

Office of the Consumer Advocate

PO Box 23135
Terrace on the Square
St. John's, NL Canada
A1B 4J9

Tel: 709-724-3800
Fax: 709-754-3800

March 14, 2023

Board of Commissions 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**

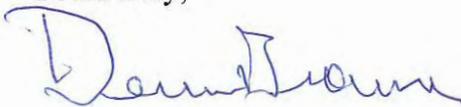
Dear Ms. Blundon:

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

Further to the above-captioned, enclosed are the Consumer Advocate's Requests for Information numbered CA-NP-001 to CA-NP-027.

If you have any questions regarding the enclosed, please contact the undersigned at your convenience.

Yours truly,



**Dennis Browne, KC
Consumer Advocate**

Encl.
/bb

cc **Newfoundland Power Inc.**
NP Regulatory (regulatory@newfoundlandpower.com)
Dominic Foley (dfoley@newfoundlandpower.com)
Lindsay Hollett (lholllett@newfoundlandpower.com)

Newfoundland & Labrador Hydro
Shirley Walsh (ShirleyWalsh@nlh.nl.ca)
NLH Regulatory (NLHRegulatory@nlh.nl.ca)

Board of Commissioners of Public Utilities
PUB Official Email (ito@pub.nl.ca)
Jacqui Glynn (jglynn@pub.nl.ca)

IN THE MATTER OF the *Public Utilities Act* (the "*Act*");

AND

IN THE MATTER OF an application by Newfoundland Power Inc. for the approval of supplemental capital expenditures to proceed with the purchase and installation of a replacement power transformer for Memorial Substation pursuant to section 41(3) of the Act.

**CONSUMER ADVOCATE
REQUESTS FOR INFORMATION
CA-NP-001 to CA-NP-027**

Issued: March 14, 2023

1 CA-NP-001

(Application, Schedule B, Footnotes 16 and 17, and NP 2023 Capital Budget Application, 2.2 Substation Spare Transformer Inventory) In the 2023 Capital Budget Application, NP was granted approval to procure “a 15/20/25 MVA, 66-25/12.5 kV power transformer in 2023.” It is stated (Report 2.2, page 14) “*Newfoundland Power has determined that procuring power transformers specifically to serve as spares is necessary to mitigate increasing risks of power transformer failure over the near term.*” Now, the Supplemental Application requests funding for a 15/20 MVA, 66-12.5 kV power transformer because apparently the approved new spare cannot be used to replace MUN-T2. Specifically, footnotes 16 and 17 of the Supplemental Application (Schedule B) indicate that the spare power transformer approved in the 2023 Capital Budget Application, and the four existing spare power transformers that NP has in inventory are not viable replacements for MUN-T2.

- 15 a) Please provide a timeline including amounts spent for the spare transformer procurement approved in the 2023 Capital Budget Application from the date of Board approval through to delivery.
- 16
- 17
- 18 b) Has NP already purchased the new spare? If not, then why not direct the funds to a new spare with the required configuration to replace MUN-T2?
- 19
- 20
- 21 c) If the new spare has already been purchased, what did it cost and where will it be put into service?
- 22
- 23 d) Please provide a copy of NP’s proposed procurement plan for spare power transformers.
- 24
- 25 e) How many different types of power transformers does NP own and what would it cost to procure a spare power transformer to back up every type of power transformer on NP’s system?
- 26
- 27
- 28 f) If none of the five spare power transformers that NP has, or soon will have, in inventory are viable replacements for MUN-T2, which supplies NP’s largest customer, please explain how a transformer spare procurement plan is a worthwhile investment for NP’s customers, particularly when a mobile substation is available.
- 29
- 30
- 31 g) Please provide a cost/benefit analysis for a spare transformer procurement plan including quantification of: 1) the reliability benefits gained, and 2) the risk mitigated by the plan.
- 32
- 33
- 34
- 35
- 36

37 CA-NP-002

(Reference Application, Schedule B, page 8) Footnote 17 indicates that one of NP’s spare transformers has the same configuration as that of the required replacement but has “*insufficient capacity.*”

- 38 (a) What is its capacity?
- 39
- 40 (b) Would it be feasible to operate this transformer safely at the MUN site?
- 41
- 42 (c) If so, how much of the risk of prolonged outages could be mitigated if this spare were used to replace MUN-T2?
- 43
- 44

- 1 CA-NP-003 (Reference NP 2023 Capital Budget Application, Schedule B, pages 85 -
 2 87) The Long Pond Substation Capacity Expansion Project is expected to
 3 be completed by mid-2023 and will provide increased capacity of electrical
 4 supply to Memorial University and include a new 25 MVA power
 5 transformer. Once this expansion is completed, will there not be sufficient
 6 capacity and flexibility (as MUN can switch between using its new electric
 7 boilers and using oil-firing) available to alleviate the immediate need to
 8 replace MUN-T2? In other words, would the risk of prolonged outages be
 9 reduced as a result of the Long Pond Expansion?
 10
- 11 CA-NP-004 (Reference NP 2023 Capital Budget Application) In NP's 2023 Capital
 12 Budget Application, and all recent capital budget applications, a number of
 13 projects are proposed that are not specifically identified and costed. These
 14 projects provide NP with the flexibility to address "*high-priority*
 15 *deficiencies that are identified during inspections or recognized during*
 16 *operational problems, including customer outages and trouble calls*"
 17 (Schedule B, page 37). The costs for these projects are based on historical
 18 expenditures. Such projects include, for example: 1) Distribution
 19 Reconstruction (\$6.7 million), 2) Replacement Transformers (\$3.35
 20 million), 3) New Transformers (\$3.0 million), 4) Substation Replacements
 21 Due to In-Service Failures (\$4.4 million), etc.
- 22 a) Did NP consider re-prioritization or re-design of approved projects in
 23 lieu of this supplemental capital budget application? For example, could
 24 the Long Pond Substation Capacity Expansion Project be modified? If
 25 not, why not? If so, please identify what was considered and why it was
 26 not pursued.
- 27 b) Why did NP not address the MUN-T2 power transformer replacement
 28 project under one of the above project categories, for example, the
 29 Substation Replacements Due to In-service Failures Project, rather than
 30 file a supplemental capital budget application?
- 31 c) If NP had addressed the proposed project under one of the above
 32 approved projects, how much time would have been saved relative to
 33 filing this Supplemental Capital Budget Application?
- 34 d) How much time is NP saving by filing this Supplemental Capital Budget
 35 Application relative to filing the project as part of the 2024 Capital
 36 Budget Application?
- 37 e) What are the comparative risks to the University load and equipment
 38 associated with the proposed project if it had been addressed under: 1)
 39 the 2023 Capital Budget Application, 2) this Supplemental Capital
 40 Budget Application, and 3) the 2024 Capital Budget Application?
- 41 f) What are the comparative costs of regulation associated with the
 42 proposed project if it had been addressed under: 1) the 2023 Capital
 43 Budget Application, 2) this supplemental Capital Budget Application,
 44 and 3) the 2024 Capital Budget Application?

1 g) If NP believes that this Supplemental Capital Budget Application is the
2 only valid approach under the current capital budget application
3 guidelines, how does it recommend the Guidelines be modified to
4 improve regulatory efficiency going forward?
5

6 CA-NP-005 (Reference Application) Who owns the MUN Substation and all assets
7 within the substation property boundary and who is responsible for
8 maintenance of the substation assets? Please provide copies of all
9 agreements between NP and the University relating to the MUN Substation.
10

11 CA-NP-006 (Reference Application) Please provide a detailed timeline and costs
12 beginning January 2018 to the present covering all work, inspections, oil
13 samplings and notifications relating to the MUN Substation.
14

15 CA-NP-007 (Reference Application) Is MUN the sole beneficiary of MUN-T2? Please
16 explain what cost contribution will be made by Memorial University with
17 respect to the proposed transformer replacement and why a cost
18 contribution is, or is not, appropriate.
19

20 CA-NP-008 (Reference Application) Please provide NP's long-term supply plan for
21 Memorial University including a detailed load forecast and an explanation
22 of how government zero carbon efforts are expected to impact the load on
23 the MUN Substation. Please explain 1) how the proposed transformer
24 replacement project ties in with NP's long-term supply plan and why it is
25 suitable to replace the transformer at this time given government zero-
26 carbon efforts, and 2) how customers are expected to benefit from the
27 transformer replacement over the longer term, thus providing confidence
28 that the transformer will not become a stranded asset.
29

30 CA-NP-009 Memorial University recently completed construction of a major new
31 Science Facility so it may be considering the future of the old Science
32 Building, which is adjacent and very close to MUN-T2. Has NP consulted
33 with the University about any planned capital works regarding the old
34 Science Building and how that may affect the MUN-T2 site?
35

36 CA-NP-010 (Reference Application) Please provide correspondence between NP and
37 NL Hydro and other utilities concerning the availability of suitable spares
38 for the MUN Substation power transformer.
39

40 CA-NP-011 (Reference Application, para. 4) It is stated "*The assessment determined*
41 *MUN-T2 is experiencing a rare form of core deterioration that exposes it*
42 *to a high probability of in-service failure. Newfoundland Power has no*
43 *previous experience with this failure mode.*"
44

(a) Which utilities have experienced this failure mode?

- 1 (b) What did they do in response?
 2 (c) What actions have they implemented to identify the potential for such
 3 failures going forward?
 4 (d) Please provide some quantification of “high probability;” e.g., is it 20 to
 5 40 per cent over the next two years or higher than 80 per cent in the next
 6 18 months?
 7
- 8 CA-NP-012 (Reference Application, para. 7) It is stated “*The deteriorated condition of*
 9 *MUN-T2 was not known at the time of filing the Applicant’s 2023 Capital*
 10 *Budget Application as inspection and oil sampling results collected at that*
 11 *time appeared normal.*” Do the most recent inspection and oil sampling
 12 results appear normal?
 13
- 14 CA-NP-013 (Reference Application, para. 10) Of the \$1,614,000 in funding being
 15 requested, \$48,000 is for 2023. A \$750,000 Allowance of the Unforeseen
 16 Items for 2023 was contained in NP’s 2023 Capital Budget Application and
 17 approved by the Board. If the Supplemental Application is approved, would
 18 NP draw on the Allowance for Unforeseen Items for its 2023 expenditure
 19 on the MUN-T2 replacement?
 20
- 21 CA-NP-014 (Reference Application, para. 9) If a suitable spare transformer were
 22 available on the Island, how long would it take to replace the MUN
 23 Substation transformer?
 24
- 25 CA-NP-015 (Reference Application, Schedule A, page 2) It is stated “*An independent*
 26 *assessment of the inspection results determined that the abnormal noise and*
 27 *temperature levels were likely caused by deterioration of the core*
 28 *lamination to lamination insulation. This is a rare condition that exposes*
 29 *MUN-T2 to a high probability of failure.*” (emphasis added)
 30 a) How “*likely*” is it that this “*rare condition*” is the cause of the abnormal
 31 noise and temperature levels?
 32 b) How probable is it that this condition will lead to failure? What
 33 experience is there in the industry upon which to base this assumption?
 34 c) What is the cause of this rare condition; i.e., materials defects,
 35 environmental, etc?
 36 d) Has MUN-T1 been inspected to determine if it also has the rare core
 37 deterioration? Please provide inspection dates for the last five years.
 38
- 39 CA-NP-016 (Reference Application, Schedule A, page 3) It is stated “*a failure of MUN-*
 40 *T2 could result in damage to substation equipment, customer infrastructure*
 41 *and public property.*” In light of the dangerous location, did NP consider
 42 relocation of the substation?

- 1 CA-NP-017 (Reference Application, Schedule A, page 3) It is stated “*The Memorial*
2 *Substation Power Transformer Replacement project is required to maintain*
3 *safe and adequate facilities at MUN Substation and to mitigate risks to the*
4 *delivery of reliable service to the University.*” Please quantify the risk
5 mitigated by the proposed project.
6
- 7 CA-NP-018 (Reference Application, Schedule A, page 4) It is stated “*Normal*
8 *operations would be suspended as customer-owned back-up generation is*
9 *designed only for the operation of life safety systems.*”
10 a) Are NP and the University considering a project to install suitable
11 backup generation at the University, particularly since NL Hydro is
12 considering options for increasing the Province’s electricity supply?
13 b) Are NP and the University considering installation of renewable forms
14 of generation to supply the campus in light of government zero-carbon
15 efforts?
16 c) Has Hydro been consulted on the proposed project and the long-term
17 supply plan for the University?
18
- 19 CA-NP-019 (Reference Application, Schedule A, page 4) It is stated “*These conditions*
20 *could persist for up to three days while Newfoundland Power installs and*
21 *energizes a portable substation to restore service to the University.*”
22 a) Given the criticality of supply, is NP taking steps to install and energize
23 a portable substation to increase supply redundancy?
24 b) Are the following redundancies built into the supply to the University:
25 1) supplying the entire substation demand via MUN-T1, 2) load transfer
26 to Long Pond Substation, 3) boiler fuel switching, 4) university-owned
27 back-up generation, and 5) installation of a portable substation? Are
28 there any additional redundancies built into the supply?
29 c) Please provide details of the alternate plan NP has in place should the
30 remaining working transformer become disabled.
31
- 32 CA-NP-020 (Reference Application, Schedule A, page 4) It is stated “*Given MUN-T1*
33 *has been in service for 57 years and has exceeded the typical useful service*
34 *life of a power transformer, the failure of this unit and a subsequent outage*
35 *to the university is considered possible.*” Please quantify the probability of
36 such an outage and the impact on reliability.
37
- 38 CA-NP-021 (Reference Application, Schedule A, Table 2) Please provide details on
39 how this “*moderate*” risk was calculated. Further, please provide a table
40 showing the risk assessment for this project relative to the risk assessment
41 for all projects approved in NP’s 2023 Capital Budget Application
42 identifying and incorporating any refinements made to the risk assessment
43 methodology since the 2023 Capital Budget Application was filed.
44

- 1 CA-NP-022 (Reference Application, Schedule B, pages 2 and 3) It is stated “*Oil samples*
2 *were taken from both power transformers in 2022 in accordance with*
3 *standard maintenance practices.*”
4 a) Please provide details of the “*standard maintenance practices*”.
5 b) Specifically, in what months were the oil samples taken in 2022?
6
- 7 CA-NP-023 (Reference Application, Schedule B, page 5). With reference to the location
8 of MUN-T2, it is stated “*This area is frequented by students and staff of the*
9 *University*” and para. 5 of the Application states “*MUN-T2 cannot be*
10 *returned to service without exposing the University and public to safety*
11 *risks.*” Do those statements imply that failure of MUN-T2 poses a risk of
12 personal injury to students, staff and the public? Is there not fencing and
13 other protections in place to ensure the safety of individuals in the vicinity
14 of MUN-T2? How is it that NP chose a location to construct this facility in
15 such an area frequented by students and staff, and with exposure to the
16 public and safety risks? Please explain.
17
- 18 CA-NP-024 (a) What manufacturers are available in Canada to build the proposed
19 transformer and where are these manufacturers located?
20 (b) Has NP conducted a jurisdictional scan throughout Canada and the
21 United States, and elsewhere, to determine the least cost option for this
22 purchase?
23
- 24 CA-NP-025 (Reference Application, Schedule B, page 5, Footnote 8) It is stated “*The*
25 *University does not have the distribution infrastructure in place to allow*
26 *for the transfer of all MUN Substation loads over to LPD Substation.*” Are
27 NP and the University considering the addition of such infrastructure in
28 light of the location and age-related challenges posed by the MUN
29 Substation?
30
- 31 CA-NP-026 (Reference Application, Schedule B, Appendix C, page 1) It is stated “*We*
32 *would expect to see higher levels of these carbon gases for this vintage*
33 *equipment but the results are somewhat skewed because the load has been*
34 *well below capacity.*” Why has the load been well below capacity and is it
35 expected to remain low going forward?
36
- 37 CA-NP-027 (Reference Application, Schedule B, Appendix C) Please provide the
38 following for van Kooy:
39 a) The study terms of reference and request for proposals.
40 b) The resume for the lead consultant.
41 c) The qualifications of van Kooy Transformer Consulting Services Inc.
42 d) The cost to provide the services leading to the documentation filed under
43 Schedule B, Appendix C.

DATED at St. John's, Newfoundland and Labrador, this 14th day of March, 2023.

Per. 
Dennis Browne, KC
Consumer Advocate
Terrace on the Square, Level 2, P.O. Box 23135
St. John's, Newfoundland & Labrador A1B 4J9
Telephone: (709) 724-3800
Telecopier: (709) 754-3800
Email: dbrowne@bfma-law.com