IN THE MATTER OF
the *Electrical Power Control Act*, RSNL 1994,
Chapter E-5.1 (the "*EPCA*") and the
Public Utilities Act, RSNL 1990,
Chapter P-47 (the "*Act*"), as amended;

AND

IN THE MATTER OF
an Application by Newfoundland and Labrador Hydro ("Hydro") for an Order:

1) approving its 2012 capital budget, pursuant to s.41(1) of the *Act*;
2) approving its 2012 capital purchases, and construction projects in excess of $50,000, pursuant to s.41(3)(a) of the *Act*;
3) approving its leases in excess of $5,000 pursuant to s. 41(3) of the *Act;*
4) approving its estimated contributions in aid of construction for 2012, pursuant to s. 41(5) of the *Act*; and
5) fixing and determining its average rate base for 2010, pursuant to s. 78 of the *Act.*

PUBLIC UTILITIES BOARD
REQUESTS FOR INFORMATION
PHASE II

PUB-NLH-1 to PUB-NLH-73

Issued: September 21, 2011

2012 Capital Projects Overview

P2-PUB-NLH-1 Provide a list of all projects to be considered in Phase II that are multi-year projects.

P2-PUB-NLH-2 On page 9 of the 2012 Capital Projects Overview it is stated that the three units at the Holyrood Thermal Generating station "*...have now reached or exceeded their generally accepted service life of 30 years*". What does Hydro rely on to support this statement?

P2-PUB-NLH-3 What is the anticipated date that a decision will be made to proceed with the proposed Labrador Interconnection referred to on page 9 of the 2012 Capital Projects Overview?

P2-PUB-NLH-4 Given the uncertainty regarding the decision to proceed with the Labrador Interconnection and the uncertainty regarding the time period that the Holyrood Thermal Generating Station (the "Plant") will function as a standby facility, how has Hydro considered such uncertainty in the development of its 2012 capital budget proposals and its 5 year plan for the Plant?

2012 Capital Plan

P2-PUB-NLH-5 On page 16 of the 2012 Capital Plan Hydro states that: "S*imilar age plants have been retired or have been subjected to life assessment and extension studies and have received large injections of capital to extend their useful lives. Some have been redeveloped into other configurations, such as combined cycle plants*". Please provide a listing of the plants to which Hydro is referring in this statement. In the response provide the name of the plant, its size, its location, its current status (retired or operating) and a summary of the work completed on the plant to extend its life.

P2-PUB-NLH-6 When will the current base case for the operation of the Holyrood Thermal Generating Station until 2020, described on page 18 of the 2012 Capital Plan, be finalized?

P2-PUB-NLH-7 What is the current environmental legislative or regulatory requirement related to the release of CO_2 referred to on page 19 of the 2012 Capital Plan?

P2-PUB-NLH-8 On page 20 of the 2012 Capital Plan Hydro states that it "*...proposes to submit only those projects necessary for the safe, reliable operation of the plant as a generator up to the time of decommissioning.*" and further that the projects proposed are considered to be the minimum amount essential to fulfill its mandate. For each project in Phase 2 explain how the project is required for the safe, reliable operation of the Holyrood Thermal Generating

Station and to allow Hydro to meet its mandate in the context of the "*minimum amount*" required.

P2-PUB-NLH-9 Provide an explanation of differences in Hydro's approach to determining the necessity of the Phase II projects as compared to Phase I projects in the context of the planned decommissioning of the Plant.

P2-PUB-NLH-10 What is the status of the work required to determine the capital projects necessary at the Holyrood Thermal Generating Station in the event of a "*No Infeed Scenario*"?

B-5, Rewind Generator Units 1 and 2, $112,200 in 2012, $1,107,600 in 2013, and $10,681,400 in future years

P2-PUB-NLH-11 Since in describing the project Hydro provides estimates for expenditures on this project in 2012, 2013 and in future years, why has Hydro not applied for approval of this project as a multi-year project?

P2-PUB-NLH-12 On page 8 of the Report *Unit 1 and Unit 2 Generator Stator Rewind*, Volume I, Tab 2 of the Application, Hydro states that General Energy Services (GE) produced inspection reports for Unit 1 in 2003, and for Unit 2 in 2005, and the 2003 Unit 1 inspection report found *"serious indications of a potential winding failure"*. On page 9 it is stated that GE recommended a full generation stator rewind for this unit in the "*near future*". The 2005 report on Unit 2 winding also recommended it be replaced in the "*near future*". The 2012 Capital Budget proposal includes replacing the Unit 2 winding in 2014, twelve years after the GE recommendation to do the replacement in the "*near future*" and Unit 1 winding in 2015, some 9 years after the recommendation. What weight did Hydro place on the GE 2003 and 2005 inspection reports in submitting its capital budget proposal at this time, and why was action not taken sooner?

P2-PUB-NLH-13 On page 4 of Volume I, Tab 2, Hydro states that *"...the AMEC report stated it would be 'considered appropriate to proceed with the installation of a new stator winding at the next major outage in 2012'."* , and the quote is supported by footnote 3 at the bottom of the page, which indicates the quotation is found in Appendix E. Since this quotation cannot be found in Appendix E, please provide the appropriate support for the quotation, or the appropriate footnote.

P2-PUB-NLH-14 On page 21 of Volume I, Tab 2, Hydro states that: *"The assumption is that there would be a 30 percent risk of stator winding failure in the year after the base case rewind date, and growing by ten percent per year....."* Please provide details of how this 30 percent risk, growing by ten percent per year, was determined.

P2-PUB-NLH-15 In Volume I, Tab 2, Appendix G, what is the meaning of *"In-service/Years"*, the title of column 4, and at what point in the service life of the generators listed did the actual stator rewinds occur?

P2-PUB-NLH-16 In relation to the AMEC report at page D3, why was the operating time to major inspection increased from 7 to 9 years, given, as noted by AMEC, the *"poor condition of the stator windings and the progressive nature of the loosening mechanism"* ?

P2-PUB-NLH-17 In relation to the AMEC report at page D3, why weren't additional measures *"taken in 2003 to prevent the end-windings looseness from re-occuring"*, as referenced by AMEC?

P2-PUB-NLH-18 In relation to the AMEC report at page D3, will Hydro complete the *"bump"* test on the end-winding coils, and add extra support blocks as referenced by AMEC?

P2-PUB-NLH-19 In relation to the AMEC report at page E3, are the partial discharge readings checked annually to detect excessive greasing and to identify whether the next planned inspection should be brought forward as recommended by AMEC?

P2-PUB-NLH-20 When is the report in relation to the planned generator inspection for Unit 1 in 2012 expected to be completed?

B-7, Upgrade Marine Terminal – Holyrood $5,859,600 in 2012

P2-PUB-NLH-21 One page 13, Appendix B of the report *Refurbishment of the Marine Terminal*, Volume I, Tab 3, it is stated that a concrete gravity fender fell from the marine terminal in 2008, and on page B-19 it is stated that the fender was one of the *"critical fenders"*. What action did Hydro take since 2008 to mitigate the loss of this fender?

P2-PUB-NLH-22 Why did Hydro wait until 2012 to propose replacement of the fender that fell off in 2008?

P2-PUB-NLH-23 Detail the work that was done in relation to each of the fenders following the incident in 2008.

P2-PUB-NLH-24 Please provide a copy of the Terms of Reference that was used to engage Hatch to undertake a 10 Year Life Extension Study of the Holyrood Marine Terminal.

P2-PUB-NLH-25 When issuing the Terms of Reference for the 10 Year Life Extension Study of the Holyrood Marine Terminal was consideration given to requesting that

the study provide only the minimum requirements needed to maintain the Marine Terminal until the year 2020? If so, please provide documentation of this constraint.

P2-PUB-NLH-26 In Volume I, Tab 3, page 3, Hydro states that: *"Holyrood personnel have indicated that this occurs during approximately 20% of the fuel deliveries."* Please provide evidence that over the past five years 20 percent of fuel deliveries have been hampered by disconnections due to high winds.

P2-PUB-NLH-27 In Volume I, Tab 3, page 15, it is stated in the Hatch report, completed in April 2011, that *"...it is noted that all ships docking at the facility in 2009 and 2010 were near the ideal length for the existing jetty"*, and that *"...Hydro adopt measures restricting the docking tankers to a minimum length of 525 feet and a maximum length of 656 feet."* Since the size of modern vessels has been used in the justification of this expenditure, please explain why this size restriction cannot continue to be used to delay certain aspects of the proposed extensive renovation.

P2-PUB-NLH-28 While generally modern vessels do not match the design criteria of the Marine Terminal is it possible to contract deliveries by tankers which more closely match the design criteria of the Marine Terminal?

P2-PUB-NLH-29 Has there been any loss or damage to Hydro or a third party due to the loss of a fender from the Marine Terminal in 2008? If yes, please describe the loss or damage.

P2-PUB-NLH-30 In Volume I, Tab 3, Appendix B, page B7, Hydro states that: *"In the last number of years, there have been a number of protest letters...."* Please provide the actual number of letters that have been received by Hydro, a definitive description of the problems addressed in these letters, and six samples of the letters describing the most serious problems.

P2-PUB-NLH-31 Provide a breakdown of the Budget Estimate on page 18 of the report *Refurbishment of the Marine Terminal*, Volume I, Tab 3, by category of work and compare it with the estimate contained in Appendix B, page 38.

P2-PUB-NLH-32 Describe the contingency plan Hydro now has in place to mitigate any consequences arising from the deficiencies identified with the Marine Terminal, including how the recommendations from Hatch in Appendix B (for example, limiting the length of ships and controlling the approach velocity of docking vessels) have been incorporated in the contingency plan.

P2-PUB-NLH-33 In Volume I, Tab 3, page 9, Hydro raises, in section 3.10, concern for the safety of workers due to major deficiencies. As preventative and corrective maintenance on the facility since 1996 has not addressed any of these issues, why is it important that they be addressed at this time?

P2-PUB-NLH-34 In considering worker safety at the Holyrood Marine Terminal and noting that the Holyrood Terminal Generating Station would be decommissioned in 2020, should the Labrador Infeed be sanctioned and constructed on schedule, has Hydro investigated other less expensive alternatives to meeting the safety issues (e.g. replacing light bulbs on a more frequent schedule while taking advantage of better weather conditions)?

P2-PUB-NLH-35 In Volume I, Tab 3, page 13, Hydro states that: *"Purging the line eliminates the potential for blockages..."* In the past what has been normal practice with regard to the draining or purging of the lines after usage, and when, if ever, has a blockage occurred?

P2-PUB-NLH-36 Provide the projected total number of fuel deliveries for the life of the Marine Terminal after this proposed work is completed, in light of the reported number of annual deliveries as set out on page 13 and the production requirements set out in Table 2 on page 16 of the report in Volume I, Tab 3.

P2-PUB-NLH-37 Provide a full explanation of available alternatives in relation to each of the aspects of the project.

P2-PUB-NLH-38 At page B14 of the Hatch report it is stated that: "*Currently, vessels of less than 55,000DWT and shorter than 656 ft long are able to dock at the jetty, as docking is being performed in a controlled manner with a very low impact velocity.*" Provide an explanation as to how many years these vessels have been delivering to the Marine Terminal and any incidents that have occurred.

P2-PUB-NLH-39 At page B15 Hatch recommended the installation of a laser sensor, display and recording system to assist control and recording of vessel speed. Is this included in the project and what is the cost?

P2-PUB-NLH-40 At pages B16 and B17 Hatch recommended that Hydro complete a pull test on all bollards to certify the bollards for a specific rating and that Hydro correspond with vessel owners to confirm acceptance of existing mooring arrangements. Has this been done?

P2-PUB-NLH-41 Has Hatch completed the investigation and analysis of installing a quick coupler release to the existing loading arms referred to on page B25?

P2-PUB-NLH-42 Are the potential solutions to the problems in relation to the flanged connections to the ship included in the proposed work?

P2-PUB-NLH-43 Referencing B26, are specific plans for the Loading Arm cleanout system developed?

B-9, Replace Fuel Oil Heat Tracing – Holyrood $1,474,300 in 2012, $1,413,900 in future years.

P2-PUB-NLH-44 In Volume I, Tab 4, page 8, in the report *Replace Fuel Oil Heat Tracing*, Hydro states that the existing heat tracing system was installed in 2002 and replaced the original system. Please describe the process that was followed in the selection of the replacement system in 2002.

P2-PUB-NLH-45 In Volume I, Tab 4, page 11, in the report *Replace Fuel Oil Heating Tracing*, Hydro states that in 2009 Hydro contacted the original equipment manufacturer ("OEM") to determine the cause of the premature repetitive failures experienced from 2004 with the new system. Did the OEM make a recommendation on the type of cables selected in 2002? If not, who did?

P2-PUB-NLH-46 In Volume I, Tab 4, page B-4 of Appendix B to the report *Replace Fuel Oil Heat Tracing*, Hydro states that "*compromises*" were made in the replacement of the heat tracing system in 2002 "*...to meet budget constraints...*" and further information is provided on page C-4 on the options considered. Did Hydro review its selected replacement option with Tyco, the manufacturer of the electric heat tracing, in 2002?

P2-PUB-NLH-47 In Volume I, Tab 4, page C-4 of Appendix C of the report *Replace Fuel Oil Heat Tracing*, Hydro states that the cost of the electric heat tracing project completed between 2002 to 2004 was $231,698. Please provide a breakdown of the total cost, including any amounts capitalized, any amounts expensed, and any amounts not specifically mentioned in this application, by major cost category.

P2-PUB-NLH-48 Did Hydro apply to the Board, prior to the installation of the current system in 2002, for approval of capital expenditures to implement the recommendations of the vendor or another capital expenditure in 2000-2004, and if not, why not?

P2-PUB-NLH-49 Provide an explanation as to the prudence of the approach that was taken in 2002 in light of the manufacturer's recommendations.

B-12, Install Plant Operator Training Simulator – Holyrood $1,028,200 in 2012 and $1,072,700 in 2013.

P2-PUB-NLH-50 What strategies has Hydro considered for the recruitment, retention and training of plant operators, given the issues identified in the report in Volume I, Tab 5, pages 2-3, other than the proposed Operating Training Simulator?

P2-PUB-NLH-51 In Volume I, Tab 5, page 8, in the report *Install Operator Training Simulator*, Hydro states that the simulator can be adapted for other training uses with further evaluation and investment. Please provide a description of the types of uses that Hydro has determined are possible for the future use of this simulator, how these uses have been determined, or how they will be determined.

P2-PUB-NLH-52 In the report provided in Volume I, Tab 5, *Install Operator Training Simulator*, Hydro has reported that there will be savings realized by optimizing plant efficiency and operations, which includes improving the heat rate (page 12), decreasing the time it takes to bring a unit online (page 13), and decreasing operator overtime (page 16). Why was a cost/benefit analysis that included these savings not undertaken on this project?

P2-PUB-NLH-53 In Volume I, Tab 5, page 17, Hydro states that: *"The Board also requires the plant to regularly practice black starts."* Please provide the basis for this statement.

P2-PUB-NLH-54 For each full year after the commissioning of this simulator and training program until 2020 provide the projected number of available operators showing separately those with less than two years, less than five years, less than ten years and less than 15 years and new hires.

P2-PUB-NLH-55 Please define "*less experienced operator*" as set out at page 16 of Hydro's report for the purpose of determining that a senior operator is required to be present.

B-20, Upgrade Stack Breeching Unit 2 - $1,505,100 in 2012

P2-PUB-NLH-56 A revised schedule was submitted by Hydro on August 29, 2011 for upgrading Unit 1 Stack Breeching. Does this impact the schedule for Unit 2 Stack Breeching?

P2-PUB-NLH-57 In Volume II, Tab 7, page 6, Hydro states that: *"The exterior insulation on the original stack breeching was prone to leaks that were difficult to locate."* What assurance does Hydro have that the installation of exterior insulation will not be subject to the same leaks, and what has Hydro done to mitigate this issue?

P2-PUB-NLH-58 In Volume II, Tab 7, page 7, Hydro stated that prior to the FD fan upgrade the flue gas velocity was 43 feet per second. The supplier for the internal insulation, Autochem, gave assurances that the liner could withstand gas velocities of up to 120 feet per minute. However, after the FD fan upgrade the flue gas velocity reached 50 feet per minute, and this velocity proved to be damaging on the breeching's insulation liner. Previous evidence filed in

relationship to the Unit 1 stack breeching upgrade stated that the FD upgrade produced flue velocity of 50 feet per second. Please confirm the flue velocity for the FD fan upgrade and the allowable flue gas velocity for the liner, as quoted by Autochem.

P2-PUB-NLH-59 If, as Autochem stated, the liner could withstand gas velocities of up to 120 feet per minute, and prior to the FD fan upgrade the flue gas velocity was 43 feet per second, why did Hydro choose to change from exterior insulation to internal insulation?

P2-PUB-NLH-60 In Volume II, Tab 7, page 13, Hydro states: *"Alstom states that the preferred long term solution for refurbishing the breeching is to install external insulation...."* Since Holyrood will only be required for the short term if the Labrador Infeed is sanctioned, what other short term solutions has Hydro considered to address the insulation problem?

P2-PUB-NLH-61 In Volume I, Tab 7 at page 16, Hydro states "*The new internal insulation liner was expected to reduce the maintenance costs associated with sulphuric acid-induced corrosion caused by water damaged external insulation.*" Alstom states at page A12 that prior to the installation of the internal insulation the projected annual maintenance cost burgeoned from the expected $8,000 per duct (extracted from the 1988 internal cost analysis). What was the annual maintenance on the external insulation before 1990 and how does that compare to the estimated maintenance of $2,000 to maintain the external insulation reflected in this project?

B-23, Upgrade Forced Draft Fan Ductwork Unit 2 - $928,600 in 2012

P2-PUB-NLH-62 In Volume II, Tab 8, page 12, in the report *Upgrade Generating Unit 2 Forced Draft Fan Ductwork*, Hydro states that if there is a failure of the FD fan/ductwork the damage could be in the range of $350,000. Please provide a detailed breakdown of this amount.

P2-PUB-NLH-63 In Volume II, Tab 24, page 12, in the report *Unit 1 Turbine Generator Major Overhaul*, Hydro writes that in its 2010 Holyrood Condition Assessment: *"...AMEC concluded that Unit 1 turbine has a reliable remaining life in the order of twenty years (to 2020)"*. Please confirm whether 2020 is correct.

B-68, Condition Assessment & Life Extension Phase 2 - $1,215,700 in 2012

P2-PUB-NLH-64 In Volume II, Tab 25, page 13, Hydro states that as a part of the AMEC Study in 2010 a Level 2 condition assessment was carried out on the Marine Terminal. This assessment was to be completed in September 2011. How does this assessment relate to the capital budget for the Marine Terminal submitted in Hydro's 2012 Capital Budget Application?

P2-PUB-NLH-65 On page B-68 of Volume I, Tab B, Hydro states that this is a three year project, and on page 15 of the report *Condition Assessment and Life Extension,* Volume II, Tab 25, Hydro provides budget estimates for 2013 and future years. Please clarify:

i) Why has Hydro only sought approval of expenditures in 2012?
ii) Will a report be prepared at the conclusion of the 2012 work so that the recommendations can be implemented?
iii) In relation to Hydro's plan to request proposals in each and every year of this project, as set out at page 16, is it practical for a firm other than AMEC to do any aspect of Phase 2 not having completed Phase 1?

P2-PUB-NLH-66 Referencing Table 1 at page 7 of Hydro's *Condition Assessment and Life Extension* report, provide a complete and more detailed explanation of the work planned for 2012, 2013 and 2014 showing estimates and identifying anything that relates solely to the continued operation for generation purposes?

P2-PUB-NLH-67 Please provide particulars in relation to "*The increasing number of unexpected equipment failures in recent years...*" set out at page 9 of the Hydro report *Condition Assessment and Life Extension.*

P2-PUB-NLH-68 Can the Phase 2 *Condition Assessment and Life Extension* report wait until Holyrood's future is certain so that the condition assessment can then focus on one option?

AMEC Report

P2-PUB-NLH-69 AMEC says at page ii of its report that "*Holyrood is also expected to be able to meet its 2041 end of life date for operation in a synchronous condensing mode, but will require some further substantial equipment refurbishments and replacements specific to that role.*" When and why was it determined that 2041 was the end of life date and what is Hydro's plan for subsequent years?

P2-PUB-NLH-70 Does Hydro agree with and accept every recommendation made by AMEC in Section 15? If not, why not?

P2-PUB-NLH-71 Set out Hydro's plans in relation to each recommendation in Section 15 of the AMEC report.

P2-PUB-NLH-72 What is the estimated cost to implement each of the AMEC recommendations?

P2-PUB-NLH-73 Provide a list of the AMEC recommendations that relate to the continued operation of the Holyrood Plant as a generator and not a synchronous condenser.

DATED at St. John's, Newfoundland this 21st day of September, 2011.

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

Per _____
Cheryl Blundon
Board Secretary