IN THE MATTER OF
the *Electrical Power Control Act, 1994*,
SNL 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 for approval
of capital expenditures and for deferral of lease costs
associated with the installation of diesel units at the
Holyrood Thermal Generating Station for the purpose
of black start, pursuant to sections 41, 49, 78 and 80
of the *Act.*

PUBLIC UTILITIES BOARD
REQUESTS FOR INFORMATION

PUB-NLH-8 to PUB-NLH-25

Issued: June 2, 2014

PUB-NLH-8 Provide an update on the installation of black start capability at Holyrood, including a summary of work completed, providing details on installation, testing, outstanding work and associated costs incurred to date.

PUB-NLH-9 Provide an update on the impact of the installation of a new gas turbine on the use of the leased units to provide black start, including the possibility of terminating the lease, any penalty provisions in the lease, and any possibility of using the leased units for other purposes.

PUB-NLH-10 Provide an update on the results, including documentation, of any investigation of other options for black start, such as the Variable Frequency Drives option and the "*soft start*" technology referred to in the responses to IC-NLH-007 and IC-NLH-011.

PUB-NLH-11 Provide a copy of all engineering assessment documentation that was available in 2012 that shows that it was not practical to repair the gas turbine that had been used to provide black start capability to the Holyrood Thermal Generating Station since 1970 (the "Holyrood Gas Turbine").

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

PUB-NLH-13 In response to IC-NLH-10 Hydro states that there are no formal studies discussing black start capability at Holyrood. Please provide any internal memos or correspondence relating to black start capability at Holyrood from January 2012 when it was determined that the Holyrood Gas Turbine could no longer be available for use.

PUB-NLH-14 The report entitled *Update to the Report to the Board of Commissioners of Public Utilities on the Status of Remedial Actions Arising out of the December 1994 Outage Jointly Prepared by: Newfoundland & Labrador Hydro and Newfoundland Light & Power, January , 1996* (Attachment 4 of IC-NLH-010) states at page 6 that:

> *Black start and station services operating procedures were reviewed and revised to reflect the WDPF changes. A program for starting a Holyrood generating unit under black start conditions has been initiated. This annual program will provide training to the operators under such emergency conditions. During 1995, Unit 3 was successfully started under black start conditions.*

Provide any documentation that this annual training program was carried out and that any units, after 1995, were successfully started under black start conditions. In the absence of this documentation, provide any documentation that authorizes the discontinuation of this annual training program and gives reasons for the discontinuation.

PUB-NLH-15 In the response to NP-NLH-022, Attachment 1 is a report entitled *AMEC Holyrood Thermal Generating Station Gas Turbine Condition Assessment & Options Study, December 19, 2011* (the "AMEC report"). On page 24 of 231 the report states:

> *GT equipment vendors previously issued their condition assessment reports to Hydro. Hydro made these reports available to AMEC. An analysis of these reports, and consultation with vendors, forms the basis for AMEC's recommendations for refurbishment work necessary to extend the life of the gas turbine plant as a highly reliable operation until the year 2020.*

Provide copies of the condition assessment reports that were made available to AMEC.

PUB-NLH-16 The AMEC report, at page 45 of 231, states that:

> *In the years 2010 and 2011, NL Hydro undertook a number of activities with vendors that have the Original Equipment Manufacturer (OEM) rights to the gas turbine sections in order to conduct internal inspections of the individual sections and prepare field inspection reports complete with refurbishment estimates.*

Provide copies of the field inspection reports complete with refurbishment estimates. In the absence of these reports, provide documentation that authorizes discontinuation of the activities with the vendors that have OEM rights to the Holyrood Gas Turbine sections prior to the receipt of the field inspection reports.

PUB-NLH-17 The AMEC report, at page 41 of 231, sets out in a listing the dates of last combustion system inspection/overhaul (2009) and the recommended next major overhaul/inspection/refurbish/replace (2012/2013). Provide

documentation showing the dates of any combustion system inspections and/or overhauls after 2009 and agree this information, with explanations, to the recommendation of AMEC.

PUB-NLH-18 The AMEC report, at page 55 of 231, states:

> *In general, the unit is currently in poor condition and overdue for a major overhaul of many components.*

Why, at the writing of this report, was the unit overdue for the major overhaul of many of its components?

PUB-NLH-19 The AMEC report, at page 47 of 231, states:

> *...there is evidence of accelerated corrosion and pitting resulting from deterioration of the inlet filter. The filter is badly corroded and is now allowing unfiltered air to enter the plenum and the engine.*

This is again referenced at page 51 of 231:

> *The unit operates in a very high salt environment and during the first 19 years of its operating life, and the last five or more years, it has had inadequate inlet filtration. This has affected the compressor blading and casing more than the turbine.*

and at page 53 of 231:

> *It is clear that in the high saline atmosphere at Holyrood, operating with an increasingly ineffective inlet filter, the unit has suffered considerable degradation during very few hours of operation."*

Why was this major component of the gas turbine unit, the inlet filter, not addressed during the last five or more years?

PUB-NLH-20 The AMEC report, at page 50 of 231, states:

> *Because the engine is rarely washed and has extensive corrosion and pitting, it is likely to have suffered significant performance degradation, which might have reduced its output by up to 10%.*

At page 54 of 231, the report states that:

> *The unit is rarely washed because washing is normally performed largely to maintain efficiency. However, it would be beneficial to wash the Holyrood unit because of the buildup of salt on the first stages of the compressor.*

Since salt is detrimental to the operation of the unit, why was the unit not washed more often?

PUB-NLH-21 The AMEC report, with the recommendations made at page 192 of 231, highlights the poor condition of the Holyrood Gas Turbine, the reliability and safety concerns of using this gas turbine in even emergency situations, and the preferred option of the purchase of two new 5 MW gas turbines. Why were these concerns and recommendations not acted upon immediately?

PUB-NLH-22 The report *entitled Alba Power Inspection Report to Borescope inspection of Avon 37029 1533 70L, Date: June 10 2008* (Attachment 1 of IC-NLH-12) provides recommendations on page 14 of 14. These recommendations address the need to correct the poor condition of the intake plenum, water ingress and flaking corrosion particles which had been causing salt ingress and corrosion, burner leaking due to the failure of the seals in the fuel control unit, the required repair/overhaul due to coating loss, pitting and corrosion, the replacement of combustion cans which, in their condition at that time, could have caused catastrophic failure, increased overhaul/replacement costs, and been a large safety issue. Why were these issues not addressed immediately?

PUB-NLH-23 In response to CA-NLH-017 Hydro stated that:

> *Hydro's staff is of the opinion that Hardwoods can meet the black start requirements at Holyrood.*

If Hardwoods was not capable of providing black start in January 2013, and this was recognized by Hydro and acknowledged after reviewing the outage of January 2013, describe in detail the changes that would have occurred that would have led Hydro to believe that Hardwoods could meet the black start requirements after it was determined that Newfoundland Power Inc.'s mobile units were not capable of providing black start to Holyrood. Include in the response any documentation that clearly supports why the Hardwoods option, previously found to be inadequate, was chosen over the pursuit of some other option immediately after the removal of the Newfoundland Power Inc. mobile units in May 2013.

PUB-NLH-24 In response to IC-NLH-26 of Hydro's 2011 Capital Budget Application, Hydro, after applying to overhaul the Holyrood Gas Turbine, requested deferral of this project and explained that:

> *Since then circumstances have changed and it is now uncertain whether it will be necessary to perform the work described in the proposal. This will not be determined until late 2010.*

In the AMEC report, it is clear that there remained a need for black start at Holyrood, and the recommendation was the purchase of two new 5 MW gas turbines. Why was no action taken in 2010 or in 2011 to deal with the loss of the Holyrood Gas Turbine? Include in the response documentation that illustrates a recognition that the Holyrood plant could be without black start capability.

PUB-NLH-25 In response to PUB-NLH-081 from the Island Interconnected System Supply Issues and Power Outages Review, Hydro stated that:

> *However, it was shown that during the events experienced on January 11, 2013, the HWDGT black start contingency plan was inadequate, due to its reliance on the Avalon transmission system.*

Why was no action taken at that time to ensure adequate black start for Holyrood? Include in the response documentation that illustrates a recognition that the Holyrood plant could be without black start capability.

DATED at St. John's, Newfoundland this 2nd day of June 2014.

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

Per _____
Cheryl Blundon
Board Secretary