

August 10, 2020

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

Attention: Ms. Cheryl Blundon  
Director of Corporate Services & Board Secretary

Dear Ms. Blundon:

**Re: Application for Approval of the Replacement of the Protective Equipment Located in the Wabush Terminal Station**

Please find attached Newfoundland and Labrador Hydro's ("Hydro") application for approval of the replacement of the line protection relays and associated equipment and cabling located in the Wabush Terminal Station for transmission lines L34 and L35 ("Application").

Tacora Resources Inc. ("Tacora") owns and operates the Scully Mine in Wabush, Labrador. Electrical power is provided to the Scully Mine site through transmission lines, L34 and L35. These transmission lines are owned by Tacora and solely serve Tacora's asset. Electromechanical line protection relays for these transmission lines are installed in the Wabush Terminal Station, with similar relays at Tacora's Scully Mine site. The protective relays were disabled in 2019 to prevent nuisance trips and mine shutdowns.

The project proposed in the attached Application is necessary to fully resolve nuisance trips and power outages impacting Tacora, while also restoring redundancy of supply and providing reliability of service to that customer.

Should you have any questions, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**

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

Encl.

ecc: **Board of Commissioners of Public Utilities**  
Ms. Jacqui Glynn  
PUB Official Email

**Newfoundland Power**

Mr. Gerard M. Hayes  
Ms. Kelly C. Hopkins  
Regulatory Email

**Consumer Advocate**

Mr. Dennis M. Browne, Q.C., Browne Fitzgerald Morgan & Avis  
Mr. Stephen F. Fitzgerald, Browne Fitzgerald Morgan & Avis  
Ms. Sarah G. Fitzgerald, Browne Fitzgerald Morgan & Avis  
Ms. Bernice Bailey, Browne Fitzgerald Morgan & Avis

**Industrial Customer Group**

Mr. Paul L. Coxworthy, Stewart McKelvey  
Mr. Denis J. Fleming, Cox & Palmer  
Mr. Dean A. Porter, Poole Althouse

**Iron Ore Company of Canada**

Mr. Gregory A.C. Moores, Stewart McKelvey

**Labrador Interconnected Group**

Mr. Senwung Luk, Olthuis Kleer Townshend LLP  
Ms. Julia Brown, Olthuis Kleer Townshend LLP



# Application for Approval of the Replacement of the Protective Equipment Located in the Wabush Terminal Station

August 10, 2020

An application to the Board of Commissioners of Public Utilities





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

**AND IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro (“Hydro”) for approval, pursuant to Subsection 41(3) of the *Act*, of replacement of the line protection relays and associated equipment and cabling located in the Wabush Terminal Station for transmission lines L34 and L35, and pursuant to section 41(5) of the *Act*, for approval of a contribution by Tacora of an amount equal to the final capital cost of the project.

**TO: The Board of Commissioners of Public Utilities (“Board”)**

**THE APPLICATION OF HYDRO STATES THAT:**

1. Hydro is a corporation continued and existing under the *Hydro Corporation Act, 2007*, is a public utility within the meaning of the *Act*, and is subject to the provisions of the *Electrical Power Control Act, 1994*.
2. The Wabush Terminal Station was acquired by Hydro in September 2016, as approved by the Board in Order No. P.U. 37(2016).
3. Tacora Resources Inc. (“Tacora”) owns and operates the Scully Mine in Wabush, Labrador. Electrical power is provided to the Scully Mine site through two 46 kV transmission lines, L34 and L35. These transmission lines are owned by Tacora and solely serve Tacora’s asset.
4. Electromechanical line protection relays for L34 and L35 were installed in the Wabush Terminal Station in the 1960s and 1970s; similar relays on each line are installed on the Scully Mine site.
5. Tacora has advised that since 2010, there have been multiple “nuisance” trips which resulted in shutdowns of the Scully Mine, in addition to three power outages in 2018. These shutdowns and trips could result in loss of production for the mine, and possible infrastructure and equipment damage in the winter months.
6. At Tacora’s request, in January 2019, Hydro disabled the primary L34 and L35 differential

protective relays at the Wabush Terminal Station. Although this step prevents the nuisance trips, the result is that only one line can practicably be in operation as a fault on one line will trip both lines. A trip to both lines would result in increased outage time due to the additional steps necessary to identify which line actually had the fault. Although Hydro can provide full service to the Scully Mine over one line, replacing the protection relays will allow both lines to be in service, with one line remaining in service should the other line trip. It will also remove the issue causing the nuisance trips and power outages, and will improve reliability for Tacora. Further information regarding the issues and the proposed solution to them can be found in the Supplemental Capital Budget Engineering Report attached to this Application as Schedule 1.

7. Hydro currently plans to replace the lines' circuit breakers in 2026 and 2027 and would ordinarily plan to upgrade transmission line protection at that time. However, Tacora has expressed its wish to complete the protection upgrades in a more immediate timeframe in order to return the second line to operation and restore redundancy of supply.
8. Tacora has agreed to pay the full cost of constructing the protection upgrades.
9. Hydro is recommending replacement of the line protection relays and associated equipment and cabling for L34 and L35, as detailed in Schedule 1. This project is scheduled to be completed by the end of December 2021.
10. The estimated capital cost of the project is \$259,300. The capital costs of this project will be recovered from Tacora.
11. Approval of Hydro's Application will enable Hydro to meet its obligation to provide reliable service to Tacora.
12. Therefore, Hydro makes Application that the Board make an Order approving:
  - a. pursuant to section 41(3) of the *Act*, the capital expenditure of approximately \$259,300 for the replacement of the line protection relays located in the Wabush Terminal Station for L34 and L35 to be fully contributed by and specifically assigned to Tacora; and
  - b. pursuant to section 41(5) of the *Act*, a contribution by Tacora of an amount equal to the final capital cost of the project.

**DATED** at St. John's in the Province of Newfoundland and Labrador this 10<sup>th</sup> day of August, 2020.



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Shirley A. Walsh  
Counsel for the Applicant  
Newfoundland and Labrador Hydro  
500 Columbus Drive P.O. Box 12400  
St. John's, NL A1B 4K7  
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## Schedule 1

### Replacement of Protective Equipment - Wabush Terminal Station





# Replacement of Protective Equipment - Wabush Terminal Station

August 10, 2020

A report to the Board of Commissioners of Public Utilities





## **Executive Summary**

1    Tacora Resources Inc. (“Tacora”) owns the Scully Mine in Wabush and started production in 2019.<sup>1</sup>  
2  
3    Electrical power is provided to the Scully Mine site via two customer-owned transmission lines which are  
4    supplied by Wabush Terminal Station. To improve reliability of their power supply, Tacora is replacing  
5    the transmission line relaying on the Scully Mine end of the two transmission lines and has requested  
6    that Newfoundland and Labrador Hydro (“Hydro”) replace the associated relays in the Wabush Terminal  
7    Station.

8    The estimated capital cost of the replacement of the relays in the Wabush Terminal Station is \$259,300.  
9    The replacement of the relays is scheduled to be completed in December 2021. All of the project costs  
10    will be recovered from Tacora.

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<sup>1</sup> The mine was previously owned and operated by Cliffs Natural Resources.

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## 1.0 Introduction

Tacora Resources Inc. (“Tacora”) owns the Scully Mine in Wabush and started production in 2019. Electrical power is provided to the Scully Mine site via two customer-owned transmission lines from the Wabush Terminal Station. Tacora is replacing the transmission line relaying on the Scully Mine end of the two transmission lines and has requested that Hydro replace the associated relays in the Wabush Terminal Station. Tacora will pay all costs incurred by Hydro to respond to this request.

This project will replace the protection equipment located in Wabush Terminal Station for Line 34 (“L34”) and Line 35 (“L35”). This project is proposed to be fully funded by Tacora. The protection upgrades will restore redundancy of power supply to the mine. This project will replace the current electromechanical protective relays for L34 and L35, located in Wabush Terminal Station, with modern multifunction microprocessor based relays. The project will also include necessary changes to auxiliary equipment and other devices required for the relay upgrades.

## 2.0 Background

Tacora owns two 46 kV transmission lines, L34 and L35, that supply electrical power from Wabush Terminal Station to the Scully Mine site. The L34 and L35 electromechanical line protection relays (Figure 1) at the Wabush Terminal Station were installed in the 1960s and 1970s. There are similar relays on each line at the Scully Mine site. Primary protection is provided by line current differential relays at each end of the line. The protection compares the current at each end of the line using a high-speed communications link and removes the line from service should an electrical fault be detected. Backup protection is provided by overcurrent relays at each end of the line that trip the line if the current exceeds a predefined threshold.

Information provided by Tacora indicates that, since 2010, there have been multiple incidents of nuisance trips due to incorrect operation of the antiquated differential relaying which have resulted in shutdowns of the Scully Mine. Tacora provided specific documentation on three of these events, which occurred on January 3, 2010, June 9, 2013, and June 15, 2013. In addition, Tacora indicated that they experienced three nuisance power outages in late 2018. Shutdowns of this nature may result in loss of production and may also result in damage to infrastructure and equipment due to freezing conditions in the winter, which would cause Tacora to incur additional production loss.



Figure 1: Existing Line Protection Relays (Wabush Terminal Station)

1 In January 2019, at Tacora’s request, Hydro disabled the primary L34 and L35 differential protective  
2 relays at Wabush Terminal Station in order to prevent nuisance tripping and is relying on the backup  
3 overcurrent relays for line protection. With the differential relays disabled, only one line can practically  
4 be in operation since the existing backup relays lack selectivity, meaning that a fault on one line will trip  
5 both lines. The unnecessary tripping of both lines would increase the outage time to Scully Mine as  
6 personnel determine which line experienced the fault. Hydro can supply the demand requirements of  
7 Tacora with only one line in service; however, replacing the protection relays will allow both lines to be  
8 in service, with one line remaining in service in the event of a trip on the other line. This will improve  
9 reliability for Tacora.

10 There have been no further nuisance trips since disabling the primary protective relays in January 2019.  
11 Under the current long term plan for Wabush, Hydro would otherwise plan to upgrade transmission line  
12 protection in conjunction with replacement of the line’s circuit breaker. In the case of L34 and L35, this  
13 is currently planned for 2026 and 2027, respectively. However, Tacora wishes to complete the  
14 protection upgrades in advance of Hydro’s breaker replacement schedule in order to return the second  
15 line to operation and restore redundancy of supply.



### 3.0 Analysis

Tacora requested that Hydro undertake this project at this time and will pay Hydro’s capital costs related to the project. Failure to complete the project will result in continued lack of supply redundancy for Scully Mine. If the electromechanical differential relaying and both lines are put back in service, Scully Mine will likely continue to have simultaneous nuisance trips of both lines resulting in a complete loss of power.

### 4.0 Project Description

The scope of this project includes the following work at the Wabush Terminal Station:

- Decommissioning of existing relays and associated equipment and cabling associated with L34 and L35;
- Design of a new protection scheme utilizing modern relays and associated equipment for L34 and L35;
- Procurement of new relays and associated equipment and cabling for L34 and L35 protection upgrades; and
- Installation and commissioning of new relays and associated equipment and cabling for L34 and L35 protection upgrades.

The project estimated cost is presented in Table 1.

**Table 1: Project Estimate (\$000s)**

Project Cost	2020	2021	Beyond	Total
Material Supply	0.0	67.3	0.0	<b>67.3</b>
Labour	39.9	104.1	0.0	<b>144.0</b>
Consultant	0.0	0.0	0.0	<b>0.0</b>
Contract Work	0.0	0.0	0.0	<b>0.0</b>
Other Direct Costs	0.0	24.4	0.0	<b>24.4</b>
Interest and Escalation	0.0	0.0	0.0	<b>0.0</b>
Contingency	4.0	19.6	0.0	<b>23.6</b>
<b>Total</b>	<b>43.9</b>	<b>215.4</b>	<b>0.0</b>	<b>259.3</b>

The project schedule is presented in Table 2.

**Table 2: Project Schedule**

<b>Activity</b>	<b>Start Date</b>	<b>End Date</b>
Planning: Prepare project scope statement, hold project kick-off meeting	October 2020	November 2020
Design: Prepare detailed design drawings including bill of materials and settings for protection upgrades	October 2020	January 2021
Procurement: Procure relays and associated equipment and cabling	December 2020	February 2021
Construction – L35 & L43: Install new relays and associated equipment and cabling for protection upgrades	February 2021	March 2021
Commissioning – L35: Test, commission, and put in service new line protection equipment	March 2021	April 2021
Commissioning – L34: Test, commission, and put in service new line protection equipment	April 2021	May 2021
Closeout: Complete as-built drawings, financial closeout	June 2021	December 2021

1 **5.0 Conclusion**

2 Tacora has requested that Hydro replace the Wabush Terminal Station line relaying associated with L34  
 3 and L35 to restore redundancy of power supply to the Scully Mine. Project costs will be recovered from  
 4 Tacora.

5 Hydro is proposing this project to meet Tacora’s request. The work will be performed in conjunction  
 6 with Tacora’s replacement of the associated Scully Mine line relays at the other end of the lines.



## Affidavit



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

**AND IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro (“Hydro”) for approval, pursuant to Subsection 41(3) of the *Act*, of replacement of the line protection relays and associated equipment and cabling located in the Wabush Terminal Station for transmission lines L34 and L35, and pursuant to section 41(5) of the *Act*, for approval of a contribution by Tacora of an amount equal to the final capital cost of the project.

**AFFIDAVIT**

I, Lisa Kingsley, Professional Engineer, of St. John’s, in the Province of Newfoundland and Labrador, make oath and say as follows:

1. I am the Senior Manager, Protection, Control & Communications Engineering, with 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 10<sup>th</sup> day of August )  
before me: )

  
\_\_\_\_\_  
Barrister, Newfoundland and Labrador

  
\_\_\_\_\_  
Lisa Kingsley