

IC-NLH-26

NLH 2011 Capital Budget Application

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- 1 Q. **Re 2011 Capital Plan - Individual Capital Projects:**
- 2 **Project B-15, Overhaul Gas Turbine-Holyrood:** Has Hydro investigated the costs of
- 3 replacing the engine on this turbine and what is Hydro's current estimate of that
- 4 cost?
- 5
- 6 A. It is requested that this proposal be deferred. Please refer to the attachment.

1 **Overhaul Gas Turbine**

2 *Holyrood Thermal Generating Station*

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5 The scope of work in the proposal now before the Board was based on the best
6 information available at the time the Application was filed. Since then circumstances have
7 changed and it is now uncertain whether it will be necessary to perform the work
8 described in the proposal. This will not be determined until late 2010. For this reason it is
9 requested that consideration of the proposal be deferred.

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11 It is anticipated that this proposal will be replaced. Exhaust gas leaks and oil leaks in the
12 power turbine and main gearbox have caused health and safety concerns regarding the
13 working environment inside the gas turbine building enclosures. As a result, in March of
14 2010, the Occupational Health and Safety Department of the provincial Government
15 Service Center (GSC) issued a directive preventing the gas turbine plant from being
16 operated. The power turbine and gearbox are two major components of the gas turbine
17 plant besides the gas turbine engine, referenced in the proposal now before the Board,
18 along with other major components.

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20 Repairs have been attempted since the GSC directive was issued but have been
21 unsuccessful in making improvements to the point the directive can be cancelled. Also,
22 equipment has deteriorated to the point it is expected that field repair cannot be effective
23 and only a factory teardown and overhaul can return the equipment to satisfactory
24 condition. This will be verified with the manufacture's representative.

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26 To perform a long term effective repair of the gear box, it is expected it will have to be
27 removed from the plant and sent to a repair facility (certified facility in the United
28 Kingdom). A certified service company will also be contracted to do an in-situ assessment
29 of the power turbine to determine if work can be done at site or if it also needs to be sent
30 to a certified facility. It is estimated that it will take a minimum of two months to complete
31 the gear box repairs and the assessment of the power turbine exhaust gas leak. This will
32 result in the unit not being available at least into early 2011.

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34 The gas turbine is essential to black start the Holyrood plant. Without this gas turbine the
35 Holyrood plant would not be able to be started when there is loss of transmission
36 connection to the plant from off the Avalon Peninsula. A source with a capability of
37 approximately 10 MW is necessary to start a Holyrood generating unit. Given the
38 uncertainty of the repair time it is prudent to secure another source of black start
39 capability prior to the 2010/2011 winter. Otherwise, while the unit is out of service for
40 repairs and assessment, the supply to the Avalon Peninsula area will be vulnerable to long
41 outages caused by extended transmission outages. While such events are rare, the

1 requirement for black starting has occurred in the past as the result of severe ice storms,
2 the last one being in December, 1994.

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4 In addition to black start the unit is required to support the Avalon Peninsula load at times
5 of peak when there are forced outages to the Holyrood units or to the transmission
6 supplying the Avalon Peninsula. Without the unit load curtailments on the Avalon
7 Peninsula will become more likely. The unit has been used for this purpose on several
8 occasions in the past few years.

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10 Hydro is now in a position whereby it does not have approval to operate the gas turbine
11 plant until the health and safety concerns are removed or special approval is granted by
12 GCS in an urgent situation. For the immediate future, until the problems associated with
13 the gas turbine plant are resolved, Hydro will need to put in place an alternate source of
14 power supply for the Holyrood Thermal Generating Station to replace the capability of the
15 gas turbine plant. To fulfill this need Hydro intends to submit a new capital budget proposal
16 in the coming weeks to lease a mobile gas turbine plant. Investigation into the availability
17 and cost of this unit is presently taking place.

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19 With reference to the existing gas turbine plant at Holyrood, and its overall condition,
20 Hydro is aware of a number of issues that require attention in the form of significant
21 capital expenditures. These issues include that identified in the 2011 gas turbine overhaul
22 proposal, issues related to the gear box and power turbine as discussed above, and other
23 items as identified in Hydro's five year capital plan. In another related project Hydro is
24 scheduled to receive the final report of a Level I condition assessment study for the
25 Holyrood Thermal Generating Station by the end of October 2010. It is expected that this
26 report will recommend a more detailed Level II condition assessment of the gas turbine
27 plant take place to more fully assess some of the problems identified above and other
28 areas of concern. With these things in consideration Hydro now intends to complete a
29 more detailed Level II study immediately to better assess the condition of the whole gas
30 turbine plant and estimate the cost and schedule to refurbish it. Information from the
31 study will then be used to prepare another new capital budget proposal to provide long
32 term gas turbine service to the Holyrood Thermal Generating Station.