

**IN THE MATTER OF** the *Public Utilities Act* (the "Act"); and

**IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro for an Order approving (1) its 2012 Capital Budget pursuant to s. 41(1) of the Act; (2) its 2012 capital purchases and construction projects in excess of \$50,000.00 pursuant to s. 41(3)(a) of the Act; (3) its leases in excess of \$5,000.00 pursuant to s. 41(3)(b) of the Act; and (4) its estimated contributions in aid of construction for 2012 pursuant to s. 41(5) of the Act and for an Order pursuant to s. 78 of the Act fixing and determining its average rate base for 2010

**REQUESTS FOR INFORMATION OF THE INDUSTRIAL CUSTOMERS (Phase II – Holyrood Projects)**

**Re Holyrood (HTGS) Stack Breeching:**

**P2-IC-NLH-1** With reference to Hydro's response to IC-NLH-5, Hydro advises that the floor of Unit 1 is already exhibiting cracks and heaving, and that the boiler service contractor estimates that the floor will be need to be replaced around 2015.

(a) Will the Unit 1 floor still need to be replaced even under Hydro's preferred option for refurbishment? If not, why not? If avoiding replacing the Unit 1 Floor is not an option under other alternatives for refurbishment, why is it an option under Hydro's preferred option?

(b) With reference to Hydro's response (c) to IC-NLH-7, Hydro advises the reduced total maintenance costs (\$4,000 per year) for the nine-year CBA period for Hydro's preferred option for refurbishment will be attributable in part to avoiding replacing the steel floor. If the need to replace Unit 1 floor will remain even under Hydro's preferred option for refurbishment, why has this corrective maintenance cost not been included in the \$4,000 per year total maintenance costs for Hydro's preferred option or in the total maintenance costs for the other alternatives which are posited to have low (\$2,000-\$4,000) total annual maintenance costs?

- 1 **P2-IC-NLH-2** With reference to Hydro's response (c) to IC-NLH-7, Hydro advises  
 2 the reduced total maintenance costs (\$4,000 per year) for the nine-  
 3 year CBA period for Hydro's preferred option for refurbishment will  
 4 be primarily attributable to avoiding new insulating block installation  
 5 and avoiding installing steel patches on casing (These must  
 6 represent the preponderance of the reductions, as steel floor  
 7 replacement only cost \$30,000, as recently as 2006). Is Hydro  
 8 maintaining that there will be no insulating block installation and no  
 9 installation of steel patches on casing, or other extraordinary  
 10 corrective maintenance not included in the total maintenance costs  
 11 (\$4,000 per year) during the nine-year CBA period, if Hydro's  
 12 preferred option for refurbishment is followed? If Hydro is not  
 13 maintaining this, then what would be a reasonable annual  
 14 contingency amount for these continuing corrective maintenance  
 15 costs?
- 16 **P2-IC-NLH-3** With the use 0.7% sulfur fuel on a go-forward basis, does Hydro  
 17 have any operational experience or consultant's opinion that would  
 18 indicate that a major (e.g., \$261,410 as in 2006) internal insulating  
 19 block replacement will be needed within the 9-year CBA period, if  
 20 Alternative 3 or 7 is implemented? In the fifteen (15) years' prior to  
 21 the major replacement in 2006, what was expended by Hydro for  
 22 internal insulating block replacement? In the period 2006 to 2011,  
 23 what has Hydro expended for internal insulating block  
 24 replacement? For the nine-year CBA period, what is Hydro  
 25 estimating will be the cost of internal insulating block replacement if  
 26 Alternative 3 or 7 is implemented?
- 27 **P2-IC-NLH-4** With reference to Hydro's response (d) to IC-NLH-7, what  
 28 recommendations did the maintenance service contractor make for  
 29 "some upgrades" to arrest or reduce the pace of deterioration of the  
 30 current liner? Were these recommendations recorded other than by  
 31 discussion? What would be the cost of implementing those  
 32 upgrades?
- 33 **P2-IC-NLH-5** With reference to Project B-20 Upgrade Stack Breeching Unit 2,  
 34 what measures is Hydro intending to take in relation to Hydro's  
 35 preferred option for refurbishment of Unit 1 to prevent the proposed  
 36 exterior insulation becoming prone to leaks, as was the case with  
 37 Unit 2 (per Volume II, Tab 7, page 6 of the 2012 Capital Budget  
 38 Application) ?
- 39 **Re Fuel Oil Storage Facility - Refurbishment of Tank 3:**
- 40 **P2-IC-NLH-6** With reference to Hydro's response to CA-NLH-4, has Hydro  
 41 obtained the approval, under section 19 of the *Storage and*  
 42 *Handling of Gasoline and Associated Products Regulations, 2003,*  
 43 *of the Department to wholly replacing manual fuel gauging, dipping*

- 1 and reconciliation, as contemplated by section 18 of those  
2 Regulations, with the proposed installation of the fuel oil indication  
3 system?
- 4 **P2-IC-NLH-7** With reference to Hydro's response to CA-NLH-4, will all of the 422  
5 person hours/\$29,540 per year for manual gauging, dipping and  
6 reconciliation be avoided with the proposed installation of the fuel  
7 oil indication system?
- 8 **P2-IC-NLH-8** With reference to Hydro's response to IC-NLH-14, provide copies of  
9 Hydro's five-year Operating Load Forecast reports for each year  
10 from 2006 to 2011.
- 11 **P2-IC-NLH-9** With reference to Hydro's response to IC-NLH-14, prepare a table  
12 or tables comparing the Holyrood Fuel Consumption forecasts  
13 stated in Hydro's 2006-2010 five-year Operating Load Forecast  
14 reports to actual Holyrood Fuel Consumption in those years, i.e.  
15 compare the 2006 report's forecasts for 2006, 2007, 2008, 2009  
16 and 2010 to actuals for those years, and then repeat that  
17 comparison for each subsequent year's report.
- 18 **P2-IC-NLH-10** With reference to Hydro's response to IC-NLH-15, will not the fuel  
19 oil indication system reduce or eliminate the need for operations  
20 personnel to access the dipping connections to the Tank? How  
21 often per year do operations personnel need to access the hand  
22 wheel associated with the internal isolation valve controlling fuel  
23 flow to the internal tank suction heater?
- 24 **P2-IC-NLH-11** With reference to Hydro's response to PUB-NLH-16, what is the  
25 "unacceptably low level" of fuel storage for the Holyrood facility?  
26 What criteria has Hydro developed to determine what is the  
27 "unacceptable" level of fuel storage at Holyrood at any point of  
28 time? Is that criteria supported by any industry standard? Could  
29 Hydro avoid "unacceptable low levels" of fuel storage by increasing  
30 the frequency of oil deliveries and/or increasing the amount of  
31 particular deliveries to, for instance, avoid the falling below 100000  
32 bbl events which would have occurred in February 2004 in a two  
33 Tank scenario?
- 34 **P2-IC-NLH-12** Did Hydro make any changes to its oil delivery schedule during the  
35 over two year period in 2007-2009 when Tank 2 was out of service,  
36 to better ensure reliable levels of fuel storage?
- 37 **P2-IC-NLH-13** Is there any plausible scenario where Hydro would have two of the  
38 four Tanks out-of-service, for more than one oil delivery cycle?  
39 Does Hydro have any contingency plans presently in place to deal  
40 with the circumstance of two of four Tanks being out of service for  
41 an extended period of time?

- 1 **P2-IC-NLH-14** What will be the acceptable minimum level of fuel storage at  
2 Holyrood after the Labrador Infeed is In-Service? After 2020?
- 3 **Project B-5 Unit 1 and Unit 2 Generator Stator Rewind:**
- 4 **P2-IC-NLH-15** When, respectively, are Units 1 and 2 scheduled to be converted to  
5 synchronous condensing capability?
- 6 **P2-IC-NLH-16** Will Units 1, 2 and 3 all be needed, for synchronous condensing  
7 capability, until 2041?
- 8 **P2-IC-NLH-17** Does operating a Unit in synchronous condensing mode (once  
9 converted to that capability) result in wear and tear on the stator  
10 windings?
- 11 **P2-IC-NLH-18** Would there be any cost benefit, assuming no failure of the stator  
12 windings in the interim, to postponing the stator rewinds for Unit 1  
13 and Unit 2 until they are converted to synchronous condensing  
14 capability?
- 15 **P2-IC-NLH-19** What would be the operational consequences, in terms of providing  
16 reliable power in a Labrador Infeed context, of one of Units 1, 2 or 3  
17 being temporarily unable to provide synchronous condensing  
18 capacity due to, for example, a failure of the stator windings?
- 19 **P2-IC-NLH-20** In the July 2011 report supporting this Project, at page 8, it is stated  
20 that Unit 1 passed the DC high potential leakage test. Reference is  
21 made on page 9 to a DC high potential leakage test on Unit 2, but it  
22 is not stated whether it passed or failed. Did Unit 2 also pass the  
23 test?
- 24 **P2-IC-NLH-21** Hydro decreased the frequency of inspections of the stator  
25 windings for Unit 1 and 2 from every 6-7 years until to 2003 to  
26 every 9 years since then. AMEC criticizes this change, saying that it  
27 "does not appear logical" (Appendix D, page D3). At page 20 of the  
28 July 2011 report supporting this Project, Hydro posits possible  
29 damage to the stator core and rotor that could occur in the range of  
30 \$13 million to \$20 million. Does decreasing the frequency of  
31 inspections increase the risk of such damage? Has Hydro  
32 reinstituted more frequent inspections?
- 33 **P2-IC-NLH-22** At page 20 of the July 2011 report supporting this Project, Hydro  
34 posits possible damage to the stator core and rotor that could occur  
35 in the range of \$13 million to \$20 million. At page 21, Hydro posits a  
36 \$10 million damage event in the case of an in-service failure. Have  
37 these risks been reduced by the installation of improved stator  
38 ground fault protection (per page 9 of the July 2011 report, and  
39 page D2 of Appendix D)?

- 1 **P2-IC-NLH-23** At page D3 of Appendix D and page E3 of Appendix E, AMEC  
2 makes recommendations with respect to rectifying deficiencies in  
3 monitoring and in inspection of rotor and field winding connections.  
4 Would implementing these AMEC recommendations reduce the  
5 risk of damage to the stator core and rotor referred to in P2-IC-  
6 NLH-22? Has Hydro implemented these recommendations?
- 7 **P2-IC-NLH-24** At page D3 of Appendix D and page E3 of Appendix E, AMEC  
8 recommends that if there is no stator rewind in 2012, that a “bump”  
9 test be conducted, and extra support blocks be added, to remove  
10 any high vibration responses. AMEC comments that this has been  
11 done on several other units in Canada with good success. What is  
12 the estimated cost of this AMEC-recommended alternative? If  
13 Hydro has not estimated, and feels it cannot estimate for the  
14 purposes of this Capital Budget Application, the cost of this  
15 alternative, then provide an order-of-magnitude cost comparison  
16 between the proposed rewind Project and the AMEC-  
17 recommended alternative.
- 18 **P2-IC-NLH-25** At page 21 of the July 2011 report supporting this Project, Hydro  
19 posits the assumption of a “30 percent risk of stator winding failure  
20 in the year after the base case rewind date, and growing by ten  
21 percent per year to the year of the stator rewind for the option being  
22 considered”. What is the source and support for this assumption?
- 23 **P2-IC-NLH-26** At page 8-6 of the AMEC Condition Assessment & Life Extension  
24 Study, AMEC recommends taking advance delivery of the winding  
25 and storing it until needed. What is the estimated cost of this  
26 AMEC-recommended alternative? If Hydro has not estimated, and  
27 feels it cannot estimate for the purposes of this Capital Budget  
28 Application, the cost of this alternative, then provide an order-of-  
29 magnitude cost comparison between the proposed rewind Project  
30 and the AMEC-recommended alternative.
- 31 **Project B-7 Refurbishment of Marine Terminal:**
- 32 **P2-IC-NLH-27** At pages 11-12 of the July 2011 report in support of this Project,  
33 Hydro refers to the circumstance that vessels currently offloading at  
34 Holyrood exceed the original design to accommodate 35,000 DWT.  
35 For how long have vessels larger than the original design  
36 accommodation of 35,000 DWT been offloading at Holyrood?
- 37 **P2-IC-NLH-28** At page 13 of the July 2011 report in support of this Project, Hydro  
38 refers to a solidified oil condition which, if undetected, can subject  
39 fuel lines to potentially damaging pressure levels. How is this  
40 condition currently inspected for, detected and remedied?

- 1 **P2-IC-NLH-29** At page 15 of the July 2011 report in support of this Project, Hydro  
2 refers to various legislation which will apply to the implementation  
3 of the Project, if it proceeds, but not to the selection of the work  
4 scope. Confirm that Hydro has received no directive from any  
5 government department or agency that the proposed work is  
6 required to meet the requirements of any of the listed legislation.
- 7 **P2-IC-NLH-30** At page B15 of Appendix B, Hatch recommends the installation of a  
8 laser sensor, display and recording system, to assist Hydro to  
9 control and record vessel velocities. Has this recommendation been  
10 implemented? What was or would be the cost of implementing this  
11 recommendation?
- 12 **P2-IC-NLH-31** At page B18 of Appendix B, Hatch states that a further detailed  
13 investigation of the fenders existing condition is required to assess  
14 the required remedial work. Has this further detailed investigation  
15 been conducted and a report prepared with respect to the results of  
16 that investigation?
- 17 **Project B-9 Replace Fuel Oil Heat Tracing:**
- 18 **P2-IC-NLH-32** Confirm that, as appears to be the conclusion of the Appendix C  
19 Root Cause Failure Analysis of Electric Heat Tracing report, the  
20 failure of the Electric Heat Tracing was due to Hydro staff error,  
21 rather than error by Tyco Thermal Controls ("Tyco") or some other  
22 contractor to Hydro. Confirm that Hydro has no warranty claim or  
23 other claim against Tyco or another third party to recover the cost  
24 of the failure of the current Electric Heat Tracing system and/or to  
25 defray the cost of the proposed Project to replace the Electric Heat  
26 Tracing System.
- 27 **P2-IC-NLH-33** Confirm that the heat tracing system installed in 2002 was intended  
28 and expected to have an expected life in excess of 20 years.
- 29 **P2-IC-NLH-34** What was the estimated cost of installing a stainless heat tracing  
30 system, as apparently was recommended by Tyco, in 2002?
- 31 **P2-IC-NLH-35** Confirm that the new heat tracing system proposed to be installed  
32 by this Project will have an expected life in excess of the necessary  
33 life of the fuel line(s) in light of the Labrador Infeed.
- 34 **P2-IC-NLH-36** Appendix B and C address only the failure of the existing system. In  
35 this regard, it is noteworthy that those failures appear to be  
36 attributable to decisions made by Hydro staff in lieu of outside,  
37 independent analysis. What documentary evidence can Hydro  
38 provide to confirm that it has complied with "Lessons Learned" 1, 2  
39 and 3, as stated on page C6 of Appendix C, with respect to the  
40 proposed Project and with respect to the consideration of whether  
41 there are lesser cost alternatives which would conform with the

necessary life of the fuel line(s) in light of the Labrador Infeed?  
 What independent analysis has been made of the proposed Project  
 and alternatives?

**Project B-12 Install Operator Training Simulator:**

**P2-IC-NLH-37** With reference to page 7 of the July 2011 report in support of this  
 Project, what is the minimum number of plant operators needed by  
 Hydro to the projected shutdown of Holyrood plant at the end of  
 2016? How many will be needed after the plant shutdown, and for  
 how long?

**P2-IC-NLH-38** With reference to page 7 of the July 2011 report in support of this  
 Project, has Hydro made any effort to persuade operators who can  
 retire between 2012 and 2016 to continue in that employment or to  
 continue as contractors to Hydro to provide plant operation services  
 and training services to new operators?

**P2-IC-NLH-39** With reference to page 19 of the July 2011 report in support of this  
 Project, under the section 4.6, the statement is made that "The  
 synchronous condensing function of Unit 3 is not a significant part  
 of the OTS". Why is this the case? How much of the cost of the  
 proposed Project represents the installation of OTS for the  
 synchronous condensing function of Unit 3? When Unit 1 and 2 are  
 converted to synchronous condensing function, will the part of the  
 proposed Project representing the installation of OTS for those 2  
 Units in their current generating mode be of any continuing use?  
 Does Hydro contemplate proposing a further OTS capital  
 expenditure after Units 1 and 2 are converted to synchronous  
 condensing function?

**Project B-12 Upgrade Unit 2 Stack Breeching:**

**P2-IC-NLH-40** What measures is Hydro intending to take in relation to Hydro's  
 preferred option for refurbishment of Unit 2 to prevent the proposed  
 exterior insulation again becoming prone to leaks, per page 6 of the  
 July 2011 report in support of this Project?

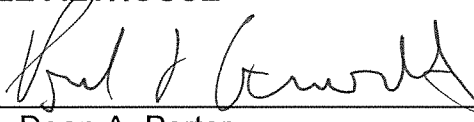
**P2-IC-NLH-41** With reference to Table 1 on page 12 of the July 2011 report in  
 support of this Project, provide a breakdown, by year and scope of  
 work, of the Corrective Maintenance Costs incurred in 2000, 2003,  
 2005 and 2007.

**P2-IC-NLH-42** With reference to page 12 of the July 2011 report in support of this  
 Project, provide details of the scope of the repairs to the internal  
 insulating liner, estimated to cost \$270,000, which Hydro would  
 have completed in 2010 but for the proposal of this Project for  
 2012? Was there a report prepared by or for Hydro regarding these  
 repairs? If so, provide a copy of that report.

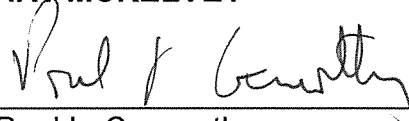
- 1 **P2-IC-NLH-43** Provide copies of all previous drafts or revisions of the Alstom  
2 Report at Appendix A, as identified at page A2 of Appendix A.
- 3 **P2-IC-NLH-44** With reference to Table 2 on page 20 of the July 2011 report in  
4 support of this Project, what would be the capital cost of Alternative  
5 1?
- 6 **P2-IC-NLH-45** With reference to pages 19 and 21 of the July 2011 report in  
7 support of this Project, Hydro assumes the failure of the west  
8 support structure in 2015. What is the source and support for this  
9 assumption?
- 10 **P2-IC-NLH-46** With reference to Table 2 on page 20 of the July 2011 report in  
11 support of this Project, what would be the CPW of Alternative 4, if it  
12 was assumed that the west support structure would not fail within  
13 the CBA period to 2020?
- 14 **Project B-68 Condition Assessment and Life Extension Phase 2:**
- 15 **P2-IC-NLH-47** Is Hydro, or its consultant AMEC, aware of any other circumstance  
16 of a thermal generation plant undergoing Phase 2 of a condition  
17 assessment and life extension study, or equivalent, within 9 years  
18 of its planned decommissioning as a generation plant?

**DATED** at St. John's, this 21<sup>st</sup> day of September, 2011.

**POOLE ALTHOUSE**

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**STEWART MCKELVEY**

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