

1 Q. **Increase Fuel and Water Treatment System Capacity – Holyrood Gas Turbine, Tab**
2 **2, Volume II, Page 3**

3 *“Operation as standby generation during circumstances, in which a “single worst*
4 *Avalon contingency event” could cause sustained customer interruptions”*

5

6 Please fully describe the “single worst Avalon contingency event”, and explain in
7 detail how customer load, outage duration, and any other relevant variable,
8 resulted in a proposal to increase the fuel storage to 5 million litres.

9

10

11 A. A single worst contingency event is a failure of a single electrical element or the
12 failure of multiple elements that are physically or electrically linked and fail
13 together as one single event. This is an event that may occur in the future, that
14 needs to be dealt with, and therefore must be prepared for.¹ On the Avalon power
15 system the single worst contingency event depends on equipment in-service and
16 system configuration, but is normally defined today by the loss of a major 230 kV
17 transmission line or the loss of a Holyrood generating unit.

18

19 Hydro operates standby generating units that support the Avalon in advance of the
20 single worst case contingencies, rather than starting them after the event has
21 occurred, to avoid sustained customer interruptions and enhance overall customer
22 reliability. To support this practice, system load flows are performed to determine
23 the thresholds of Avalon load at which additional Avalon generation resources are
24 required to be operated in order to position the system to withstand the single
25 largest contingency. Hydro operates the system to ensure that transmission line

¹ NERC *Reliability Concepts* report, Version 1.0.2, December 2007.

1 loads and delivery point voltages are within acceptable limits following this
2 contingency.

3

4 While most contingencies are of a shorter duration in nature, Hydro must be
5 prepared for longer duration events such as an extended outage to a Holyrood
6 thermal unit or 230 kV transmission line serving the Avalon Peninsula. As indicated
7 in its Application, during the winter of 2016, there were extended outages to
8 Holyrood Units 1 and 2 due to the failure of lower reheater boiler tubes that
9 required offline repairs. The Holyrood gas turbine was called on to operate
10 continuously during these outages, often times above minimum loading, in order to
11 maintain reserves and position the system to withstand the single worst
12 contingency. The required fuel deliveries were achieved to run the unit
13 continuously during these periods; however, there are a number of delivery risks
14 outlined in Hydro's application that could have jeopardized the operation of the
15 unit. (Please refer to PUB-NLH-023)

16

17 To mitigate these risks during future requirements to operate the gas turbine for
18 extended periods, Hydro is proposing to increase the existing fuel storage capacity
19 from 2.5 to 5 million litres. This additional onsite storage will allow the gas turbine
20 to generate at full load for five days, with no deliveries, and at full load for ten days,
21 with normal delivery dates. Hydro feels that an adequate fuel supply and inventory
22 plan should recognize reasonable delays or problems in the delivery or production
23 of fuel.