Q. (Reference Application Schedule B, 2023 Capital Projects) For each capital project included in Schedule B, please provide the details of the business case used to support the selected project option, including demand side management and non-wires alternatives where relevant, showing:

a) all options considered for achieving the objectives set out in the justification section for each project.
b) a schedule comparing the net present value of each option considered taking into account both the required capital expenditure and the impact on operating and maintenance costs.
c) a schedule comparing the impact on NP's total revenue requirement in each year for the years 2022 through 2031.
d) a schedule comparing the incremental rate impact in each year for the years 2022 through 2031.

A. Newfoundland Power's *2023 Capital Budget Application* is filed in accordance with the Board's Provisional Guidelines effective January 2022. The Provisional Guidelines state that a cost benefit analysis and alternatives must be provided for projects and programs greater than $1 million and classified as Mandatory, Renewal, System Growth, Service Enhancement, or General Plant.

Schedule B includes information on 57 capital projects and programs.[1] The majority of these projects and programs are recurring programs that are consistent from year to year. A net present value ("NPV") calculation, levelized cost of energy or cost benefit analysis would not be appropriate for these recurring projects and programs.

There are six projects where an NPV calculation, levelized cost of energy or cost benefit analysis are appropriate. These are the: (i) *Feeder Additions for Load Growth* project; (ii) *Transmission Line Rebuild* project; (iii) *Sandy Brook Hydro Plant Generator Refurbishment* project; (iv) *Mobile Hydro Plant Refurbishment* project; (v) *Application Enhancements* project; and (vi) the *LED Street Lighting Replacement* project.

With respect to options including demand side management and non-wires alternatives, see the response to Request for Information CA-NP-101.

a) Attachment A provides the alternatives considered to achieve the objectives set out in the justification section for each of the six projects where an NPV calculation, levelized cost of energy or cost benefit analysis are appropriate.

b) Attachment A summarizes the NPV calculation, levelized cost of energy or cost benefit analysis for the projects where these analyses are appropriate. These economic analyses consider both the required capital expenditure and the impact on operating and maintenance costs.

[1] This includes 37 projects and 20 programs.

c) Due to the complex nature of how capital expenditures impact revenue requirements and customer rates, Newfoundland Power does not assess revenue requirement and customer rate impact of its capital projects by project.

For a discussion on revenue requirement and customer rate impacts associated with Newfoundland Power's *2023 Capital Budget Application,* see the response to Request for Information CA-NP-022.

For a discussion on the relationship between the Company's capital investments, revenue requirements and customer rates, see the *2023 Capital Budget Application, 2023 Capital Budget Overview, Section 2.3.3 Customer Rates.*

d) See part c).

ATTACHMENT A:

Summary of Alternatives and Economic Analyses

Table 1 Summary of Alternatives and Economic Analyses		
Capital Project	**Alternatives**	**Economic Analysis**
Feeder Additions for Load Growth: PUL-01	1. Load transfer 2. Single-phase to three-phase upgrade 3. Non-wires Alternative	1. $364,000 2. $312,000 3. $482,000
Feeder Additions for Load Growth: PUL-04	1. Load transfer from Rattling Brook Road 2. Load transfer from Skippers Landing 3. Single-phase to three-phase upgrade 4. Non-wires alternative	1. $358,000 2. $459,000 3. $358,000 4. $1,400,000 Alternative #3 provides improved operational benefits compared to #1 for the same cost.
Transmission Line Rebuild: 55L	1. Address existing deficiencies 2. Rebuild in existing right of way 3. Rebuild in new right of way	1. NPV of $16,497,000 2. NPV of $15,091,000 3. NPV of $12,044,000
Sandy Brook Hydro Plant Generator Refurbishment	1. Refurbish generator during penstock replacement 2. Defer refurbishment to a future year 3. Purchase replacement energy and capacity	Deferring the generator refurbishment would provide minimal economic benefit, while exposing customers to a high probability of an in-service equipment failure. Levelized cost of production is 3.27 ¢/kWh with a net benefit between 2.58 ¢/kWh and 4.61 ¢/kWh.
Mobile Hydro Plant Refurbishment	1. Refurbish plant in 2023/2024 2. Defer refubishment to a future year 3. Purchase replacement energy and capacity	The minimal benefit of deferring the refurbishment is outweighed by the potential costs associated with responding to an in-service failure if the project were to be deferred. Levelized cost of production is 2.70 ¢/kWh with a net benefit between 5.14 ¢/kWh and 6.79 ¢/kWh.
Application Enhancements: Digital Forms Portfolio Enhancement	1. Status quo 2. Efficiency improvements from completing electronic forms in the field	7-year NPV of $42,798
Application Enhancements: Virtual Meeting System Replacement	1. Status quo (Webex) 2. Transition to Microsoft Teams at no additional cost under existing agreement	7-year NPV of $194,096
Application Enhancements: Environment, Health and Safety System Replacement	1. Status quo 2. New system with comparable functionality with lower annual costs	7-year NPV of $45,853
LED Street Lighting Replacement	1. Status quo 2. Accelerated replacement over six years	20-year NPV of $4.9 million