit 43

PUB-Nalcor-51 Further to Exhibit 43, Load Sensitivity with an Annual Load Decrease of 880 GWh starting in 2013, please provide a table similar to pgs. 1 and 2 of Exhibit 14 showing the 2010 PLF Strategist Generation Expansion Plans for this sensitivity.

PUB-Nalcor-52 Further to PUB-Nalcor-51, if the requirement for electrostatic precipitators, scrubbers and NO_x burners was eliminated, and there was an annual load decrease of 880 GWh in 2013, what would be the CPW for the Isolated Island and the Labrador Interconnection and the difference in CPW of the two options?

PUB-Nalcor-53 Further to PUB-Nalcor 51, in what year would the annual load decrease of 880 GWh have to be extended to for the CPW for the two options to be equal?

PUB-Nalcor-54 Further to Exhibit 43, please provide a sensitivity assuming fuel costs are reduced by 20% and the capital costs of Muskrat Falls and the HVdc Labrador-Island Link are increased by 20% each. Compare this sensitivity to the Isolated Island and Labrador Interconnection Base Cases shown on Exhibit 43.

PUB-Nalcor-55 Please prepare the generation expansion plan and CPW analysis for the Isolated Island Option using the following assumptions:

- delete the electrostatic precipitators, scrubbers and NO_x burners;
- maintain and operate the Holyrood Thermal Generating Station to 2041 using 0.7% sulphur No. 6 fuel;
- add a 900 MW HVdc link from Labrador in 2041 using Labrador power at $2/MWh constant; and
- Holyrood Thermal Generating Station retired in 2041.

Compare this sensitivity to the Muskrat Falls/HVDdc Interconnection Base Case.

PUB-Nalcor-56 Further to Exhibit 43, please provide a sensitivity with the following assumptions:

- a 20% decrease in fuel costs;
- a 20% decrease in annual percentage load growth post 2014; and
- a 20% increase in capital cost estimate for both the Muskrat Falls development and the HVdc Interconnection.

Compare this sensitivity to the Isolated Island Option and the Labrador Interconnection Option Base Case. Provide a table similar to pgs. 1 and 2 of Exhibit 14 showing the 2010 PLF Strategist Generation Expansion Plan.

Responses to RFIs

PUB-Nalcor-57 The response to PUB-Nalcor-3 did not answer the question. As previously requested, identify and describe each major cost category for the Total Capex for the Isolated Island Scenario that is included within the estimate of $3.2 billion shown on Slide 18 of the July 18, 2011 Presentation by Nalcor and the Capex de-escalated to 2010 of $8.074 billion and the CPW of revenue requirements of $12,272,000 shown on Slide 19. The answer should clearly reconcile the numbers on Slides 18 and 19.

PUB-Nalcor-58 The response provided to PUB-Nalcor-4 did not answer the question. As previously requested, identify and describe each major cost category for the cost estimates provided on Slide 37 of the July 18, 2010 Presentation by Nalcor of $2.9 billion for Muskrat Falls Generation and $2.1 billion for the transmission link and the Slide 22 numbers of the Lower Churchill Project Capex de-escalated to 2010 of $6.582 billion the and CPW of revenue requirement of $10.114 billion. The answer should clearly reconcile the numbers on Slides 22 and 37.

PUB-Nalcor-59 The response to MHI-Nalcor-24 states *"The HVDC interconnection is designed to obtain the required level of reliability via the HVDC link from Labrador in conjunction with island generation facilities. Any additional reliability as a result of the Maritime link has not been factored into the analysis."* Pg. 8 of Exhibit 23 states the Maritime Link would also be capable of delivering up to 500 MW to the Island in the event of the loss of the HVdc Labrador-Island Link. Explain these two conflicting statements. Is Nalcor stating that the Maritime Link is required to provide the required reliability for the Island System?

PUB-Nalcor-60 Further to the response to MHI-Nalcor-33, list all payments by category to the Government of Newfoundland and Labrador from the Muskrat Falls-Labrador-Island Link Project on an annual basis and on a CPW basis, expressed in 2011 dollars.

PUB-Nalcor-61 Further to the response to MHI-Nalcor-44, will Emera, Nalcor and/or Newfoundland and Labrador Hydro be required to comply with North American Electric Reliability Corporation Standards in the completion of the Maritime Link? If not, why not?

PUB-Nalcor-62 Further to PUB-Nalcor-61, how has compliance with the referenced standards been considered in the Project design for the Muskrat Falls-Labrador-Island Link Project?

PUB-Nalcor-63 Further to the response to MHI-Nalcor-57, is the correct reference to Exhibit 44, not 43?

PUB-Nalcor-64 Further to the response to MHI-Nalcor-103, is the correct reference to Exhibit CE-56, not CE-61?

General

PUB-Nalcor-65 Please confirm the date on which the Gull Island Development Multi-terminal HVdc Line and the HVdc link to New Brunswick Project was abandoned for not meeting Nalcor's financial targets?

PUB-Nalcor-66 Further to PUB-Nalcor-65, please confirm the date when analysis of the Muskrat Falls-Labrador-Island Link and Nova Scotia Link Project was commenced?

PUB-Nalcor-67 Using the long term planning forecast for 2000, please provide a table comparing the forecast fuel price for the Holyrood Thermal Generating Station versus the average fuel price actually paid for the years 2000 to 2010.

PUB-Nalcor-68 Please provide the detailed document Gate 2 Capital Cost Estimate Report – Muskrat Falls Generating Facilities.

PUB-Nalcor-69 Please provide the detailed document Gate 2 Capital Cost Estimate Report – LIL HVdc System.

PUB-Nalcor-70 Please provide the document Project Control Schedule Report.

PUB-Nalcor-71 What specific studies/analyses have been done to determine the effects of developing the Muskrat Falls site before the Gull Island site? What are the specific cost, risk and other factors that would affect both developments if such a sequencing program was followed?

PUB-Nalcor-72 In response to PUB-Nalcor-16 regarding the potential increase of Rio Tinto's production capacity in Labrador by 100 percent, Nalcor states: *"Nalcor will have 2TWh of production available from Muskrat Falls, and approximately 1 TWh available from Churchill Falls recall to meet needs in Labrador".*

Current requirements for Rio Tinto's operations in Labrador is approximately 2.2 TWh. Assuming a 100 percent increase in production would require approximately 2TWh, this would leave about 1 TWh available from Muskrat Falls and Churchill Falls recall. From Nalcor's forecast for the Island Interconnected System, this surplus energy would be required to meet Island needs within a 10-year timeframe. This does not provide for any additional domestic or industrial load growth in Labrador or industrial load growth on the Island. Also energy exports on the potential Maritime Link to Nova Scotia would be limited to the 1TWh contracted with Emera for a 35 year term.

In consideration of the above, and the fact that Nalcor's assessment of a Gull Island development with 800MW HVdc lines to Soldiers Pond and Salisbury, New Brunswick "did not meet Nalcor's financial targets," if Rio Tinto's planned expansion proceeds, how would Nalcor propose to meet load requirements in Newfoundland and Labrador beyond 2027?

PUB-Nalcor-73 Further to PUB-Nalcor-72, what would be the impact of such a scenario on the Power Purchase Agreement between Nalcor and Hydro?

PUB-Nalcor-74 Further to PUB-Nalcor-72, what would be the potential impact of such a scenario on ratepayers of the Island Interconnected System?

PUB-Nalcor-75 In response to MHI-Nalcor-24, Nalcor states: *"The HVDC interconnection is designed to obtain the required level of reliability via the HVDC link from Labrador in conjunction with island generation facilities."*

With the proposed shutdown of the Holyrood Thermal Generating Station in 2021, how will Nalcor respond to the loss of up to 800 MW of generation during a prolonged bipole outage which could potentially last for weeks or even months?

PUB-Nalcor-76 What is the current anticipated date for project approval at DG3 or sanction?

PUB-Nalcor-77 What are the current anticipated targets for First Power and Full Power from the Muskrat Falls Project?

PUB-Nalcor-78 What is the schedule for contract tenders and contact awards associated with the Muskrat Falls-Labrador-Island Link Project for the period September 1, 2011 to June 30, 2012?

PUB-Nalcor-79 What is the current anticipated date for the finalization of formal agreements with Emera Inc.?

PUB-Nalcor-80 It has been announced that Navigant Consulting is completing a review for Nalcor of the Muskrat Falls-Labrador-Island Link Project and the Isolated Island Options. Provide the terms of reference for this review.

PUB-Nalcor-81 What is the schedule for completion of the Navigant Consulting review?

PUB-Nalcor-82 Further to PUB-Nalcor-80 has Navigant Consulting provided any interim or final reports or presentations or findings as part of this review? If so, provide copies.

PUB-Nalcor-83 The HVdc Labrador-Island Link is a large energy and capacity link to a relatively small system. Exhibit 29 Rev 1, pgs. 33 & 34 addresses some of the concerns with providing standby generating and the cost of energy loss for an extended outage to the bipole. Has Nalcor made similar allowances in its current studies?

PUB-Nalcor-84 Losses related to the HVdc Labrador-Island Link are mentioned in Exhibit 43, pg. 33 of 37 (5%), Nalcor Submission July 6, 2011 Synopsis of 2010 Generation Expansion Decision, Appendix C, pg. 3 of 9 (10%) and Exhibit 18, pg. 32 (7% & 8%). Please provide the design capacity and energy losses for the proposed HVdc Labrador-Island Link.

PUB-Nalcor-85 Provide Tables 2-2, 2-3 and A-1 and Figure 5-1 from Hydro's Generation Planning Issues 2009 Mid Year Report dated July 2009 submitted to the Board as part of Hydro's 2010 Capital Budget.

PUB-Nalcor-86 Hydro submitted a report "Generation Planning Issues 2009 Mid Year" dated July 2009-in its 2010 Capital Budget submitted to the Board which had two load forecasts, one for the Isolated Island option and one for the Muskrat Falls-HVdc Link Project. The load growth profiles are sufficiently different that it is possible there will be distinctly different rate forecasts. Please explain the causes of these variations between the two load forecasts, for each stage where the Muskrat Falls-Labrador-Island Link Project forecast line changes direction relative to the Isolated Island option. Since the load forecast is for only 10 years, please describe the expected pattern of each forecast curve in absolute terms and relative to each other for the remainder of the 50 year CPW period.

PUB-Nalcor-87 The CPW analysis, submitted for this current Review arising from the Reference to the Board by the Lieutenant-Governor in Council, used only the Isolated Island load forecast for both options. Please explain the objectives met and reasons for the Muskrat Falls-Labrador-Island Link Project load forecast not being used for the Muskrat Falls-Labrador-Island Link Option, and describe the strategies Nalcor expects to use in ensuring there will be no future implications for ratepayers resulting from this decision.

PUB-Nalcor-88 Without regard to any specific strategy possibly envisaged by Nalcor identified in responding to PUB-Nalcor-87, please estimate the Muskrat Falls Infeed Option CPW if the last available Muskrat Falls-Labrador-Island Link Option load forecast was used instead of the Isolated Island forecast. Please identify the Muskrat Falls-Labrador-Island Link Option load forecast selected and provide it with the response.

PUB-Nalcor-89 Using the Muskrat Falls-Labrador-Island Link load forecast, please provide the rate differential by year for the Muskrat Falls Infeed Option, from that obtained using the energy sales from the Isolated Island load forecast.

PUB-Nalcor-90 Using Strategist please calculate and show the annual energy projected from the Muskrat Falls-Labrador-Island Link infeed with the load forecast requested in PUB-Nalcor 88. Using these annual energies, calculate the Internal Rate of Return for the Muskrat Falls Project.

DATED at St. John's, Newfoundland this 9th day of September 2011.

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

Per Barbara Thistle

Barbara Thistle
Assistant Board Secretary