Q. Please provide the following information for Holyrood:

a) description of capital needs and costs to continue operation until March 31, 2023;

b) annual Holyrood fixed O&M expenditures for the years from 2019 up to 2021, 2023, 2027, and post 2027; considering O&M cost impacts of capital costs assumed in extensions of Holyrood operations under those four scenarios; and

c) variable O&M and fuel costs for one month of full production for all three units at the Holyrood Plant.

A. a) Newfoundland and Labrador Hydro's ("Hydro") current plan is based on ceasing steam generation capability on March 31, 2021. The incremental capital investment required to extend the operation of Holyrood Thermal Generating Station for two additional years from March 31, 2021 to March 31, 2023 is outlined in Table 1. The items included in the Table are high level and do not have recent detailed estimates. However, as is typical of Class 5 estimates they could range between +100% to -50%. A third-party study would be required to verify scope and improve estimate quality. This study is further discussed in Hydro's response to PUB-NLH-049.

Table 1: Additional Capital Investment Required over Current Plant to Continue Operation of Holyrood Thermal Generating Station until March 31, 2023

Item	Project	Estimate ($)	Year	Comments
1	API Life Extension Study – Fuel Oil Storage Tanks 3 and 4	50,000	2019	Work planned for 2019. Tank 3 is currently good to March 2023. Tank 4 is currently good to November 2020. Need to determine if these tanks can be extended to 2023 or beyond.
2	API Internal Inspection and Refurbishment of Fuel Storage Tank 1	4,000,000	2020	Required to use this tank beyond 2021. Hydro is currently attempting to extend this tank to 2023 through consultation with the appropriate government regulatory authorities and if successful then the $4m project will not be required. It may be possible to omit one tank inspection provided that Tank 4 is extended to 2023 and operation with three tanks is deemed acceptable for the final operating season.
3	API Internal Inspection and Refurbishment of Fuel Storage Tank 2	4,200,000	2021	Required to use this tank beyond 2021. Hydro is currently attempting to extend this tank to 2023 through consultation with the appropriate government regulatory authorities and if successful then the $4m project will not be required. It may be possible to omit one tank inspection provided that Tank 4 is extended to 2023 and operation with three tanks is deemed acceptable for the final operating season.
4	API Internal Inspection and Refurbishment of Fuel Storage Tank #4	4,000,000	2020	May not be required pending the results of the 2019 Life Extension Study (Item 1).
5	Refurbish Unit 3 Boiler Feed Pump West	350,000	2019	Continuation of six-year overhaul frequency.
6	Refurbish Unit 3 Boiler Feed Pump East	350,000	2020	Continuation of six-year overhaul frequency.
7	Overhaul Unit 2 Turbine Valves	3,300,000	2020	Continuation of three-year overhaul frequency.

Item	Project	Estimate ($)	Year	Comments
8	Overhaul Unit 2 Generator	1,250,000	2020	Continuation of six-year overhaul frequency.
9	Major Overhaul Unit 1 Turbine	6,800,000	2021	Continuation of nine-year overhaul frequency.
10	Condition Assessment and Miscellaneous Upgrades (Boilers and High Energy Piping)	3,000,000	2020	Two-year extension to operate to 2023 would require two additional years of this project.
11	Condition Assessment and Miscellaneous Upgrades (Boilers and High Energy Piping)	3,000,000	2021	Year Two (see Item 10).
12	Stack Inspection and Upgrades	500,000	2024	Next three-year scheduled inspection date would be 2024. Need for this project depends on the decommissioning schedule. Stacks may be demolished before 2024.
13	Thermal In-Service Failures	1,250,000 1,250,000 1,250,000	2021 2022 2023	Continuation of existing program.

b) The annual operation and maintenance expenditures beyond 2019 are estimated in Table 2. As a conservative estimate it is assumed that the 2019 actual budget will increase by an amount equal to 2.5% each year. This also reflects the assumption that the plant will continue to operate in accordance with 2019 expectations, with three units available for full load generation. A study, as described in Hydro's response to PUB-NLH-050, would be required to further develop the response to this question.

Table 2: Annual Operation and Maintenance Expenditures

Year	Expenditures ($)
2019	25,106,905[1] (budget)
2020	25,735,000
2021	26,378,000
2022	27,037,000
2023	27,713,000
2024	28,406,000
2025	29,116,000
2026	29,844,000
2027	30,590,000
2028	31,355,000

c) The estimated variable O&M and fuel cost for one month of full production for all three Holyrood Thermal Generating Station units, as a contingency scenario, is largely driven by the fuel cost alone. Using 17,200 barrels/day, across 30 days, at $105.90 CAD per barrel, results in an the estimated fuel cost for one month of full load on all three units of $54.6 million. Periodic start-up and testing to confirm load capability and operator competency would also be required throughout the season and would be separate and additional to this cost. Consideration must also be given to: layup practices and associated costs, any additional maintenance requirements to stop and restart the units, staffing requirements, additional wear and tear on the assets related to increased stops and starts, and other factors. A third-party study would be required to answer this appropriately. This study is also discussed in Hydro's response to PUB-NLH-050.

[1] Budget prior to Order NO. P.U. 16(2019).