

1 Q. **Reference: Application, Schedule 3 relating to Holyrood TGS, pages 2 and 3**

2 It is stated

3 The generator itself is pressurized and cooled by hydrogen gas to provide
4 maximum efficiency both in heat transfer and reduced windage losses.

5 a) From whom does Hydro source its hydrogen gas requirements for Holyrood TGS?

6 b) Does Hydro use hydrogen gas in any other of its operations?

7 c) What annual quantities of hydrogen gas does Hydro purchase?

8 d) What safety concerns are presented by hydrogen gas transport and use?

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11 A. a) Newfoundland and Labrador Hydro (“Hydro”) purchases hydrogen gas from Air Liquide for use
12 at the Holyrood Thermal Generating Station (“Holyrood TGS”).

13 b) Aside from being used in the three generators at the Holyrood TGS as described, hydrogen is
14 also used to cool the synchronous condensers at Soldiers Pond.

15 c) In 2022, Hydro purchased 87 bulk packs of hydrogen, or 7506.72 cubic meters, for use at the
16 Holyrood TGS.

17 d) Transportation of hydrogen, including all related safety precautions and compliance with
18 regulations, is the responsibility of the vendor. Hydrogen is delivered to the Holyrood TGS
19 by the vendor in bulk cylinder packs and is stored on site in these packs in a designated
20 building.

21 Hydrogen is delivered as a pressurized gas and can be highly flammable when mixed with
22 air. Therefore, when the Holyrood TGS generators are filled with hydrogen, all of the air
23 must be removed first using carbon dioxide.¹ Once the generator is full of carbon dioxide
24 and all air has been removed then the hydrogen can be added, displacing the carbon dioxide

¹ Carbon dioxide is an inert gas and will not react with air or hydrogen.

1 until the generator's hydrogen purity reaches the required levels. Removal of the hydrogen
2 from a generator for maintenance is achieved using the reverse process. When in operation,
3 the hydrogen pressure is carefully monitored as a decrease in pressure could indicate a leak.
4 In addition, hydrogen detection instruments are placed in key areas throughout the
5 Holyrood TGS and will provide an audible and visual alarm should a leak be discovered.