

1 Q. In the responses to IC-NLH-001 and IC-NLH-002, Hydro states that the “*costs cannot*  
2 *be meaningfully compared to the capital cost to install a working blackstart*  
3 *solution.*” Provide the estimates of costs determined by Hydro that would have  
4 been required to overhaul the Holyrood Gas Turbine and compare the total of these  
5 estimates to the forecast costs of the current solution, including the cost of leasing  
6 eight 1.825 MW diesel generation units for eighteen months and the cost of  
7 purchasing a 100 MW Combustion Turbine Generator. Include in the comparison  
8 the forecast costs of the planned 2015 installation of a new 50 MW combustion  
9 turbine and explain how this plan was used to evaluate the possibility of  
10 overhauling the Holyrood Gas Turbine. In the response clearly indicate how the  
11 original plan is different from the present solution and any reasons, financial or  
12 otherwise, that led to the choice of the present solution over the plan to overhaul  
13 the Holyrood Gas Turbine.

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16 A. In its responses to IC-NLH-001 and IC-NLH-002, Hydro indicated that it could not  
17 meaningfully compare the costs of the blackstart diesel project of the present  
18 application to that included in its 2011 Capital Budget Application (CBA) to overhaul  
19 the Holyrood gas turbine because the latter work would not have restored a  
20 blackstart solution. The condition assessment completed by AMEC, subsequent to  
21 the submission of Hydro’s 2011 CBA, indicated that a significant amount of  
22 expenditure was required over and above what was proposed in Hydro’s 2011 CBA  
23 proposal.

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25 There were a number of options presented in the AMEC condition assessment  
26 report (filed with the Board as NP-NLH-022 Rev. 1, Attachment 1) to restore local  
27 blackstart functionality at Holyrood. They are summarized in the following table:

Option	Total Cost (\$Million) <sup>1</sup>	Estimated In- Service
Refurbish the Existing CT	\$12.7	February 2013
Purchase and Install two new 5 MW GTs	\$9.6	May 2013
Purchase and Install two used 5 MW GTs	\$9.5	March 2013
Purchase and Install five new 2 MW Diesel Units	\$10.2	May 2013
Purchase and Install five used 2 MW Diesel Units	\$10.1	March 2013

The recommended solution in AMEC's report was the option to purchase and install two new replacement 5 MW GTs with an expected in-service of May 2013. This recommendation was made by AMEC without consideration for Hydro's plans to install an additional 50 MW combustion turbine (CT) in late 2015. At this time, Hydro foresaw that if the new CT was located in Holyrood, it would serve the dual-purpose of providing blackstart capability and meeting anticipated load growth. However, given that the unit was not scheduled for installation until late 2015, an interim blackstart capability solution was required in the event of sustained loss of transmission to the Avalon Peninsula. The lowest cost option to fulfill this requirement was the development of a procedure (as provided in Hydro's response to CA-NLH-019, Attachment 10) to use the Hardwood's gas turbine and existing transmission lines to supply blackstart capability to the Holyrood units. It is of note to emphasize that this solution would have had minimal costs compared to those outlined in the above table to meet local blackstart requirements.

As indicated in Hydro's response to IC-NLH-010, in October 2013, a letter was received from the Board requesting Hydro to take immediate action to ensure all possible options have been considered to provide reliable Holyrood blackstart

<sup>1</sup> Cost Benefit Analysis costs as detailed in the tables on Page vii of the AMEC Assessment report. These figures include costs for capital, fuel, operation and maintenance, and the economic impact of a failure to operate. They do not include amounts for owner's costs and contingency.

1 capability<sup>2</sup>. In November 2013, a report with the options was completed (attached  
2 as IC-NLH-010 Attachment 5). Subsequently, a supplemental capital application was  
3 filed with the Board with the preferred option to have a nominal 16 MW diesel  
4 plant, on-site, as a blackstart generating solution to be installed and commissioned  
5 during the winter of 2014.

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7 As Hydro had concluded that use of the proposed new combustion turbine was the  
8 least cost option to meet the blackstart capability for Holyrood, an interim solution  
9 was sought to restore blackstart until this unit was brought into service. It was  
10 envisioned that this asset would solely be used for blackstart; therefore the  
11 recommended solution was determined primarily on capital costs. The result of this  
12 analysis was that the lease of a 16 MW (nominal) diesel plant was the least cost  
13 option. As indicated in Hydro's response to CA-NLH-007, the total cost of this  
14 option (including capital and lease expenses) is \$6.5 million.

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16 Hydro submits that comparing the new combustion turbine to other options is not  
17 meaningful as the system benefits provided by the current combustion turbine  
18 option far outweigh the benefit of (a) the blackstart diesels alone, or (b) overhaul of  
19 the Holyrood Gas Turbine. Further, the new combustion turbine option, as  
20 presented in the combustion turbine application, contemplated use of the  
21 blackstart diesels until the combustion turbine comes in service. Thus, the  
22 blackstart and combustion turbine options were not contemplated as separate and  
23 distinct options to be compared; they constituted a combined solution to (a) a  
24 blackstart issue Hydro was required by the Board to address in 2013 and (b) a

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<sup>2</sup> This was in response to the events of January 11, 2013 in which all transmission was interrupted into the Holyrood terminal station, thereby rendering the Hardwoods gas turbine blackstart solution ineffective. Hydro estimates that the lack of pre-warming resulting from the absence of local generation resulted in an 11-hour delay in restoring the HTGS to supply power customers after the transmission system was restored.

1 generation capacity requirement identified for 2015 and highlighted by the recent  
2 events of January.

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4 With respect to blackstart capability of the Holyrood plant, Hydro feels that it has  
5 chosen the least cost option at each decision point, as new information became  
6 available.