

1 Q. **Reference: Schedule 1 – Upgrade Report – Penstock 1 Life Extension – Bay d’Espoir.**

2 Hydro states on page 10, lines 2-6, that it

3 conducted additional analysis using an expansion planning model to identify
4 which resource, or resources, provided the requisite level of reliability at the
5 least cost. The analysis concluded that the replacement and refurbishment of
6 Penstock 1 was the least-cost option to supply 153 MW to the system, ensuring
7 reliable penstock availability and bringing Hydro’s expected level of reliability
8 back within acceptable parameters.

9 Please provide the additional analysis that led to that conclusion.

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12 A. The referenced analysis was conducted using the Resource Planning Model in PLEXOS that
13 Newfoundland and Labrador Hydro (“Hydro”) utilizes for system planning. An expansion plan
14 was modelled with Penstock 1 out of service, leaving Units 1 and 2 at the Bay d’Espoir
15 Hydroelectric Generating Facility (“Bay d’Espoir”), to determine if Hydro’s reliability criteria¹
16 were met without these units. In the absence of Bay d’Espoir Units 1 and 2, it was determined
17 that the reliability criteria on the Island Interconnected System were not met. PLEXOS was then
18 used to determine the least-cost expansion option that satisfied reliability criteria.

19 To assess the refurbishment option, Hydro modelled penstock replacement and refurbishment
20 by including an expansion option that made 153 MW of new capacity available at the estimated
21 cost of the replacement and refurbishment of Penstock 1. The result was that the penstock
22 replacement and refurbishment was the least-cost option to supply 153 MW to the Island
23 Interconnected System.

24 As stated in the “Reliability and Resource Adequacy Study - 2022 Update,”² the next least-cost,
25 new resource expansion option has historically been the addition of Bay d’Espoir Unit 8 at an
26 estimated cost of \$522.0 million.

¹ The reliability criteria assumed was a loss of load expectation of 0.1.

² “Reliability and Resource Adequacy Study - 2022 Update,” Newfoundland and Labrador Hydro, October 3, 2022.