Manitoba HYDRO INTERNATIONAL

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Questions for Nalcor, request 5

General Questions

MHI-NALCOR-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-NALCOR-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-NALCOR-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.

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MHI-NALCOR-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?

Reliability

MHI-NALCOR-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?

Thermal Generation

MHI-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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-NALCOR-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.

SOBI marine crossing

MHI-NALCOR-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-NALCOR-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.

Load Forecasting

MHI-NALCOR-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-NALCOR-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-NALCOR-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.