Q. CA-NP-029 (Reference Application Schedule B, Transmission Line Rebuild, page 19 of 99) It is stated "This project is justified on the obligation to provide reliable service to customers at least cost and cannot be deferred."

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

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

c) Given that this project has been ongoing since 2006, what efficiency improvements have been made in the administration of the program and how much have these improvements decreased the costs of the program?

A. a) Newfoundland Power manages its capital expenditures in a manner that balances both the cost and reliability of the service provided to its customers.[1] The Company is focused on maintaining current levels of overall service reliability for its customers at the lowest possible cost.[2] The 2022 *Transmission Line Rebuild* project is consistent with this objective.

Newfoundland Power filed a multi-year plan to rebuild its aging and deteriorated transmission lines as part of its *2006 Capital Budget Application* (the "Strategy").[3]

The Strategy was developed in response to the fact that many of the Company's transmission lines were constructed over 50 years ago and were not built to any particular standard.[4] These transmission lines were not engineered to withstand local environmental conditions and were therefore more susceptible to failure.

The Strategy recognizes the critical role that transmission lines play in providing reliable service to large numbers of customers.[5] It outlines a structured approach to rebuilding the Company's oldest and most deteriorated transmission lines. The Strategy established criteria that prioritizes rebuild projects based on: (i) the physical condition of the lines, as determined through inspections; (ii) the risk of failure based on the condition of the lines; and (iii) the impact a failure would have on customers. At year-end 2021, execution of the Strategy will be 76% complete.

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

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

3 See Newfoundland Power's *2006 Capital Budget Application, Volume II, Supporting Materials, Report 3.1 Transmission Line Rebuild Strategy.* An update to the Strategy was filed as part of the Company's *2008 Capital Budget Application.* The primary purpose of the update was to provide updated cost estimates to reflect inflationary increases. The methodology remained the same.

4 The Strategy noted: *"Prior to the amalgamation of the three largest utilities in the province in 1966 (United Towns Electric, Newfoundland Light & Power, and Union Electric) there was limited transmission design expertise in any utility. There was little consistency in the design of transmission lines and, as a result, many lines built before 1960 were not designed to any standard (and do not meet present day standards)"* (see page 4).

5 In particular, the Strategy noted: *"While feeders typically supply several hundred up to two thousand customers, transmission lines often supply a few thousand up to tens of thousands of customers"* (see page 5).

The 2022 *Transmission Line Rebuild* project includes 2 projects to rebuild substandard transmission lines constructed in the 1960s that are significantly deteriorated. These transmission lines meet the criteria for rebuild as follows:

(i) Transmission line 124L was originally constructed in 1964. The section of line proposed for rebuild in 2022 is part of the looped transmission system in Central Newfoundland and provides the sole source of supply for approximately 3,700 customers in the Glovertown area and Eastport Peninsula.[6] Inspections determined significant deterioration and non-standard equipment on this section of line. For example, approximately 97% of poles and 94% of ball link eye bolts are deteriorated.[7]

(ii) Transmission line 94L was originally constructed in 1969. This line provides the sole source of supply for approximately 2,500 customers from St. Catherine's to Trepassey on the Avalon Peninsula. Inspections determined significant deterioration and non-standard equipment on this line. For example, approximately 83% of cribs and 68% of cross braces are deteriorated.[8]

Rebuilding the deteriorated section of transmission line 124L and transmission line 94L in 2022 is consistent with maintaining current levels of service reliability for customers at the lowest possible cost.

b) Delaying the 2022 *Transmission Line Rebuild* project by 2 years would increase the risk of component failure due to deterioration. The primary consequence of component failure on these transmission lines would be outages to thousands of customers in Central Newfoundland and on the Avalon Peninsula.[9]

For example, transmission line 124L experienced an outage in August 2021. The outage affected customers in the Glovertown area and Eastport Peninsula, and resulted in approximately 480,000 customer outage minutes. The outage was due to a broken ground wire on the 121L transmission line tap from 124L to Glovertown Substation. The proposed reconfiguration of transmission line 124L would provide looped service to customers in this area, thereby avoiding an outage under this scenario in the future.

Component failure would also increase costs to customers. Transmission lines 94L and 124L are remote lines. Costs to mobilize crews to address component failures can be very high and would in many cases require helicopter access. For example, emergency work to replace a small number of failed cross arms and insulators on

[6] See the *2022 Capital Budget Application, Report 3.1 2022 Transmission Line Rebuild,* page 2, footnote 6.
[7] Ibid., page 3, Table 2.
[8] Ibid., page 8, Table 3.
[9] For information on Newfoundland Power's approach to quantifying risks and benefits, see response to Request for Information CA-NP-014.

transmission line 124L in November 2018 required helicopter access and cost approximately $62,000.[10]

Delaying the 2022 *Transmission Line Rebuild* project would therefore be inconsistent with maintaining reliable service for customers at the lowest possible cost.

c) Newfoundland Power's administration of the Strategy primarily focuses on extending the useful service life of its transmission lines. For example, transmission line 124L was originally planned for rebuild in 2011, but was deferred to 2022 through routine maintenance. Maintenance costs have increased for this section of line and continued maintenance would not address the significant levels of deterioration discussed in part a).[11]

Newfoundland Power has achieved efficiencies in administering the Strategy through the adoption of a system planning approach for individual rebuild projects. For example, the 2019 *Central Newfoundland Planning Study* assessed alternatives to address the deteriorated condition of 66 kV transmission lines 101L and 102L in Central Newfoundland.[12] The *Central Newfoundland Planning Study* determined that the least cost alternative to address the deterioration of these lines was to reconfigure the 138 kV transmission system in Central Newfoundland. A net present value analysis determined this approach reduced costs to customers by approximately $5.7 million in comparison to rebuilding the lines as is.[13]

[10] See response to Request for Information NLH-NP-012.
[11] See response to Request for Information NLH-NP-012.
[12] See Newfoundland Power's *2019 Capital Budget Application, Central Newfoundland System Planning Study.*
[13] Ibid., page 4 *et seq.*