

Wesley Hawe

From: Paul Wilson <plwilson@mhi.ca>
Sent: Saturday, October 15, 2011 7:04 PM
To: Maureen Greene
Subject: MHI Biweekly Report 6
Attachments: 20111009 Biweekly Report 6 Rev 1.pdf

Dear Maureen, please find attached the Biweekly Report #6 for your information.

My regards,

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Newfoundland and Labrador
Board of Commissioners of Public Utilities
PO Box 21040
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St. John's, NL
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Attention: Maureen Greene Q.C., Legal Counsel

Nalcor Submission Two Option Study Project – Biweekly Report 6

Manitoba Hydro International Ltd is pleased to present the biweekly report for the period September 24th to October 7th. This report is divided into six sections: activities completed to date, activities planned for the next two weeks, legal compliance update, significant issues and findings, schedule, and cost and expenses.

1. Activities Completed To Date

Week of September 24 – October 7

Paul Wilson was at site from September 27th to September 30th meeting with Fred Martin to review the status of MHI's RFIs, to finalize the report outline, meet with Maureen Greene, and to close the office at 120 Torbay. The technical staff proofed the technical report drafts and populating the report framework with data for Oct 3rd.

During the week of October 3rd to October 7th, on agreement with the Project Manager, the report draft was delayed a few days and submitted October 6th.

2. Activities Planned for the Next Two Weeks

Week of October 8th – October 21st

During this period, technical and financial review staff will use this time to complete the missing sections of the report, proof and edit the document for flow and comprehension.

The team leads will also complete the cost estimate comparisons from the technical reports which are input to the CPW analysis.

3. Legal Compliance Update

All issues closed.

4. Significant Issues and Findings

CPW Analysis

The information provided in response to MHI-Nalcor-60 does not answer the question completely. The financial team could mine the response for the fuel pricing data, but Nalcor did not provide the high/low fuel price forecast as requested, only the result of the CPW analysis on the high/low fuel price. MHI requires this data to confirm the calculations performed by Nalcor.

Technical Assessments

Additional material is being drafted for the report to deal with;

- Generation resource planning practices. This item will compare what Nalcor has done in their project planning (ie DG2/DG3) with that of Manitoba Hydro. Also, there will be a discussion on the lack of options presented that drive project selection. The reference question only presents two options; however, a completely transparent process would have presented many more options such as the selection criteria, and results. This may have been done prior to DG2 but no discussion has been made available.
- Risk management discussion on the risk matrix presented by Nalcor is required in the report and is to be addressed by MHI.

Report

The following table documents the status of all engineering assessments as at October 7th. The draft report is lengthy and the technical team is still proofing the document and will do so for the next few weeks.

Subject	Status	Comment
AC Power Systems	Pending	Confirm with Alan when available
CPW Analysis	In draft report	Missing sections pending
LIL HVDC System	In draft report	Edits required
LIL HVDC Transmission Line	Pending	RFI MHI-71 is under review
Hydrology	In draft report	Completed
Load Forecast	In draft report	Finalization waiting on new RFI. Report can be filed without response if absolutely necessary.
Mini Hydros	In draft report	Completed
Muskrat Falls	In draft report	Completed
Reliability	In draft report	Report returned to author with comments for additional material
SOBI Marine Crossing	In draft report	Under review
Thermal Plant Assessments	In draft report	Edits forthcoming on Holyrood decommissioning.
Wind Power	In draft report	

Requests for Information

MHI's RFI Compliance log with associated comments and follow-up actions were noted as appropriate. Reporting to Batch 34 is attached for information. Items noted in red are items that MHI is waiting on, or require further action such as drafting of a new RFI.

5. Schedule

The following schedule has changed.

- First draft report: October 3rd (submitted October 6th)
- Final draft report: October 31st
- Final report: Pending Nalcor's submission.

Nalcor has indicated to the Board that they will not be submitting their Two Options submission until November, and that any outstanding RFIs will be answered post submission. As MHI prefers not to finalize their report until those documents are examined, we now anticipate that the report will be finalized at the end of November.

6. Costs and Expenses

MHI has exceeded the budgeted person hours. Labour hours to date: 2289.5 (1840 budgeted). MHI is still underspent in reimbursables by \$75.9k; however, not all expenses have been accounted for as the billing cycle is completed at month end. To date, the total project expenses are estimated at \$486.5k, of

which a budget of \$491.6k was submitted. This issue will be discussed with the Project Manager.

Costs to date to October 7th together with the related budget estimates are detailed in the attached spreadsheet PDF file.

The costs estimated to October 7th, 2011 are as follows:

Labour:	\$ 390,410
Expenses:	<u>\$ 96,110</u>
Total	<u>\$ 486,520</u>

Note: Actual invoices may differ as adjustments are made. The expenses may not be up to date as some expenses (notably from credit cards) take about four weeks to show on our account reporting system due to a processing lag.

The next biweekly report is tentatively due October 21st. Paul Wilson will discuss the timing for this next report, if required.

Regards,



Paul Wilson
Managing Director Subsidiary Operations

plw / 20111009 Biweekly Report 6 Rev 1.docx

NEWFOUNDLAND - Review and Report on Two Generation Expansion Alternatives

Time Tracking

Time Period	Al Snyder	Peter Rae	Charly Cadou	Les Recksiedler	Randy Wachal	Robert Dandenault	Bob Bushau (Thiam Ooi)	Paul Durkin	Mack Kast	Allan Silk	Paul Wilson	Bagen Bagen	Alex Gerrard	Craig Kellas	Rick Horocholyn	Enrico Colombo	Tommaso Granata	Luigi Mattiello	Sergio Meregalli	Brent Sanderson	Gary Bishop	Total Hours	Total Days
July 1-15, 2011	12.00						2.00		36.50		55.00			9.00	7.00							121.50	15.19
July 16-30, 2011	38.00	38.00	-	13.50	6.00	9.00	26.00		91.00	-	79.25	31.00	23.00	58.50	36.00	-			-	28.00		477.25	59.66
July 31-Aug 13, 2011	44.00	60.00	56.50	47.00		7.00	20.00	45.50	64.00		22.50	40.00	0.25	8.00	11.00	16.00				17.00	6.00	464.75	58.09
Aug 14-27, 2011	6.00	8.00	27.00		-	49.00	12.00	56.00	31.50	15.00	63.50	24.00	14.50	40.00	27.50	56.00				16.50	8.00	454.50	56.81
Aug 28-Sept 10, 2011	2.00	2.00		1.00	-	3.00		13.00	73.00	7.50	27.00		8.00	12.50	91.50	16.00				18.50		275.00	34.38
Sept 11-24, 2011	27.00			9.00	-	3.00		13.00	36.00		62.50		9.50	32.00	35.50	32.00	8.00	32.00	16.00	3.00		318.50	39.81
Sept 25- Oct 9, 2011	28.00								28.00		65.00				55.00							176.00	22.00
																						-	-
Total Actual hours	157.00	108.00	83.50	70.50	6.00	71.00	60.00	127.50	360.00	22.50	374.75	95.00	55.25	160.00	263.50	120.00	8.00	32.00	16.00	83.00	14.00	2,287.50	285.94
Total Budgeted hours	240.00	96.00	80.00	96.00	16.00	40.00	64.00	112.00	200.00	40.00	280.00	80.00	80.00	168.00	96.00	80.00				40.00	32.00	1,840.00	230.00
Balance remaining	83.00	(12.00)	(3.50)	25.50	10.00	(31.00)	4.00	(15.50)	(160.00)	17.50	(94.75)	(15.00)	24.75	8.00	(167.50)	(40.00)	(8.00)	(32.00)	(16.00)	(43.00)	18.00	(447.50)	(55.94)
Billing Rate	181	243	151	130	148	164	201	250	151	151	176	131	178	130	138	283			283	164	138		
Total Billed	28,456	26,190	12,629	9,165	885	11,626	12,075	31,875	54,450	3,403	66,050	12,469	9,807	20,800	36,231	33,900			4,520	13,591	1,925	390,048	
Total Budget	43,500	23,280	12,100	12,480	2,360	6,550	12,880	28,000	36,300	6,050	49,350	10,500	14,200	21,840	13,200	22,600			-	6,550	4,400	346,140	
Outstanding	(15,044)	2,910	529	(3,315)	(1,475)	5,076	(805)	3,875	18,150	(2,647)	16,700	1,969	(4,393)	(1,040)	23,031	11,300			4,520	7,041	(2,475)	43,908	

NEWFOUNDLAND - Review and Report on Two Generation Expansion Alternatives

Reimbursable Expenses														
Time Period	Airfare (Wpg -NFLD)	Hotel (NFLD)	Car Rental/Taxis/Parking	Perdiem/Meals	Airport Transfers	Comm & Reprod Costs	Residence Lease	Office Lease	Company Registration	PENGL Registrations	PENGL Permits to Practice	Automobile Lease	Int'l Airfare (UK-NFLD)	TOTAL Expenses
July 1-15, 2011	-							6,385.00						6,385.00
July 16-30, 2011	9,509.50	3,718.68	493.54			23.46		1,945.00		3,279.60	1,295.99			20,265.77
July 31-Aug 13, 2011		945.56				73.51								1,019.07
Aug 14-27, 2011	18,919.91	10,838.95	749.77	8,378.00	61.87	73.51				99.96				39,121.97
Aug 28-Sept 10, 2011														-
Sept 11-24, 2011	3,536.75	4,003.34	368.63	4,130.00						388.21		3,204.09		15,631.02
Sept 25- Oct 9, 2011		4,950.00												4,950.00
TOTAL	31,966.16	24,456.53	1,611.94	12,508.00	61.87	170.48	-	8,330.00	-	3,767.77	1,295.99	3,204.09	-	87,372.83
Admin Fee 10%	3,196.62	2,445.65	161.19	1,250.80	6.19	17.05	-	833.00	-	376.78	129.60	320.41	-	8,737.28
Total with Admin Fee	35,162.78	26,902.18	1,773.13	13,758.80	68.06	187.53	-	9,163.00	-	4,144.55	1,425.59	3,524.50	-	96,110.11
Original Budget \$	62,700.00	22,440.00	4,774.00	19,470.00	6,270.00	330.00	10,890.00	8,963.00	600.00	4,840.00	1,612.00	2,750.00	26,400.00	172,039.00
Budget Remaining	27,537.22	(4,462.18)	3,000.87	5,711.20	6,201.94	142.47	10,890.00	(200.00)	600.00	695.45	186.41	(774.50)	26,400.00	75,928.89

MHI

Newfoundland Options Review Project - Request For Information Log (Revised Oct 15/11)

Includes to Batch 34

RFI No.	Request/Question	Requested by	Date of Request	Return Doc	Date of Return	References	Status	Comment	local	Reference Docs
1)	What are the components that make up composite costs related to the CPW's related to each the options? Please provide a step-matrix back to the source documents.	CPW	18-Jul-11	Batch 8	10-Aug-11	Rev 1 (Exhibit 14, MHI-Nalcor-49.3)	Accepted	Regarding the second part of the question: Nalcor did not provide the step-matrix directly but in subsequent responses and exhibits were able to deliver appropriate details and source documents.	Link	Exhibit 14 RFI 49.3
2)	What is the sensitivity of the CPW if the time frame was reduced from 2067 to 2041?	CPW	18-Jul-11	Batch 31	27-Sep-11			The essence of the question has been reformulated by PUB-Nalcor-55.	Link	
3)	What consideration has been given to the excess power capacity that will become available associated with the termination of the Upper Churchill Falls Agreement in 2041?	MHI	18-Jul-11	Batch 31	27-Sep-11			The essence of this question is critical because the response is going to be the foundation for a comment in the MHI report.	Link	
4)	To what extent have the Isolated Island Option cost estimates been updated as related to Island Pond (2006), Portland Creek (2007), and Round Pond (1989)?	AG	18-Jul-11	Batch 4	05-Aug-11	Portland Creek is common to both, and most recent. Escalation is acceptable. Other two plants do not have a large capital expenditure.	Accepted	The question was answered but we are disappointed that Nalcor did not elaborate and did not think it was necessary to update the estimates.	Link	
5)	Does the costing of all project estimates include AFUDC and Escalation? Has this been incorporated in the CPW analysis and available for review?	CPW	18-Jul-11	Batch 1	26-Jul-11		Accepted	The response is sufficient; however, a comment needs to be made in the MHI report to address the exclusion of capitalizing the cost of financing.	Link	
6)	Recognizing that all projects related to each of the Options have not been estimated at the same level of detail, what adjustments have/should be done in order to be able to evaluate them on the same basis?	CPW	18-Jul-11	Batch 4	05-Aug-11		Accepted	The integrity of the response is questionable given Exhibit 31, which indicated that all estimates were level 4, which is not the case.	Link	
7)	What is the composition of the capital cost definition for the HVDC Capital Cost Exhibit 5 (e)?	CPW	18-Jul-11	Batch 2	27-Jul-11	Refer to the table in Batch 2 and Exhibit 5e	Accepted		Link	Batch 2 Exhibit 5e
8)	Have the exchange rates in the CPW analysis been revised from those initially used in the base year of the input document. For example Table 4.1a of Exhibit #5 (h) (Holyrood) indicated \$1.50 CAD = \$1.00 USD	CPW	18-Jul-11	Batch 3	04-Aug-11		Accepted		Link	
9)	Please provide a report and related documentation to support the option to allow Holyrood to continue to operate in the Isolated Island alternative? Please include all related legal, technical, environmental and economic considerations for the operation or continued operation of Holyrood. For example, this will include the potential additions for precipitators, scrubbers, NOx burners, and grade of fuel to be used throughout its planned life of the alternative and the legal and environmental drivers that guide this alternative. What constraints does Newfoundland Hydro have on Holyrood operations today?	Thermal	18-Jul-11	Batch 4	05-Aug-11		Unsatisfactory	A new question needs to be framed specifically to address: What constraints does Newfoundland Hydro have on Holyrood operations today? Additionally, why are refurb costs included for Isolated Island for 2012 to 2017 but not for In-Feed Option? Do we not need to remain the same level of reliability in both cases?	Link	
10)	Does Nalcor have a requirement to continue purchasing energy from the Wind farm NUGs for the foreseeable future or are the plants retired after 20 years of service?	CPW	18-Jul-11	Batch 1	26-Jul-11		Accepted		Link	
11)	Provide a document that clearly outlines the retirement costs to take Holyrood out of service 2017 (or beyond)? What is the cost to convert unit(s) to synchronous condenser operation? Are these costs factored into the CPW analysis?	CPW	18-Jul-11	Batch 4	05-Aug-11		Accepted	The question was not answered appropriately, however, MHI can proceed based on information provided elsewhere.	Link	
12)	Explain the composition of the operating costs for Labrador Island Link in Exhibit 8? What is the source document for the cable inspection costs?	CPW	18-Jul-11	Batch 15	24-Aug-11		Accepted	LIL opex in response to MHI 12 lines up with Exhibit 8. CE 44 Rev 1 section 7 refers to undersea only.	Link	CE-44 Exhibit 8

13)	With respect to Exhibit 10 (a), please provide the load balance estimate annually from 2014 to 2067 in a format similar to that provided for years 2010 to 2014.	CPW	18-Jul-11	Batch 10	11-Aug-11	See RFI 13a and RFI 13b (Pages 3-4 of Batch 10)	Accepted	The forecasted MW figures on page 2 and 3 of MHI-Nalcor-13 match identically to the Island Peak Demand figures in the 2010 Planning Load Forecast (page 3 of DN002 - Exhibit 1 Addendum). The MW figures are also identical to the extended 2010 Planning Load Forecast figures (page 1 of DN003 - Exhibit 1). The forecasted GW.h figures on page 2 and 3 of MHI-Nalcor-13 are three GW.h lower than the Total Island Requirement figures in the 2010 Planning Load Forecast (page 3 of DN002 - Exhibit 1 Addendum). The MW figures are also three GW.h lower than the extended 2010 Planning Load Forecast figures (page 1 of DN003 - Exhibit 1). This is because the DN002 and DN003 figures include 3 GW.h of interruptible energy associated with the Vale smelter. The energy figures on Nalcor-13 do not include interruptible energy associated with Vale.	Link	Batch 10
14)	Please identify the additional costs to provide the extended overload capacity of the HVDC system and describe the financial impact it will have on the CPW analysis.	HVDC	18-Jul-11	Batch 2	27-Jul-11	Question was ambiguous. Costs of OL capacity have been factored into the CPW	Under Review	Tech Team (Les R) needs to review to be satisfied stated costs are acceptable. Costs appear to be about \$87.0 million. That seems light and maybe the reason not stated in the RFI response. See CE51 p21/38.	Link	
15)	With respect to Exhibit 11 and the plant maintenance requirements, please describe the HVDC plant performance criteria that are incorporated into the design requirements.	HVDC	18-Jul-11	Batch 7	10-Aug-11	Also see Exhibit 29 Revision 1, exhibit 29 is 30 years old to reference reliability. No reliability criteria defined in the answer. RFI 61 may supply the required information.	Accepted	The question is not answered because they have not completed the studies, as referenced in RFI-61. MHI will raise this item in the report.	Link	Exhibit 29
16)	With respect to Exhibit 16, figure 7-3, please provide the justification and details supporting the addition of two 50 MW CTs and the 170 MW CCCT in the generation mix (years 2022, 2024 to 2027)?	Thermal	18-Jul-11	Batch 11	12-Aug-11		Accepted		Link	Batch 10
17)	As one unit at Holyrood is already capable of synchronous condenser operation; when are the other two units converted? Please provide a document that outlines the plan and timing for the synchronous condenser conversion at Holyrood.	Thermal	18-Jul-11	Batch 7	10-Aug-11	No studies to support the conversion, cost estimates are not detailed or supportable. \$\$ may not be material to the overall Ref Question.	Accepted	See Ex 5 summary in DN 007 for detail. Bob Dandenault has reviewed and commented in his email Sept 13/11. Project schedule is found in DN184, costs in DN007. Close this item.	Link	
18)	With respect to Exhibit 15, please explain how the numbers tie to the CPW results? Why were the 75/25 D/E ratio and respective costs not incorporated in the calculation?	CPW	18-Jul-11	Batch 3	04-Aug-11	Also refer to Exhibit 15 and the response to RFI 35	Accepted	ok	Link	Exhibit 15 RFI-35
19)	With respect to Exhibit 18 (HVDC), have the cost estimates and system configuration been upgraded to the current project definition? The original report had the converters at Gull Island and the transmission line was a different voltage. Please provide definitive design report(s) on the final configurations and costs for the HVDC Labrador Island Transmission System.	CPW	18-Jul-11	Batch 3	04-Aug-11	Refer to response to RFI 7 and CE 32 (Exhibit 23)	Accepted	A supplementary question has been asked.	Link	CE-32
20)	With respect to Exhibit 19 (Muskat Falls), has there been any detailed analysis carried out relating to the clay spur and the effectiveness of the sump pump system under impounded conditions (tests, simulations, experience of other dam operators)? Please provide supporting documentation.	AS	18-Jul-11	Batch 3, Ex38, Ex39, Ex40, Ex41	04-Aug-11	Appendix C of Exhibit 19; the Technical Note in Batch 3 (Pages 6-15) aka Exhibit 38; and consultant reports (Exhibit 39-41). No discussion on the effectiveness of the sump pumps under impounded conditions. To much material provided in the exhibits.	Accepted	MHI has concern about the existing well-point system; however, site investigation to be done in 2012, which will provide information as to the future well-point system.	Link Exhibit 39	Exhibit 19 Exhibit 38 Exhibit 40 Exhibit 41
21)	With respect to DC1010, what is the current HVDC operating voltage to be used in the Option 1 configuration? How has the capital cost been adjusted in the CPW for this configuration? Is there any provision for future capacity improvements included? Please provide supporting documentation.	CPW	18-Jul-11	Batch 3	04-Aug-11	See responses to RFI 7; RFI 24 and CE-32 (Exhibit 23)	Accepted	There does not appear to be any consideration for future expansion and merits a follow-up comment in the MHI report.	Link	CE-32 RFI-24
22)	With respect to MF1320, this report indicates firm generation of 515 MWc, not 824 MWc at Muskrat Falls. Why?	PW	18-Jul-11	Batch 1	26-Jul-11		Accepted		Link	
23)	The +/- 320 kV was noted as the minimum operating voltage for the HVDC. Please explain the rationale for this decision; have conductor optimization studies been revised to support this; and revised cost estimates transmission lines, cables, and converter station equipment.	HVDC	18-Jul-11	Batch 2	27-Jul-11	See document HVdc System - Historical Summary - 2011-07-14, Exhibit 23 and responses to RFI 7 & RFI 24	Accepted	Refer to RFI 62	Link	Exhibit 23 RFI-24
24)	What assurances exist and what are the cost implications for mainland power sources to supply firm power in the event of a loss of the HVDC system?	AS	18-Jul-11	Batch 1	26-Jul-11	Nalcor has not confirmed that the reliability is adequate in terms of HVDC system. Maritime link is not to be considered in the Ref Question.	Accepted	MHI needs to confirm the comment regarding the Government mandate setting standards for Nalcor. Nalcor is expected to follow NERC standards for reliability. MHI (G. Derwin) will include a comment in the report about this matter.	Link	
	With respect to document DC1010 " Voltage and Conductor Optimization" a. How do the costs for the various voltage options at the top of page 3-20 get factored into the CPW?					a) See document HVdc System - Historical Summary - 2011-07-14, Exhibit 23 and responses to RFI 7 & RFI 24		An additional question needs to be asked: In		

25)	b. In para 3.2.4 it is stated, "The costs estimates exclude the costs for operating and maintaining the transmission system, and also exclude the costs for laying and protecting the submarine cables, which will have a significant impact on the total project costs." Please explain the rationale and elaborate.	AS	18-Jul-11	Batch 2	27-Jul-11	Responses to RFI's submitted b) These costs are beyond the scope of DC1010; applicable estimates were prepared by Nalcor and included in the CPW.	Under Review	RFI-7, why are the values (323,882) in the SOBI Crossing different than in the CE-44 on page 31 (280,429)?	Link	Exhibit 23	RFI-24
26)	What costs have been factored in for public consultations on either option?	CPW	18-Jul-11	Batch 1	26-Jul-11		Accepted		Link		
27)	What costs have been factored in for environmental assessments?	CPW	18-Jul-11	Batch 2 / Batch 6 / Batch 7	July 27 / Aug 10	Rev 1	Accepted	It is not necessary for Nalcor to do an environmental study (MHI has confirmed this from the NFLD and Labrador Energy Plan). PUB-Nalcor-6: public policy mandates that Holyrood must comply with pollution controls if MF does not proceed.	Link Link (Rev 1)		
28)	What costs have been factored in for land owner easements, expropriations, and purchases?	CPW	18-Jul-11	Batch 5	08-Aug-11		Accepted		Link		
29)	With respect to Document 1500 "Electrode Review – Confirmation of Type and Site Selection" a. Where is the cost estimate of \$8.2 million set out in section 6.6 on page 86 included in the CPW numbers? b. At the bottom of page 88, several recommendations have been suggested to improve the confidence level associated with the assumptions. Have these recommendations been carried out and if not/so, what are the cost implications?	CPW	18-Jul-11	Batch 1	26-Jul-11		Accepted		Link		
30)	With respect to Document MF 1010 "Pre-Feed Engineering Study – Muskrat Falls – Study of Variants" a. It is indicated the unit prices were updated to the 2007 base year from the 1999 report. Please identify where the revised numbers shown in Appendix D have been included in the CPW output?	CPW	18-Jul-11	Batch 2	27-Jul-11		Accepted		Link		
31)	Has Nalcor received an updated report from Global Insights relating to the estimates used in the Studies? Please provide a copy of the base Global Insights report, and any revised reports?	CPW	18-Jul-11	Batch 1	26-Jul-11	CE36, DN076-079	Accepted	Please refer to RFI #50	Link DN077	CE-36 DN078	DN076 DN079
32)	What is the basis for using 10 % rate of return on equity used in the studies?	CPW	18-Jul-11	Batch 1	26-Jul-11	Exhibit 5e	Accepted		Link	Exhibit 5e	
33)	Have any guarantee fees, water rentals, land grants or dividend payments been factored into the cost of the options?	CPW	18-Jul-11	Batch 1	26-Jul-11		Accepted	Note: PUB has requested further clarification in PUB-Nalcor-60	Link		
34)	With respect to Exhibit 5(b), Section 5.2, please provide details relating to the owner's costs (8.7% of Total Direct Costs) as set out in the cost estimates of Island Pond?	CPW	18-Jul-11	Batch 2	27-Jul-11		Accepted		Link		
35)	Have the costs of the Muskrat Falls Option been included using a PPA approach as opposed to actual capital expenditure cash flow in the CPW? If so, please explain the rationale for doing so.	CPW	18-Jul-11	Batch 3	04-Aug-11	The costs of Muskrat Falls energy have been included as a PPA; also see responses to Request #4 from the Board's July 12, 2011 letter to Nalcor and RFI 18	Accepted		Link	Jul12 Q4	RFI-18
36)	Please provide unredacted cost estimates for each component of the Isolated Island Options, SOBI and all other reports.	MHI	24-Jul-11	Batch 12	16-Aug-11	SOBI in CE44, Island Pond in CE48, and Portland Creek in CE49	Accepted		Link		CE-44
37)	Please provide a document that describes the Newfoundland Hydro and Nalcor power system planning criteria	AC	24-Jul-11	Batch 5, Ex42	08-Aug-11	Also see Exhibit 42	Accepted		Link	Exhibit 42	
38)	Please provide specifications for the HVDC converter stations related to the current configuration.	HVDC	24-Jul-11	Batch 8	10-Aug-11	Refer to Section 6 in Exhibit 30 (LCP Design Progression, 1998-2011)	Accepted	No specification provided as it was not available. This answer is unsatisfactory.	Link	Exhibit 30	
39)	Please provide the updated AC integrations studies for the 2011 HVDC configuration. This should include the AC system operational performance criteria, and any operational issues that need to be factored into the system design.	AC	24-Jul-11	Batch 7	10-Aug-11		Accepted	MHI to note in report that this is a potential gap in the DG2 process.	Link		
40)	Please provide the AC Power System Integration Studies for the Isolated Island option.	AC	24-Jul-11	Batch 5	08-Aug-11	Also see Exhibit 24	Accepted	Follow on RFI's: 61, 64, 65, 66, 68	Link	Exhibit 24	
41)	Documentation is requested on which modules of Ventyx Strategist Software were used to derive the CPW? Please identify the 'objective functions' used as input and what are the parameters and weights given to each of the objective functions. If more than one module was used, please elaborate on how these objectives are tied together. What sensitivities were run relative to the base case and what were the results of the sensitivity runs? Please explain on how the transmission capabilities, transfer limits and any system operating constraints were factored into the model.	CPW	24-Jul-11	Batch 9, Ex24	11-Aug-11	Also see CE-50 and Exhibit 43	Accepted		Link	Exhibit 43	CE-50

42)	Please provide the detailed data inputs used in the Strategist runs for both option cases, with all associated source documentation describing each generation component as given to Strategist, and how all these relevant input data and parameters were derived. Provide all relevant run parameters, targets, schedules, system load characteristics, reliability and reserve criteria, generation capabilities, and constraints factored as input into Strategist for both options under consideration.	CPW	24-Jul-11	Batch 9	11-Aug-11	See Exhibits: 1-5(a-l), 6 (a-b), 7-10 (a-b), 11-13 (a-b), 15-16, 25, 26, & 42; Board Letter July 12 Q5; RFI 10, 37, 41, 50, & 55	Accepted	Unsatisfactory because references were only made to studies and not specific data.	Link	Exhibits (all) & Board Letter	RFIs (all)
43)	Please provide the Strait of Belle Isle Feasibility Studies, appendices, and all related reference reports.	CESI	24-Jul-11	Batch 8	10-Aug-11	Refer to CE-40-44 and Exhibits 33-35	Accepted		Link	CE 40-44	
44)	Please provide the detailed Newfoundland power system reliability study for Nalcor and Newfoundland Hydro for the Muskrat Falls and Labrador Island Link HVDC system.	BB	24-Jul-11	Batch 8	10-Aug-11	Reponse not filed as no reliability study is performed annually as required NERC Standard TPL-005-0. Nalcor is not interconnected.	Accepted	The response is sufficient as Nalcor has indicated they do not need to conduct a NERC based Reliability Study. PUB has filed a followup question PUB-Nalcor-61. MHI is reviewing legislative language for comments in the report.	Link		
45)	Please provide a detailed Newfoundland power system reliability study for the Isolated Islanded option.	BB	24-Jul-11	Batch 11	12-Aug-11	Refer to RFI 44	Accepted	See above comment to RFI 44.	Link	RFI 44	
46)	Please provide all Wind farm feasibility and integration studies, associated cost estimates, additions, and replacement or refurbishment plans, including cost estimates. The documents "Exhibit 5(a), 5(i), 5(j), and 5(k)" have no information. Some documentary evidence is necessary to provide a direct linkage between costs estimated, and that embedded into the CPW model.	MCW	24-Jul-11	Batch 7	10-Aug-11	Refer to Exhibit 25	Accepted		Link	Exhibit 25	
47)	Please provide all CT and CCCT feasibility and integration studies, and associated cost estimates for additions, replacements, or refurbishments. "Exhibit 5(g) - Capital Cost Estimates - 50MW CT (Greenfield)", and "Exhibit 5L(ii) - Capital Cost Estimates - HTGS Environmental Improvements - Low NOX Burners" were not available in report form. Some documentary evidence is necessary to provide a direct linkage between costs estimated, and costs embedded into the CPW model.	Thermal	24-Jul-11	Batch 8	10-Aug-11	Refer to Board Letter July 12 Q4 and attachments for CT and CCCT cost estimates justification. Cost of the CT is in CE-47, Nalcor did not provide an update for 5L(ii) as this item is ten years and has been escalated.	Accepted		Link	CE-47	
48)	MF1330 Report 5 filed.pdf appears to be missing from the material provided (Lower Churchill Project). Please provide this document.	MHI	24-Jul-11	Batch 4	05-Aug-11	Document is not relevant as it relates to Gull Island	Accepted		Link		
49)	Please provide a detailed schedule by year for Fuel Costs, O&M Costs, and a further breakdown of Fixed Charges for each capital project identified on pages 1 and 2 of Exhibit 14. The breakdown of Fixed Charges should identify AFUDC and escalation as separate line items. Where escalation is being applied, please identify the year for which the base dollar cost estimates were derived. Identify the specific debt/equity ratio and interest rates used in determining AFUDC. Please demonstrate in an Excel workbook how provided cost values in Exhibit 14 result in the individual PCW line-item totals in the left-most column for Fixed Charges, Fuel Costs, and O&M Costs, for both options.	CPW	24-Jul-11	Batch 6	09-Aug-11	See attachments in Batch 6; Exhibit 5; and RFI 1	Accepted	An additional question to be asked regarding the HVDC 5% losses. Refer to RFI-62	Link - 49 Link - 49.1 (a) Link - 49.1 (b) Link - 49.2 (a) Link - 49.2 (b) Link - 49.2 (c) Link - 49.2 (d) Link - 49.3	Exhibit 5 Batch 6	
50)	Please document and describe the complete set of escalators and their values that are shown as being used in Exhibit 3.	CPW	24-Jul-11	Batch 7	10-Aug-11	Also see PPI info request #2 as requested by the Board dated July 12, 2011; CE-45; (Batch 7 attachments)	Under Review	An additional question needs to be asked: in reference to CE-45, RFI-49.3 and Exhibit 3, the calculated weighted average composite rates from 2011-2017 results in different rates than in Exhibit 3 and RFI-49.3. Please explain which escalation rates were used in the CPW and the purpose of the others if they were not used.	Link	CE-45	Batch 7
51)	Please provide the projected GWh/yr and \$CAD(2010)/yr by fuel type that was generated by Strategist in the runs for each of the two options.	CPW	24-Jul-11	Batch 8	10-Aug-11	See attachment in Batch 8 (Pages 9-10)	Accepted		Link	Batch 8	
52)	Please provide any environmental assessment reports outlining the costs of environmental mitigation related to the Muskrat Falls and Labrador Island Link HVDC System.	CPW	24-Jul-11	Batch 13	17-Aug-11		Accepted		Link		
53)	What was the HVDC design voltage related to the capital costs used in the CPW calculation?	CPW	24-Jul-11	Batch 4	05-Aug-11	The HVdc design voltage used in the current capital cost estimate is 320kV. Refer to the response to RFI 19, 21 & Exhibit CE-32	Accepted		Link	RFI-19	CE-32
54)	Please clarify what percentage of the total capital costs for each of the major cost elements in the MF/HVDC Project are being allocated to the calculation of the CPW in Exhibit 14, and what is the basis for determining those percentages? If the allocation is over an extended period, please elaborate.	CPW	24-Jul-11	Batch 4	05-Aug-11	100% of the capital costs for each of the major cost elements in the MF/HVDC Project have been allocated for the calculation of the CPW in Exhibit 14.	Accepted		Link	Exhibit 14	
55)	Please provide the document "Summary of Newfoundland and Labrador Hydro 2010 Long Term Planning Forecast" dated July 2011. Also please provide the excel spreadsheets showing the coefficients and statistical outputs from the following six regression models used to prepare the load forecast: 1. Residential - Average Use per Customer 2. Residential - Total Number of Customers 3. Residential - Percentage of New Customers Installing Electric Space Heat 4. Residential - Number of Existing Customers Converting from Non-Electric to Electric Space Heat 5. General Service - Annual Electric Energy Demand (GW.h) 6. System Peak - Winter Peak (MW)	LF	24-Jul-11	Batch 8	10-Aug-11	Refer to Exhibits 27, 45 and 46	Accepted		Link	Exhibit 27 Exhibit 45 Exhibit 46	

56)	Please provide excel files related the load forecast that contain all the historical sales and generation data from 1969 to present, as well as a file that contains historical and forecasted values for all forecast inputs that are driving the forecast models, including information on energy rates (electric, oil), demographics (population, housing), economic (GDP, disposable income, business investment, etc.) that are used as input or explanatory variables in the load forecasting equations.	LF	24-Jul-11	Batch 8	10-Aug-11	Refer to exhibits files in response to RFI 55. Note: historical data back to 1969 is not available.	Accepted		Link	RFI-55
57)	The AMEC report on Thermal Generation life extensions at Holyrood.	Thermal	24-Jul-11	Batch 8	10-Aug-11	Refer to Exhibit 44	Accepted	ok (changed reference in Comment col to Ex 44 (from 43)	Link	Exhibit 44
58)	Regarding the information provided in 'Exhibit 15 PWC S245. Subsheet Summary 2010PLF PUB Review', please provide the original Excel workbook printed out as Exhibit 15, plus the following information: a) Derivation of the chosen discount rate of 7.30% for Muskrat Falls b) Understanding that the PWC analysis assumes 100% equity, why does the total equity invested in the Muskrat Falls project (\$2,852.91 MM) not match the stated "Direct capex (escalated nominal \$MM)" of \$2,869? c) Footnote 1 indicates that \$2,869 MM "Includes interest during construction, financing fees, and debt service reserve". Why would these be included for an analysis based on 100% equity? If they are not actually zero, please provide the amounts associated with these three costs elements. d) Please breakout the 'Nominal Equity Return (Post-Innu), line on pp. 4-8, into all revenue and cost components, including PPA revenues, Innu payments, etc., demonstrating that they add to the 'Nominal Equity Return' line in the Exhibit. e) How are Innu payments determined? f) Please confirm that the PPA tariff charged to NL Hydro in the CPW analysis is \$75.82/MWh at MF busbar (2010 CAD), escalated annually 2%. Within the PPA itself, what is the date within the year that the escalation formula will be applied, or will the escalation be applied monthly commencing on a specific date in 2010? If this has not yet been confirmed in a PPA document, please explain how this escalation has been modeled. g) Please provide the annual energy delivered to the busbar (in GWh) underlying the 'Nominal Equity Return' line on pp. 4-8; what classes of energy were used in the total (e.g. firm, average, etc.); their proportions; and the source documents or specific calculations used in determining the volumes of each class of energy, How were the proportions used for each class of energy in the total determined? h) Please describe the underlying basis, approach, assumed energy volumes, and financial objectives used in selecting a PPA tariff strategy to reflect Muskrat Falls' costs to Newfoundland Hydro, and determining the appropriate PPA tariff that was incorporated in the CPW summary. i) Regarding the document provided, identified as 'CE 27 Summary of Studies on Firm and Average Energy Production', please explain any differences in assumed energy volumes between those used per I).h. above and those indicated in 'CE 27'. j) Please provide the annual energy delivered to Soldier's Pond station from Muskrat Falls. k) Besides the PPA energy tariff determined by the PWC analysis, what other revenues or costs accrue to the Province, as the ultimate equity owner, resulting from the operations of Muskrat Falls (e.g. water rentals, etc.), and are they part of the 'Nominal Equity Return' figures?	CPW	02-Aug-11	Batch 14	19-Aug-11	Very detailed answer, Mack is this what your looking for?	Accepted		Link	
59)	Regarding 'CE 38 MHI-Nalcor-1 CPW Details', insurance expenses for each fixed asset are shown to be constant over the remaining life of the asset. Please describe the insurance Newfoundland Hydro actually arranges for these fixed assets, including the basis for estimating the insurance expense per annum, and whether Newfoundland Hydro self-insures fixed assets or purchases such from an external insurer. Please also illustrate an example using all relevant Expense and Balance Sheet T-accounts affected by the entire annual insurance transaction.	CPW	02-Aug-11	Batch 12	16-Aug-11		Accepted	A note will be made in the MHI report indicating that no insurance costs have been included in the LIL component.	Link	
60)	With respect to the PIRA forecast used in Exhibit 4 "Nalcor Energy/NLH Thermal Fuel Oil Price Forecast" as of January 2010: a) Please provide an update of Exhibit 4 based on the most recent and readily available 2011 PIRA fuel price forecast; and b) Please estimate what impact the revised and updated fuel price forecast has on the CPW for the Isolated Island option. Please describe the determination of the revised estimated CPW.	CPW	02-Aug-11	Batch 9	11-Aug-11	Refer to Fuel Price sensitivities files in RFI 41	Unsatisfactory	Part a) was never provided. Part b does not provide any details on the fuel price basis used in the CPW calculations. A new RFI under development.	Link	RFI-41

HVDC Converter Stations and System

61)	<p>MHI is aware that a comprehensive reliability report for the entire project has been requested from Nalcor by the Board in a letter July 12, and this document is yet to be filed.</p> <p>As an additional related information request, is there an <u>operational</u> reliability report considering the forced outage rate and scheduled outage rate? Has all equipment and systems been looked from an operations and maintenance perspective at using an N-1 criteria or considering the Criteria required? Some detailed areas of concern are listed below but the response should include all areas considered.</p> <p>a) Are there two or three auxiliary supply feeds (station service) for the Bipole? Considering an extensive Forced Outage to one feed (Station Service) there is now an entire Bipole feed from one station service transformer for one year or more. Is this acceptable? Is there a spare Station service or other alternative feed? The same question is applied to the battery banks and chargers.</p> <p>b) How many relay buildings are being considered in the AC switchyard of the converter station? What is the physical separation between the buildings? Are there duplicate control and protections from different suppliers?</p> <p>c) Has separation of equipment and controls supplies been considered to limit the amount of power lost for any event?</p> <p>d) What is the Forced Outage Rate (FOR) and scheduled outage rate target?</p> <p>e) Has a design report been issued detailing all these requirements? If so please provide.</p> <p>f) Is there a contingency plan in place or being considered, if the reliability criteria cannot be met? ie Documents have indicated that there is one synchronous condenser (SC) provisioned as a spare. If one SC is out of service for maintenance, and a second one trips off, what is Nalcor's operating plans?</p>	HVDC	18-Aug-11	Batch 19	02-Sep-11		Accepted		Link	
62)	Please provide a copy of the analysis that was carried out in June and July of 2010 which confirmed that the 900 MW HVDC link would require a minimum operating voltage of 320 kV as referenced in Exhibit 30, Section 4, paragraph 4.	HVDC	18-Aug-11	Batch 22	09-Sep-11		Accepted	MHI will recalculate the CPW based on 10% losses (Nalcor's worst case). Refer to RFI-49. An additional question is to be asked: Why the discrepancy between the two loss %?	Link	
63)	In discussions with Nalcor, it was stated that the AC collector system at Muskrat Falls and associated transmission lines to Upper Churchill, was optimized at 345 kV. Please provide a document of that analysis.	HVDC	18-Aug-11	Batch 17	29-Aug-11	Exhibit 59	Accepted		Link	Exhibit 59
64)	Exhibit #30, page 24 shows a simplified single line diagram of the Muskrat Falls converter station. Please provide a complete single line diagram and major equipment data of the Muskrat Falls converter station.	HVDC	18-Aug-11	Batch 22	09-Sep-11		Accepted	The answer was insufficient for MHI's analysis; the design data is not yet available.	Link	
65)	Please provide a complete single line diagram and major equipment data for the Solders Pond converter station.	HVDC	18-Aug-11	Batch 18	01-Sep-11		Accepted	The answer was insufficient for MHI's analysis; the design data is not yet available.	Link	
66)	Please provide a copy of the study used to determine the requirements for the 3 – 300 MVar Synchronous Condensers.	HVDC	18-Aug-11	Batch 18	01-Sep-11	CE-10	Accepted		Link	CE-10
67)	In discussions with Nalcor, it was stated that the Voltage Source Converter (VSC) Option was discarded and the Line Commutated Converter (LCC) chosen. One reason the VSC option was discarded was because studies showed that the recovery from a DC fault was too slow at about 900 milliseconds, and also that the system still required an Effective Short Circuit Ratio (ESCR) of 1.5. Please provide copies of the studies performed by Siemens on the HVDC Plus fault recovery rate and the ABB PSS/E ESCR study.	HVDC	18-Aug-11				Open	To be received on Sept 23/11		
68)	The inverter system for a LCC requires 2 – 300 MVar (plus one spare) Toshiba Synchronous Condenser with and inertia of 7.2 to achieve an ESCR of 2.5 under worst case conditions. Please provide the study done to confirm this finding as referred to in Exhibit 30, Section 6.7, page 21, System Upgrades for Island Link.	HVDC	18-Aug-11	Batch 18	01-Sep-11	CE-04, CE-10	Accepted		Link	CE-10 CE-04
69)	Based on discussions with Nalcor and documents received to date, only \$ 2.5 M has been allocated for HVDC equipment replacement / refurbishment over the 50 year life of the project. Please describe the components of this figure, and the rationale for its determination.	HVDC	18-Aug-11	Batch 15	24-Aug-11	Answer shows that Nalcor has not factored all HVDC converter station equipment replacement costs, eg. Converter Transformers (\$5M) every 25 years, Controls every 15 to 20 years.	Accepted	Question relates to LIL. Rick H sees \$11.5 m/yr to 2025 and thereafter \$12.5 million/yr (picks up vegetation). What number is Les R using. Seems there is a reference to \$2.5 million/yr for equip replacement/refurbishment. Not sure if opex or capex. Les needs to define the sustaining capital requirements to pass to Mack.	Link	
70)	From discussions with Nalcor, it is understood that some recent algorithms and custom indices have been developed to escalate the converter and other equipment costs. Please provide information on the methodologies that were used to derive these.	HVDC	18-Aug-11	Batch 17	29-Aug-11		Accepted		Link	

HVDC Transmission Line

71)	Based on meetings with Nalcor, the transmission line sections have been designed to different requirements due to varying conditions. Please provide a copy of this design. Provide any transmission line design concept documents, detailed design reports, drawings, tower designs, cost estimates, line route selection details, transmission line reliability design criteria, risk analysis, for the HVDC overhead transmission line, and associated AC transmission lines from the Converter stations.	MHI	18-Aug-11	Batch 31	27-Sep-11			Link	
72)	From discussions with Nalcor, a mechanical fuse concept has been adopted for the HVDC transmission line. The conductor design will drop the conductor to save the tower due to high icing and wind loading over ratings. Have sufficient investigations been done to prove the concept of the mechanical fuse to save the tower during a catastrophic event? Please provide supporting information why this technology was chosen. What is the risk of a mechanical fuse failure and how would this be prevented/mitigated.	MHI	18-Aug-11	Batch 19	02-Sep-11		Accepted	In discussions with Nalcor, the mechanical fuse concept was to be used but the RFI indicates otherwise.	Link
72)	Please provide the report containing the preparation of the detailed cost estimate that is presented in the "Gate 2 Capital Cost Estimate Report – Muskrat Falls Generation Facilities and LIL HVDC System". Your response should include the sources of information for labour, equipment and materials costs, methods used to estimate labour rates, computation of construction equipment operating costs, assumptions made for construction productivity, computation of indirect costs, and derivation of the cost for the main generating equipment.	MHI	18-Aug-11	Batch 19	02-Sep-11		Accepted	Refer to RFI-73	

Muskrat Falls

73)	Describe the methods and details to benchmark and validate the cost estimates prepared by Nalcor for the entire Project to confirm their validity for the conditions at the site and regional construction markets?	MF	18-Aug-11	Batch 15	24-Aug-11	CE-51 referenced	Accepted		Link	CE-51
74)	Please describe whether the optimization of the installed capacity will differ with the Muskrat Falls project when developed in isolation from the Gull Island, Quebec river diversions, and Churchill Falls 2 plant in the 1999 report.	MF	18-Aug-11	Batch 20	06-Sep-11	CE-26, CE-28	Accepted		Link	CE-26 CE-28
75)	Does the change of the ac transmission interconnection to Churchill Falls used in the 1999 optimization report affect the optimal installed capacity needed to dispatch the energy available at Muskrat Falls under the current arrangement?	MF	18-Aug-11	Batch 28	21-Sep-11		Accepted		Link	
76)	From discussions with Nalcor on the Muskrat Falls pumpwell system, it was suggested that it will be required only for the next ten years. Why would that be the limit since the system will be in operation for 30 or more years? When the MF project is commissioned, what is the expected life of the current system? Is there a backup supply system in place to provide power in case of a future catastrophic failure of the pumpwell system?	MF	18-Aug-11	Batch 17	29-Aug-11	MF1260 (Exh 39)	Under Review	The report provided is difficult to interpret. The report is apparently only directed to looking at the next 10 years where as it should have considered the entire timeframe for the CPW analysis (50 years). This detail will be noted in the MHI report.	Link	MF1260 (Exh39)
77)	The following documents of the Muskrat Falls study have not been made available but are needed to fully understand the analyses that have been performed since documents provided reference these missing documents: a) Acres International Ltd, (1998), Churchill River Complex, PMF Review and Development, volumes 1 and 2, This document is required in order to fully understand the PMP development procedure, especially with respect to Probable Maximum Snow Pack. b) Hatch Ltd. G1141 – Upper Churchill PMF and Flood Handling Procedures Update. Prepared for Nalcor Energy – Lower Churchill Project, August 2009.	CC, MF	18-Aug-11	Batch 15	24-Aug-11	CE-54 filed	Accepted	The recommendation in the report is inconclusive because it calls for a further study and leaves the notion of continuing uncertainty. MHI needs to consider this in its report.	Link	CE-54

Isolated Island Option

78)	The report "Studies for Island Pond Hydroelectric Project", (2006) by SNC-Lavalin presents no new data or analysis with respect to hydrology but relies on results from previous studies. The hydrological analysis would be contained in the Prefeasibility Study (1986), the re-optimization of Round Pond (1987), the Feasibility Study (1988) and possibly Island Pond and Granite Canal Final Feasibility Studies (1988), all studies executed by Shawmont Newfoundland. The relevant documents from these three studies are required in order to evaluate the completeness of the hydrological analysis.	MHI	18-Aug-11	Batch 19	02-Sep-11	Exhibit 60	Accepted	The answer is accepted but Nalcor has not done sufficient work on the on-island hydro development options. Nalcor does not appear to take the Isolated Island Option seriously. MHI will include this in the report.	Link	Exhibit 60
79)	Please provide "Appendix A Capital Cost Estimates - Backup" for Exhibit 5b - Studies for Island Pond Hydroelectric Project	MHI	18-Aug-11	Batch 23	14-Sep-11	CES7 filed	Under Review	An additional question is to be asked: Please explain the difference for the Island Pond development costs \$166.220k (Jan 2010 dollars) in Exhibit 5 from what was provided in the engineering report Exhibit 5 b page 80 which was \$173.600k (Dec 2006 dollars).	Link	CE-57
80)	Please provide "Appendix F Geotechnical site Investigations - Proposed Island Pond Hydro Electric Development (as prepared by AMEC)" for Exhibit 5b - Studies for Island Pond Hydroelectric Project.	MHI	18-Aug-11	Batch 27	20-Sep-11	Exhibit 69 and 98	Accepted	Refer to Alex Gerrard; to be received on Sept 22/11. Final report to be revised if there is anything of import in this document.	Link	Exhibit 69 Link (2nd answer)
81)	Please provide "Appendix A Capital Cost Estimates – Backup" for Exhibit 5c - Feasibility Study for Portland Creek Hydroelectric Development.	MHI	18-Aug-11	Batch 23	14-Sep-11	CES8 filed	Accepted	The estimate seems to have 3 years of escalation missing.	Link	CE-58

82)	Please provide backup for the summary capital cost estimate in Table 9.1 of Exhibit 5d - Round Pond Hydroelectric Development Feasibility Study	MHI	18-Aug-11	Batch 21	07-Sep-11		Accepted	The estimate is 19 years old and has been escalated with no work done to update.	Link	Exhibit 5d
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AC Power System Performance

83)	Please provide a project description and schedule for the systems improvements outlined in Section 2.4.3 of document DC1210_filed.pdf "HVDC Sensitivity Studies", July 2010 required to mitigate the 3 phase fault at Bay d'Espoir. The system improvements noted are a cross tripping/over frequency protection system, a new 230 kV circuit between Bay d'Espoir and Western Avalon, plus two new 230 kV circuits between Bay d'Espoir and Sunnyside.	AC	18-Aug-11	Batch 33	04-Oct-11		Open		Link	
84)	Please provide project scoping documents, cost estimates, and relevant technical details of these system reinforcements referred to in MHI-NALCOR-86.	AC	18-Aug-11	Batch 33	04-Oct-11		Open		Link	
85)	Are there any load/generation patterns on the Island where the system survives a 3 phase fault at d'Espoir, and will implementing the system reinforcements listed in DC 1220, section 2.4.3 change this result?	AC	18-Aug-11	Batch 33	04-Oct-11	References RFI-83	Open		Link	RFI-83
86)	Are any further system reinforcements planned or required to mitigate a 3 phase fault at Bay d'Espoir?	AC	18-Aug-11	Batch 33	04-Oct-11		Open		Link	

Wind Farms

87)	The assumption of annual capacity factor of 40% for the 25 MW wind farm is based on the average of the two existing wind farms at St. Lawrence (44.3%), and Fermeuse (35.7%) capacity factors. Has any wind survey data been collected to validate the assumption of a 40% capacity factor at the proposed site of the 2014 3rd 25 MW wind farm? If so, please provide documentation to support the anticipated capacity factor.	MCW	18-Aug-11	Batch 19	02-Sep-11	The answer is that no wind survey data is available. Nalcor will us an RFP process to select wind farms. An average of the two is a good estimate of capacity factor available on the Avalon peninsula.	Accepted	MCW/AGE has been informed and filed a report.	Link	
88)	Has a system study been performed that examines the issues with wind integration into the Newfoundland Island power system? If so, please provide this document. What is the maximum wind capacity sustainable on the Island under both options (Muskrat Falls LIL HVDC and the Isolated Island)?	MHI	18-Aug-11	Batch 20	06-Sep-11	Exhibit 61	Accepted		Link	Exhibit 61
89)	What is the maximum wind capacity sustainable on the Island under both options (Muskrat Falls LIL HVDC and the Isolated Island)?	MHI	18-Aug-11	Batch 29	23-Sep-11	Exhibit 61	Open		Link	Exhibit 61

Load Forecast

90)	Please provide all historical sales, generation and peak demand information for the period 1969-2010 for all sectors that are part of the Load Forecast. This would include the number of customers and energy (GW.h) for the following sectors: rural residential, NP residential, total residential, rural GS, small GS, large GS, electric heat GS, total GS, street & area lighting, industrial and total island sales.	LF	18-Aug-11	Batch 17	29-Aug-11	See Exhibit 58, Peak demand in RFI 92	Accepted		Link	Exhibit 58 RFI-92
91)	Please provide historical energy (GW.h) information for distribution & transmission losses, total utility requirements, total island requirements. NLH energy deliveries and NLH net generation.	LF	18-Aug-11	Batch 17	29-Aug-11	See Exhibit 58	Accepted		Link	Exhibit 58
92)	Please provide historical demand (MW) information for the non-coincident utility peak demand, non-coincident industrial peak demand, coincident island peak demand, NLH transmission losses peak demand and coincident NLH peak demand.	LF	18-Aug-11	Batch 17 and Batch 19	29-Aug-11		Accepted	Refer to RFI-114.	Link	
93)	Please provide the historical and forecast information for all variables used, but not provided (as yet), in the winter peak demand equation specified in Exhibit 45. This would include information on the following variables: WINDCHILL, NPTOTGWSA, NST and DECPK. The requested information should cover the 1967 – 2029 period similar to the information provided on page 7 of Exhibit 45.	LF	18-Aug-11	Batch 17	29-Aug-11	See Exhibit 45 Rev 1	Accepted		Link	Exh 45 Rev 1

Reliability Analysis

94)	Please provide a copy of the report "Reliability of the Straits of Belle Isle HVDC Cable System" - PTI, Sept. 1988.	BB	18-Aug-11	Batch 15	24-Aug-11	Exhibit 57 filed	Accepted	Question as noted should read Sept 1985 - not 1988.	Link	Exhibit 57
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SOBI

95)	Please provide a copy of the SOBI Technical Request for Proposal document for "Submarine Cable Design, Supply and Install".	CESI	18-Aug-11	Batch 17	29-Aug-11	CE-55 filed	Accepted	Cable protection specification was not provided and much material redacted. If necessary, MHI will include relevant comments in the report.	Link	CE-55
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General Questions

96)	What changes have been made in the definition, cost estimate and schedule for the Muskrat Falls-HVDC link project since DG2? If changes have been made, how have these impacted the CPW analysis?	MHI	01-Sep-11				Open	To be received on Sept 23/11		
97)	Regarding 'Batch 6 MHI-Nalcor-49.1 FuelCosts.xls' a) In Exhibit 10a – Energy Balance, for years 2010-2014 the total energy generated by Holyrood is different than that indicated in the above-referenced response file for Holyrood Production (GWh). Please explain the difference. b) Please provide the remaining Energy Balance tables following the table formats in Exhibit 10a, in Excel and PDF files, for the years 2015-2067.	MHI	01-Sep-11	Batch 33	04-Oct-11	References: RFI-49.1, Exhibit 10a, CE59 and Exhibit 1	Open		Link	Link - 49.1 (a) Link - 49.1 (b) Exhibit 10a CE-59 Exhibit 1
98)	In document 'CE 39 MHI-Nalcor-1 CPWDetails.xls' (the CPW Summary workbook), 'Power purchase agreements – Other' for the Isolated case are provided by referencing 'Exhibit 6a PPA Listing and Rates.xls'. Please provide the equivalent detailed PPA listings and rates to support the 'Power purchase agreements – Other' line for the Infeed case. Please explain why the total 'power purchased from others' is different between the Isolated and Infeed options.	MHI	01-Sep-11	Batch 27	20-Sep-11	See Exhibit 70 for details	Accepted	Third windfarm added to the power purchase from others on the Isolated Island Option.	Link	Exhibit 70 Exhibit 6a
99)	In the file 'Exhibit 6b Energy Over The Infeed 2010 PLF PUB Review.xls' the 'Total Energy Over Infeed' values multiplied by the 'PPA Energy Tariff' leads to a small but fixed percentage comparative difference from the 'Power Purchases' column from 2017 to 2056. Please explain the differences for these years. Why do the annual comparative differences increase substantially from 2057 to 2067?	MHI	01-Sep-11	Batch 29	23-Sep-11	Exhibit 6b, RFI 49.2 and CE-59			Link	Link - 49.2 (a) Link - 49.2 (b) Link - 49.2 (c) Link - 49.2 (d) Exhibit 6b

Reliability

100)	Please provide updated and detailed documents that describe the methodology, data, and results of the probabilistic reliability evaluation of the Muskrat Falls and LIL HVDC Project, expressed in terms of the commonly used probabilistic indices LOLH, LOLE, and EUE. How does the probabilistic evaluation of the Muskrat Falls and LIL HVDC project compare with the Isolated Island Option?	MHI	01-Sep-11				Open	To be received on Sept 23/11		
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Thermal Generation

101)	The costs estimated by Stantec for the ESP and FGD installations in their report are totaled at \$450 million. The price carried in document "Exhibit 5 Summary Capital Cost Estimate" is \$582 million. In discussions with Nalcor on August 17, 2011, Nalcor indicated that there was a capital budget input sheet that was submitted to the System Planning Department which developed these costs. Please describe the progression of these costs from \$450 million to \$582 million.	MHI	01-Sep-11	Batch 29	23-Sep-11	Exhibit 5, Exhibit 5 L ii	Open		Link	Exhibit 5L-ii Exhibit 5
102)	Please provide the Operating & Maintenance Cost Summary for Holyrood Station for the next five years for the two options being considered. Also, include the O&M Cost Summary for extending the operation of the Holyrood facility out to 2033 under the Isolated Island Option, and converting the plant to synchronous condenser operation for an additional five years and shutting the plant down under the Infeed Option.	MHI	01-Sep-11				Open	To be received on Sept 23/11		
103)	In discussions with Nalcor, a report was discussed on the study carried out by SNC-Lavalin approximately two years ago for the synchronous condenser conversion at Holyrood. Please provide this document.	MHI	01-Sep-11	Batch 20	06-Sep-11	CE-61	Accepted	To be reviewed by Bob Dandenault.	Link	
104)	Please provide the statistical efficiency chart which indicates the kWhr/barrel of oil consumed in relation to the MWs generated for each unit at Holyrood.	MHI	01-Sep-11	Batch 27	20-Sep-11		Under Review	The answer appears to be OK, but need Bob Dandenault to review.	Link	
105)	What costs are included in line items HRD DCL1 and HRD DCL2 in document CE-39 MHI-Nalcor-1 CPWDetails? Please describe the components of and how the costs were developed?	MHI	01-Sep-11	Batch 33	04-Oct-11		Open		Link	
106)	How were decommissioning costs for Holyrood developed? Where are the costs captured in the CPWDetails document? Do the decommissioning costs include asbestos removal and site remediation?	MHI	01-Sep-11	Batch 34	06-Oct-11	References RFI-105, CE-39	Open		Link	RFI-105 CE-39
107)	In discussion with Nalcor at the meeting of August 17, 2011, \$100 million (\$20 million per year from 2012 to 2016) is included to upgrade Holyrood based on the recommendations of the AMEC Life Extension Study. Please provide the life extension cost estimate, and basis for the costs for operation of Holyrood Station until 2033 as per the Isolated Island Option.	MHI	01-Sep-11	Batch 33	04-Oct-11	Exhibit 28 - PUB Letter July 12 No 10 HTGS	Open		Link	Exhibit 28
108)	The AMEC Newfoundland and Labrador Hydro, Holyrood Thermal Generating Station Condition Assessment & Life Extension Study report indicates the number of starts for each steam turbine. However, the report does not differentiate the type of start ie. cold, warm or hot, which has an impact on life of the turbine. It is our understanding that the plant maintains a summary of the number of starts and type of start each year for each steam turbine. Please provide the summary of starts for as far back as records have been maintained.	MHI	01-Sep-11	Batch 28	21-Sep-11		Under Review	At least 2/3rds of the starts have been hot, therefore, the impact on equipment should be minimal. Paul Durken to review.	Link	
109)	In discussions with staff at the Holyrood facility on Aug. 19, 2011 a relevant report was identified. Please provide the report prepared by Hatch related to upgrades and life extension of the Holyrood marine terminal.	MHI	01-Sep-11	Batch 25	16-Sep-11		Accepted	Forwarded to Bob Dandenault for review.	Link	
110)	In discussions with staff at the Holyrood facility on Aug. 19, 2011 a relevant report was identified. Please provide the report where ABB carried out an investigation around 2005/06 for Holyrood on various options and provided a study report on the viability of different fuels, combustion technologies and backend emission control strategies.	MHI	01-Sep-11	Batch 26	16-Sep-11	Exhibit 66 and 68	Accepted	Forwarded to Bob Dandenault for review.	Link	Exhibit 66 Exhibit 68
111)	In discussions with staff at the Holyrood facility on Aug. 19, 2011 a relevant report was identified. Please provide the report where Stantec carried out a review and condition assessment of the electrical switchgear for the facility.	MHI	01-Sep-11	Batch 25	16-Sep-11	Exhibit 65	Accepted	Forwarded to Bob Dandenault for review.	Link	Exhibit 65

SOBI Marine Crossing

112)	What validation was done for the data, and proprietary software used to study ice berg risks in Exhibit 35 "Iceberg Risk to Subsea Cables in Strait of Belle Isle"?	MHI	01-Sep-11	Batch 20	06-Sep-11	Exhibit 35 (Section 3.4.6)	Accepted	Further validation in discussion was raised in a meeting with C-Core.	Link	Exhibit 35
113)	In the assessment of ice berg strike risks, was there any assessment of the impact energy inherent for icebergs for the scours at depth long the cable route? Significant work was performed on ice berg model grounding events to formulate a scour rates, but a useful design quantity in the cable protection system would be impact energy anticipated from an iceberg strike.	MHI	01-Sep-11	Batch 20	06-Sep-11	Exhibit 67	Accepted	MHI is to address cable protection in report.	Link	Exhibit 67

Load Forecasting

114)	Please provide information on all sub-groups that are forecast to comprise the Total Island Energy Requirements (GW.h) and Total Island Peak Demand (MW) forecasts prepared since 2000. The response should be prepared in a format similar to information previously provided on Exhibit 46. As part of this request, please also provide the actual and weather-adjusted figures for the categories requested above for the 2000-2010 period, similar to page 1 of Exhibit 46. This information will be used to calculate forecast accuracy for all forecast sub-components.	MHI	01-Sep-11	Batch 24	15-Sep-11	RFI -92 and Exhibit 64	Accepted	New RFI drafted to request data not provided. Please provide information on Total Island Energy Requirements (GW.h) and Total Island Peak Demand (MW) forecasts prepared since 2000. The response should be prepared in a format similar to information previously provided on Exhibit 46. As part of this request, please also provide the actual and weather-adjusted figures for the categories requested above for the 2000-2010 period, similar to page 1 of Exhibit 46.	Link	RFI-92 Exhibit 64
115)	Please provide regression equation results for all models that are used to prepare the load forecast and have not been previously provided in Exhibit 45. This would include regression models for Rural Residential and Rural General Service. Please provide the history and forecast information from 1967-2029, similar to page 7 of Exhibit 45, for all relevant variables used to calculate the regression results.	MHI	01-Sep-11	Batch 22	09-Sep-11	Exhibit 62	Accepted		Link	Exhibit 62
116)	Please provide information on all Department of Finance economic forecasts since 2000 that are used as input to the Residential Average Use and General Service Electric Heat regression equations. The response should be prepared in a format similar to information previously provided on Exhibit 46.	MHI	01-Sep-11	Batch 24	15-Sep-11	Exhibit 63	Accepted		Link	Exhibit 63
117)	The response to RFI MI-II-Nalcor-58 which included CE-53, this document does not provide enough information to be able to determine how the calculations were formulated. Please resubmit CE-53 as a new Excel workbook (called CE-53 Revision 1), containing hard-coded data only for input parameters that have a documented external source, and formulas in all other cells requiring calculation. Colour these input cells yellow and indicate the source. Please include all data within the same workbook that is used by the worksheet that results in the figures already displaced in CE-53.	MHI	30-Sep-11							
118)	Please explain the progression or explain why the total cost estimate values for the SOBI Crossing differ between the response, to MHI-Nalcor-7 and that documented in CE-44 page 31.	MHI	30-Sep-11							
119)	In Exhibit 49,2(d) HVDC losses are shown at 5%. Please explain the discrepancy between this value and the 10% worst case value shown in the response to MHI-NALCOR-62.	MHI	30-Sep-11							
120)	In reference to CE-45, RFI-49.3 and Exhibit 3, the calculated weighted average composite escalation rates from 2011-2017 result in different rates. Please explain which escalation rates were used in the Strategist software for the CPW Analysis.	MHI	30-Sep-11							
121)	Please explain the difference for the Island Pond total development costs (Jan 2010 dollars) in Exhibit 5 from what was provided in the SNC Lavalin engineering report Exhibit 5b Rev. 1, page 80 (Dec 2006 dollars).	MHI	30-Sep-11							
122)	With reference to the response to MHI-Nalcor-13, page 3 of 3, 2010 PLF Forecast, Energy Balance and LOLH Results, Labrador HVDC Link, please describe the source(s) for the addition of 5,943.0 GW.h in 2017.	MHI	30-Sep-11							

Load Forecasting

123)	Please provide information on Total Island Energy Requirements (GW.h) and Total Island Peak Demand (MW) forecasts prepared since 2000. The response should be prepared in a format similar to information previously provided on Exhibit 46. As part of this request, please also provide the actual and weather-adjusted figures for the categories requested above for the 2000-2010 period, similar to page 1 of Exhibit 46.	MHI	30-Sep-11							
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SOBI Marine Crossing

124)	Please provide the thermal design parameters (ambient temperature range, and ground thermal resistivity) for the following marine crossing segments: i. land installations ii. HDD installations where the cables are in a tube iii. Sea bed installation with rock berm. For each of these three installations, also provide the cable burial depth and separation details.	MHI	30-Sep-11							
125)	Nalcor's response to MHI-Nalcor-50 appears to be incomplete. Exhibit CE-45 is to document the escalation indices based on Purchase Price Index weightings for various components of supply. Nalcor has provided the various weights but has not provided the actual escalation rates associated with page one of CE-45. Please re-issue Exhibit CE-45 with the missing information.	MHI	06-Oct-11							