

September 21, 2023

Board of Commissioners of Public Utilities
Prince Charles Building
120 Torbay Road, P.O. Box 21040
St. John's, NL A1A 5B2

Attention: Cheryl Blundon
Executive Director and Board Secretary

Re: Application for Approval of Capital Expenditures for the Purchase of a Spare Generator Step-Up Transformer

Please find enclosed Newfoundland and Labrador Hydro's ("Hydro") application for approval of capital expenditures for the purchase of a spare generator step-up ("GSU") transformer that can be utilized at any of the Holyrood Thermal Generating Station ("Holyrood TGS" or "HRD"), the Bay d'Espoir Hydroelectric Generating Facility ("BDE"), the Upper Salmon Hydroelectric Generating Station ("Upper Salmon Station"), and Granite Canal Hydroelectric Generating Station ("Granite Canal Station"). This project is required for the safe and reliable operation of Hydro's generating system. Project execution is expected to take four years with an estimated project cost of \$7,466,900.

As noted in Hydro's application, and detailed in Schedule 1, the three failures of GSU transformers Hydro has experienced over the last two years have utilized all the spare GSU transformer units Hydro had traditionally kept on hand. One of those failed units was repaired and is serving as the spare replacement for the third failed unit—BDE T6. Hydro intends to repair the failed BDE T6 and hopes to have that for use as a spare as of December 2023. This repaired unit can be considered an effective spare for BDE T1 to T6, Upper Salmon Station, and Granite Canal Station, but would only be useful for BDE T7 with a derating of the applicable unit. There is no available spare for HRD T1 to T3.

The amount of time that is necessary to procure a GSU transformer, combined with the impact on Hydro's generation if there were to be more than one GSU transformer failure or a failure of BDE T7 or any unit at the Holyrood TGS, has significant implications for system reliability. It is necessary for Hydro to have a second spare in place. Due to the length of procurement time and the urgency of the request in light of the third failure, this project proposal was removed from the 2024 Capital Budget Application ("CBA") where it had originally been proposed,¹ and is now being submitted as a capital expenditures application, supplemental to the approved 2023 CBA.² Further information regarding the necessity of the purchase of a spare GSU transformer, including the timeframe expected and the estimated capital costs, are contained in Hydro's application, including Schedule 1.

¹ "2024 Capital Budget Application," Newfoundland and Labrador Hydro, rev. August 18, 2023 (originally filed July 12, 2023), sch. 6, proj. 1.

² "2023 Capital Budget Application," Newfoundland and Labrador Hydro, July 13, 2022 was approved as per *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 2(2023), Board of Commissioners of Public Utilities, January 26, 2023.

Cheryl Blundon
Board of Commissioners of Public Utilities

2

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



Shirley A. Walsh
Senior Legal Counsel, Regulatory
SAW/kd

Encl.

ecc:

Board of Commissioners of Public Utilities

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Purchase Spare Generator Step-Up Transformer

September 21, 2023

An application to the Board of Commissioners of Public Utilities



IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 (“EPCA”) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (“Act”), and regulations thereunder; and

IN THE MATTER OF an application by Newfoundland and Labrador Hydro (“Hydro”) for approval of capital expenditures for a spare generator step-up (“GSU”) transformer, pursuant to Subsection 41(3) of the *Act*.

To: The Board of Commissioners of Public Utilities (“Board”)

THE APPLICATION OF HYDRO STATES THAT:

A. Background

1. Hydro, a corporation continued and existing under the *Hydro Corporation Act, 2007*,¹ is a public utility within the meaning of the *Act*, and is subject to the provisions of the *EPCA*.
2. Hydro is the primary generator of electricity in Newfoundland and Labrador, utilizing the Holyrood Thermal Generating Station (“Holyrood TGS” or “HRD”), the Bay d’Espoir Hydroelectric Generating Facility (“Bay d’Espoir Facility” or “BDE”), the Upper Salmon Hydroelectric Generating Station (“Upper Salmon Station” or “USL”), and the Granite Canal Hydroelectric Generating Station (“Granite Canal Station” or “GCL”) among other facilities. Each of these facilities utilizes GSU transformers, without which the associated generating unit is unable to operate.
3. Traditionally, Hydro has maintained two spares for its GSU transformer fleet and prior to 2021 had had no GSU transformer failures. Unfortunately, over the last two years, Hydro has experienced three failures of the GSU transformers with the failure of the HRD T2 in 2021, BDE T5 in 2022, and most recently BDE T6 in 2023. The two spare GSU transformers were utilized in the 2021 and 2022 failures, and the failed BDE T5 was repaired (now known as BDE T5S) and will be used to replace the recently failed BDE T6.

¹ *Hydro Corporation Act, 2007*, SNL 2007 c H-17.

4. Hydro currently does not have any spares; however, Hydro intends to repair the failed BDE T6 and will have that for use as a spare as of December 2023. This repaired unit can be considered an effective spare for BDE T1 to T6, Upper Salmon Station, and Granite Canal Station, but would only be useful for BDE T7 with a derating of the applicable unit. This spare cannot be used for HRD T1 to T3.
5. The amount of time that is necessary to procure a GSU transformer, combined with the impact on Hydro's generation if there were to be more than one GSU transformer failure or a failure of BDE T7 or any unit at the Holyrood TGS, has significant implications for system reliability. It is necessary for Hydro to have a second spare in place. The need for the spare GSU transformer, and the circumstances requiring the application to be removed from the 2024 Capital Budget Application and re-filed as a supplemental application, are contained in Schedule 1 to this application.

B. Application

6. To ensure the safe and reliable operation of Hydro's generating system, Hydro recommends the purchase of a new 172 MVA GSU transformer that can be utilized as a spare for HRD T1 to T3, BDE T1 to T7, USL T1, or GCL T1. The new 172 MVA transformer will serve as a spare near the full-load ratings of Units 1 to 3 at the Holyrood TGS and BDE Unit 7.
7. Project execution is expected to take four years. The project description and schedule are detailed in Section 2.0 and 5.2 of Schedule 1, respectively.
8. The estimated capital cost of the project is \$7,466,900 with approximately \$39,600 in 2023, \$1,298,900 in 2024, \$3,966,700 in 2025 and \$2,161,700 in 2026.
9. Hydro submits that the proposed capital expenditure is necessary to ensure that Hydro can continue to provide service which is safe and adequate and just and reasonable as required by Section 37 of the Act.

C. Hydro's Request

10. Hydro requests that the Board make an Order pursuant to Section 41(3) of the Act approving the capital expenditures necessary for the purchase of a spare GSU transformer that can be

utilized at any of the Holyrood TGS, Bay d'Espoir Facility, Upper Salmon Station, and Granite Canal Station, as more particularly described in this application and the attached Schedule 1.

D. Communications

11. Communications with respect to this application should be forwarded to Shirley A. Walsh, Senior Legal Counsel, Regulatory for Hydro.

DATED at St. John's in the province of Newfoundland and Labrador on this 21st day of September 2023.

NEWFOUNDLAND AND LABRADOR HYDRO



Shirley A. Walsh
Counsel for the Applicant
Newfoundland and Labrador Hydro,
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Schedule 1

Purchase Spare Generator Step-Up Transformer



1 **Executive Summary**

2 As result of the failure of Bay d’Espoir Hydroelectric Generating Facility (“Bay d’Espoir Facility” or “BDE”)
3 Unit 6 generator step-up (“GSU”) transformer BDE T6 in 2023, Unit 5 GSU transformer BDE T5 in 2022
4 and Holyrood Thermal Generating Station (“Holyrood TGS” or “HRD”) Unit 2 GSU transformer (“HRD
5 T2”) in 2021, Newfoundland and Labrador Hydro (“Hydro”) does not currently have a spare GSU
6 transformer.

7 Traditionally, Hydro has maintained two spare complements for its GSU transformer fleet; however, the
8 failures of BDE T5 and HRD T2 depleted this complement. Hydro worked with the original equipment
9 manufacturer (“OEM”) to complete the refurbishment of the failed original BDE T5 for utilization as a
10 spare; Hydro intends to replace the failed BDE T6 with the repaired BDE T5 (now referenced as BDE T5S),
11 enabling the unit to return to service in October 2023 but leaving Hydro without a spare. The failed
12 BDE T6 will be repaired in December 2023 and will then serve as a spare for BDE T1 to T6, Granite Canal
13 Hydroelectric Generating Station (“Granite Canal Station” or “GCL”) T1, and a reduced spare for BDE T7
14 and Upper Salmon Hydroelectric Generating Station (“Upper Salmon Station” or “USL”) T1.¹ There is no
15 available spare for HRD T1 to T3. In this project, Hydro is proposing to purchase an additional spare GSU
16 transformer rated at 172 MVA, to serve as a spare closer to the full-load ratings of the Holyrood TGS
17 units and BDE Unit 7. To ensure full spare capability, the transformer that will be purchased is one that
18 can be installed in the Holyrood TGS, Bay d’Espoir Facility, Upper Salmon Station, or Granite Canal
19 Station.² This new spare, in addition to the repaired BDE T6, will return Hydro to the status quo—having
20 two spare GSU transformers—as was the case before the aforementioned failures in 2021, 2022 and
21 2023.

22 This project has a multi-year approach, with completion planned in 2026 at an estimated cost of
23 \$7,466,900.

24 The purchase of a spare GSU transformer was initially included in Hydro’s 2024 Capital Budget
25 Application (“CBA”). Due to the timing of the latest GSU transformer failure, the proposal was removed
26 from the 2024 CBA in order to allow for a review and approval process that would aid in expediting
27 procurement. Due to the combined factors of the age of the current GSU transformers in service, the

¹ For BDE T4, GCL T1, USL T1 and BDE T7 modifications will be required to the isolated-phase bus duct connections.

² The location for the installation of transformer and pad are to be determined.

Schedule 1: Purchase Spare Generator Step-Up Transformer

- 1 delivery time of a spare transformer exceeding 24 months, and the three recent failures, Hydro felt it
- 2 appropriate to submit this refurbishment as a standalone supplemental capital project to ensure reliable
- 3 service is maintained.

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1.0 Introduction

Hydro has endeavoured to maintain two GSU transformer spares to mitigate system reliability risks. Hydro has experienced three GSU transformer failures in the last two years – HRD T2 in November 2021, BDE T5 in July 2022, and BDE T6 in July 2023, which have depleted Hydro’s complement of GSU transformer spares. Hydro expects to have BDE T6 refurbished (which will be called BDE T6S after its repair) and available to serve as its only spare in December 2023.

Until 2021, Hydro had not experienced a GSU transformer failure. In light of the number of failures since 2021, and with the aging of its transformer fleet, Hydro must minimize the risk exposure from future GSU transformer failures. The risk associated with loss of a GSU transformer is the reduction in generation availability.

Given the current lead times on equipment, in the event of a loss of a GSU transformer that cannot be addressed with the only spare (BDE T6S) or more than one transformer loss, there is a significant risk that the duration of the generation deficiency lasts two or more winter seasons. Hydro is proposing a four-year project to purchase a new spare GSU transformer to be utilized in the event of a failure of HRD T1 to T3, BDE T1 to T7, USL T1, or GCL T1.

2.0 Project Description and Justification

In 2021 and 2022, Hydro experienced two GSU transformer failures within nine months, resulting in significant downtime for two generating units. Most recently in 2023, Hydro experienced another GSU transformer failure, again resulting in significant generating unit downtime. Replenishing the fleet of GSU transformer spares to two is required to ensure the timely return to service of a failed GSU transformer in an aging fleet. Should a transformer fail with no spare available, downtime of the associated generating unit could be up to 124 weeks based on current lead times for the delivery of a new transformer.

This project will see the purchase of a new spare 172 MVA-rated GSU transformer designed for use in the event of a failure of GSU transformers at the Holyrood TGS, Bay d’Espoir Facility, Upper Salmon Station and/or Granite Canal Station (i.e., HRD T1 to T3, BDE T1 to T7, USL T1, or GCL T1).

1 **3.0 Asset Overview**

2 **3.1 Asset Background**

3 Table 1 provides the age of each GSU transformer currently in service that can be replaced by the spare
 4 transformer proposed for purchase. As shown, three-quarters of Hydro’s GSU transformers are aged
 5 40 years or more and over half of the transformers are 53 years of age or older. The expected service life
 6 of a GSU transformer varies with its operating load profile and environment. Like other utilities, Hydro
 7 has an aging transformer fleet but does not replace transformers based solely on age. Replacement is
 8 considered as a result of condition.

Table 1: Age of GSU Transformers

Transformer No.	Year Manufactured	Age ³
HRD T1	1978	44
HRD T2	1969	53
HRD T3	1969	53
BDE T1	1966	56
BDE T2	1966	56
BDE T3	1967	55
BDE T4	1968	56
BDE T5	2009	13
BDE T6	1969	53
BDE T7	2016	7
USL T1	1982	40
GCL T1	2002	20

9 **3.2 Historical Reliability**

10 In November 2021 and July 2022, Hydro experienced two GSU transformer failures at the Holyrood TGS
 11 and Bay d’Espoir Facility. The failures resulted in a two-month downtime for each of the associated
 12 generating units. Hydro utilized its two spare GSU transformers, which were located at the Holyrood TGS
 13 and Upper Salmon Station, to replace these failed units. The failed unit at the Bay d’Espoir Facility was
 14 refurbished in 2022 and was retained as a spare (BDE T5S).

³ As of December 31, 2022.

1 In July 2023, Hydro experienced another transformer failure in Bay d’Espoir. Hydro is currently working
2 with the OEM to complete the replacement of the failed BDE T6 transformer with the newly refurbished
3 spare, BDE T5S, within Hydro’s Terminal Station In-Service Failures (2023) program.⁴ This work is
4 ongoing, and is expected to be completed with BDE Unit 6 returned to service in October 2023.
5 Following this work to replace BDE T6, the failed transformer will be refurbished and retained as a spare.

6 **3.3 Asset Condition**

7 Hydro’s GSU transformers in the Holyrood TGS, Bay d’Espoir Facility, Upper Salmon Station, and Granite
8 Canal Station are in relatively good condition with some exceptions noted below.

9 After failing in November 2021, HRD T2 was shown to contain corrosive sulphur; Hydro was unable to
10 determine whether the sulphur was the cause of the failure. As a precaution, Hydro created a corrosive
11 sulphur mitigation plan in 2022, to reduce corrosive sulphur levels in the other transformers that are
12 known to contain it. The mitigation plan for the applicable transformers included draining, flushing,
13 disposing of oil, replacing with new oil, and passivating,⁵ reducing the amount of corrosive sulphur
14 present in the transformer oil and potentially lowering the risk of failure.

15 USL T1 has slightly elevated ethylene and carbon monoxide⁶ levels, which Hydro is currently monitoring.
16 This does not appear to be significant at this time and will continue to be monitored to determine if
17 intervention is required.

18 BDE T3 is showing deterioration of its insulation; Hydro is currently considering a potential replacement
19 in 2028 if the condition-based replacement criteria is met.

20 The investigations into the failure of BDE T5 and BDE T6 are ongoing. It was originally thought the cause
21 of the bushing failure of BDE T5 in 2022 was related to lightning; however, another bushing failure was
22 experienced on BDE T6, with the same make and model as that of the bushing on BDE T5. A root cause
23 analysis into both events is within the scope of the current investigation.

⁴ “2023 Capital Budget Application,” Newfoundland and Labrador Hydro, July 13, 2022, vol. II, sch. 6, prog. 12, was approved as per *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 2(2023), Board of Commissioners of Public Utilities, January 26, 2023.

⁵ The addition of a transformer oil treatment designed to protect copper from corrosive sulphur.

⁶ Elevated ethylene and carbon monoxide levels occur when there is heating in the transformer, which can indicate an internal fault to the transformer.

4.0 Analysis

4.1 Evaluation of Alternatives

Hydro has evaluated the following alternatives:

- Deferral;
- Upgrade life extension; and
- Like-for-like replacement.

During the evaluation of alternatives, Hydro also considered the size of the spare transformer to be procured, which included the following options:

- 100 MVA, 230/16-13.8 kV transformer;
- 172 MVA, 230/16-13.8 kV transformer; and
- 190 MVA, 230/16-13.8 kV transformer.

An evaluation was completed to confirm that larger MVA-rated transformers, such as the 172 MVA and the 190 MVA transformer,⁷ would physically fit in all proposed locations at the Holyrood TGS, Bay d'Espoir Facility, Upper Salmon Station, and Granite Canal Station.⁸ The dimensions of an existing 172 MVA transformer, currently installed for BDE T7, were used to confirm that a 172 MVA transformer would fit in all locations. There remains a high level of uncertainty as to whether the higher-rated, 190 MVA unit can fit in all locations.

As a result, it is recommended a 172 MVA transformer be procured, which will fit in all required locations and will facilitate the full load of BDE T7 and the slightly derated load of HRD T1 to T3.

4.1.1 Deferral

Deferral is not an option for this project. The spare that will be available from the failed BDE T6 refurbishment in December 2023 can be considered as a spare for BDE T1 to T6, Upper Salmon Station and Granite Canal Station, but would require a derating for its use for BDE T7 and USL T1 and will not be suitable as a spare for HRD T1 to T3. Furthermore, given the lengthy delivery time of a transformer, if Hydro were to experience more than one GSU transformer failure, or a failure of BDE T7 or any

⁷ A 190 MVA transformer would allow full output of HRD T1 to T3.

⁸ Particular attention was given to BDE T1 to T6, USL T1, and GCL T1 as they are currently smaller MVA transformers.

1 transformers in Holyrood TGS, a significant portion of Hydro’s generation supply would remain offline
2 for more than two years while a replacement transformer is procured, installed, and commissioned. In
3 the event that Hydro experienced an additional GSU transformer failure at Holyrood TGS and a spare
4 transformer was not available, the Holyrood TGS would experience a DAUFOP⁹ that would likely exceed
5 34%. As modelled in Hydro’s 2023 “Near-Term Reliability Report – May Report,”¹⁰ a DAUFOP of 34%
6 coupled with a Labrador-Island Link (“LIL”) forced outage rate greater than 5% would be expected to
7 violate Hydro’s LOLH¹¹ criteria. Therefore, to maintain system reliability, it is critical that Hydro
8 immediately move forward with the purchase of a spare GSU transformer.

9 **4.1.2 Upgrade Life Extension**

10 Hydro has not identified any life extension options for this project. In 2022, Hydro worked with the OEM
11 to complete the refurbishment of the failed original BDE T5 transformer within Hydro’s Terminal Station
12 In-Service Failure program. Hydro intends to utilize this approach again in 2023 to repair the failed
13 BDE T6 transformer. At this time, the OEM of the failed transformer has completed an internal
14 inspection of the unit and indicated this failure is similar to the BDE T5 transformer failure in 2022, and
15 that a similar repair plan can be executed on site in Bay d’Espoir.

16 **4.1.3 Like-for-Like Replacement**

17 Hydro is proposing to purchase a new spare transformer, rated at 172 MVA, as a like-for-like
18 replacement for a spare GSU transformer that was placed in service following the failure of HRD T2,
19 which will serve as a spare near the full-load ratings of Units 1 to 3 at the Holyrood TGS and BDE Unit 7.
20 This purchase will replenish Hydro’s spare GSU transformers to the standard two units, as was the case
21 before the failure of HRD T2 in November 2021, BDE T5 in July 2022, and BDE T6 in July 2023.

22 The proposed spare transformer will be a 172 MVA-rated GSU transformer and designed for use in the
23 event of a failure of GSU transformers at the Holyrood TGS, Bay d’Espoir Facility, Upper Salmon Station,
24 and/or Granite Canal Station. An analysis was completed to ensure a 172 MVA transformer will
25 physically fit in all locations; however, care will have to be taken during the procurement of the new

⁹ Derated Adjusted Utilization Forced Outage Probability (“DAUFOP”).

¹⁰ “Reliability and Resource Adequacy Study – 2023 Update – Volume II: Near-Term Reliability Report – May Report,” Newfoundland and Labrador Hydro, June 2, 2023.

¹¹ Loss of Load Hours (“LOLH”).

1 spare transformer to ensure all physical size constraints are considered/reviewed with respect to each
2 location.

3 **4.2 Least-Cost Evaluation**

4 Hydro has not identified any viable alternatives to facilitate a least-cost evaluation.

5 **4.3 Recommended Alternative**

6 Based on the evaluation of alternatives, Hydro recommends the purchase of a new 172 MVA GSU
7 transformer that can be utilized as a spare for HRD T1 to T3, BDE T1 to T7, USL T1, or GCL T1. The new
8 172 MVA transformer will serve as a spare near the full-load ratings of Units 1 to 3 at the Holyrood TGS
9 and BDE Unit 7.

10 **4.3.1 Risk of Asset Stranding**

11 The proposed spare can be used in multiple generating locations and can be transferred to another
12 generating station including BDE T1 to T7, USL T1, GCL T1, or HRD T3¹² upon the conclusion of steam
13 generation at the Holyrood TGS.^{13,14}

14 Hydro's generating units at the Bay d'Espoir Facility, Upper Salmon Station, and Granite Canal Station
15 have a combined capacity of over 730 MW, with the Bay d'Espoir Facility alone producing an average of
16 2,650 GWh annually. As significant sources of hydroelectricity for the Island Interconnected System,
17 there are no plans to retire the generating assets at the Bay d'Espoir Facility, Upper Salmon Station, or
18 Granite Canal Station.

19 For these reasons, the risk of asset stranding for this GSU transformer is low.

¹² To support synchronous condenser operation.

¹³ As per the "Reliability and Resource Adequacy Study – 2022 Update," Newfoundland and Labrador Hydro, October 3, 2022, the Holyrood TGS shall remain available for a "Bridging Period" until 2030, or until such time that sufficient alternative generation is commissioned, adequate performance of the LIL is proven, and generation reserves are met.

¹⁴ Hydro considers the Bridging Period to be from 2023 to 2030. During the Bridging Period, the system would rely primarily on existing sources of generation capacity to maintain reliability while new generation capacity is being built. The primary, readily available supply options in this period are extending the retirements of the Holyrood TGS and the Hardwoods Gas Turbine until their capacities can be adequately replaced.

1 **4.3.2 Risk Mitigation**

2 Hydro assessed the pre- and post-implementation risk of the scope of work for this project in
 3 accordance with Hydro’s Capital Risk Assessment process as outlined in Section 7.0 of the 2024 Capital
 4 Budget Overview.¹⁵ The outcome of this assessment is provided in Table 2.

Table 2: Risk Scoring Pre- and Post-Implementation

	Impact	Likelihood	Score
Pre-Execution	5	4	20
Post-Execution	5	2	10
	Risk Mitigated		10
	Risk Mitigated per \$1 Million		1.3

5 **5.0 Scope of Work**

6 The scope of work includes:

- 7 • Purchase of a new 172 MVA, 230/16-13.8 kV power transformer;
- 8 • Installation of pad and oil containment for the spare 172 MVA power transformer; and
- 9 • Assembly, oil filling, and testing of the spare 172 MVA power transformer on site.

10 **5.1 Project Budget**

11 The estimate for this project is shown in Table 3.

Table 3: Project Estimate (\$000)¹⁶

Project Cost	2023	2024	2025	2026	Total
Material Supply	0.0	1,131.0	3,393.0	1,201.0	5,725.0
Labour	35.3	29.0	36.0	117.1	217.4
Consultant	0.0	0.0	0.0	78.0	78.0
Contract Work	0.0	0.0	0.0	354.9	354.9
Other Direct Costs	0.0	0.0	0.5	3.6	4.1
Interest and Escalation	0.7	22.9	194.2	231.6	449.4
Contingency	3.6	116.0	343.0	175.5	638.1
Total	39.6	1,298.9	3,966.7	2,161.7	7,466.9

¹⁵ “2024 Capital Budget Application,” Newfoundland and Labrador Hydro, rev. August 18, 2023 (originally filed July 12, 2023), sch. 1, sec. 7.0, p. 37.

¹⁶ Totals may not add due to rounding.

1 **5.2 Project Schedule**

2 The project will be completed as a four-year project. It is anticipated that planning will be completed in
 3 Year 1, detailed design and procurement of the transformer will be completed in Year 2 and that the
 4 transformer will be delivered and installed in Year 4. Management of manufacturing milestones and
 5 equipment payments will be ongoing through Years 2 through 4. The schedule for this project is shown
 6 in Table 4.

Table 4: Project Schedule

Activity	Start Date	End Date
Planning: Open work order and plan and develop schedule.	November 2023	December 2024
Design: Design and specification development for tender and procurement.	November 2024	January 2024
Procurement: Order transformer and oil containment.	February 2024	July 2026
Construction: Install power transformer and pad and oil containment.	May 2026	July 2026
Commissioning: Test new spare transformer.	August 2026	September 2026
Closeout: Close work order and complete closeout documentation.	September 2026	September 2026

7 **6.0 Conclusion**

8 This project will see the purchase of a new spare GSU transformer to be utilized in the event of a failure
 9 of the GSU transformers at the Holyrood TGS, Bay d’Espoir Facility, Upper Salmon Station, or Granite
 10 Canal Station. Hydro recommends the purchase of a new spare GSU transformer to restore its historical
 11 complement of two spares to ensure the continuation of the supply of reliable power to the province,
 12 given its recent experience of transformer failures and the length of delivery time of a spare
 13 transformer.

Affidavit



IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 ("*EPCA*") and the *Public Utilities Act*, RSNL 1990, Chapter P-47 ("*Act*"), and regulations thereunder; and

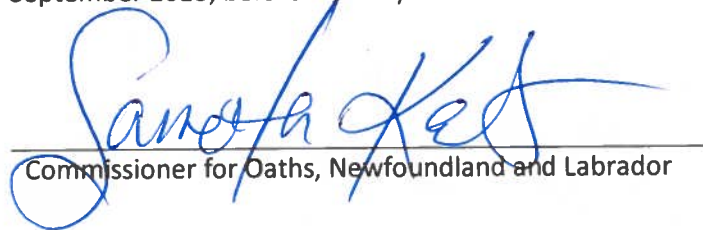
IN THE MATTER OF an application by Newfoundland and Labrador Hydro ("*Hydro*") for approval of capital expenditures for a spare generator step-up ("*GSU*") transformer, pursuant to Subsection 41(3) of the *Act*.

AFFIDAVIT

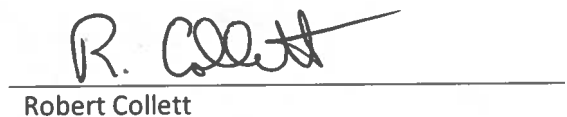
I, Robert Collett, of St. John's in the province of Newfoundland and Labrador, make oath and say as follows:

- 1) I am Vice President, Engineering and NL System Operator for Newfoundland and Labrador Hydro, the applicant named in the attached application.
- 2) I have read and understand the foregoing application.
- 3) To the best of my knowledge, information, and belief, all of the matters, facts, and things set out in this application are true.

SWORN at St. John's in the)
province of Newfoundland and)
Labrador this 21st day of)
September 2023, before me:)



Commissioner for Oaths, Newfoundland and Labrador



Robert Collett

SAMANTHA KEATS
A Commissioner for Oaths in and for
the Province of Newfoundland and Labrador.
My commission expires on December 31, 2027