newfoundland labrador
hydro
a nalcor energy company

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September 29, 2014

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 Cost Increase to Labrador City Voltage Conversion Project**

Enclosed are an application, supporting affidavit, supporting project report and draft Order for the above-noted matter. Since 2010, Hydro has been carrying out work with respect to the Labrador City Voltage Conversion Project. This project has been coupled with the construction of the new 25 kV Terminal Station in Labrador City. Together, these improvements will enable Hydro to provide reliable power to the Labrador City area and to meet load growth.

The Labrador City Voltage Conversion Project comprises the replacement of poles, insulators, structure framing and conductor throughout Labrador City to bring the primary distribution from 4.16 kV to a more robust and reliable 25 kV distribution system.

The project was approved under P.U. Order No. 1(2010) at an amount of $9,400,000. The project has taken longer than first forecast due to a requirement to carry out planned outages to Hydro's customers over a shorter period of the year to avoid outages to customers during colder temperatures. In addition, there have been increased materials costs and higher than anticipated costs incurred for the participation of hydro's operations personnel to coordinate the construction with the delivery of power. The project is now estimated to cost $11,477,100. This is more fully described in the report which supports and which is attached to the enclosed application.

Should you have any questions, please contact the undersigned.

Yours truly,

***NEWFOUNDLAND AND LABRADOR HYDRO***

Tracey L. Pennell
Legal Counsel

TLP/cp

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey Stirling Scales
Sheryl Nisenbaum – Praxair Canada Inc.
Thomas Johnson – Consumer Advocate
Thomas J. O'Reilly, Q.C. – Cox & Palmer

**IN THE MATTER OF** the *Electrical Power Control Act,* R.S.N.L. 1994, Chapter E-5.1 (the *EPCA*) and the *Public Utilities Act*, R.S.N.L. 1990, Chapter P-47 (the *Act*), and regulations thereunder;

**AND IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro (Hydro) pursuant to Subsections 41(1) and 41(3) of the *Act*, for approval of additional capital expenditures pertaining to its Labrador City Voltage Upgrade Multi-year Project

**TO:** The Board of Commissioners of Public Utilities (the Board)

**THE APPLICATION OF NEWFOUNDLAND AND LABRADOR HYDRO (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. By Order No. P.U. 1(2010) the Board approved the multi-year project Voltage Conversion Labrador City (the project is included in the Order at Schedule A, page 3 of 4). This project provides distribution system upgrades and a voltage conversion from 4.16 kV to 25 kV and is required to provide reasonable and adequate distribution service, at least cost, to Hydro's customers in Labrador City.

3. This project was originally budgeted at $9,400,000. Costs increases arose due to increases in material costs and a greater than anticipated involvement with Hydro's operations staff for the coordination of outages and preparatory works. In addition, this work requires planned customer outages and due to the impact of cold temperatures on customers, it was necessary to compress the construction window from an assumed 5-month window for each year to approximately 3.5 months. In all, the costs to complete the work have increased to $11,477,100. The project will be completed in 2015.

4. Schedule A to this Application is a project report that sets out in greater detail the causes of this cost increase.

5. The Capital Budget Guidelines (Section 3.b Multi-Year Expenditures) indicate that changes of scope and cost increases in excess of 10% are subject to further review.

6. Hydro therefore makes application for an Order approving the increase in the cost of this project from $9,400,000 to $11,477,100.

**DATED** at St. John's, in the Province of Newfoundland and Labrador, this 29th day of September, 2014.

Tracey L. Pennell
Counsel for the Applicant
Newfoundland and Labrador Hydro
500 Columbus Drive P.O. Box 12400
St. John's, Newfoundland and Labrador
A1B 4K7
Telephone: (709) 778-6671
Facsimile: (709) 737-1782

**IN THE MATTER OF** the *Electrical Power Control Act,* R.S.N.L. 1994, Chapter E-5.1 (the *EPCA*) and the *Public Utilities Act*, R.S.N.L. 1990, Chapter P-47 (the *Act*), and regulations thereunder;

**AND IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro (Hydro) pursuant to Subsections 41(1) and 41(3) of the *Act*, for approval of additional capital expenditures pertaining to its Labrador City Voltage Upgrade Multi-year Project

**TO:** The Board of Commissioners of Public Utilities (the Board)

**AFFIDAVIT**

I, Robert J. Henderson, Professional Engineer, of St. John's in the Province of Newfoundland and Labrador, make oath and say as follows:

1. I am Vice-President of Newfoundland and Labrador Hydro, the Applicant named in the attached Application.
2. I have read and understand the foregoing Application.
3. I have personal knowledge of the facts contained therein, except where otherwise indicated, and they are true to the best of my knowledge, information and belief.

**SWORN** at St. John's in the Province of Newfoundland and Labrador this 29 day of September 2014, before me: )

Barrister - Newfoundland and Labrador

Robert J. Henderson

A REPORT TO

THE BOARD OF COMMISSIONERS OF THE BOARD

| | |
|---|---|
| | Electrical |
| | Mechanical |
| | Civil |
| | Protection & Control |
| | Transmission & Distribution<br>John Noble |
| | Telecontrol |
| | System Planning |

# 2014/2015 Labrador City Voltage Conversion

Newfoundland and Labrador Hydro

September 2014

newfoundland labrador hydro
a nalcor energy company

## Table of Contents

# 1.0 Introduction

This report details a proposed revision to the 2010 Capital Budget Proposal, "Labrador City Voltage Conversion" (see Volume II, Tab 9, 2010 CBA). The Labrador City Voltage Conversion was approved as a multi-year expenditure of $9.4 million to be completed over the period 2010 to 2013. However, further review of the Board is required as the project will require an additional two years to complete as well as approximately $2 million in additional capital expenditures.

# 2.0 2014/2015 Labrador City Voltage Conversion ($608,900/$1,268,200)

## 2.1 Background

Hydro's Labrador City Upgrading Project was developed to ensure that continued, least-cost, reliable service is provided to customers in Labrador City, and to provide the required capacity to meet load growth. The present system was designed to supply approximately 52 MW of customer load. Hydro carried out a study of the distribution system in the fall of 2007. It was found that beyond 52 MW, the existing system would be subject to poor voltage regulation, low voltages, and more frequent component failures due to excessive heating. The distribution system study determined that in order to serve additional load growth, it would be necessary to convert the system to a higher distribution voltage. Converting the distribution lines to 25 kV will increase the power transfer capability, improve voltage regulation, and improve the overall reliability of the system.

## 2.2 Project Execution

The Labrador City Voltage Conversion has encountered challenges which have resulted in escalated costs and schedule delays. The material quantities have increased from the original proposal, and weather conditions and overall contractor availability have resulted in shorter than anticipated construction seasons. When combined with the restrictions in obtaining outages in Labrador City, the pace of construction has been slow.

In an effort to improve the pace, a larger portion of work has been required from Hydro's local operations forces to support to project. This not only includes direct work on the voltage

conversion but switching, securing work permits, and outage planning. The project will require an additional two years to complete.

## 2.3 Work Completed

Since the start of the project, a large amount of work has been completed. This includes the following:

- Install 246 Poles
- Frame/Transfer 402 Structures
- Re-Insulate 227 Structures
- Install 354 Distribution Transformers
- Install 303 Polymer Cutouts
- Install 44.36km of Primary and Neutral Conductor
- Install 4.7km of Secondary Conductor
- Install/Transfer 98 Service Drops
- Install 205 Anchors
- Install 403 Downguys
- Install/Transfer 6 Overhead Guys
- Clear 5.84ha of brush
- Transfer 3 Street Lights
- Install 20 Crossarms
- Install 61 Neutral Brackets

The completed work has resulted in the following system improvements:

- Harrie Lake Trailer Court upgrade work has been completed and is currently operating at 25 kV
- New line to College of the North Atlantic ("CNA") installed
- CNA and new hospital are currently operating at 25 kV
- Labrador City Industrial Park upgrade work has been completed and is currently operating at 25 kV

The lines which have been converted, as outlined in the system improvements above, and are

currently operating at 25 kV are as follows:

- Quartzite Line 6, Line 7, Line 8, and Line 14
- Harrie Lake Line 19 and Line 20
- Vanier Line 21
- A section of Hudson Line 18, around the Labrador City Industrial Park, has been converted and is currently operating at 25 kV

### 2.4 Remaining Work

The following lines are currently operating at 4.16 kV and are scheduled to be converted to 25 kV as a part of this project:

- Bartlett Line 1, Line 2, Line 3, Line 4, and Line 5
- Quartzite Line 12 and Line 13
- Hudson Line 15, Line 16, Line 17, and remainder of Line 18
- Vanier Line 22

## 3.0 Revised Budget

The revised budget for project completion is $11,477,100. The main areas contributing to the increased budget are:

*Material Procurement Costs*

The scope of the project and continued load growth was underestimated and contributed to increased costs due to a requirement for higher quantity of materials than budgeted. In addition, the overall cost of materials and shipping to the area has increased significantly from what was included in the original estimate.

*Cost of Construction*

Contract costs have increased significantly in comparison to the original budget. Labour costs represent approximately 50% of the contract value. The extent of the involvement of Hydro's operations forces required to complete the work was unforeseen and not included in the original estimate. This not only includes work directly associated with converting from 4.16 kV

to 25 kV, but also includes costs required from an outage planning and preparation perspective.

*Weather Conditions and Contractor Availability*

The original budget allowed for a construction schedule of June to October every year, 5 months per year, for a total of 20 months of construction. To date, this level of activity has only been achieved in one year and on average, only 3.5 months of actual work has been completed each year. It is anticipated that the project will require another six to eight months of construction to complete. This will require a project schedule extension of two years.

*Outage Restrictions*

The upgrading of existing line components must be done under a customer outage. Due to the increased development in the Labrador City area, it has been difficult to obtain the volume of outages required to complete the upgrade work in a timely manner. This is especially true in the fall season when temperatures are dropping and customer outages are more difficult to obtain. The outage restrictions have also contributed to the requirement for a schedule extension.

## 3.1 Improved Budgeting Process

A comprehensive review of the project was undertaken in 2013. The result of this review was to finalize the remaining work to be completed and to ensure that all outstanding material was available. As part of the review, a construction work plan was developed and approved by both Projection Execution and Hydro Operations in Labrador.

A number of project planning and project management enhancements currently in place should avoid future problems similar to that which occurred in the Labrador City Voltage Conversion project. These include the use of increased front end engineering/scope development for better estimate accuracy and increased engagement of key team members earlier in the budget development process (e.g., operations/commissioning).

The budget was also revised to reflect the increased involvement of Hydro Operations personnel in direct outage work as well as outage preparation.

# 4.0 Project Cost

Table 1 indicates the revised project costs.

**Table 1 - Revised Project Cost**

**($000s)**

| | *Budget Original* | Actual | Additional Costs | | Revised Project Cost |
|---|---|---|---|---|---|
| **Project Cost: ($ x 1,000)** | **2010 to 2013** | **2010 to 2013** | **2014** | **2015** | **Total** |
| Material Supply | 3,050.0 | 5,161.2 | 100.0 | 83.0 | 5,344.2 |
| Labour | 930.0 | 636.7 | 200.0 | 294.2 | 1,130.9 |
| Consultant | 0.0 | 0.3 | 0.0 | 0.0 | 0.30 |
| Contract Work | 3,700.0 | 2,133.4 | 250.0 | 370.0 | 2,753.4 |
| Other Direct Costs | 0.0 | 692.2 | 0.0 | 27.3 | 719.5 |
| O/H, AFUDC & Escln. | 952.3 | 976.2 | 58.9 | 158.5 | 1,193.6 |
| Contingency | 768.0 | 0.0 | 0.0 | 335.2 | 335.2 |
| TOTAL | 9,400.3 | 9,600.0 | 608.9 | 1,268.2 | 11,477.1 |

# 5.0 Conclusion

The approval of additional expenditures is required to complete the Labrador City Voltage Conversion project. Completion of the Labrador City Voltage Conversion will ensure that a reliable energy supply is available to customers and to meet future load growth. As demonstrated in the 2010 capital budget proposal, voltage conversion is the most efficient and economical way to obtain these desired results.

The overall budget increase requested for approval is $2,046,800.

**DRAFT ORDER)**
**NEWFOUNDLAND AND LABRADOR**
**BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

**AN ORDER OF THE BOARD**

# NO. P.U. __ (2014)

**IN THE MATTER OF** the *Electrical Power Control Act*, R.S.N.L. 1994, Chapter E-5.1 (the *EPCA*) and the *Public Utilities Act*, R.S.N.L. 1990, Chapter P-47 (the *Act*), and regulations thereunder;

**AND IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro (Hydro) pursuant to Subsections 41(1) and 41(3) of the *Act*, for approval of additional capital expenditures pertaining to its Labrador City Voltage Upgrade Multi-year Project

**WHEREAS** Newfoundland and Labrador Hydro ("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 *EPCA;* and

**WHEREAS** Subsection 41(3) of the *Act* requires that a public utility not proceed with the construction, purchase or lease of improvements or additions to its property where:

a) the cost of construction or purchase is in excess of $50,000; or
b) the cost of the lease is in excess of $5,000 in a year of the lease,

without prior approval of the Board; and

**WHEREAS** in Order No. P.U. 1(2010) the Board approved a multi-year project for the Labrador City Voltage Upgrade at an estimated cost of $9,400,000; and

**WHEREAS** by Order No. P.U. 42(2013) the Board approved Hydro's 2014 capital budget in the amount of $97,805,300; and

**WHEREAS** on September 29, 2014 the Board received an application (the "Application") from Hydro to increase the estimated amount for its multi-year project, Labrador City Voltage Conversion, from $9,400,000 to $11,477,100; and

**WHEREAS** the Board is satisfied that the proposed increase in Hydro's capital budget for the Labrador City Voltage Conversion project is necessary to allow Hydro to provide service and facilities which are reasonably safe and adequate and reasonable and should be approved.

**IT IS THEREFORE ORDERED THAT:**

1. The increase in the estimated costs of the multi-year project Labrador City Voltage Conversion from $9,400,000 to $11,477,100 is approved;

2. Hydro shall pay all expenses of the Board arising from this Application.

**DATED** at St. John's, Newfoundland and Labrador, this day of , 2014.

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