Reference: Schedule C Projects and Programs under $750,000

Q. Pages 3-4. Two projects are listed under Substations for the Oxen Pond Substation; Bus Upgrade ($451,000) and Switch Replacements ($316,000).
a) Please explain why these two projects were not grouped together for one project over $750,000.
b) Is either project proposed for Oxen Pond Substation required as a result of Memorial University's conversion to electric boilers?
c) Will Memorial University be contributing to the cost of these projects? If there is no contribution, please explain why Newfoundland Power considers this fair and appropriate for customers.

A. a) The *Oxen Pond Substation Bus Upgrade* and *Oxen Pond Substation Switch Replacements* projects are not grouped together as one project over $750,000 because they involve different investment classifications, and therefore have different drivers and justification for completing the scopes of work. The organization of capital projects and programs by investment classification is a requirement of the Provisional Guidelines.[1]

The *Oxen Pond Substation Bus Upgrade* project is justified on the requirement to increase capacity of the two existing 66 kV buses at the Oxen Pond ("OXP") Substation. The project will address existing and forecast overload conditions. The project has been classified under the System Growth investment classification.

The *Oxen Pond Switch Replacements* project is justified on the requirement to replace nine 66 kV switches in the substation that have reached the end of their useful service lives. The project has been classified under the Renewal investment classification.

Both projects are being completed in 2024 to coordinate work and provide productivity and service benefits for customers. The 66 kV buses must be offloaded in order to complete *Oxen Pond Substation Bus Upgrade* project. During this offload period, the *Oxen Pond Substation Switch Replacements* project will be completed. Executing the two scopes of work in a coordinated manner reduces the number of customer outages required, reduces project management and improves overall efficiency of work execution.

b) Neither project proposed for OXP Substation is required as a result of Memorial University's conversion to electric boilers.

The *Oxen Pond Substation Bus Upgrade* project is justified on the basis that OXP-B3 and OXP-B4 are loaded beyond their rated capacity and are forecast to remain overloaded. Overload conditions at OXP Substation are attributable to load growth at all substations in the St. John's area that are supplied from the transmission system originating from OXP-B3 and OXP-B4.

[1] See the Provisional Guidelines, *Appendix A, Section II Organization*.

OXP Substation is an essential supply point of the St. John's 66 kV transmission system. The 66 kV buses at OXP Substation, OXP-B3 and OXP-B4, are critical components of the St. John's 66 kV looped transmission system, which serve approximately 113,000 customers in the greater St. John's area. OXP-B3 is connected to the Ridge Road, Virginia Waters, and Stamp's Lane substations through transmission lines 32L, 34L, and 70L, respectively, while also serving approximately 1,290 customers through a single distribution feeder OXP-01. OXP-B4 is connected to the Airport, Virginia Waters, Stamp's Lane, Long Pond and Ridge Road substations through transmission lines 33L, 58L, 31L, 36L, and 67L, respectively.

The conductor of buses OXP-B3 and OXP-B4 are comprised of a single run of 1000 MCM copper. The winter ampacity rating of 1000 MCM copper is 1,442 A per phase which is equal to 165 MVA of total power.[2]

Table 1 provides the actual and forecast peak load on buses OXP-B3 and OXP-B4 at OXP Substation.

Table 1
Oxen Pond Substation Bus Loading

Bus Name	Planning Rating (MVA)	Actual Peak Load 2022 (MVA)	Forecast Peak Load (MVA)		
			2023	2024	2025
OXP-B3	165	188	178	174	184
OXP-B4	165	183	197	224	233

Buses OXP-B3 and OXP-B4 are loaded beyond their rated capacity and are forecast to remain overloaded.[3] OXP-B3 and OXP-B4 require upgrading to increase their rated capacities and ensure the delivery of safe and reliable service to customers. Bus tie switches are also required on both buses to minimize outages during the project and to increase operational capabilities to provide greater flexibility when offloading is required.

c) No, Memorial University will not be contributing to the cost of these projects. See parts a) and b) above.

[2] The winter rating is based on an ambient temperature of 0°C.

[3] Conductor capacity rating is inversely related to ambient temperature. Due to the load profile of Newfoundland Power's system, the highest loads occur at the lowest ambient temperatures. This allows conductors to be safely loaded beyond their standard rating for short durations due to beneficial environmental conditions, but should not be relied on indefinitely.