Q. (Reference Application Volume 2, Transmission Line Rebuild) Please demonstrate how NP has incorporated customer preferences, planning criteria, system reliability, asset condition and benchmarking for this project. Please identify the risk impacts of not proceeding with this project in 2021 both in terms of probability of failure and the consequences of failure.

A. See the response to Request for Information CA-NP-008 for information on how Newfoundland Power incorporates customer preferences into its *2021 Capital Budget Application*.

See the response to Request for Information CA-NP-007 for information on how Newfoundland Power incorporates benchmarking into its *2021 Capital Budget Application.*

Newfoundland Power's transmission lines are the backbone of the electricity system providing service to customers. The 2021 *Transmission Line Rebuild* project consists of capital expenditures involving two of the Company's transmission lines in Central Newfoundland.[1] These include: (i) rebuilding a 30 km section of 138 kV transmission line 124L between the Gambo ("GAM") and Clarenville ("CLV") substations; and (ii) 2.8 km of new 138kv transmission line construction to connect the Rattling Brook ("RBK") substation to transmission line 136L.[2]

The proposed capital expenditures relating to transmission line 124L are supported by an inspection and condition assessment that was completed in 2020. The assessment concluded that: (i) 83% of the poles are deteriorated and at risk of failure; and (ii) 53% of the ball link eye bolts are deteriorated and at risk of failure. See the response to Request for Information CA-NP-030 for information relating to the reliability implications and risk of not proceeding with rebuilding the 30 km section of transmission line 124L in 2021.

Capital expenditures pertaining to the extension of transmission line 136L are supported by the Company's *Central Newfoundland System Planning Study* (the "Planning Study").[3] The Planning Study was undertaken to address the condition of 66 kV transmission lines 101L and 102L and to ensure the long-term electrical transmission

[1] See the *2021 Capital Budget Application, Volume 2, report 3.1 2021 Transmission Line Rebuild*.

[2] Two new 138 kV extensions from transmission line 136L to RBK are required. These include the extension from the section originating from the direction of the Bishops Falls ("BFS") substation and another section originating from the direction of the Lewisporte ("LEW") substation.

[3] The Planning Study was completed in 2018 and was included as part of *Newfoundland Power's 2019 Capital Budget Application*. Expenditures in 2019 related to the Planning Study were approved by the Board in Order No. P.U. 35 (2018). Expenditures in 2020 related to the Planning Study were approved by the Board in Order No. P.U. 5 (2020).

system requirements of the Central Newfoundland area continue to be met.[4] It considered three alternatives, including the straightforward replacement of transmission lines 101L and 102L, as well as alternatives that involved the reconfiguration of the Central Newfoundland transmission system.

The least-cost alternative proposed in the Planning Study was a reconfiguration of the Central Newfoundland transmission system, which includes the 2.8 km of new construction associated with transmission line 136L.[5] This alternative involves approximately 31 km of transmission line construction.[6] This compares to the approximately 90 km of transmission line construction that would have resulted from the simple replacement of transmission lines 101L and 102L.

Transmission lines 101L and 102L are part of the Central Newfoundland transmission system which serves approximately 32,000 customers and provides support to the main 230kV transmission corridor in the province. Furthermore, transmission lines 101L and 102L are the only transmission lines supplying approximately 750 customers served by the Company's RBK substation. The inspections and engineering assessments completed in 2018 concluded that these lines were at the end of their service lives with structures experiencing significant deterioration of the poles, crossarms, pole cribs, hardware, and conductors. The consequences of not addressing the condition of these transmission lines are higher risk of unplanned outages and increased costs necessary to restore service. The probability of these consequences occurring is considered high since the transmission lines are at the end of their service lives.

[4] Transmission lines 101L and 102L are over 60 years old. A 2018 condition assessment concluded that these transmission lines have reached end of life. See *Newfoundland Power's 2019 Capital Budget Application, report 3.1 Transmission Line Rebuild, Appendix C – 101L and 102L Transmission Line Condition Assessment.*

[5] The majority of the recommendations included in the Planning Study have already been approved. This includes: (i) construction of a 14.0 km transmission line extension from transmission line 136L to the LEW substation, which was approved by the Board in Order No. P.U. 35 (2018) and completed in 2019; and (ii) rebuilding 14.0 km of transmission line 103L from the LEW substation to Notre Dame Junction ("NDJ") substation, which was approved by the Board in Order No. P.U. 5 (2020) with construction occurring in 2020.

[6] In addition to transmission line construction, the least-cost alternative recommended in the Planning Study included converting the LEW and RBK substations from 66 kV to 138 kV.