

DELIVERED BY HAND

January 30, 2019

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

Attention: G. Cheryl Blundon  
Director of Corporate Services  
and Board Secretary

Ladies & Gentlemen:

**Re: Approval of Capital Expenditures Supplemental to Newfoundland Power Inc.'s (the "Company") 2019 Capital Budget Application**

***The Application***

Please find enclosed the original and nine (9) copies of an application (the "Application") for approval of capital expenditures supplemental to Newfoundland Power's approved 2019 capital budget. The proposed capital expenditures are in relation to the addition of a substation on the north side of the MUN St. John's campus.

***Long Pond Substation Project***

Memorial University of Newfoundland ("MUN") has made a request to Newfoundland Power ("the Company") to establish a substation on the north side of the MUN St. John's campus. This will be a second power supply point as there is adequate substation power transformer capacity available at the existing MUN substation. The Company considers MUN's request for a second power supply point to be a request for a special facility under clause 9(c) of its *Schedule of Rates, Rules & Regulations*. Clause 9(c) requires MUN to pay for the estimated additional cost of providing the special facility. The Provincial Government's Department of Transportation and Works ("DT&W") has agreed to reimburse the Company for the capital expenditures associated with the work.

The project was not included in the Company's 2019 capital budget application due to outstanding matters related to land rights and project schedule which have since been resolved. To meet the project schedule established by MUN, the project has to start in earnest in 2019. Therefore, it cannot be delayed for inclusion in the 2020 annual capital budget application.

**Newfoundland Power Inc.**

55 Kenmount Road • P.O. Box 8910 • St. John's, NL A1B 3P6

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Schedule C to the Application includes the report *2019 Long Pond Substation Project* which provides details on the proposal to establish a substation on the north side of the MUN St. John's campus and the justification for the items to be included in this Application.

***Process Matters***

The Application is filed in accordance with the revised Capital Budget Application Guidelines issued in October 2007 (the "Guidelines"), in particular, part *B.1. Application for Approval of Supplemental Capital Expenditures*. The Guidelines provide for approval of a supplemental capital expenditure where a utility determines that a capital expenditure which was not anticipated and included in the annual capital budget is necessary in the year and should not be delayed until the following year. The capital expenditures associated with the Long Pond Substation Project were not anticipated at the time of preparation of the Company's 2019 Capital Budget Application. It is necessary to proceed with the project in 2019 and delaying either project until 2020 is not feasible.

The Schedules to the Application are presented in a manner consistent with the Company's annual capital budget filings. Schedule A summarizes the capital expenditures by asset class. Schedule B provides project descriptions and details on project expenditures as prescribed by the Guidelines. Schedule C is a report titled *2019 Long Pond Substation Project* which provides full details of the requirement to add the substation.

***Concluding***

A draft of the Order requested is enclosed for the Board's convenience. If there are any questions in relation to this matter, please contact the undersigned at the direct number noted below.

Yours very truly,



Kelly C. Hopkins  
Corporate Counsel

Enclosure

c. Geoff Young  
Newfoundland and Labrador Hydro

Dennis Browne, QC  
Browne Fitzgerald Morgan & Avis

Newfoundland Power Inc.

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

**IN THE MATTER OF** an Application by Newfoundland Power Inc. (the "Applicant") for approval to proceed with the construction and purchase of certain improvements and additions to its property pursuant to Section 41(3) of the Act.

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

**THE APPLICATION OF** Newfoundland Power Inc. (the "Applicant") **SAYS THAT:**

**A. Introductory**

1. The Applicant is a corporation duly organized and existing under the laws of the Province of Newfoundland and Labrador, 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 Applicant operates transmission lines, distribution lines and substations to deliver electricity to customers throughout its service territory on the island portion of the Province of Newfoundland and Labrador.
3. The Application proposes total 2019 capital expenditures of \$4,600,000 as summarized in Schedule A.

**B. Long Pond Substation Project**

4. Memorial University of Newfoundland ("MUN") has made a request to the Applicant to establish a substation on the north side of the MUN St. John's campus. This will be a second power supply point as there is adequate substation power transformer capacity available at the existing MUN substation.
5. The Applicant considers MUN's request for a second power supply point to be a request for a special facility under clause 9(c) of its *Schedule of Rates, Rules & Regulations*. Clause 9(c) requires MUN to pay for the estimated additional cost of providing the special facility. The Provincial Government's Department of Transportation and Works ("DT&W") has agreed to reimburse the Applicant for the capital expenditures associated with the work.
6. The estimated capital expenditure required to establish a substation on the north side of the MUN St. John's campus is \$4,600,000. Schedule "B" to this Application is a formal explanation of this project.

7. The engineering report 2019 Long Pond Substation Project describes the work to be undertaken. The report is included as Schedule "C" to this Application.

**C. Justification and Relief Requested**

8. The Applicant submits that the proposed expenditure for 2019 referred to in paragraph 6 hereof is necessary to provide service and facilities which are reasonably safe and adequate and just and reasonable, all as required pursuant to Section 37 of the Act.
9. Communications with respect to this Application should be sent to Kelly Hopkins, Counsel for the Applicant.
10. **THE APPLICANT REQUESTS** that the Board approve pursuant to Section 41(3) of the Act, the capital expenditures associated with the purchase and construction of the improvements and additions to the Applicant's property as set out in this Application.

**DATED** at St. John's, Newfoundland and Labrador, this 30<sup>th</sup> day of January, 2019.

**NEWFOUNDLAND POWER INC.**



Kelly C. Hopkins  
Counsel for the Applicant  
Newfoundland Power Inc.  
P.O. Box 8910  
55 Kenmount Road  
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**2019 CAPITAL BUDGET SUPPLEMENTAL**

<b><u>Asset Class</u></b>	<b><u>Budget (000s)</u></b>
1. Substations	\$4,200
2. Transmission	\$400
<b>Total</b>	<b><u>\$ 4,600</u></b>

**2019 CAPITAL PROJECTS (BY ASSET CLASS)**

<b><u>Capital Projects</u></b>	<b><u>Budget (000s)</u></b>	<b><u>Description<sup>1</sup></u></b>
<b>1. Substations</b>		
LPD Substation	\$ 3,800	2
OXF Substation 36L Termination	400	5
<b><i>Total Substations</i></b>	<b>\$ 4,200</b>	
<b>2. Transmission</b>		
36L Transmission Line	\$ 400	8
<b><i>Total Transmission</i></b>	<b>\$ 400</b>	
<b><i>Total Supplemental Capital Expenditure</i></b>	<b>\$ 4,600</b>	

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<sup>1</sup> Project descriptions can be found in Schedule B at the page indicated.

**SUBSTATIONS**

**Project Title:** Long Pond (“LPD”) Substation

**Project Cost:** \$3,800,000

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### **Project Description**

This Substation project involves the construction of a portion of the new LPD substation. The report titled 2019 Long Pond Substation Project included as Schedule C provides detailed information on the project.

The LPD substation will be located behind the National Research Council (NRC) Industry Partnership Facility, which is located on Memorial University of Newfoundland (“MUN”) St. John’s campus along Kerwin Place in St. John’s. The 3200 square meter yard will consist of a standard 66 kV air-insulated steel bus structure, a 66 kV transmission line breaker, a 25.0 MVA, 66 kV/12.47 kV substation power transformer, a 12.47 kV substation power transformer breaker, a 12.47 kV distribution switchgear lineup, and a control building.

Similar to the existing MUN substation, the Company will only be responsible for a portion of the substation’s equipment as the substation will be jointly owned and operated by both the Company and MUN. The portion of the substation to be constructed by the Company includes all 66 kV substation equipment including the 66 kV/12.47 kV substation power transformer and all 12.47 kV substation equipment upstream of the substation power transformer breaker disconnect switch. MUN will be responsible for the construction and ownership of the remaining 12.47 kV distribution equipment including the distribution switchgear.

### **Justification**

The Company’s largest customer is MUN. The MUN St. John’s campus along Prince Philip Drive, including the Health Sciences Center (“HSC”), is supplied electricity by MUN substation. This substation was originally constructed in 1966 and is located between the Facilities Management and Science buildings on the south side of the MUN St. John’s campus. This substation is jointly owned and operated by both the Company and MUN.

Over the past 12 years, the Company has been consulted on a number of occasions regarding the construction of a second substation on the north side of the MUN St. John’s campus. Throughout the consultations, the Company has provided support in the form of cost estimates and electrical utility infrastructure design expertise.

The main reasons cited by MUN for their need to have a new substation built on the north side of their St. John’s campus are to:

- i) Improve the electrical reliability and provide an increased level of redundancy of utility supply to primarily the HSC, but also to the rest of the MUN St. John’s campus.



ii) Increase capacity flexibility on MUN's existing 12.47 kV distribution system to better accommodate projected load growth and future maintenance activities.

The Company normally provides its customers with a single supply point. MUN has requested a second power supply point even though there is adequate substation power transformer capacity still available at the existing MUN substation. For this reason, the Company considers the request by MUN for the second supply point to be a request for a special facility pursuant to clause 9(c) of the Company's *Schedule of Rates, Rules & Regulations*. Clause 9(c) requires the customer to pay for the estimated additional cost of providing the special facility. Accordingly, the Company requires that MUN pay for the full cost of the second supply point. The Provincial Government's Department of Transportation and Works ("DT&W") has agreed to reimburse the Company for the capital expenditures associated with the LPD Project.

This project was not included in the 2019 Capital Budget Application as the required revised lease and easement agreements in relation to the LPD Project were still being developed.

### Projected Expenditures

Table 1 provides a breakdown of the proposed expenditures for 2019 and a projection of expenditures through 2023.

<b>Table 1</b> <b>Project Cost</b> <b>(000s)</b>				
<b>Cost Category</b>	<b>2019</b>	<b>2020</b>	<b>2021 - 2023</b>	<b>Total</b>
Material	\$3,300	-	-	\$3,300
Labour – Internal	50	-	-	50
Labour – Contract	-	-	-	-
Engineering	350	-	-	350
Other	100	-	-	100
<b>Total</b>	<b>\$3,800</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,800</b>

**Costing Methodology**

The budget estimate for this project is based on an engineering cost estimate of the required work.

To ensure this project is completed at the lowest possible cost consistent with safe and reliable service, all material will be obtained through competitive tendering.

**Future Commitments**

This is not a multi-year project.

**Project Title:** Oxen Pond (“OXP”) Substation 36L Termination Project

**Project Cost:** \$400,000

### Project Description

This Substations project is required to provide substation equipment necessary for the addition of a new transmission line at Oxen Pond Substation ("OXP"). The project involves the termination of a new 66 kV transmission line, 36L, at OXP. The existing OXP substation will need to undergo a number of modifications to allow for the 36L transmission line termination. These modifications will include the relocation of transmission line structures within the substation as well as the installation of a new 66 kV transmission line breaker, 66 kV disconnect switches, and auxiliary protection equipment.

### Justification

This project is necessary to supply the new LPD substation located at the MUN St. John’s Campus.

### Projected Expenditures

Table 1 provides a breakdown of the proposed expenditures for 2019 and a projection of expenditures through 2023.

<b>Table 1</b> <b>Projected Expenditures</b> <b>(000s)</b>				
<b>Cost Category</b>	<b>2019</b>	<b>2020</b>	<b>2021 - 2023</b>	<b>Total</b>
Material	\$320	-	-	\$320
Labour – Internal	10	-	-	10
Labour – Contract	-	-	-	-
Engineering	60	-	-	60
Other	10	-	-	10
<b>Total</b>	<b>\$400</b>	<b>\$0</b>	<b>\$0</b>	<b>\$400</b>

### Costing Methodology

The budget estimate for this project is based on engineering estimates.

To ensure this project is completed at the lowest possible cost consistent with safe and reliable service, all material and contract labour will be obtained through competitive tendering.

**Future Commitments**

This is not a multi-year project.

**Transmission**

**Project Title:** 36L Transmission Line

**Project Cost:** \$400,000

### Project Description

A new 66 kV transmission circuit, 36L, will be constructed between the existing OXP substation located along Mount Scio Road and the new LPD substation located at MUN St. John's Campus. The 1.4 km long transmission line will traverse Mount Scio Hill along a 15 meter wide right-of-way and is the least cost, viable transmission line route to supply LPD substation.

### Justification

This project is necessary to supply the new LPD substation located behind the NRC Industry Partnership Facility at the MUN St. John's Campus. A comprehensive review was undertaken by the Company in coordination with Pippy Park Commission to select the most viable least cost transmission line route to supply LPD substation.

### Projected Expenditures

Table 1 provides a breakdown of the proposed expenditures for 2019 and a projection of expenditures through 2023.

<b>Table 1</b> <b>Project Cost</b> <b>(000s)</b>				
<b>Cost Category</b>	<b>2019</b>	<b>2020</b>	<b>2021 - 2023</b>	<b>Total</b>
Material	\$120	-	-	\$120
Labour – Internal	10	-	-	10
Labour – Contract	230	-	-	230
Engineering	10	-	-	10
Other	30	-	-	30
<b>Total</b>	<b>\$400</b>	<b>\$0</b>	<b>\$0</b>	<b>\$400</b>

### Costing Methodology

The budget estimate for this project is based on an engineering cost estimate of the required work.

To ensure this project is completed at the lowest possible cost consistent with safe and reliable service, all material has been obtained through competitive tendering.

**Future Commitments**

This is not a multi-year project.

**Capital Budget Supplemental**  
**Long Pond Substation Project**  
**January 2019**

Prepared by:  
Brad Tucker, P. Eng.





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## 1.0 Introduction

Memorial University of Newfoundland (“MUN”) has made a request to Newfoundland Power (“the Company”) to establish a substation located on the north side of the MUN St. John’s campus.<sup>1</sup> The project was not included in the Company’s 2019 capital budget application due to outstanding matters related to land rights and project schedule which have since been resolved. In order to meet the project schedule established by MUN, the project has to start in earnest in 2019. Therefore, it cannot be delayed for inclusion in the 2020 annual capital budget application.

The Company’s largest customer is MUN. The MUN St. John’s campus along Prince Philip Drive, including the Health Sciences Center (“HSC”), is supplied electricity from the existing MUN substation. This substation was originally constructed in 1966 and is located between the Facilities Management and Science buildings on the south side of the MUN St. John’s campus. This substation is jointly owned and operated by both the Company and MUN.<sup>2</sup>

Over the past 12 years, the Company has been consulted on a number of occasions regarding the construction of a second substation on the north side of the MUN St. John’s campus. Throughout the consultations, the Company has provided support in the form of cost estimates and electrical utility infrastructure design expertise.

The main reasons cited by MUN for the need to have a new substation built on the north side of their St. John’s campus are to:

- i. Improve the electrical reliability and provide an increased level of redundancy of utility supply to primarily the HSC, but also to the rest of the MUN St. John’s campus.<sup>3</sup>
- ii. Increase capacity flexibility on MUN’s existing 12.47 kV distribution system to better accommodate forecast load growth and future maintenance activities.

The Provincial Government’s Department of Transportation and Works (“DT&W”) has approved the cost estimate provided by the Company for the design and construction of a portion of the new LPD substation and a dedicated transmission line (to be designated “36L”) to supply the substation.<sup>4</sup> Over the last several years, the Company has been working with the project’s stakeholders to move this project forward.

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<sup>1</sup> This project involves the construction a portion of the new Long Pond (“LPD”) substation and its dedicated transmission line 36L, including the associated Oxen Pond (“OX”) substation termination infrastructure.

<sup>2</sup> Appendix A includes the single line diagram (“SLD”) of the existing MUN substation.

<sup>3</sup> CSA Standard Z32-15 “*Electrical Safety and Essential Electrical Systems in Health Care Facilities*” outlines the utility supply requirements for health care facilities.

<sup>4</sup> The portion of the substation to be constructed by Newfoundland Power includes all 66 kV substation equipment including the 66 kV/12.47 kV substation power transformer and all 12.47 kV substation equipment upstream of the substation power transformer breaker disconnect switch. MUN will be responsible for the construction and ownership of the remaining 12.47 kV distribution equipment including the distribution switchgear.

## 2.0 Background

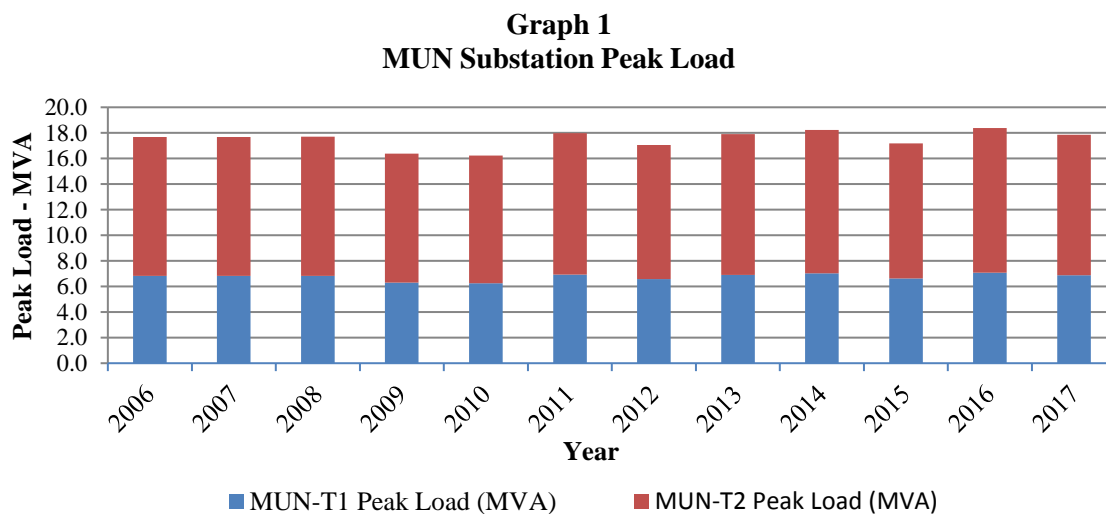
### 2.1 MUN Substation History and Loading

The MUN St. John's campus was established in 1961 at its current location on Elizabeth Avenue. Throughout the 1960s, expansion of the MUN St. John's campus continued. In order to continue to provide electricity service to the expanding MUN St. John's campus, MUN substation was constructed in 1966. The substation originally consisted of a single 14.8 MVA substation power transformer and a switchgear building that housed an incoming breaker and 4 distribution feeder breakers.<sup>5</sup>

In 1976, an additional 20.0 MVA substation power transformer was installed at MUN substation to increase the parallel substation power transformer capacity to 34.0 MVA.<sup>6</sup> Additionally, the switchgear building was extended and 8 more breakers were added to supply the continued expansion of the MUN St. John's campus, which included the opening of the HSC in 1978.<sup>7</sup>

Since 1977 no substation power transformer capacity or switchgear distribution feeders have been added to MUN substation.

From 2006 to 2017, the average peak electrical load of MUN substation has been approximately 17.5 MVA. This compares to a parallel substation power transformer capacity of 34.0 MVA. Graph 1 shows the historical peak electrical loads on MUN substation between 2006 and 2017.



<sup>5</sup> A substation power transformer converts electricity from transmission level voltages (typically between 66 kV and 138 kV) to distribution level voltages (typically between 4 kV and 25 kV).

<sup>6</sup> The total substation capacity is not necessarily equal to the sum of the individual substation power transformer nameplate capacities. The electrical characteristics of each substation power transformer, more specifically the substation power transformer's per unit impedance, determines how load is divided between substation power transformers that operate in parallel.

<sup>7</sup> Of the 8 breakers that were added, 6 were feeder breakers, 1 was an incoming breaker, and 1 was a bus-tie breaker.

## **2.2 *MUN St. John's Campus and HSC Planned Expansions***

Over the next decade, there are a number of planned expansions expected to take place within the MUN St. John's campus, including expansions of the HSC. The most prominent of these expansions is the completion of the new MUN Core Sciences Facility ("CSF"), which is being built alongside the MUN University Center ("UC") on the north side of Prince Philip Drive. This building is currently under construction and is expected to be completed in late 2020. It is estimated that the peak electrical demand of the building could reach as much as 6.3 MVA, depending on the building's occupancy level.

In addition to the new CSF, an Animal Resource Center and Mental Health facility are expected to be added to the HSC and both an Aboriginal Center and Engineering Building High Bay Expansion are expected to be constructed on the MUN St. John's campus. These anticipated expansions and additions would increase the electrical load on the existing MUN substation; however, the existing parallel substation power transformer capacity would be enough to satisfy the forecast demand.

## **2.3 *MUN and HSC Contingency Plans***

The HSC is the largest health care facility in the province of Newfoundland and Labrador and represents the most critical electrical load on MUN's St. John's campus. The HSC's peak load in 2017 was 7.9 MVA and accounts for approximately 45% of the MUN substation peak load. MUN substation supplies the HSC using a primary dedicated feeder, MUN-01, and by a backup dedicated feeder, MUN-08.<sup>8</sup> In the event that neither feeder is available, four 0.8 MW and two 2.0 MW emergency standby diesel generators are available to provide essential service power to the HSC, the Nuclear and Molecular Medicine Facility ("NMMF"), and the UA.

## **3.0 *Project Justification and Benefits***

MUN indicates that a new substation on the north side of the St. John's campus is required in order to:

- i. Improve electrical reliability and provide an increased level of redundancy of utility supply to primarily the HSC, but also to the rest of the MUN St. John's campus.
- ii. Increase capacity flexibility on MUN's existing 12.47 kV distribution system to better accommodate forecast load growth and future maintenance activities.

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<sup>8</sup> Under normal operations, both feeders are in-service and essentially split the electrical peak load being supplied to the HSC and Utilities Annex ("UA"). Under the "Single Feeder Operating Scenario", MUN staff would take measures to reduce the loading on the single feeder (i.e., load curtailment, load transfers, and strategic load scheduling).

### 3.1 Utility Electrical Supply Redundancy

The proposed LPD Project will increase the redundancy of the utility electrical supply to the MUN St. John's campus.

The existing MUN substation is supplied by two 66 kV transmission lines, 12L and 14L. Transmission line 12L is a 3.2 km transmission line that connects the Company's King's Bridge ("KBR") substation to the existing MUN substation.<sup>9</sup> Transmission line 14L is a 2.3 km transmission line that connects the Company's Stamp's Lane ("SLA") substation to the existing MUN substation.<sup>10</sup> These transmission lines are redundant, so in the event of a trip on 12L or 14L, the other transmission line will still supply MUN substation. These transmission lines have performed reliably, with no instances of both transmission lines failing during the same timeframe and thereby causing an outage to MUN substation within the last 10 years.

With the addition of the 36L transmission line connecting OXP substation to the new LPD substation, the level of redundancy from the utility transmission supply perspective is increased as either of the three transmission lines can supply the entire MUN distribution system load.<sup>11</sup> Additionally, supplying the MUN distribution system directly from one of two Northeast Avalon infeed substations is considered to be a more reliable transmission arrangement.<sup>12</sup>

Similar to the 66 kV transmission supply to the MUN distribution system, the LPD substation project will increase the amount of redundancy at the substation power transformer level as well. Currently, the existing MUN substation contains two substation power transformers, MUN-T1 and MUN-T2. MUN-T1 was installed during the original construction of the substation in 1966 and has a capacity rating of 14.8 MVA. MUN-T2 was installed in 1976 and has a capacity of 20.0 MVA. Since the average peak electrical load of MUN substation has been approximately 17.5 MVA for the past 12 years, these substation power transformers are not considered fully redundant based on their nameplate capacity ratings.<sup>13</sup>

With the addition of a new 25.0 MVA substation power transformer as part of the proposed LPD substation, the MUN distribution system will see an approximate 72% increase in the available

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<sup>9</sup> 12L consists of a 2.2 km single pole aerial conductor section and a 1.0 km underground oil-filled power cable section. 1.1 km of the aerial section was rebuilt in 2013 and the remaining 1.1 km was rebuilt the following year in 2014. The underground section was first installed in 1966 and it's anticipated that a replacement evaluation will be completed within the next 5 years to determine what replacement alternatives exist.

<sup>10</sup> 14L consists of a 1.2 km single pole aerial conductor section and a 1.1 km underground oil-filled power cable section. 0.5 km of the aerial section was rebuilt in 1993 and the remaining 0.7 km was rebuilt in 2015. The underground section was first installed in 1966 and it's anticipated that a replacement evaluation will be completed within the next 5 years to determine what replacement alternatives exist.

<sup>11</sup> The ability to supply the entire MUN distribution system via a single transmission line could require a number of MUN feeder reconfigurations depending on which single transmission line is supplying the system and what that means for loadings on MUN's feeders.

<sup>12</sup> The majority of the Northeast Avalon electrical load is supplied through either Newfoundland and Labrador Hydro's OXP substation or Hardwoods ("HWD") substation. As a result, OXP and HWD are known as infeed substations. From the transmission perspective, supplying a customer from an infeed substation instead of from other substations is considered to be a more reliable transmission configuration due to the higher level of infrastructure redundancy present within an infeed substation.

<sup>13</sup> The Company's substation power transformer loading guideline allows for a substation power transformer to be operated in an overloaded state under certain conditions.

substation power transformer capacity. This increase in substation power transformer capacity means that the level of redundancy from the utility substation power transformer supply perspective is also increased.<sup>14</sup>

Overall, once the LPD substation is in-service, the MUN distribution system will be supplied from two geographically unique substations, instead of from the single existing substation. This reduces the probability of the MUN distribution system, and especially the HSC, from having to operate on backup/emergency generation during a major outage at either of the two substations.

### **3.2 Increased Distribution System Capacity Flexibility**

The proposed LPD Project will increase the capacity flexibility on MUN's existing 12.47 kV distribution system to better accommodate forecast load growth and future maintenance activities.

Many of the load additions that are expected to occur over the next 10 years on the MUN St. John's campus, including the anticipated HSC expansions, are anticipated to occur on the north side of the Prince Philip Parkway. This means that in order to supply all of these loads from the existing MUN substation, significant upgrades would be required to both the existing substation's switchgear and the 12.47 kV distribution network.

Overall, the proposed LPD substation and the associated distribution system upgrades increase MUN's flexibility in terms of supplying both the existing and forecast electrical loads throughout its St. John's campus. As well, the ability to offload the existing MUN feeder breakers would be enhanced allowing for maintenance activities to proceed with minimal impact to the day-to-day operation of the St. John's campus.

## **4.0 Project Description (\$4,600,000)**

Providing a second electric utility supply point to MUN will require three projects in 2019. These projects include:

- construction of the LPD Substation,
- construction of transmission line 36L, and
- construction of a transmission line termination for 36L at the OXP Substation.

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<sup>14</sup> The ability to supply the entire MUN distribution system during a multiple substation power transformer failure event after the LPD substation has been placed into service could require a number of MUN feeder reconfigurations depending on which substation power transformer is left supplying the system and what that means for loadings on MUN's feeders.

#### **4.1 LPD Substation Project Description (\$3,800,000)**

The LPD substation will be constructed behind the National Research Council Facility, which is located on MUN's St. John's campus along Kerwin Place in St. John's. The 2,400 m<sup>2</sup> substation yard will consist of a standard 66 kV air-insulated steel bus structure, a 66 kV transmission line breaker, a 25.0 MVA 66 kV/12.47 kV substation power transformer, a 12.47 kV transformer breaker, a 12.47 kV distribution switchgear lineup and a control building.<sup>15</sup>

Similar to the existing MUN substation, the Company will only be responsible for a portion of the equipment in the substation. The agreed upon scope of work is for the Company to supply, install, maintain, own and operate:

- All 66 kV equipment in the new substation. This will include the single 25.0 MVA substation power transformer, bus structures, switches, breakers, and any other ancillary equipment (e.g., instrument transformers). A control building complete with all required protective relaying, metering, and communication equipment for remote control and monitoring is also included.
- All 12.47 kV equipment upstream of and including the substation power transformer breaker disconnect switch.
- The civil infrastructure required in the new substation to complete the installation of all the Company owned equipment, including the ground grid for the entire substation.

#### **4.2 36L Transmission Line Project Description (\$400,000)**

A new 66 kV transmission line, 36L, will be constructed between the existing OXP substation located along Mount Scio Road and the new LPD substation. The 1.4 km long transmission line will traverse Mount Scio Hill along a 15 meter wide right-of-way. The Company worked extensively with Pippy Park Commission ("PPC") staff to select a least cost transmission line route that was both practical and acceptable to PPC board members.<sup>16</sup>

#### **4.3 OXP Substation 36L Termination Project Description (\$400,000)**

The existing OXP substation will need to undergo a number of modifications to allow for the 36L transmission line termination. These modifications will include the relocation of transmission line structures within the substation as well as the installation of a new 66 kV transmission line breaker, 66 kV disconnect switches, and auxiliary protection equipment.

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<sup>15</sup> Appendix B includes the single line diagram for the LPD Substation.

<sup>16</sup> A comprehensive review was undertaken by the Company in coordination with PPC staff over a two year time frame to select an appropriate 36L transmission line route. The PPC formally approved the 36L transmission line route in October 2017. A drawing of the selected 36L transmission line route is included as Appendix C.

## 5.0 Project Cost

Table 1 provides a breakdown of the total project cost.

**Table 1**  
**2019 LPD Project Costs**  
**(\$000's)**

<b>Cost Category</b>	<b>LPD Substation</b>	<b>OXF Substation 36L Termination</b>	<b>36L Transmission Line</b>	<b>Total LPD Project Cost</b>
Material	3,300	320	120	3,740
Labour – Internal	50	10	10	70
Labour – External	0	0	230	230
Engineering	350	60	10	420
Other	100	10	30	140
<b>Total</b>	<b>3,800</b>	<b>400</b>	<b>400</b>	<b>4,600</b>

## 6.0 Project Construction Schedule

The proposed project construction schedule for the LPD Project is include as per Table 2 below.

**Table 2**  
**Proposed LPD Project Construction Schedule**

<b>Date</b>	<b>Milestone</b>
February 28, 2019	Award of transformer and equipment procurement contracts.
March 29, 2019	Award of substation construction contract.
June 28, 2019	Commencement of project related civil works construction and award of 36L transmission line construction contract.
September 30, 2019	Transformer delivery.
November 29, 2019	Completion of substation, civil and transmission construction contracts.
December 20, 2019	Completion of project commissioning activities and substation in-service date.



## 7.0 Customer Contribution

The Company normally provides its customers with a single supply point. MUN has requested a second power supply point even though there is adequate substation power transformer capacity available at the existing MUN substation. For this reason, the Company considers the request by MUN for the second supply point to be a request for a special facility as per clause 9(c) of the Company's *Schedule of Rates, Rules and Regulations*. Clause 9(c) requires the customer to pay for the estimated additional cost of providing the special facility. Accordingly, the Company requires that MUN pay for the full cost of the second supply point.<sup>17</sup> Table 3 provides a breakdown of the calculation of the customer cost estimate.<sup>18</sup>

**Table 3**  
**Calculation of Customer Cost Estimate**

Project Cost	Cost (\$000's)
LPD Substation Project	3,800
OXF Substation 36L Termination Project	400
36L Transmission Line Project	400
GEC Cost	230
O&M Cost	650
<b>Total Customer Cost Estimate</b>	<b>5,480</b>

## 8.0 Conclusion

MUN has made a request to the Company to establish a second substation on the north side of the MUN St. John's campus. This requires the Company to complete the three projects listed above. The project schedule established by MUN requires these projects to be completed in 2019.

The Company's costs associated with these capital projects will be fully reimbursed by DT&W.

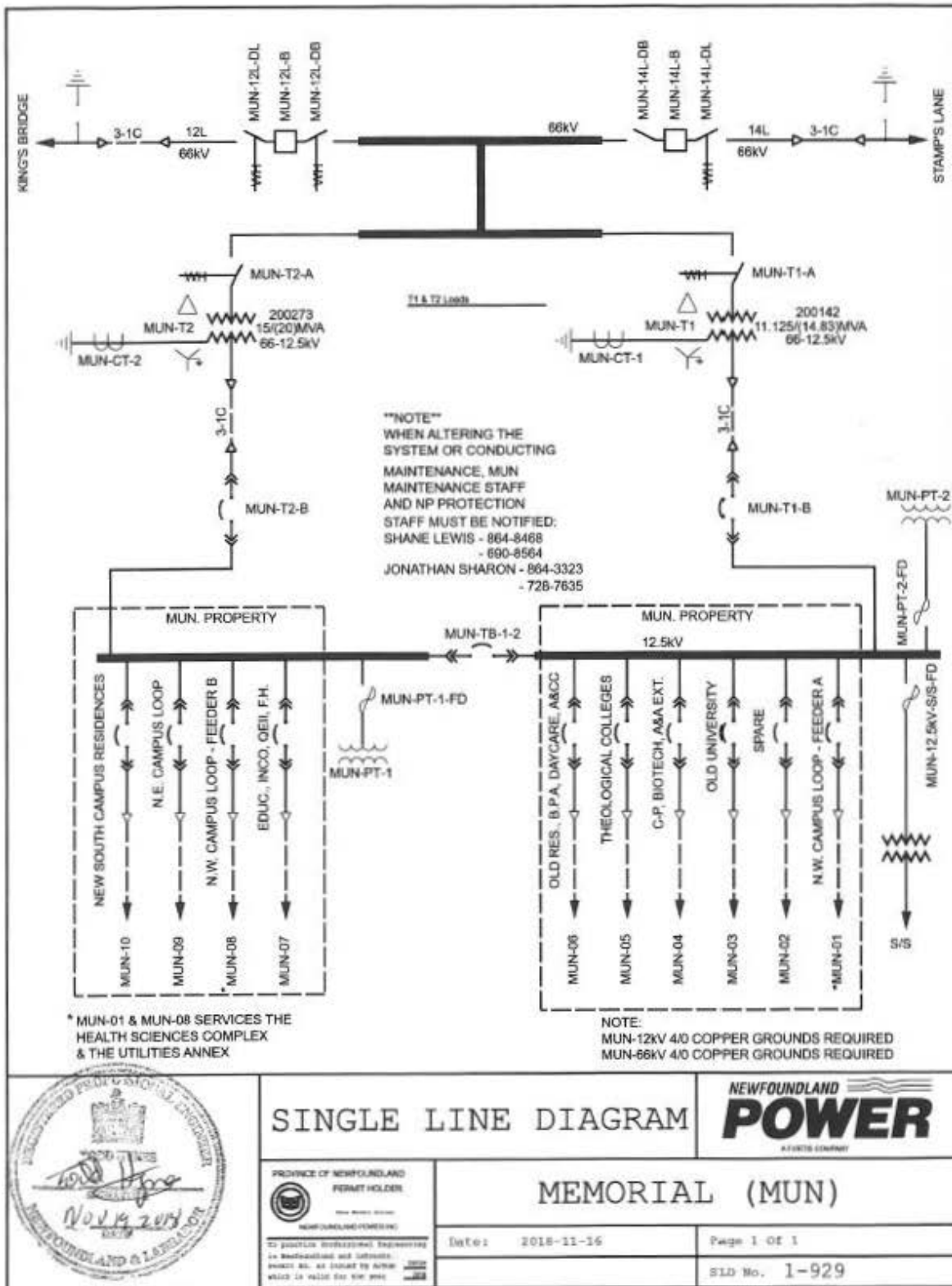
This project is estimated to cost \$4,600,000 in 2019.

<sup>17</sup> The cost estimate of \$5.5 million includes: \$4.6 million for project costs; General Expense costs ("GEC") of \$0.2 million and an allowance for Operating and Maintenance Costs of \$0.7 million. The Company is also reviewing the Rates, Terms and Conditions of service to MUN to accommodate the second supply point and to ensure MUN continues to pay its reasonable cost for service.

<sup>18</sup> Appendix D includes a detailed summary of the Calculation of Customer Cost Estimate for the LPD Project.

**Appendix A**  
**Existing MUN Substation Single Line Diagram**

## Existing MUN Substation Single Line Diagram



**Appendix B**  
**Proposed LPD Substation Single Line Diagram**

[illegible]

**Appendix C**  
**Proposed 36L Transmission Line Route Drawing**

**Proposed 36L Transmission Line Route Drawing**



**Appendix D**  
**Detailed Summary of the Calculation of**  
**Customer CIAC Cost Estimate**



**Calculation of Customer CIAC Cost Estimate  
(\$000's)**

<b>Cost Category</b>	<b>LPD Substation Project</b>	<b>OX Substation 36L Termination Project</b>	<b>36L Transmission Line Project</b>	<b>Total Cost</b>
Material	3,300	320	120	3,740
Labour – Internal	50	10	10	70
Labour – External	0	0	230	230
Engineering	350	60	10	420
Other	100	10	30	140
<b>Total (Before GEC &amp; O&amp;M)</b>	<b>3,800</b>	<b>400</b>	<b>400</b>	<b>4,600</b>
GEC Allocation (5%)	190	20	20	230
<b>Total</b>	<b>3,990</b>	<b>420</b>	<b>420</b>	<b>4,830</b>
O&M Allocation <sup>19</sup>	550	60	40	650
<b>Total</b>	<b>4,540</b>	<b>480</b>	<b>460</b>	<b>5,480</b>

<sup>19</sup> The O&M Factor for Substations is 13.8% and for Transmission is 9.9%.

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


**IN THE MATTER OF** an Application by Newfoundland Power Inc. (the "Applicant") for approval to proceed with the construction and purchase of certain improvements and additions to its property pursuant to Section 41(3) of the Act.

**AFFIDAVIT**

I, Byron Chubbs, of St. John's in the Province of Newfoundland and Labrador, make oath and say as follows:

1. That I am Vice-President, Energy Supply and Planning of Newfoundland Power Inc.
2. To the best of my knowledge, information and belief, all matters, facts and things set out in this Application are true.

**SWORN** to before me at St. John's  
in the Province of Newfoundland and  
Labrador this 30<sup>th</sup> day of January, 2019

  
\_\_\_\_\_  
Barrister

  
\_\_\_\_\_  
Byron Chubbs

**NEWFOUNDLAND AND LABRADOR**

**AN ORDER OF THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

**NO. P.U. \_\_\_\_ (2019)**

**IN THE MATTER OF THE PUBLIC  
UTILITIES ACT, R.S.N. 1990,  
CHAPTER P-47 (THE “ACT”)**

**AND**

**IN THE MATTER OF AN APPLICATION  
BY NEWFOUNDLAND POWER INC. (THE “APPLICANT”)  
FOR APPROVAL OF A SUPPLEMENTAL CAPITAL  
EXPENDITURE FOR THE CONSTRUCTION  
AND PURCHASE OF CERTAIN IMPROVEMENTS  
AND ADDITIONS TO ITS PROPERTY PURSUANT  
TO SECTION 41 (3) OF THE ACT.**

**WHEREAS** the Applicant is a corporation duly organized and existing under the laws of the Province of Newfoundland and Labrador, is a public utility within the meaning of the Act, and is also subject to the provisions of the *Electrical Power Control Act, 1994*, and

**WHEREAS** the Applicant operates transmission lines, distribution lines and substations to deliver electricity to customers throughout its service territory on the island portion of the Province of Newfoundland and Labrador, and

**WHEREAS** Memorial University of Newfoundland (“MUN”) has requested that Newfoundland Power undertake the required work to establish a substation on the north side of the MUN St. John’s campus, and

**WHEREAS** the Applicant proposes additions to its property that are required to establish a substation on the north side of the MUN St. John’s campus involving an estimated 2019 expenditure of \$4,600,000, and

**WHEREAS** the Provincial Government's Department of Transportation and Works ("DT&W") has agreed to reimburse Newfoundland Power for the capital expenditures associated with the work, and

**WHEREAS** the proposed expenditure is necessary for the Applicant to provide service and facilities associated with the establishment of a substation on the north side of the MUN St. John's campus which are reasonably safe and adequate and just and reasonable as required pursuant to s. 37 of the Act,

**IT IS THEREFORE ORDERED THAT:**

Pursuant to Section 41(3) of the Act, the Board approves the capital expenditures in excess of \$50,000 associated with the improvements and additions to the Applicant's property as proposed in the Application.

DATED at St. John's, Newfoundland and Labrador, this 30<sup>th</sup> day of January, 2019.

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G. Cheryl Blundon

Board Secretary