

August 2, 2016

Island Regulatory & Appeals Commission
PO Box 577
Charlottetown PE C1A 7L1

Dear Commissioners:

Please find enclosed 10 copies of Maritime Electric's 2017 Capital Budget.

If you require further information, please do not hesitate to contact me at (902) 629-3667.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in black ink, appearing to read "S. D. Loggie".

S. D. Loggie
Vice President, Finance
and Chief Financial Officer

SDL40
Encl. as noted

Maritime Electric

C A N A D A

PROVINCE OF PRINCE EDWARD ISLAND

**BEFORE THE ISLAND REGULATORY
AND APPEALS COMMISSION**

IN THE MATTER of Section 17(1) of the Electric Power Act (R.S.P.E.I. 1988, Cap. E-4) and **IN THE MATTER** of the Application of Maritime Electric Company, Limited for an order of the Commission approving the 2017 Annual Capital Budget and for certain approvals incidental to such an order.

**APPLICATION AND EVIDENCE
OF
MARITIME ELECTRIC COMPANY, LIMITED**

Date: August 2, 2016

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1.0 APPLICATION

C A N A D A

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Introduction

1. Maritime Electric Company, Limited ("Maritime Electric" or the "Company") is a Corporation incorporated under the laws of Canada with its head or registered office at Charlottetown and carries on a business as a public utility subject to the Electric Power Act ("EPA" or the "Act") engaged in the production, purchase, transmission, distribution and sale of electricity within Prince Edward Island.

Application

2. Maritime Electric hereby applies for an order of the Island Regulatory and Appeals Commission ("IRAC" or the "Commission") approving the Annual Capital Budget ("the Budget") for the year 2017 as outlined in the attached evidence.

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3. The proposals contained in this Application represent a just and reasonable balance of the interests of Maritime Electric and those of its customers and will, if approved, allow the Company to perform necessary capital improvements at a cost that is, in all circumstances, reasonable.

Procedure

4. Filed hereto is the Affidavit of John D. Gaudet, Steven D. Loggie, Angus S. Orford and Byron A. Chubbs which contains the evidence in which Maritime Electric relies in this Application.

Dated at Charlottetown, Province of Prince Edward Island, this 2nd day of August, 2016.



D. Spencer Campbell, Q. C.

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Solicitors for Maritime Electric Company, Limited

2.0 AFFIDAVIT

C A N A D A

PROVINCE OF PRINCE EDWARD ISLAND

**BEFORE THE ISLAND REGULATORY
AND APPEALS COMMISSION**

IN THE MATTER of Section 17(1) of the Electric Power Act (R.S.P.E.I. 1988, Cap. E-4) and **IN THE MATTER** of the Application of Maritime Electric Company, Limited for an order of the Commission approving the 2017 Annual Capital Budget and for certain approvals incidental to such an order.

AFFIDAVIT

We, John David Gaudet, Steven David Loggie, Angus Sumner Orford, of Charlottetown and Byron Ambrose Chubbs, of Stratford, in Queens County, Province of Prince Edward Island, MAKE OATH AND SAY AS FOLLOWS:

1. We are the President and Chief Executive Officer, Vice-President, Finance and Chief Financial Officer, Vice-President, Corporate Planning and Energy Supply and Vice-President, Customer Service of Maritime Electric respectively and, as such, have personal knowledge of the matters deposed to herein, except where noted, in which case we rely upon the information of others and in which case we verily believe such information to be true.


Maritime Electric

2. Maritime Electric is a public utility subject to the provisions of the Electric Power Act engaged in the production, purchase, transmission, distribution and sale of electricity within Prince Edward Island.

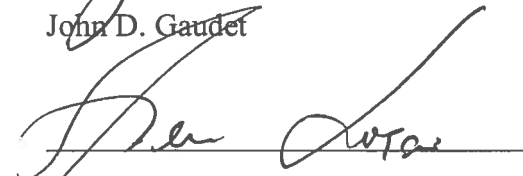
3. We prepared or supervised the preparation of the evidence and to the best of our knowledge and belief the evidence is true in substance and in fact. A copy of the evidence is attached to this, our Affidavit, and is collectively known as Exhibit "A", contained in Sections 3 through 9 inclusive and Appendix A.

4. Section 10 contains a proposed Order of the Commission based on the Company's Application.

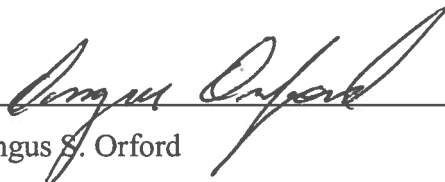
SWORN TO SEVERALLY at
Charlottetown,
Province of Prince Edward Island,
the 2nd day of August, 2016.
Before me:



John D. Gaudet




Steven D. Loggie



Angus S. Orford



Byron A. Chubbs



A Commissioner for taking Affidavits
in the Supreme Court of Prince Edward Island.

3.0 INTRODUCTION

3.1 Corporate Profile

Maritime Electric owns and operates a fully integrated system providing for the purchase, generation, transmission, distribution and sale of electricity throughout Prince Edward Island. The Company's head office is located in Charlottetown with generating facilities in Charlottetown and Borden-Carleton. The Company has contractual entitlement to capacity and energy from NB Power's Point Lepreau Nuclear Generating Station ("Point Lepreau") and an agreement for the purchase of capacity and system energy from NB Power delivered via two submarine cables leased from the Province of Prince Edward Island. The Company purchases 92.5 MW of wind powered energy through contracts with PEI Energy Corporation.

3.2 Overview of Evidence

Under Section 17 (1) of the Electric Power Act, Maritime Electric is required to submit to the Island Regulatory and Appeals Commission, for its approval, an annual Capital Budget of proposed improvements or additions to the property of the public utility. This is the evidence in support of the Company's proposed 2017 Annual Capital Budget. Appendix A outlines the level of the Company's actual and proposed capital expenditures over the 2008-2017 periods. Table 1 below outlines the proposed capital expenditures for 2017 specifically.

Table 1
Proposed 2017 Capital Expenditures

4.0	Generation		
4-1	Charlottetown Plant Buildings and Services Projects	\$	88,000
4-2	Charlottetown Plant Boiler Projects		154,000
4-3	Charlottetown Plant Turbine-Generator Projects		876,000
4-4	Borden Plant Projects		<u>135,000</u>
			<u>1,253,000</u>
5.0	Distribution		
5-1	Replacements due to Storms, Collisions, Fire and Road Alterations		1,400,000
5-2	Distribution Transformers		3,388,000
5-3	Services and Street Lighting		4,369,000
5-4	Line Extensions		1,963,000
5-5	Line Rebuilds		3,862,000
5-6	System Meters		542,000
5-7	Distribution Equipment		1,571,000
5-8	Transportation Equipment		<u>935,000</u>
			<u>18,030,000</u>
6.0	Transmission		
6-1	Substation Projects		2,652,000
6-2	Transmission Projects		3,707,000
6-3	Y-104 Multi-Year Project		<u>2,282,000</u>
			<u>8,641,000</u>
7.0	Corporate		
7-1	Corporate Services		300,000
7-2	Information Technology		<u>768,000</u>
			<u>1,068,000</u>
Sub-total			28,992,000
8.0	Capitalized General Expense		491,000
9.0	Interest During Construction		316,000
Less:	Customer Contributions		<u>(400,000)</u>
Total		\$	<u>29,399,000</u>

4.0 GENERATION

Maritime Electric’s three on-Island generating stations are primarily backup supply sources. Those stations are:

Charlottetown Thermal Generating Station (“CTGS or “Charlottetown Plant”)	5 Generators	55 MW
Borden Generating Station	2 Generators	40 MW
Charlottetown Combustion Turbine No. 3 (CT3)	1 Generator	50 MW

Although the primary role of Maritime Electric’s generation is backup for the existing submarine cables, benefits are also realized through reduced purchased energy costs. The annual value of the avoided capacity and operating reserve purchases supplied by these facilities is approximately \$4.8 million, based on the current Energy Purchase Agreement with NB Power. In addition, this generation provides on-Island supply in times of supply curtailment from off-Island energy suppliers. They also supply energy during transmission line outages or curtailments on the mainland or PEI.

As the CTGS is approaching the end of its life, Management is actively studying generation and pursuing transmission capacity options to enable the timely transition of the thermal units at the CTGS to long-term layup and eventual retirement. Recognizing that the thermal generating units at CTGS may be required in the near-term, an assessment was conducted in 2015 to identify immediate concerns with the equipment in terms of safety and reliability. The assessment has resulted in further inspection and testing which began in 2015 and is ongoing in 2016.

The Generation Capital Budget is made up of projects required to keep the generating facilities in a state of readiness to operate as well as meet reliability and safety requirements. These requirements and considerations are set out in the Company’s Energy Purchase Agreement with NB Power, safety regulations, Provincial boiler inspection branch recommendations, cable overloading, contingency planning and insurance requirements.

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4.1 Charlottetown Plant Buildings and Services Projects \$ 88,000

This category includes expenditures required for buildings and support systems at the Charlottetown Plant facilities. Support systems include but are not limited to:

- Energy Control Centre (ECC) provides 24 hour operation of the Maritime Electric electrical system including energy purchases, load and wind forecasting, generation dispatch and line crew dispatch;
- River Pumphouse provides cooling water for the thermal generation units at the Charlottetown Plant;
- Fuel tanks provide storage of fuel for a minimum of seven days generation at full load;
- Lighting within the Charlottetown generation facilities; and
- Other equipment such as sump pumps and fuel pipe lines.

a. Charlottetown Plant Roof Replacements \$ 49,000

The next scheduled bi-annual roof inspection at the Charlottetown Plant is to be completed in the summer of 2016. A provisional amount, based on previous experience, is included in the budget each year to address roof areas which require replacement because the surface which protects the underlying roof materials has deteriorated. Failure to complete this work could lead to roof leaks, causing damage to Plant equipment.

b. Charlottetown Plant Miscellaneous Buildings and Services \$ 39,000

A provision has been made for a number of smaller projects which have been identified for the Charlottetown Plant. These items are provisional in nature based on past expenditures and include Parts Storage Improvements, Door and Window Replacements, Process Pipeline Replacements, Plant Lighting Systems, Safety Equipment, Sump Pump Replacements and ECC office improvements.

4.2 Charlottetown Plant Boiler Projects \$ 154,000

These expenditures relate to the boilers and boiler systems associated with the Company's thermal generating units. Boilers typically include numerous sub-systems required for operation such as: fuel oil system, combustion air system, burner safety management system, auxiliary steam system, feedwater system, sootblower system, boiler chemicals system, instrument air system, boiler furnace, boiler steam tubing, smoke stacks, emission monitoring system, boiler control and emission control equipment.

a. Miscellaneous Boiler Projects \$ 154,000

A provision has been made for a number of smaller boiler projects at the Charlottetown Plant.

▪ **Miscellaneous Tool Replacements, Boiler Spare Parts and Motors \$ 44,000**

This is a provisional amount to purchase new or replacement tools for the Plant's Machine Shop and Electrical and Instrumentation Shop, provide a provision to rewind one large motor, and source spare parts and implement improvements to the heating boiler.

▪ **Miscellaneous Boiler Improvements \$ 63,000**

Each year the Plant's power boilers are inspected before being laid up for the summer. These inspections identify tube replacements and upgrades that must be completed before the next startup. This provisional amount is contingent on inspection results.

▪ **Boiler Insulation Replacement Improvements \$ 47,000**

The Plant was constructed during a period when insulating materials often contained asbestos. This insulation degrades over time and must be replaced to prevent airborne Asbestos Containing Material (ACM) from endangering the health of workers. The Company has a policy of

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immediate replacement of any ACM found to be in poor condition. This is a provisional amount based upon past experience for asbestos replacement related to the steam boilers.

4.3 Charlottetown Plant Turbine-Generator Projects \$ 876,000

This section covers expenditures associated with the steam turbines, generators and the 50 MW Combustion Turbine (CT3). The steam turbines and generators include such systems as: main steam system, auxiliary steam system, bleed steam system, lube oil system, relay oil system, cooling and auxiliary cooling water systems, air extraction system, condensate system, generator excitation system and vibration monitoring system.

a. Retrofit Gas NOx Water Pump to Liquid NOx Pump \$ 505,000

The 50 MW Combustion Turbine (CT3) was originally supplied by its manufacturer with two NOx water pumps; one pump which is designed to operate with liquid fuel and the second designed to operate with natural gas fuel. Natural gas is currently not available at this site, nor is it expected to be available in commercially viable quantities in the foreseeable future. This project will see the second pump converted for use with liquid fuel which will provide a critical spare for the existing liquid NOx pump. A failure of the existing liquid NOx pump, with no backup pump, limits the 50 MW combustion turbine to a derated output of 5 MW.

b. Water Treatment Plant Filter Replacement \$ 112,000

A Reverse Osmosis (RO) water treatment plant was built in 2005 to supply clean, demineralized water to the 50 MW Combustion Turbine (CT3) for air emissions control. The RO filter membranes supplied with this unit have a typical operating life of 5 to 10 years. This project has been budgeted to replace the original RO filter membranes in 2017.

c. Bird Exclusion Netting for Combustion Turbine Air Intake \$ 40,000

The 50 MW Combustion Turbine (CT3) has incurred a significant amount of corrosion damage to its structural steel supports and metal enclosure due to bird droppings. This project will result in the installation of bird exclusion netting to prevent pigeons from nesting around the combustion turbine's air intake.

d. Miscellaneous Turbine Projects \$ 219,000

A provision has been made for a number of smaller recurring projects for the turbines at the Charlottetown Plant:

▪ **Turbine Insulation (Asbestos) Replacement \$ 34,000**

The Plant was constructed during a period when insulating materials often contained asbestos. This insulation degrades over time and must be replaced to prevent airborne Asbestos Containing Material (ACM) from endangering the health of workers. The Company has a policy of immediate replacement of any ACM found to be in poor condition. This is a provisional amount based upon past experience for asbestos replacement associated with the steam turbines.

▪ **Steam Turbine Improvements \$ 17,000**

Each year the Plant's steam turbines are inspected before being laid up for the summer. These inspections identify replacements and upgrades that must be completed before the next startup. This provisional amount is contingent on inspection results.

▪ **Combustion Turbine Improvements and Spare Parts \$ 168,000**

This is a provisional amount to address any operational deficiencies that arise during the year and allow for the acquisition of additional parts to accommodate required refurbishments.

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4.4 Borden Plant Projects \$ 135,000

This category provides for expenditures related to the facilities at the Borden Plant which are stand-by and peaking units that also supply ancillary services needed for reliability purposes. The Borden Plant houses two diesel fueled combustion turbines (CT1 and CT2) which are rated at a combined 40 MW. This facility also includes: three diesel fuel storage tanks, a fuel tanker truck offloading facility, a maintenance building, two control rooms, lube oil storage building, a storage building for a spare length of submarine cable and a 69 kV substation with two step-up transformers.

a. Miscellaneous Combustion Turbine Improvements \$ 105,000

A provisional amount has been included in the budget to source spare parts and implement turbine improvement work identified during the year.

b. Miscellaneous Buildings and Services Improvements \$ 30,000

A provisional amount, based on previous experience, is included in the budget each year for needed refurbishments including sandblasting, metal patching and replacement.

5.0 DISTRIBUTION

Maritime Electric owns and operates approximately 5,000 kilometres of distribution power lines, 37,000 transformers, 750 pieces of distribution equipment (reclosers, regulators, capacitor banks, etc.), 10,000 street lights and 125,000 distribution poles in its service territory. The Company has a well-established Maintenance and Asset Replacement Program that includes the assessment of the condition of equipment and development of an asset maintenance and replacement cycle for distribution system assets and equipment.

In 2009, the Company conducted a Field Audit and Assessment Project on all transmission and distribution system assets and equipment. This data has provided the Company with the information required to address the issue of the aged infrastructure within the system and improve reliability, voltage and reduce losses.

Maritime Electric's proposed 2017 Distribution Capital Budget will focus on replacing aging infrastructure to maintain system reliability, improvement of the energy efficiency of street lighting with new LED fixtures, servicing new customers with the installation of new assets, and the expansion of existing and new facilities to meet electrical load growth.

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5.1 Replacements Due to Storms, Fire, Collisions and Road Alterations \$ 1,400,000

This is a provisional amount, based on historical expenditures, for distribution asset replacements due to storms, fire, motor vehicle accidents and road alterations.

a. Replacements due to Storms, Fire and Collisions \$ 840,000

The scope and severity of damage caused by storms and adverse weather events is highly unpredictable and as such a provisional amount for the replacement of distribution equipment (predominantly poles and wire) has been proposed for this budget. This budget allows for the labour and material to replace damaged equipment.

b. Replacements due to Road Alterations \$ 560,000

Each year Provincial and Municipal Governments initiate road or highway projects such as intersection expansions, sidewalk installations, sewer or water line extensions, road widening, roundabout installations and bridge replacements. These projects often necessitate the relocation or replacement of distribution lines. This is a provisional amount to relocate or replace distribution lines as a result of these Government projects. At the time of preparing the Capital Budget, the timelines and scope of Government road or highway projects for 2017 was unavailable and as such a provisional amount has been budgeted.

5.2 Distribution Transformers \$ 3,388,000

This provides for the purchase and installation of new transformers and related equipment to serve new customers, address load growth for existing customers and to replace deteriorated units.

For polemount transformers, the historical annual requirement is approximately 38,000 kVA which includes transformer replacements for the Spill Prevention Program. The Spill Prevention Program involves the replacement of 200 pre-1982 polemount transformers on an annual basis that are identified as transformers not tested for PCB contaminants and are at risk of spill. There are approximately 3,800 pre-1982 polemount transformers remaining in the system that need to be tested and/or removed from service depending on the concentration of PCB's.

For padmount transformers, the historical annual requirement is approximately 15,000 kVA which includes padmount transformers for the Transclosure Removal Program. The Transclosure Removal Program involves the replacement of polemount transformers installed in an enclosure (i.e. transclosure) with a padmount transformer. Installations such as these are no longer an approved standard design and are a safety concern when opening the enclosure due to the proximity to energized high voltage equipment.

5.3 Services and Street Lighting \$ 4,369,000

This amount provides for construction of service lines to serve new customers, replacement of aged service lines, and the replacement of street and area lighting with new energy efficient LED fixtures. The service line expenditures are expected to be partially offset by customer contributions.

a. Overhead Service Lines

Estimate:	Single phase	\$2,186,000	
	Three phase	\$784,000	\$ 2,970,000

b. Underground Service Lines

Estimate:	Single phase	\$334,000	
	Three phase	\$240,000	\$ 574,000

c. Street and Area Lighting \$ 825,000

In 2017, the Company will commence its third year of a ten year program to replace existing high pressure sodium (HPS) and mercury vapor (MV) fixtures with more energy efficient light-emitting diode (LED) fixtures. This budget amount provides for the replacement of approximately 750 LED fixtures through the conversion program. The budget amount also includes the installation of approximately 150 LED fixtures based upon historical level of customer requests and the replacement of approximately 150 HPS street and area lights due to the fixtures reaching the end of their useful life.

5.4 Line Extensions

\$ 1,963,000

This amount reflects recent historical costs in this area and provides for the upgrade extension of single phase and three phase distribution lines to serve new residential, industrial, commercial and institutional customers and to accommodate customer demand for electrical load growth. These expenditures are expected to be partially offset by customer contributions. Included in the budget are the upgrades required to the distribution feeders from the proposed Wellington Substation in Section 6.1 and a 1.5 kilometre line extension from North Drive to Slemon Park to provide an alternate feed and improved reliability to the Slemon Park Business Park.

5.5 Line Rebuilds \$ 3,862,000

The projects planned under line rebuilds will allow the Company to address the timely replacement of aged infrastructure, improve reliability and voltage levels, reduce electrical losses and improve safety for Company employees by implementing modern construction standards. The Company's Field Audit and Assessment database remains the primary tool used to prioritize single phase and three phase line rebuilds, pole for pole replacements, porcelain cutout replacements and other reliability improvement activities. Telecommunication companies also periodically request pole replacement to accommodate additional communication infrastructure. These expenditures are often partially offset by a contribution from these third parties.

a. Single Phase and Three Phase Rebuilds \$ 2,437,000

This amount provides for the rebuilding of distribution lines including joint use lines. Projects are prioritized for rebuild based on the condition of the poles and wire, the length of the spans, historical reliability issues associated with the line and historical load growth. These rebuilds improve both reliability and voltage, allow for future load growth and, in many cases, will lead to a reduction in losses. These rebuilds will also improve the safety of Company employees by using modern construction standards with better clearances and equipment. With a greater priority weighting given to pole condition and wire size, the majority of the rebuilds planned for 2017 will be in areas with Eastern Cedar poles that are 40 years or older and are carrying distribution lines with inadequate wire size to properly serve the load. The 32.6 kilometres of line rebuilds currently planned for 2017 are listed in the following table:

**Table 2
Proposed Line Rebuilds for 2017**

Rebuild Location	Line #	Km	# of Phases	Comments	2015 Customer Hrs.	2014 Customer Hrs.	2013 Customer Hrs.
Rustico Rd (Rte. 2 to New Glasgow Road)	WR01661	4 km	Three Phase	61% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 217 customers.	0	3,055	374
N. Winsloe Rd Rebuild (Red Birch Lane to Stepdown)	WR01622	2.5 km	Single Phase	40% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 252 customers.	0	0	0
N. Winsloe Rd Voltage Upgrade and Rebuild (Stepdown to MacQuarrie Road)	WR01607 WR16170	6 km	Single Phase	32% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 191 customers. The voltage on this section of line will be increased from 12.5 kV to 25 kV.	2,658	131	0
Lot 16 Belmont – Rte. 123 (from Rte. 12 to Belmont Park Road)	SE23319 SE23321	7 km	Single Phase	30% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 93 customers.	302	130	0
Lot 16 Belmont – Rte. 12 (from Wharf Rd to Rte. 123)	SE23317	2.5 km	Single Phase	80% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 121 customers.	0	0	1,702
Western Rd (Rte. 2) from Union Rd Intersection to End of 3-Phase Line	AL03067	2.1 km	Three Phase	95% of the line has Eastern Cedar poles. Line has long spans and #4 ACSR wire. Structures do not meet current standards as many transformers are mounted below the neutral. Distribution line feeds 72 customers.	0	0	0
Morell Bridge to St. Peter's	DM00546 DM00566 SF11183	8.5 km	Three Phase	77% of the line has Eastern Cedar poles. The conductor is #2 ACSR Smooth Body wire. Distribution line feeds 175 customers.	264	185	0

b. Pole for Pole Replacement \$ 423,000

The Company owns approximately 125,000 distribution poles across the Island. This proposed budget amount will be used to selectively replace approximately 350 individual poles identified as being deteriorated and reaching the end of their useful life. These pole replacements will be in addition to poles that are replaced due to failure in the course of normal operations, storm damage and line rebuilds.

c. Porcelain Cutout Replacement Program \$ 1,002,000

This proposed budget amount will be used to replace approximately 2,500 porcelain cutouts in 2017. The Company continues to prioritize the replacement of porcelain cutouts as the failure of these cutouts continues to present reliability issues and employee safety concerns. There are approximately 14,260 porcelain cutouts currently installed in the distribution system. It is expected that it will take a further 6 - 8 years to complete the replacement of all porcelain cutouts in the system.

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5.6 System Meters \$ 542,000

This amount provides for the purchase and installation of revenue metering and associated equipment. Details of the amounts are as follows:

a. Watt-hour Meters \$ 261,000

The budget amount for Remote Interrogation (RI) watt-hour meters includes a provision for new services in 2017, new replacement RI watt-hour meters to permit sample testing of approximately 300 meters to ensure compliance with Industry Canada/Masurement Canada standards and an allowance for replacement of damaged or failed meters. Sample testing continues for RI meters installed 10 years ago with most recent results allowing a continuation of the maximum 8 year life extension period. The forecast of new RI watt-hour meters required for 2017 is based upon the sample groups scheduled for testing, anticipated rate of customer growth and historical equipment damage and failure rates.

Customer growth, testing and replacement	620
Network and three phase meters	<u>350</u>
Total	<u>970</u>
Installed Cost: 970 meters @ \$269	\$ 261,000

b. Combination Meters \$ 133,000

With the conversion to RI technology for combination meters completed, the amount for 2017 provides for customer growth and replacements due to service size upgrades or combination meter failures. The unit cost of these meters reflects the purchase of lower cost equipment and a focus on performing in-situ meter installation tests to confirm accuracy.

Customer Growth	60
Replacements due to upgrades, failure	<u>32</u>
Total	<u>92</u>
Installed Cost: 92 meters @ \$1,446	\$ 133,000

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c. Miscellaneous Metering Equipment \$ 77,000

This provides for the replacement of metering equipment such as potential transformers, current transformers, cabinets, locks, meter covers, load limiters, cable connectors, meter adapters, test blocks, phase indicators, neutral isolators, communication cables and media converters for interval meters, DC breakers and disconnect sleeves.

d. Outdoor Metering Tanks \$ 71,000

The requirement for metering tanks in new substations has been eliminated by the use of digital relays that can collect the load data required for planning purposes. In 2017, the Company plans to replace three metering tanks in existing substations as focus continues on eliminating older 2.5 element metering tanks, as well as assets that were manufactured before 1982 which may potentially contain PCB.

5.7 Distribution Equipment \$ 1,571,000

a. System Equipment \$ 1,373,000

This provides for the replacement of aged equipment used to provide voltage support, communications, protection and control of the Company's assets. The ongoing investment in system equipment is essential to providing low cost reliable service to customers. Unplanned failures due to aged equipment tend to be costly and reduce reliability of service to customers. Some of these assets require replacement parts that extend the life of the asset while others require a complete replacement. The Company continuously monitors the age and condition of assets to assess the need for life extension or replacement.

The items identified for replacement in 2017 are identified in Table 3 below:

**Table 3
Proposed System Equipment Replacement for 2017**

System Equipment Description	Material	Labour	Total
Voltage Regulators, Reclosers and Controllers	\$ 302,000	\$ 168,000	\$ 470,000
Electronic Reclosers	93,000		
Recloser Controllers to Replace Obsolete FXB Controllers	13,000		
Voltage Regulator Controls Replacement	21,000		
Two Sets (6) - Voltage Regulators	134,000		
Capacitor Bank Controllers	10,000		
Capacitor Banks and Parts	21,000		
Voltage Regulator and Recloser Parts	10,000		
Circuit Breaker and Power Transformer Upgrades	\$ 125,000	\$ 71,000	\$ 196,000
Power Transformer Parts (pressure relief devices/fall arrest mounts)	6,000		
Transformer Oil	31,000		
Transformer Oil Reconditioning	10,000		
69 kV and 138 kV Breaker Contacts	26,000		
Annual Dissolved Gas Analysis	26,000		
Tap Changer Contacts - Auto Transformer	26,000		
Teleprotection and Relay Replacement	\$ 124,000	\$ 70,000	\$ 194,000
Teleprotection/Relay Replacement Equipment	124,000		
Communication Equipment	\$ 117,000	\$ 65,000	\$ 182,000
Aging Battery Bank Replacement	21,000		
Replacement of LEDR Radios (2 sites per year)	21,000		
Communication Equipment Replacements	21,000		
Communication Equipment New Substations	41,000		
SCADA RTU Retro-Fit Parts	10,000		
Vehicle Antenna (Radio and RF Meters)	3,000		
Distribution	\$ 179,000	\$ 99,000	\$ 278,000
Recloser By-Pass Switch	21,000		
13.8 kV City Circuits Switches	51,000		
Voltage Regulator By-Pass Switch	15,000		
Distribution Connected Capacitors at VC and DV	92,000		
Test Equipment	\$ 53,000	\$ -	\$ 53,000
Doble Power Factor Test Equipment	28,000		
Doble Capacitor Testing Module	25,000		
Total	\$ 900,000	\$ 473,000	\$ 1,373,000

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b. Meter Shop Equipment \$ 28,000

This budget amount provides for the purchase of power quality test equipment, voltmeters and meter test equipment as required.

c. Line Equipment \$ 170,000

This budget amount provides for the replacement of line test equipment such as hotline sticks, phasing sticks, potential indicators, underground fault finder, line safety equipment such as hard cover-up and fall arrest equipment and material handling equipment such as presses and dies, running blocks and chain hoists.

5.8 Transportation Equipment \$ 935,000

The Company's transportation fleet consists of large line vehicles with boom and/or digger attachments, small trucks and suvs, vans, pole and wire trailers and other equipment. Large line vehicle replacements are planned based on the age and condition of the unit. The life span of these units typically average from 10 to 12 years with the aerial units lasting longer than the digger units. Small vehicle replacements depend on age, mileage and type of service; however, the life span averages from 5 to 10 years. Table 4 outlines the proposed expenditure for 2017:

Table 4					
Proposed Transportation Equipment Replacements					
	Unit Replaced	Description	Location	Age (Yrs)	Replacement Cost
1.	08-04-02	Honda Element	Survey Dept.	9	\$ 35,000
2.	05-12-52	Hiab Boom Truck	XFMR/Stores	12	\$ 250,000
3.	06-12-67	Aerial Device Bucket Truck	Western Line Dept.	11	\$ 295,000
4.	07-12-57	Small Bucket Truck (CSUP)	Western Line Dept.	7	\$ 180,000
5.	New	Wire Tensioning Trailer	Central Line Dept.	-	\$ 100,000
6.	Allowance for unforeseen capital expenditures				\$ 75,000
Total					<u>\$ 935,000</u>

6.0 TRANSMISSION

Maritime Electric owns and operates approximately 600 kilometres of transmission lines and 24 substations in its service territory. The Company has a well-established Maintenance and Asset Replacement Program that includes the assessment of the condition of transmission equipment and development of an asset maintenance and replacement cycle for transmission system assets and equipment to improve system reliability. The Transmission category reflects the Company's activities for the expansion and replacement of the 138 kV and 69 kV transmission system. This includes transmission lines, substations, power transformers and protection devices such as circuit breakers.

6.1 Substation Projects \$ 2,652,000

a. Wellington Substation \$ 976,000

The Wellington Substation was built in 1962. The control building and substation infrastructure has deteriorated and safe clearances for maintenance cannot be achieved. The re-construction will include the installation, testing and commissioning of a new 7.5/10 MVA transformer, a provision for a second transformer, oil containment equipment, a provision for a mobile transformer, reclosers for feeders and digital protection and control equipment.

b. Wellington Transformer \$ 992,000

A new 7.5/10 MVA transformer will be designed, procured, installed, tested and commissioned in the re-constructed Wellington Substation. This transformer will be equipped with an on line tap changer and an oil and temperature monitoring system.

c. 69 kV Breaker Replacement Program \$ 566,000

This is a provision to replace four 69 kV breakers in 2017 as a part of the Breaker Replacement Program. There are 10 breakers that are over 40 years old remaining in the system. The breakers will be replaced based on test results, age and severity of the impact on the system in the event of failure.

d. Mount Mellick Substation \$ 82,000

This is a provision for the Environmental Impact Assessment and land purchase for a new substation in the Mount Mellick area. Due to increased customer load growth in this geographic area, construction of the Mount Mellick Substation is required to offload the Crossroads Substation. The Crossroads transformers are loaded at 90 per cent capacity and are forecast to be overloaded in the winter 2019. The construction of the new 69 kV/12.5 kV Mount Mellick Substation will include the installation, testing and commissioning of a new 7.5/10 MVA transformer, a provision for a second transformer, oil containment equipment, a

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provision for a mobile transformer, recloser for feeders and digital protection and control equipment.

e. **Miscellaneous Projects** \$ **36,000**

This is a provision for substation fence upgrades.

6.2 Transmission Projects \$ 3,707,000

a. 69 kV and 138 kV Switch Program \$ 426,000

This amount is to purchase and install 69 kV switches for the Wellington Substation. The Company has an Air Switch Inspection Program and a Transmission Line Inspection and Refurbishment Program that provides for annual inspection of transmission lines and switches. Based on the results of these inspections, there is a provision to upgrade and extend the life of selected 69 kV and 138 kV switches across the transmission system. In addition, in 2017, there will be a focus on extending the life of 69 kV and 138 kV switches in the West Royalty Substation.

b. Transmission Line Refurbishment \$ 1,175,000

The 69 kV and 138 kV transmission lines are the backbone of the Company's electricity delivery system. This amount provides for the life extension activities of the transmission system and ensures system reliability. The following projects are planned for 2017:

- Completion of full scale inspections, refurbishment of emergency and Priority 1 deficiencies and damper replacements on the 138 kV Y-105 transmission line from Bedeque to Sherbrooke, the 138 kV Y-107 transmission line from Borden to Bedeque, and the 138 kV Y-113 transmission line from Borden to Sherbrooke.
- Completion of replacements resulting from a ground inspection of the 69 kV T-11 transmission line from Sherbrooke to Summerside.

- c. **T-8 Transmission Line Rebuild Alleys Mill Road to Georgetown Substation** \$ **1,062,500**
- This project will rebuild a 10 kilometre segment of the T-8 transmission line from the Alleys Mill Road to the Georgetown Substation. This segment of the T-8 transmission line was constructed in 1974 using brown porcelain ‘flower pot’ insulators which are prone to failure due to the top skirt of the insulator separating from the pin on the insulator. This amount provides for the replacement of the poles, conductor, porcelain insulators and wood crossarms with new armless structures.
- d. **Environmental Impact Assessment re Y-109 Re-Routing and Extension and T-3 Relocation** \$ **106,000**
- In conjunction with the submarine cable project, the Company is planning to re-route a section of the 138 kV Y-109 transmission line from the Bedeque Substation and extend the line approximately 9 kilometres to the Borden Substation to improve cable load sharing and system performance. The project will also require the 69 kV T-3 transmission line to be relocated to the opposite side of the Trans Canada Highway in the Borden area. This provision allows for route selection and an Environmental Impact Assessment associated with this project.
- e. **T-21 Transmission Line Rebuild Howlan Road to Alberton Substation** \$ **937,500**
- This project will rebuild a 10 kilometre segment of the T-21 transmission line from the Howlan Road to the Alberton Substation. The Company rebuilt sections of T-21 transmission line in 2003 and 2007. This 10 kilometre segment of the T-21 transmission line was constructed in 1972 using porcelain post-top insulators which are prone to failure due to shearing at the bottom of the insulator. This amount provides for the replacement of the poles, conductor, porcelain insulators and wood crossarms with new armless structures.

6.3 Y-104 Multi-Year Project *\$ 2,282,000*

This is a provision to build the remaining 13 kilometres of 138 kV transmission line from Curtis Road to the Church Road Substation in 2017. The completion of this segment of transmission line will result in the completion of the 82.5 kilometre Y-104 transmission line project.

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Table 5 outlines the actual and forecast annual costs for the multi-year Y-104 transmission line project.

Table 5			
Estimated Annual Costs Y-104 Transmission Line			
	Y-104 Project Description	KM	Actual/ Proposed Cost
2012	Church Road 45/60/75 MVA Auto-Transformer, 138 kV Breaker and Bay		\$ 2,686,000
2012	EIA for Mount Stewart Road - Route 22 to Church Road Substation		100,750
	Total 2012(A)		\$ 2,786,750
2013	Easements from existing T-4 to Church Road Substation		117,760
	Total 2013(A)		\$ 117,760
2014	Riverside Bypass West Royalty Substation to Acadian Drive	7	944,380
2014	Scotchfort Substation to West St. Peter's Substation	13	1,753,845
2014	West St. Peter's Substation (installation deferred to 2015)		36,000
2014	West Royalty 138 kV Breaker (installation deferred to 2015)		152,525
	Total 2014(A)		\$ 2,886,750
2015	West St. Peter's Substation to Settlement Road	2.5	275,700
2015	Acadian Drive to Scotchfort	27	2,977,720
2015	Settlement Road to Cardigan Road (2016 Tree Clearing)		176,000
2015	West St. Peter's 138 kV Transformer		716,335
2015	West St. Peter's Substation (installation deferred from 2014)		816,255
2015	West Royalty 138 kV Breaker (installation deferred to 2014)		98,100
	Total 2015(A)		\$ 5,060,110
2016	Settlement Road to Cardigan Road	20	2,884,000
	Total 2016(F)		\$ 2,884,000
2017	Church Road 138 kV Breaker		552,000
	Curtis Road to Church Road Substation	13	1,730,000
	Total 2017(F)		\$ 2,282,000
TOTAL		82.5	\$ 16,017,370

(A) - Actual; (F) - Forecast.

7.0 CORPORATE

7.1 Corporate Services \$ 300,000

The following projects are required to ensure the safety, security and efficient operation of the Company's facilities.

a. Server Room HVAC Replacement - 180 Kent Street \$ 50,000

This provides for the replacement of the heating, ventilation and air conditioning (HVAC) unit which serves the Company's primary information technology infrastructure. Maintaining constant air temperatures and humidity levels is integral to proper operation and performance of the sensitive Information Technology (IT) equipment.

With the addition of new IT equipment in the Kent Street server room, the current HVAC unit has experienced increased loading in recent years which has resulted in performance issues, an increase in the number of repair outages required and frequent reliance upon the back-up HVAC system to provide climate control protection. Replacement of the HVAC unit will provide the key IT infrastructure located in the Kent Street server room with reliable HVAC protection to meet current and projected future requirements.

b. Service Centre Improvement Plan – West Royalty Service Centre \$ 200,000

This provides for Year 2 of a three year plan to identify areas throughout the West Royalty Service Centre facility where improvements in the design and layout can be implemented to increase operational efficiencies for those who work there. Planning and design assessments will be completed in 2016 to establish an execution timeline for those improvements that can be accommodated within the budget parameters. With approval of the Year 2 expenditure amount, implementation of the identified changes will commence later in 2016 and continue in a timely manner throughout 2017.

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7.2 Information Technology \$ 768,000

The Company recognizes the critical role that IT plays in meeting its objectives. To this end, the Company proposes to invest in the following initiatives.

a. Hardware Acquisitions \$ 198,000

Servers	\$ 48,000
Communications Equipment	55,000
Personal Computers	50,000
Printers	20,000
Installation Costs	<u>25,000</u>
Total	<u>\$ 198,000</u>

b. Purchased Software and Upgrades \$ 280,000

Microsoft Suite	\$ 80,000
Great Plains Financials	30,000
ESRI Mapping System	40,000
Software Development Tools	25,000
Smaller Miscellaneous Software	40,000
Installation Costs	<u>65,000</u>
Total	<u>\$ 280,000</u>

c. Network Security Review \$ 55,000

This provides for a review and analysis of the Company's computer network by an external security specialist. The review evaluates the many facets of security against the latest trends in criminal cyber activity. Maritime Electric has adopted a two phased approach to the review. In year one (2017), the review is completed, recommendations assessed and a work plan, incorporating necessary capital improvements, is developed. In year two (2018), the work plan is implemented.

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- d. Wireless Network \$ 35,000**
This project will see wireless networking installed in several core Maritime Electric facilities. Wireless technology will allow for increased mobility and collaboration, improved response times, easier network expansion and enhanced guest access. The project will see access points installed at 180 Kent Street, West Royalty Service Centre and the Energy Control Centre.
- e. Aged Systems Refresh \$ 60,000**
As technology evolves, it is critical to upgrade older systems software. As these assets age issues with the development software, security and the needs of the users need to be addressed. This project will focus on upgrading several older applications including the Meter History System, Outage Statistics Reporting and Civic Address Validation System. These systems will be developed and implemented by internal IT staff.
- f. Call Recorder System \$ 35,000**
Call recording technology is used within the Call Centre as well as at the Energy Control Centre. The recordings are used for training purposes, for customer service clarifications as well as back up for verbal energy purchase commitments. The call recording technology currently employed has become dated and has reached its capacity. This project will see the system replaced and expanded.
- h. Transmission Assets Field Inspection System \$ 50,000**
IT will work with the Operations group to develop software to manage the data acquired from inspections of transmission assets. This new system will maintain historical data, generate inspections schedules, track corrective actions and produce work orders.

8.0 CAPITALIZED GENERAL EXPENSE **\$ 491,000**

This amount includes a portion of administrative costs (predominately labour) that are properly recognized as part of the Company's overall capital expenditure program. These recurring expenditures represent an allocation of administrative costs, not specific to any one capital project, but rather as part of the overall development, implementation and management of the Company's capital budget program.

9.0 INTEREST DURING CONSTRUCTION **\$ 316,000**

This represents an allowance for the cost of funds used during the construction of certain assets. It is reflected in the accounts as an offset to financing costs and is based on the Company's cost of borrowing. This amount is allocated to fixed assets and recovered through amortization over the life of the assets.

10.0 PROPOSED ORDER

C A N A D A

PROVINCE OF PRINCE EDWARD ISLAND

**BEFORE THE ISLAND REGULATORY
AND APPEALS COMMISSION**

IN THE MATTER of Section 17(1) of the Electric Power Act (R.S.P.E.I. 1988, Cap. E-4) and **IN THE MATTER** of the Application of Maritime Electric Company, Limited for an order of the Commission approving the 2017 Annual Capital Budget and for certain approvals incidental to such an order.

UPON receiving an Application by Maritime Electric Company, Limited (the “Company”) for approval of the Company’s capital budget for year 2017;

AND UPON considering the Application and Evidence filed in support thereof;

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NOW THEREFORE, for the reasons given in the annexed Reasons for Order and pursuant to the Electric Power Act;

IT IS ORDERED THAT

The 2017 Capital Budget Application of the Company, filed herein on July 29, 2016 and summarized below is approved:

2017 Capital Budget Summary	
Corporate	\$ 1,068,000
Generation	1,253,000
Distribution	18,030,000
Transmission	8,641,000
General Expense Capitalized	491,000
Interest During Construction	316,000
Total	\$ 29,783,000
Less: Contributions	(400,000)
Total (Net)	\$ 29,399,000

DATED at Charlottetown, Prince Edward Island, this ____ day of _____, 2016.

BY THE COMMISSION:

Chair

Commissioner

Commissioner

Commissioner

APPENDIX A

**Summary of Capital Expenditures
(2008 – 2017)**

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Maritime Electric Company, Limited Summary of Capital Expenditures (2008-2017)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016	2017
	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Budget	Forecast	Budget
Generation											
Charlottetown Plant and CT3	1,645,014	907,390	1,200,419	1,195,221	844,766	669,275	592,872	451,154	1,061,000	721,000	1,118,000
Borden Plant	162,289	1,263,651	75,334	600,300	59,333	881,322	1,468,960	234,642	154,000	404,000	135,000
	1,807,303	2,171,041	1,275,753	1,795,521	904,099	1,550,597	2,061,832	685,796	1,215,000	1,125,000	1,253,000
Distribution and Transmission											
Distribution	15,199,296	15,982,270	16,225,133	18,334,780	17,371,849	15,707,728	16,974,255	16,132,068	17,538,000	18,342,000	18,030,000
Transmission	12,226,942	5,437,318	2,195,688	2,476,363	3,305,468	4,106,795	6,462,871	8,092,839	10,399,000	10,399,000	8,641,000
	27,426,238	21,419,588	18,420,821	20,811,143	20,677,317	19,814,523	23,437,126	24,224,907	27,937,000	28,741,000	26,671,000
Corporate	732,796	547,743	750,794	979,447	997,025	757,930	979,141	897,585	1,214,000	1,214,000	1,068,000
Sub-total	29,966,337	24,138,372	20,447,368	23,586,111	22,578,441	22,123,050	26,478,099	25,808,288	30,366,000	31,080,000	28,992,000
Capitalized General Expense	1,982,504	2,190,512	2,179,629	371,689	263,704	350,331	388,730	458,433	494,000	494,000	491,000
Interest During Construction	319,302	321,691	317,828	333,182	295,027	298,913	368,486	376,452	200,000	300,000	316,000
	32,268,143	26,650,575	22,944,825	24,290,982	23,137,172	22,772,294	27,235,315	26,643,173	31,060,000	31,874,000	29,783,000
Less: Customer Contributions	(11,438,104)	(5,313,287)	(524,811)	(1,106,139)	(760,444)	(643,920)	(525,236)	(382,693)	(400,000)	(1,210,000)	(400,000)
Net Capital Expenditures	20,830,039	21,337,288	22,420,014	23,184,843	22,376,728	22,128,374	26,710,079	26,260,480	30,660,000	30,664,000	29,399,000

Note: Actual amounts above, where applicable, include amounts expended for approved carryovers from the previous year.