

Office of the Consumer Advocate

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March 29, 2023

Board of Commissioners of Public Utilities
120 Torbay Road, P.O. Box 2140
St. John's, NL A1A 5B2

**Attention: G. Cheryl Blundon, Director of
Corporate Services / Board Secretary**

Dear Ms. Blundon:

**Re: Newfoundland Power Inc. 2023 Supplemental Capital Expenditure Application
- Memorial Substation Power Transformer Replacement**

On March 3, 2023 Newfoundland Power ("NP") filed an Application with the Public Utilities Board (the "Board") entitled *2023 Supplemental Capital Expenditure Application – Memorial Substation Power Transformer Replacement* (the "Application").

In a letter dated March 7, 2023 the Board indicated that comments on the Application by the parties are due March 28, 2023. The Consumer Advocate subsequently requested an extension until March 30, 2023 which was granted by the Board. This letter conveys the Consumer Advocate's comments on the Application.

Project Overview

NP describes the project as follows:

(Application Schedule A, page 4) *"The University is Newfoundland Power's largest single customer and its campus provides essential services to the public, including critical healthcare services. MUN Substation provides service to various buildings on the campus, including educational facilities for over 15,000 students and residences housing nearly 1,700 students. A loss of supply to the University could lead to the closure of the majority of campus buildings."*

(Application, para. 3) Memorial Substation *"has two power transformers, MUN-T1 and MUN-T2. During normal operations, both transformers carry the load necessary to supply the University and provide a source of redundant supply for Long Pond Substation. MUN-T2 is also capable of carrying the full load of MUN Substation in the event of a failure of MUN-T1, thereby providing redundancy within the Substation."*

(Application, para. 4) *“MUN-T2 is a 47-year-old, 15/20 MVA, 66-12.5 kV power transformer. Newfoundland Power was notified by the University in August 2022 that MUN-T2 was producing an abnormal noise level during operation and was experiencing a higher than normal internal temperature. MUN-T2 was removed from service and an assessment was performed by an independent consultant. The assessment determined MUN-T2 is experiencing a rare form of core deterioration that exposes it to a high probability of inservice failure. Newfoundland Power has no previous experience with this failure mode.”*

(Application, para. 6) *“Newfoundland Power completed an assessment of three alternatives for returning MUN Substation to its normal configuration and determined that replacing MUN-T2 with a new unit is the recommended solution.”*

(Application para. 7) *“The deteriorated condition of MUN-T2 was not known at the time of filing the Applicant’s 2023 Capital Budget Application as inspection and oil sampling results collected at that time appeared normal. Capital expenditures to replace MUN-T2 were therefore not included in that application.”*

(Application, para. 9) *“The replacement of MUN-T2 cannot be deferred until the Applicant’s next capital budget application. Delivery times for power transformers currently average 43 weeks, with additional time required for installation, testing and commissioning upon arrival. Deferring the replacement of MUN-T2 until the Applicant’s 2024 Capital Budget Application would defer the installation of a replacement power transformer to 2025. This would expose the University to an increased risk of prolonged outages for an extended period of time.”*

(Application para. 10) *“The Application proposes capital expenditures of \$1,614,000 for the Memorial Substation Power Transformer Replacement project (the “Project”). The Project involves the procurement and installation of a new 15/20/25 MVA, 66-12.5 kV power transformer to replace MUN-T2. The Project would be executed over two years, with \$48,000 in capital expenditures in 2023 and \$1,566,000 in 2024.”*

(Application, para. 12) *“The Applicant submits that the proposed expenditures referred to in paragraph 10 hereof are necessary to provide service and facilities that are reasonably safe and adequate and just and reasonable, all as required pursuant to Section 37 of the Act.”*

NP justifies its recommendation to replace the transformer in part on an independent assessment conducted by a consultant known as van Kooy Transformer Consulting Services Inc.

Comments of the Consumer Advocate

We start with a broad comment. The Application relates to a Supplemental Capital Project, so must be reviewed for consistency with the requirements set out in the Provisional Capital Budget Application Guidelines effective January 2022. As noted in several recent submissions, the Province’s electric utilities do not yet have the capability to meet the requirements set out in the Provisional Capital Budget Application Guidelines. They are unable to “quantify” the impact that a project has on reliability, or “quantify” the risk of project deferral. Hopefully the Board will soon direct the utilities to procure asset

management systems to enable them to meet requirements set out in the provisional guidelines and reduce the overwhelming information asymmetry that the utilities now enjoy relative to interveners.

Specific enumerated comments on the proposed project now follow.

- 1) ***Funding through customer contribution.*** It is not clear why NP did not request that the customer make this capital contribution. As noted by NP (Application Schedule A, page 4) “*The University is Newfoundland Power’s largest single customer and its campus provides essential services to the public, including critical healthcare services. MUN Substation provides service to various buildings on the campus, including educational facilities for over 15,000 students and residences housing nearly 1,700 students.*”

MUN is similar to an electricity retailer. MUN owns its own distribution system and distributes electricity to various buildings and institutions on the MUN campus. Many of these entities are subject to separate metering by MUN. NP’s electric bill to MUN is then apportioned accordingly by MUN. MUN takes responsibility for paying the entire NP electric bill. It is inappropriate that NP’s other customers pay for supply facilities that benefit only MUN and its associated entities.

In NLH-NP-001 NP states “*Yes, Newfoundland Power considers redundant supply to be a special facility pursuant to Clause 9(c) of its Schedule of Rates, Rules and Regulations. In 2019, Newfoundland Power filed an application for supplemental capital expenditures to construct Long Pond (“LPD”) Substation. The proposed expenditures were approved by the Board in Order No. P.U. 5 (2019).*” However, NP also states that MUN Substation (Application, para. 3) “*has two power transformers, MUN-T1 and MUN-T2. During normal operations, both transformers carry the load necessary to supply the University and provide a source of redundant supply for Long Pond Substation. MUN-T2 is also capable of carrying the full load of MUN Substation in the event of a failure of MUN-T1, thereby providing redundancy within the Substation.*” Therefore, like Long Pond Substation,¹ MUN-T2 is a source of redundant supply.

Further, the ownership of facilities and operating responsibility of the MUN Substation are not clear. The only agreement between NP and MUN is a 3-point letter addressing access to the MUN Substation (CA-NP-005, Attachment A). With respect to ownership, the letter states only (point 3) “*any equipment owned and installed by the company in the substation at the University is and will remain the property of the company*”. The ownership and operating arrangements at the MUN Substation need to be addressed in a proper connection agreement between MUN and NP so the Board and the parties can assess if other customers are subsidizing MUN.

NP has not provided a convincing case against requiring the University to fund the MUN-T2 replacement. The MUN Substation benefits only the University, so the costs of the MUN-T2

¹ In NLH-NP-001 NP indicates that Long Pond Substation received a capital contribution of “approximately \$4.0 million” from MUN via the provincial Department of Transportation. According to Footnote 2 of NLH-NP-001, that amount “*also included an allowance for sustaining operating and maintenance costs.*” However, in P.U. 5(2019) the Board approved \$4.6 million for Long Pond Substation. NP does not explain this discrepancy.

replacement should be borne by MUN. The cost of replacement should not be allowed in rate base and recovered from ratepayers.

- 2) ***Funding availability under approved 2023 Capital Budget.*** In CA-NP-004 (b) NP was asked why the proposed project was not included under the *Substation Replacements Due to In-Service Failures* project which received Board approval for expenditures of \$4.4 million in 2023. NP responded:

“the procurement and installation of a new power transformer with the capacity of MUN-T2 would be challenging to accommodate under this program due to the magnitude of the associated costs. For example, the replacement of MUN-T2 would account for over one third of the total budget of the Substation Replacements Due to In-Service Failures program. Accommodating the replacement of MUN-T2 under that program may therefore either hinder Newfoundland Power’s ability to complete other necessary work in substations, or expose the program to the risk of a significant variance from the budgeted amount.

It is not clear why NP would find it “*challenging*” to accommodate the proposed project under the approved *Substation Replacements Due to In-Service Failures* program. Why is it a concern that the proposed project would consume a third of the total budget and that it might result in a “*significant variance*”? The approved budget of \$4.4 million is an estimate that is not associated with specific projects, but rather based on an average of project costs in recent years. We point out that NP does not state that the proposed project **cannot** be addressed under this program, only that it would be **challenging**.

Moreover, all the required \$1.6 million for MUN-T2 need not come from the *Substation Replacements Due to In-Service Failures* funding of \$4.4 million. The Board also approved a \$750,000 Allowance for Unforeseen Items. As NP indicated (Application para. 7) the deteriorated condition of MUN-T2 was not known when it filed its 2023 CBA. Therefore, drawing on both this Allowance and the Substation Replacement funds appears a reasonable approach and consistent with the rationales for those two sources.

Another option that NP might have pursued would be to modify its procurement of the transformer spare approved by the Board as part of the 2023 Capital Budget. The transformer spare project was approved for \$1.5 million, and according to CA-NP-001, NP has committed only \$1000 to date on this project and has not called for bids on the equipment. NP could redirect these funds to procurement of a transformer for the MUN Substation.

In summary, NP has opportunity within its approved 2023 Capital Budget to address the MUN-T2 matter at the current time without costs associated with this supplemental capital budget Application. NP has not provided evidence to support adding \$1.6 million to rate base with recovery from ratepayers. It is our position that full funding should come from the University. Alternatives could be accessed if for some reason the University is not required to provide these funds.

- 3) ***NP's transformer maintenance program seems wanting.*** According to CA-NP-006, during the 32-month period from January 1, 2020 through August 25, 2022 when MUN informed NP about “*abnormal noise levels*” and “*higher than normal internal temperatures*” at the substation, NP staff visited the MUN Substation a total of 42 times to conduct various tests and inspections. The last of these visits took place on August 17, 2022, only 8 days before MUN informed NP of the abnormal noise levels and higher than normal temperatures. It is difficult to understand how NP completely missed a deteriorating transformer condition that must have been taking place over an extended period of time. While this type of transformer failure may be new to NP, higher than normal noise and temperature levels are not.

The Board should direct NP to conduct a review of its transformer maintenance practices to determine if staff are adequately trained and if the program could be improved to reflect industry best practice.

- 4) ***NP Spare Transformer Plan is flawed.*** NP states (CA-NP-001) “*To provide an identical spare unit for every type of in-service power transformer would require a range of approximately 30 to 45 power transformers. Many of these would only provide coverage to a single power transformer. The approximate cost to purchase an identical spare unit for every type of power transformer could be in the range of \$45,000,000 to \$60,000,000.*” NP’s 2023 CBA (Schedule B, page 89) states that NP has nine spare transformers. Apparently, none is suitable as a replacement for MUN-T2, which serves NP’s largest customer, and the new spare that NP intends to order under its approved 2023 Capital Budget is not suitable either.

Before procurement of another spare transformer is requested, the Board should direct NP to develop a comprehensive spare transformer plan that includes sharing arrangements with not only NL Hydro, but also with other utilities in eastern Canada.

- 5) ***Adequacy of existing redundancies and back-up supply.*** As noted in CA-NP-019, a number of redundancies and back-up provisions are built into the supply to MUN. Redundancies and back-up supply provisions include:

- Long Pond Substation which could supply a large portion of the university load, and all of the university load if some switching were added to the university’s distribution system.
- MUN-T1 and MUN-T2 can individually supply a sizeable portion of the MUN Substation load when one or the other is out of service.
- There is backup generation in 12 MUN buildings to supply essential services.
- Fuel switching for the two new electric boilers.
- Portable substations.
- Spare transformers, when available.

NP states (Application Schedule A, page 5) “*The University is now without its typical redundancy in the event of a failure of MUN-T1*”. However, NP has failed to show that the level of supply

security without MUN-T2 is inadequate based on its security of customer supply policy and criteria, or when compared to that provided other customers.

The Board should direct NP to file an explanation of why this level of supply security to MUN is warranted.

- 6) ***The Urgency to Replace MUN-T2.*** NP's risk assessment methodology relating to the proposed project requires context. CA-NP-021 indicates that in NP's 2023 Capital Budget Application, 28 projects have a higher priority score than the proposed project and 5 projects have a lower priority score (4 projects have the same priority score). Moreover, the project's priority score of 15 is based on the assumption that MUN-T1 ***could*** fail while MUN-T2 is out of service (Application, Schedule A, page 4) and *"These conditions could persist for up to three days while Newfoundland Power installs and energizes a portable substation to restore service to the University."* The assigned probability of a potential failure of MUN-T1 is 3 out of 5.

In the risk assessment, the consequence of a failure of MUN-T1 is judged critical, and assigned a score of 5 out of 5 as *"A loss of supply to the University could lead to the closure of the majority of campus buildings"* (Application Schedule A, page 5). However, as noted by NP, if MUN-T1 fails, the university would be exposed to 3 days of outage, the time it takes to install a portable substation. If NP judges the risk of failure to be critical, it could mitigate the risk by locating the portable substation at the substation site and ready it for operation now rather than subsequent to a failure. As stated in PUB-NP-005 *"Should the condition of MUN-T1 deteriorate, Newfoundland Power intends to assess whether the extended deployment of a portable substation at the university is necessary to mitigate the increased risk. Newfoundland Power aims to ensure a portable substation is available at all times for emergency backup purposes. The Company has a fleet of four portable substations. All four portable substations have a capacity of at least 10 MVA and could be capable of carrying the load currently served by MUN-T1 in the event of a failure of that unit."* In short, although MUN-T1 ***could*** fail, the consequence of the failure would be quite low if a portable substation were located and readied for operation at the MUN Substation.

The urgency of MUN-T2 replacement is also undermined by NP's response to CA-NP-004(b). It states *"In evaluating whether it would be appropriate to replace MUN-T2 under the Substation Replacements Due to In-Service Failures program, Newfoundland Power also considered the redundancy available at LPD Substation. This redundancy allows service to be maintained at Memorial University while regulatory approval is sought to replace MUN-T2."* This suggests there is no immediate urgency, yet the application asserts that the replacement of MUN-T2 cannot be deferred until the 2024 CBA.

Additionally, consider the response to CA-NP-013, which asked about the option of drawing on the approved 2023 Allowance for Unforeseen Items. NP's response included the following statement *"With MUN-T2 deenergized, Memorial University continues to receive service via MUN-T1 and the redundancy provided by Long Pond Substation. Accordingly, by Newfoundland Power's assessment, the circumstances did not present the urgency required to draw on its Allowance for Unforeseen Items."*

Position of the Consumer Advocate

Our ratepayers are opposed to adding new funding of \$1.6 million to rate base for the proposed MUN-T2 transformer replacement. The MUN Substation benefits only MUN, so should be recovered from MUN and *not* ratepayers. Further, there are sufficient funds available within the 2023 Capital Budget to proceed with procuring a replacement transformer for the MUN substation. The funds for Allowance for Unforeseen Items and for Substation Replacements Due to In-Service Failures program appear to be the most appropriate sources. NP could have proceeded in that way without the need to file the Application. It is disturbing that, instead, NP is seeking new funding from ratepayers through the Application that will increase rate base without seeking a university contribution or drawing from approved funds in the 2023 capital budget.

Our recommendation is that the Board dismiss the Application because: 1) the need for the project has not been established, and 2) there is no compelling evidence on the record indicating that full funding from MUN cannot be pursued, or that the project cannot be funded under the currently approved 2023 Capital Budget in conjunction with a MUN contribution.

Our ratepayers would not oppose the project if MUN confirms that the replacement transformer will be paid for by MUN.

If there are any questions with respect to our comments, please contact the undersigned.

Yours truly,



Dennis Browne, KC
Consumer Advocate

Encl.
/bb

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