

1 **Q. (Reference CA-NP-076) Newfoundland Power's response indicates that the penstock**  
 2 **will not be replaced with a woodstave penstock but by a penstock made of another**  
 3 **material that will have an expected life of 80 years or more.**

4 a) **What is the cost of a woodstave penstock replacement, what is its expected**  
 5 **service life and did Newfoundland Power consider using such a replacement?**

6 b) **What repair options did Newfoundland Power consider as alternatives to**  
 7 **replacement?**

8 c) **If the work on Sandy Brook were to proceed as Newfoundland Power**  
 9 **proposes, would that mean there would be no energy production from the**  
 10 **plant in 2022 and 2023? How much would production be reduced and for how**  
 11 **long?**

12 d) **Can the work (i.e., penstock and related capital expenditures) planned for 2022**  
 13 **and 2023 be deferred by two or three years after Muskrat Falls is**  
 14 **commissioned and established as a reliable asset?**

15  
 16 A. a) Wood stave construction is no longer typically used in modern penstock  
 17 construction projects.<sup>1</sup> This is primarily due to the environmental restrictions  
 18 associated with the application of preservatives required to increase service life  
 19 and reduce maintenance.<sup>2</sup> Non-wood penstock alternatives are relatively  
 20 environmentally benign.<sup>3</sup>

21  
 22 The expected service life of a wood stave penstock is 40 years, provided regular  
 23 treatments with wood preservatives is completed. The service life of a non-wood  
 24 penstock alternative is expected to exceed 80 years. Also, a wood stave penstock  
 25 requires considerably more maintenance throughout its service life to address  
 26 leakage from the penstock as the wood ages, compared to non-wood penstock  
 27 alternatives.

28  
 29 For these reasons, wood stave construction for the replacement penstock at Sandy  
 30 Brook Plant is not considered a viable alternative by Newfoundland Power. The  
 31 estimated cost of a wood stave replacement for the Sandy Brook Plant penstock is  
 32 therefore not available.

33  
 34 b) As stated in response to Request for Information CA-NP-078, no additional  
 35 alternatives were considered beyond the replacement and do nothing alternatives.  
 36 The Sandy Brook Plant penstock has reached the end of its useful service life.  
 37 Deterioration was detected along the entire length of the penstock and partial

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<sup>1</sup> The last wood stave penstock constructed by Newfoundland Power is located at the Tors Cove Hydro Plant and was constructed in 1984.

<sup>2</sup> For example, the Sandy Brook Plant penstock was treated with creosote. The Government of Newfoundland and Labrador *Policy for Use of Creosote Treated Wood In and Near Fresh Water* will no longer approve the use of creosote in or near a body of fresh water.

<sup>3</sup> As provided in response to Request for Information CA-NP-076, non-wood penstock alternative solutions include, but are not limited to, steel, fiberglass reinforced polymer, centrifugally cast fiberglass, reinforced polymer mortar and high-density polyethylene. Newfoundland Power will consider all of these alternatives in the Request for Proposal submissions of various vendors.

1 replacement is not a viable alternative. Maintenance efforts on the penstock have  
 2 been exhausted and, based on the condition assessment completed by  
 3 Kleinschmidt, penstock replacement is required  
 4

- 5 c) No, if the work on the Sandy Brook Plant were to proceed as Newfoundland  
 6 Power proposes, it would not mean that there would be no energy production  
 7 from the plant in 2022 and 2023. As detailed in report *1.2 Sandy Brook Plant*  
 8 *Penstock Replacement*, Newfoundland Power is proposing to complete the  
 9 execution phase of this project during a 24-week outage to the Plant beginning in  
 10 the summer of 2023.<sup>4</sup> This 24-week outage is expected to result in 12.8 GWh of  
 11 lost energy production.  
 12

- 13 d) No, the work cannot be deferred by 2 or 3 years after Muskrat Falls is  
 14 commissioned and established as a reliable asset.  
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16 In 2020, Newfoundland Power engaged Kleinschmidt Canada Inc.  
 17 (“Kleinschmidt”) to complete a visual inspection and condition assessment of the  
 18 existing penstock.<sup>5</sup> Kleinschmidt determined that failure of the penstock is likely  
 19 due to wood stave collapse and/or loss of support from the saddles due to  
 20 excessive cracking in the timbers. Due to the increased probability of penstock  
 21 failure related to its current condition and significant consequences associated  
 22 with failure, the replacement of the penstock in 2023 cannot be deferred.<sup>6</sup>  
 23

24 As stated in response to Request for Information PUB-NP-003, recent  
 25 developments concerning the reliability and adequacy of supply and potential load  
 26 growth in Labrador suggest that additional generation is likely required following  
 27 the integration of the Muskrat Falls Project.<sup>7</sup> In June 2021, Hydro acknowledged  
 28 that additional generation may be the likely outcome to at least partially mitigate  
 29 reliability concerns once the Muskrat Falls Project is fully integrated and  
 30 Holyrood is decommissioned.<sup>8</sup>  
 31

32 For additional information on why this project cannot be deferred, see response to  
 33 Request for Information CA-NP-024.

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<sup>4</sup> See the *2022 Capital Budget Application, Report 1.2 Sandy Brook Plant Penstock Replacement*, page 7, section 5.1.

<sup>5</sup> See the *2022 Capital Budget Application, Report 1.2 Sandy Brook Penstock Replacement*, Appendix B, *Penstock Inspection Report – Sandy Brook Hydroelectric Development*.

<sup>6</sup> See the *2022 Capital Budget Application, Report 1.2 Sandy Brook Plant Penstock Replacement*, page 7, section 4.

<sup>7</sup> Response to Request for Information CA-NP-141 explains the importance of maintaining Newfoundland Power’s existing hydro generation in light of the need for additional resources identified in the *Reliability and Resource Adequacy Study Review*.

<sup>8</sup> See *Reliability and Resource Adequacy Study Review – Technical Conference #3 Follow-Up Items* filed with the Board on June 23, 2021.