

1 **Reference: “2023 Capital Budget Application,” Newfoundland Power Inc., June 29,**
 2 **2022, Schedule B, pp. 114–117 (Mobile Hydro Plant Refurbishment).**
 3

4 **Q. a) What is the anticipated useful life of the Mobile hydroelectric plant**
 5 **following completion of the proposed refurbishment?**
 6

7 **b) Did Newfoundland Power consider replacement of the generating unit**
 8 **as an alternative? If not, why not? If so, please provide the cost-**
 9 **benefit analysis.**
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11 A. a) For the purposes of the *Lifecycle Cost Analysis of the Mobile Plant*, the
 12 anticipated useful life of the Mobile hydroelectric plant following completion of
 13 the proposed refurbishment is 50 years.¹
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15 b) No, Newfoundland Power did not consider replacement of the generating unit as
 16 an alternative for the *Mobile Hydro Plant Refurbishment* project.
 17

18 Replacing the generator would include the cost of dismantling the generator and
 19 turbine, demolishing the existing turbine’s embedded parts, installing a new
 20 scroll case, turbine runner, mechanical linkages, shafts, bearings, upper and
 21 lower bridges, laminated steel core, exciter, and auxiliary systems unique to the
 22 new generating unit. These costs would be in addition to the proposed
 23 refurbishment cost. The cost to replace the generating unit is therefore
 24 considered to be orders of magnitude greater than the selected refurbishment
 25 alternative.²
 26

27 In addition to the increased cost of the replacement unit, the time to execute the
 28 replacement project would exceed the time required to execute the selected
 29 refurbishment alternative. This is due to the increased scope of work and longer
 30 lead times for equipment delivery. The extended project timelines would impose
 31 an additional cost to purchase more expensive replacement energy from
 32 Newfoundland and Labrador Hydro while the Plant is out of service.
 33

34 In Newfoundland Power’s view, a replacement generator would not provide any
 35 additional benefits sufficient to justify these added costs. The plant’s efficiency
 36 would not necessarily improve and the expected remaining service life would not
 37 change materially. Based on these considerations, generator replacement was
 38 not considered a viable alternative warranting a detailed cost-benefit analysis.

¹ See the *2023 Capital Budget Application*, report 4.2 *Mobile Hydro Plant Refurbishment*, Appendix A: *Lifecycle Cost Analysis of the Mobile Plant*.

² Newfoundland Power routinely engages with its suppliers for general awareness on cost and design matters for its various assets. With respect to the refurbishment versus replacement costs of hydro generators, the suppliers confirm that replacement costs are orders of magnitude greater than refurbishment of turbine generators.