

1 **Q. (Reference Application Schedule B, Sandy Brook Plant Penstock Replacement, page**
 2 **5 of 99) It is stated “This project is justified on the obligation to provide reliable service**
 3 **to customers at least cost and cannot be deferred.”**

4
 5 **a) Please provide evidence based on reliability criteria that Newfoundland Power**
 6 **will be unable to provide reliable service at least cost if it were to delay this project.**

7 **b) Please quantify the impact on the following if the project were delayed by two**
 8 **years: 1) reliability, 2) cost, and 3) the risk and consequences of failure.**

9
 10 A. a) Newfoundland Power manages its capital expenditures in a manner that balances both
 11 the cost and reliability of the service provided to its customers.¹ The Company is
 12 focused on maintaining current levels of overall service reliability for its customers at
 13 the lowest possible cost.² The 2022 *Sandy Brook Plant Penstock Replacement* project
 14 is consistent with this objective.

15
 16 The *Sandy Brook Plant Penstock Replacement* project is necessary in 2022 to ensure
 17 the safe and reliable operation of the Sandy Brook Plant. The Sandy Brook Plant was
 18 placed in service in 1963 and provides approximately 27.6 GWh of low-cost
 19 electricity to Newfoundland Power’s customers.³

20
 21 Newfoundland Power applies condition-based and cost-based criteria in assessing the
 22 replacement or refurbishment of major hydro plant components, such as penstocks.

23
 24 The Company engaged Kleinschmidt Canada Inc. (“Kleinschmidt”) in 2020 to
 25 complete a visual inspection and condition assessment of the Sandy Brook Plant
 26 penstock.⁴ Kleinschmidt determined that failure of the penstock is likely due to wood
 27 stave collapse and/or loss of support from the saddles due to excessive cracking in the
 28 timbers.⁵

29
 30 Newfoundland Power completed an economic analysis to determine whether
 31 continued operation of the Sandy Brook Plant, including penstock replacement, is
 32 least-cost for customers.⁶ The analysis showed that the benefits to customers of
 33 continued operation of the Sandy Brook Plant are greater than the cost of production
 34 over the long term. The net benefit for customers of the plant production is between
 35 7.04 ¢/kWh to 10.21¢/kWh.⁷

36
 37 The *Sandy Brook Plant Penstock Replacement* project is consistent with maintaining
 38 current levels of service reliability for customers at the lowest possible cost, as further
 39 described in part b).

1 See response to Request for Information NLH-NP-042.

2 See response to Request for Information CA-NP-014.

3 See the 2022 *Capital Budget Application, Report 1.2 Sandy Brook Penstock Replacement*, page 1.

4 Ibid., Appendix B.

5 Ibid., page 7.

6 Ibid., Appendix A.

7 Ibid., Appendix A, Table 3.

- 1 b) Delaying the 2022 *Sandy Brook Plant Penstock Replacement* project by 2 years
2 would increase the risk of penstock failure. The primary consequences of penstock
3 failure would be increased costs to customers due to increased plant downtime, as
4 well as environmental damage and safety concerns.⁸
5

6 The energy produced from the Sandy Brook Plant provides a cost benefit to
7 Newfoundland Power’s customers. The *Sandy Brook Plant Penstock Replacement*
8 project outlines a planned approach for penstock replacement that minimizes plant
9 downtime. Using this planned approach, plant downtime is estimated at
10 approximately 24 weeks. Since penstock construction cannot occur during the
11 winter, unexpected failure of the penstock would increase plant downtime to between
12 76 and 96 weeks depending on the time of year.⁹ This, in turn, would increase the
13 cost of energy from Newfoundland and Labrador Hydro (“Hydro”) by approximately
14 \$1.3 million to \$1.8 million.¹⁰
15

16 Failure of the penstock would also pose safety and environmental risks. The Sandy
17 Brook Plant is located on a tributary of the Exploits River. The Exploits River is a
18 sensitive ecological environment and has a significant population of Atlantic salmon.
19 Failure of the penstock would result in flooding and debris and sedimentation
20 entering the Exploits River, potentially causing harm to the Atlantic salmon
21 population.¹¹ The high pressure flow of water resulting from a failure of the penstock
22 could also cause harm to employees working in the vicinity of the penstock or in the
23 plant at the time of failure.
24

25 Delaying the 2022 *Sandy Brook Plant Penstock Replacement* project would therefore
26 be inconsistent with maintaining reliable service for customers at the lowest possible
27 cost.

⁸ For information on Newfoundland Power’s approach to quantifying risks and benefits, see response to Request for Information CA-NP-014.

⁹ A 24-week plant outage would result in 12.8 GWh of lost energy production. A 76-week plant outage would result in additional lost energy production of 30.9 GWh. A 96-week plant outage would result in additional lost energy production of 42.9 GWh.

¹⁰ The energy related value of production is estimated using 4.3 ¢/kWh. This is the estimated energy-related value of production from the Company’s hydro facilities divided by normal annual hydroelectric production. (4.3 ¢/kWh = \$18,573,000 / 434.8 GWh). These estimates are calculated to reflect post Muskrat Falls marginal costs using the 2022 marginal cost values for energy. See the *2022 Capital Budget Application, Report 1.1 Facility Rehabilitation*, footnote 2.

¹¹ See the *2022 Capital Budget Application, Report 1.2 Sandy Brook Plant Penstock Replacement*, page 7.