Q. (Reference Application Schedule B, Mobile Hydro Plant Surge Tank Refurbishment, Table 2, pages 96-97) It is stated "*Based on the current condition of the Mobile Plant surge tank, the probability of failure is possible*." Further, it is stated "*not proceeding with the Mobile Hydro Plant Surge Tank Refurbishment project would pose a Medium-High (15) risk to the delivery of least-cost service to customers.*"

a) Please provide evidence that this project is needed to supply customers in an environmentally responsible manner.

b) Is the risk assessment in Table 2 relevant to this point in time, or 2024 when the project is completed, or some other time frame?

c) The risk assessment in Table 2 indicates that the consequence of failure is "critical (5)". What makes the consequence of failure "critical"? Has the consequence of failure changed in the past 3 years? Is the consequence of failure likely to change over the next 3 years?

d) The risk assessment in Table 2 indicates that the probability of failure is "possible (3)". Had the assessment been undertaken 3 years ago would the probability of failure have been ranked "possible"? Three years from now would the probability of failure continue to be ranked "possible" if plant maintenance continues and any failures that arise are addressed under programs designed to address in-service failures?

A. a) Newfoundland Power observes that hydroelectricity is widely considered to be an environmentally friendly and low carbon source of reliable, dispatchable electricity generation.[1] Generation from Newfoundland Power's small hydro fleet offsets generation from thermal generating assets such as Holyrood and Hardwoods generating stations. The reliable hydroelectric generation from the Mobile Hydro Plant has been providing clean electricity to customers since 1951.

See also Newfoundland Power's response to Requests for Information CA-NP-014 and CA-NP-106.

b) Newfoundland Power confirms that the risk assessment provided for the Mobile Hydro Plant surge tank is relevant for the plant at the current time. The risk assessment was completed in 2023 following the condition assessment documented in Newfoundland Power's *2024 Capital Budget Application,* report *4.2 Mobile Hydro Plant Surge Tank Refurbishment.*

c) A surge tank is a critical piece of equipment in a hydroelectric development.[2] Failure of a surge tank would result in a prolonged period of plant unavailability until the system is reinstated. Failure of a surge tank is also likely to cause significant damage to the surrounding area due to uncontrolled release of water and falling structural steel. For this reason, the consequence of failure has been classified as

[1] For example, see Kreith, F. and Krumdieck, S. (2010), *Principles of Sustainable Energy Systems,* 2nd ed. CRC Press. Pages 60-62 discuss hydroelectric developments.

[2] Surge tanks are a pressure release mechanism for penstocks, ensuring the penstock does not sustain damage in an overpressure event. Not all penstock designs require a surge tank, however surge tanks are essential equipment in designs where they are required.

critical. See the response to Request for Information CA-NP-045 for a discussion of how Newfoundland Power performs risk assessments for capital projects and changes in consequence of failure over time.

d) The failure of a protective coating system is progressive over the system's life. Failure progresses slowly during early years of service and accelerates with age and continued exposure to environmental conditions.[3] As protective coating systems age, the probability of failure increases. See the response to Request for Information CA-NP-045 for a discussion of how Newfoundland Power performs risk assessments for capital projects and probability of failure over time.

Newfoundland Power observes that allowing the coating to fail risks permitting corrosion damage to the structural steel of the surge tank. Structural damage necessitates either structural repairs to the surge tank or a shortened service life.

[3] See Jones, D. (1996). *Principals and Prevention of Corrosion*, 2nd ed. Prentice Hall. Pages 478-479 provide an overview of coating systems and failure methods.