

April 27, 2017



Island Regulatory and Appeals Commission  
PO Box 577  
501-134 Kent Street  
Charlottetown PE C1A 7L1

Dear Commissioners:

*Point Lepreau Cost Allocation Classification Study*

Pursuant to Section 12 of IRAC Order UE16-04, the Company is required to file with the Commission, on or before April 30, 2017, a Point Lepreau Cost Allocation Classification Study.

The Company has completed the Point Lepreau Cost Allocation Classification Study and has also conducted an analysis of the classification of its generation fuel costs and wind power purchase costs. Attached are 10 copies of the Company's evidence which includes a report and recommendations on these three items.

An electronic version will follow.

If you have any questions please do not hesitate to contact me.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in black ink, appearing to read "Jason Roberts", written over a horizontal line.

Jason Roberts  
Director, Regulatory & Financial Planning

JCR17  
Enclosure

**Maritime Electric**

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**C A N A D A**

**PROVINCE OF PRINCE EDWARD ISLAND**

**BEFORE THE ISLAND REGULATORY  
AND APPEALS COMMISSION**

**IN THE MATTER** of Section 26 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 changes to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases and for certain approvals incidental to such an order.

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

**April 27, 2017**

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**1.0 APPLICATION**

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**C A N A D A**

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**Introduction**

1. Maritime Electric Company, Limited (“Maritime Electric” or “the Company”) is 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.
2. On October 28, 2015, the Company filed a General Rate Application (“GRA”) proposing amendments to the rates, tolls and charges for electric service for the period beginning March 1, 2016.
3. The GRA addressed a number of matters affecting the rates, tolls and charges for electric service including, in particular, the manner in which costs relating to the Point Lepreau generating facility were classified in the 2014 Cost Allocation Study (“CAS”) that was filed as part of the evidence.

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*April 27, 2017*

## **SECTION 1 - APPLICATION**

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4. In the 2014 CAS the annual power supply fixed costs for Point Lepreau were classified as Demand related while only the fuel costs were classified as Energy related. However, the Company's GRA evidence provided information that indicated further study was required to assess whether some proportion of the power supply fixed costs should more appropriately be classified as Energy related.
5. On February 29, 2016, the Commission issued Order UE16-04 which, among other things, ordered the Company to prepare and file with the Commission a Point Lepreau cost allocation classification study on or before April 30, 2017.

### **Application**

6. Maritime Electric hereby applies for an Order of the Island Regulatory and Appeals Commission ("IRAC" or the "Commission") approving changes to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases as well as certain other approvals incidental thereto.
7. The proposed changes contained in this Application represent a just and reasonable balance of the interests of Maritime Electric customers and those of the Company and will, if approved, allow the Company to continue to provide a high level of service at rates for various customer classes that are, in all circumstances, reasonable.

### **Procedure**

8. Filed herewith is the Affidavit of John D. Gaudet, Angus S. Orford and Robert O. Younker which contains the evidence on which Maritime Electric relies in this Application.

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*April 27, 2017*

***SECTION 1 - APPLICATION***

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Dated at Charlottetown, Province of Prince Edward Island, this 27<sup>th</sup> day of April, 2017.

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**D. Spencer Campbell, Q.C.**

STEWART MCKELVEY  
65 Grafton Street, PO Box 2140  
Charlottetown PE C1A 8B9  
Telephone: (902) 629-4549  
Facsimile: (902) 892-2485  
Solicitors of Maritime Electric Company, Limited

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*April 27, 2017*

**2.0 AFFIDAVIT**

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**C A N A D A**

**PROVINCE OF PRINCE EDWARD ISLAND**

**BEFORE THE ISLAND REGULATORY  
AND APPEALS COMMISSION**

**IN THE MATTER** of Section 26 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 changes to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases and for certain approvals incidental to such an order.

We, John David Gaudet and Angus Sumner Orford of Charlottetown and Robert Owen Younker of Cornwall 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, Corporate Planning and Energy Supply and Director, Corporate Planning for Maritime Electric Company, Limited (“Maritime Electric” or the “Company”) 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.
2. Maritime Electric is a public utility subject to the provisions of the Electric Power Act (“EPA”) engaged in the production, purchase, transmission, distribution and sale of electricity within Prince Edward Island.

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*April 27, 2017*

***SECTION 2 - AFFIDAVIT***

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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 Tab 3 inclusive.
4. The evidence found at Tab 3 (the “Evidence”) contains the evidence with respect to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases.
5. Tab 4 contains a Proposed Order of the Commission based on the Company’s Application.

SWORN TO SEVERALLY at  
Charlottetown, Prince Edward Island  
the 27<sup>th</sup> day of April, 2017.

Before me:

\_\_\_\_\_  
John D. Gaudet

\_\_\_\_\_  
Angus S. Orford

\_\_\_\_\_  
Robert O. Younker

\_\_\_\_\_  
A Commissioner for taking affidavits  
in the Supreme Court of Prince Edward Island.

\_\_\_\_\_  
*April 27, 2017*

**3.0 EVIDENCE**

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**3.1 EXECUTIVE SUMMARY**

The preamble to the Electric Power Act states:

*Whereas the rates, tolls and charges for electric power should be reasonable, publically justifiable and not discriminatory.*

One of the principles followed by utilities and Regulators to ensure fairness to all customers is that rates charged to customers should be based on the cost of providing service to that class of customers. In practice, utilities record the revenue received from each group, or class, of customers but the cost of providing service to each class is not tracked because the assets and various costs are normally used, or incurred, to serve a mix of customer classes.

The purpose of a cost allocation study is to allocate the utility's total cost of providing service among the various classes of customers so as to be able to compare the revenues to costs, expressed as a Revenue to Cost ("RTC") ratio, for each rate class as part of determining whether rates are just and reasonable. An RTC ratio below 100 per cent indicates revenue should be increased for a rate class while a ratio above 100 per cent indicates that revenue for that rate class should be lower. With these results, a cost allocation study also provides a benchmark to guide rate design.

Maritime Electric's October 21, 2015 General Rate Application ("GRA") included a 2014 Cost Allocation Study ("CAS") based on 2014 year data. The CAS was included to provide input on the appropriateness of the Company's rates and was based on the approach followed in previous cost allocation studies done for the Company.

Table 1 shows how Maritime Electric's power supply costs were classified in the 2014 Cost Allocation Study.

<b>TABLE 1</b>		
<b>Classification of Maritime Electric's 2014 Power Supply Costs</b>		
	<b>Demand Related</b>	<b>Energy Related</b>
On-Island Oil-Fired Units	100%	-
Point Lepreau Participation	95% (all fixed costs)	5% (fuel related only)
Wind Power Purchase Agreements (PPAs)	--	100%
Short Term Capacity Purchases from NB Power	100%	--
System Energy Purchases from NB Power	--	100%

For the Company's on-Island oil-fired units, the fuel costs were classified as 100 per cent Demand related (the same as in previous studies) because of the limited number of hours of operation of the units and in recognition of the fact that a certain minimum amount of operation is needed each year for equipment testing and operator training. The wind power purchase costs, however, were classified as 100 per cent Energy related and, as such, did not recognize any of the potential Demand related capacity value derived from these contracts.

The costs associated with the Company's 30 MW participation in the Point Lepreau Nuclear Generating Station ("Lepreau") were classified as 95 per cent Demand related and 5 per cent Energy related. This was based on classifying all fixed costs as Demand related and only fuel costs as Energy related which is consistent with the Fixed and Variable classification method that was used for power supply costs in the 2014 CAS and in previous cost allocation studies. A drawback of the Fixed and Variable method is that it does not recognize that a significant portion of the fixed costs for a base load generating plant, such as Lepreau, are incurred to produce lower cost energy, and thus could be more appropriately classified as Energy related rather than Demand related.

In the October 21, 2015 GRA evidence, the Company reported on the results of a sensitivity analysis in which RTC Ratios were calculated with 100 per cent of Lepreau

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costs classified as Energy related. Table 2 below, reproduced from the original Schedule 13-5 in the 2015 GRA, shows the results of the sensitivity analysis of reclassifying Lepreau costs as 100 per cent Energy related.

<b>TABLE 2</b>			
<b>Schedule 13-5 from Maritime Electric's October 21, 2015 General Rate Application</b>			
<b>Impact on RTC Ratios with Point Lepreau Classified 100% Energy</b>			
<b>Rate Class</b>	<b>Existing RTC with Lepreau 95% Demand and 5% Energy</b>	<b>RTC with Lepreau 100% Energy</b>	<b>Change in RTC Ratio</b>
Residential (excl. Seasonal and Farms)	92	94	2
Residential – Seasonal	97	92	(5)
Residential – Farms	81	83	2
General Service I	117	115	(2)
General Service I – Seasonal	115	104	(11)
General Service II	120	116	(4)
Small Industrial	96	95	(1)
Large Industrial	100	94	(6)
Street and Area Lighting	103	104	1
Unmetered	103	100	(3)

A result of classifying more of the Lepreau costs as Energy related would be to allocate more Lepreau costs to customers with higher load factors (i.e. to customers that use a larger number of kWh over the course of a year relative to their demand, or maximum load, during the year). Large Industrial customers tend to have the highest load factors of any of the Company's customers, and, as a result, Table 2 above shows a lower RTC ratio for the Large Industrial class with Lepreau costs classified as 100 per cent Energy related. With more Lepreau costs allocated to the Large Industrial class, the denominator (cost) in the RTC ratio is increased while the numerator (revenue) stays the same, and so the ratio decreases.

### ***SECTION 3 - EVIDENCE***

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As the RTC ratio changes for some of the rate classes were considered significant, the Company proposed that a change in the methodology utilized for classifying Point Lepreau fixed costs be further explored through a Lepreau Classification Study with a future recommendation to the Commission on this issue by no later than April 30, 2017. In Order UE16-04, IRAC ordered that this study be completed and filed with the Commission.

The Lepreau Classification Study included in this report is based on recent reviews of cost allocation study methodologies used in New Brunswick and Nova Scotia. In New Brunswick, the NB Energy and Utilities Board (“NBEUB”) issued its Decision on May 13, 2016 on Matter No. 271, an application by NB Power for the approval of a Class Cost Allocation Study methodology. In Nova Scotia, the NS Utilities and Review Board (“NSUARB”) issued its Decision on March 11, 2014 on M05473, an application by NS Power for approval of its 2013 Cost of Service Study.

In addition to the Lepreau Classification Study, the Company has chosen to expand the scope of this report to include two additional, but related, items:

- A review of the appropriateness of classifying generation fuel costs at the Company’s oil-fired plants as fixed costs, and hence Demand related; and
- Whether a portion of wind power purchase costs, currently classified as 100 per cent Energy related, should be classified as Demand related.

Upon review of these three areas, Maritime Electric recommends the following changes to the classification of power supply costs for future cost allocation studies:

1. Classify 25 per cent of Lepreau fixed costs as Demand related and 75 per cent as Energy related. This will reflect the fact that most of the fixed costs for a nuclear generating plant are incurred to provide base load energy. The 25 per cent

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Demand/75 per cent Energy split is representative of the results of applying several alternative classification methods to Lepreau fixed costs;

2. Classify all combustion turbine fuel costs as Energy related. This will reflect the fact that most fuel usage by the Company's combustion turbines occurs to supply energy for the system. Fuel costs for the Charlottetown Thermal Generating Station ("CTGS") should continue to be classified as Demand related because most fuel usage at the CTGS occurs for equipment testing, operator training and plant heating; and
3. Classify wind power purchase costs as Demand related in the same proportion that wind power nameplate capacity is counted as capacity for generating capacity planning purposes. Currently this proportion is 23 per cent (i.e. 23 per cent of the 92 MW of wind power that Maritime Electric purchases, equal to 21 MW, is counted as capacity toward meeting the Company's planning reserve requirement).

Table 3 below shows the cost shift that would have resulted in the 2014 Cost Allocation Study had these proposed changes to the classification of power supply costs been in effect.

<b>TABLE 3</b>				
<b>Impact of Proposed Cost Allocation Study Classification Changes</b>				
	<b>As classified in 2014 Study</b>		<b>Classification result with proposed changes</b>	
	<b>Demand Related (\$ millions)</b>	<b>Energy Related (\$ millions)</b>	<b>Demand Related (\$ millions)</b>	<b>Energy Related (\$ millions)</b>
Point Lepreau Participation	19.9	-	5.0	14.9
Combustion Turbine Fuel Costs	1.2	-	-	1.2
Wind Power Purchase Agreements	-	23.0	5.3	17.7
<b>Total</b>	<b>21.1</b>	<b>23.0</b>	<b>10.3</b>	<b>33.8</b>
Overall shift from Demand to Energy related (\$ millions)			(10.8)	10.8

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The impact of the proposed classification changes on the RTC ratios in the 2014 Cost Allocation Study is shown in Table 4 below.

<b>TABLE 4</b>			
<b>Impact of Proposed Classification Changes on Revenue-to-Cost Ratios</b>			
<b>Rate Class</b>	<b>Existing RTC with Lepreau 95% Demand and 5% Energy</b>	<b>RTC for sensitivity with Lepreau 100% Energy</b>	<b>RTC with proposed classification changes</b>
Residential	92	94	93
Residential - Seasonal	97	92	94
Residential - Farms	81	83	82
General Service I	117	115	116
General Service I - Seasonal	115	104	109
General Service II	120	116	118
Small Industrial	96	95	95
Large Industrial	100	94	97
Street and Area Lighting	103	104	104
Unmetered	103	100	102

As Table 4 shows, the impact on RTC ratios is less than that reported in the 2015 GRA evidence for the sensitivity with Lepreau classified as 100 per cent Energy related. This occurs because there is less of a shift in costs from Demand to Energy when all three recommendations are considered.

Although certain rate classes remain outside the Company's 90/110 RTC ratio objective, it is Maritime Electric's conclusion that the recommendations presented in this report represent the most appropriate approaches to classifying certain costs and should be adopted for future costs allocation studies.

**3.2 THE COST ALLOCATION STUDY PROCESS**

**3.2.1 Overview**

A utility can readily determine the amount of revenue collected from each class of customers, but because assets and operating costs are normally used or incurred to serve a mix of customer classes, the cost of serving each customer class is not readily available. An example is the maintenance and repair costs for a distribution line. The line usually serves a mix of residential, general service, small industrial and street lighting customers, but the maintenance and repair costs are collected in one account, along with the maintenance and repair costs for all other distribution lines.

A fundamental principle in establishing electric utility rates is that the revenue collected through rates for each class of customers should match, as closely as possible, the corresponding cost of providing service. The purpose of a CAS is to allocate the financing, maintenance and repair costs for distribution lines, along with all of the utility's other costs of providing service, to the various customer classes in a systematic manner.

A CAS follows a three step process to allocate costs to the various rate classes:

1. Functionalization – Costs are assigned to one or more functions within the electric utility (e.g. Power Supply, Transmission, Distribution Network, Services and Metering, Customer Care and Street Lighting).
2. Classification – Each of the functionalized costs are further broken down into Demand related, Energy related and Customer related, according to what causes the costs to be incurred. For example, costs that are driven by the number of customers connected to the system are classified as Customer related.

3. Allocation – The Functionalized and Classified costs are allocated to the various customer classes based on allocation factors. For example, Energy related costs are allocated to the customer classes based on the number of kilowatt hours (“kWh”) used by each customer class.

When analyzing power supply fixed costs, a breakdown of those costs between Demand related and Energy related can be done at either the Classification step or as part of the Allocation step.

### **3.2.2 Classification Methods for Power Supply Fixed Costs**

If the breakdown of power supply fixed costs between Demand Related and Energy related is done at the Classification step, it is usually based on the costs and/or operation of the generating plants. The subsequent allocation of these costs to the various rate classes is then done on the basis of either the Coincident Peak (1CP), which uses the customer rate class contributions to the annual system peak load or Multiple Coincident Peaks (often 3CP) which uses the average customer rate class contributions to the three highest monthly system peaks. For electric utilities in Canada, the highest monthly system peaks are usually December, January and February.

The following are methods used at the Classification step to break down power supply fixed costs between Demand related and Energy related:

- Fixed and Variable
- Plant Factor
- System Load Factor
- Peaker Credit
- Composite Peaking Plant
- Base-Intermediate-Peak

**3.2.3 Allocation Methods for Power Supply Fixed Costs**

If the breakdown of power supply fixed costs between Demand related and Energy related is done as part of the Allocation step, it is usually based on the load characteristics of the various customer rate classes, primarily the relationship between the peak loads and the average loads. Under this approach, all power supply fixed costs are classified as Demand related at the Classification step.

The following methods combine a breakdown of power supply fixed costs between Demand related and Energy related and the allocation of costs to the various rate classes as part of the Allocation step:

- Average and Excess
- Peak and Average

Table 5 shows the methods used by electric utilities in the Maritimes Provinces.

<b>TABLE 5</b>				
<b>Maritime Utilities Cost Allocation Study Breakdown of Power Supply Fixed Costs</b>				
	<b>NB Power</b>		<b>NS Power</b>	<b>Maritime Electric</b>
	<b>2014 Update</b>	<b>2016 NBEUB Decision</b>		
<b>Classification Step</b>				
Classification method	Peaker Credit	Fixed and Variable	System Load Factor	Fixed and Variable
Classification of Power Supply fixed costs:				
Demand related (%)	24	100	40	100
Energy related (%)	76	-	60	-
<b>Allocation Step</b>				
Allocation method for <u>Demand</u> related costs	1CP	3CP Peak and Average	3CP	1CP
<b>Overall Breakdown of Power Supply Fixed Costs</b>				
Demand related (%)	24	48	40	100

***SECTION 3 - EVIDENCE***

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Energy related (%)	76	52	60	-
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An important factor to consider in reviewing the information in Table 5 is that both NB Power and NS Power generate most of their electricity requirements, and the breakdowns apply to their power supply fixed costs as a whole. In this report Maritime Electric is looking at the classification of the power supply fixed costs for just one generating plant – Point Lepreau – and thus the classification percentages used by NB Power and NS Power are not necessarily directly applicable to Point Lepreau fixed costs.

**3.3 CLASSIFICATION AND ALLOCATION METHODS FOR POINT LEPREAU POWER SUPPLY FIXED COSTS**

**3.3.1 Summary of Classification and Allocation Methods**

Table 6 summarizes the results of applying the various classification and allocation methods described in Section 3.2 to Lepreau fixed costs, where applicable.

<b>TABLE 6</b>		
<b>Summary of Results of Classification Methods Applied to Lepreau Fixed Costs</b>		
<b>Classification Method</b>	<b>Directly applicable to a Single Generating Plant</b>	<b>Percentage of Lepreau fixed costs classified as Demand related</b>
Fixed and variable	Yes	100
Plant factor	Yes	43
System load factor	No	N/A
Peaker credit (based on proxy plant costs)	Yes	22
Peaker credit (based on NB Power plant costs)	Yes	13
Composite peaking plant (based on NB Power plant costs)	Yes	25
Base-Intermediate-Peak	Yes	0
Average and excess	No	N/A
Peak and average	No	N/A

With the exception of the Fixed and Variable Method, which by definition simply classifies 100 per cent of Lepreau fixed costs as Demand related, the results show a range of 0 per cent to 43 per cent for the proportion of Lepreau fixed costs that would be classified as Demand related. Given this range of results, Maritime Electric recommends using a value of 25 per cent of Lepreau fixed costs to be considered Demand related as being representative of the results overall.

The remainder of Section 3.3 provides the description and analysis of each method, where applicable, to the Lepreau power supply fixed costs.

**3.3.2 Fixed and Variable Method**

The Fixed and Variable Method classifies all fixed generation costs as Demand related. Only fuel and variable O&M costs are classified as Energy related. This is the classification method that was used in Maritime Electric's 2014 CAS and in previous cost allocation studies which resulted in 5 per cent of Lepreau costs being classified as Energy related and 95 per cent as Demand related.

While the Fixed and Variable method reflects how Demand and Energy costs are incurred in a strict marginal sense, it does not reflect the system planning trade-off of capital for energy cost savings. Thus the Fixed and Variable Method does not provide any specific guidance on how to break down power supply fixed costs between Demand related and Energy related.

**3.3.3 Plant Factor Method**

The Plant Factor Method of classification, which has not been used by any of the Maritime utilities, starts with the calculation of a non-base load capacity factor, using the portion of the system energy that is in excess of the system minimum demand and the portion of the system generating capacity that is in excess of the system minimum demand. For each generating plant, the portion of fixed costs that are then classified as Demand related is equal to this non-base load capacity factor divided by the generating plant's annual capacity factor.

The application of this method to Lepreau fixed costs is shown in Table 7 below, using Maritime Electric's 2014 data. The result is 43 per cent of Lepreau fixed costs being classified as Demand related.

<b>TABLE 7</b>				
<b>Application of Plant Factor Method of Lepreau Fixed Costs (based on Maritime Electric 2014 data)</b>				
A	System minimum demand	MW	90	
B	Base load energy	MWh	788,400	A x 8,760 h
C	Total energy requirement	MWh	1,252,000	
D	Non-base load energy	MWh	463,600	C – B
E	Total generating capacity	MW	242	
F	Capacity used for load following	MW	152	E – A
G	Non-base load capacity factor	%	35	D/(F x 8,760 h)
H	Point Lepreau capacity factor (29 MW and 208,034 MWh at Murray Corner)	%	82	100 x 208,034/(29 x 8,760 h)
	Portion of Lepreau fixed costs as Demand related	%	43	100 x G/H

**3.3.4 System Load Factor Method**

The System Load Factor Method, used by NS Power, equates the portion of power supply fixed costs that are to be classified as Energy related to the utility’s annual system load factor. The annual load factor is average demand divided by peak demand, and thus indicates the proportion of generating capacity required for year-round generation of energy. As an example, Maritime Electric’s 2014 annual load factor was 62 per cent (1,252,000 MWh/8,760 hours)/229 MW), resulting in 62 per cent of power supply fixed costs being classified as Energy related and 38 per cent as Demand related.

The System Load Factor Method applies to a utility’s generating fleet, or power supply portfolio, as a whole, and thus is not applicable to a particular generating unit within the fleet. As a result, the System Load Factor Method does not apply directly to Lepreau fixed costs.

**3.4.5 Peaker Credit Method**

The Peaker Credit Method, used in past studies by NB Power, is based on a comparison of the \$/kW capital cost of a peaking plant to the \$/kW capital cost of

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a base load plant. The principle is that the higher \$/kW capital cost for the base load plant is incurred in order to achieve lower energy costs than the peaking plant would provide, and thus the \$/kW differential should be classified as Energy related. The Peaker Credit Method explicitly recognizes the system planning trade-off of capital for energy cost savings. Fixed O&M costs are usually classified as Demand related or Energy related on the same basis as the capital related costs.

Table 8 below shows two applications of the Peaker Credit Method to Lepreau costs.

<b>TABLE 8</b>				
<b>Application of the Peak Credit Method to Lepreau Fixed Costs</b>				
	<b>APPLICATION 1</b>		<b>APPLICATION 2</b>	
	<b>2013 \$ Proxy Plant Costs</b>		<b>NB Power Plants in 2014 \$</b>	
	<b>Capital Costs (\$/kW)</b>	<b>Classification (%)</b>	<b>Capital Costs (\$/kW)</b>	<b>Classification (%)</b>
Nuclear	6,350		6,762	
Combustion Turbine (Demand related)	1,380	22	846	13
Differential (Energy related)	4,970	78	5,916	87

Application 1 uses proxy plant costs from Appendix 3 of NB Power's 2014 Integrated Resource Plan document, expressed in 2013 \$Cdn. The differential of \$4,970/kW between the capital cost for a nuclear plant and a peaking plant in the form of a simple cycle combustion turbine ("CT") represents 78 per cent of the \$/kW capital cost of the nuclear plant, and thus 78 per cent of Lepreau fixed costs would be classified as Energy related and 22 per cent as Demand related. (The \$/kW capital cost for the high efficiency simple cycle CT was used because it better matches the type of CT that would be deployed on PEI.)

Application 2 uses data from the Peaker Credit analysis found in Attachment N to NB Power's response to IR-5 from the New Brunswick Energy and Utilities Board as part of the recent hearing on an appropriate Class Cost Allocation Study methodology for NB Power (NBEUB Matter 271). Here, the \$/kW costs are the original installed costs for NB Power's generation plants escalated to 2014. In this application, the differential of \$5,916/kW represents 87 per cent of the \$/kW escalated capital cost of Point Lepreau, and thus 87 per cent of Lepreau fixed costs would be classified as Energy related and 13 per cent as Demand related.

The overall result for NB Power's power supply portfolio was a classification of 76 per cent of fixed costs as Energy related and 24 per cent as Demand related outlined earlier in Table 5.

**3.3.6 Composite Peaking Plant Method**

The Composite Peaking Plant Method is similar to the Peaker Credit Method, with the difference being that the definition of a peaking plant is expanded to include generating plants used for load following as well as simple cycle combustion turbines. The \$/kW capital cost for the "composite" peaking plant is then the weighted average of the escalated \$/kW capital costs for the larger group of generating plants that are considered to be peakers.

The Composite Peaking Plant Method is not readily applicable to Maritime Electric because the Company's oil-fired plants supply less than 1 per cent of the energy supply (60 per cent of the energy supply is in the form of system energy purchases, 25 per cent is from wind and 15 per cent is from Point Lepreau).

As a point of reference, the Composite Peaking Plant analysis found in Appendix N to NB Power's response to IR-5 from the New Brunswick Energy and Utilities Board as part of the recent hearing on an appropriate Class Cost Allocation Study methodology for NB Power (NBEUB Matter 271) resulted in 49 per cent of NB

Power's power supply portfolio being classified as Demand related, with 25 per cent of Lepreau fixed costs being classified as Demand related. This 49 per cent classification result is double the proportions classified as Demand related as compared to the Peaker Credit Method, however, the 25 per cent Demand related classification from Lepreau aligns with the Company's recommendation.

**3.3.7 Base-Intermediate-Peak Method**

In the Base-Intermediate-Peak method each generating plant is evaluated based on its annual capacity factor and variable fuel costs to determine whether that plant operates to serve primarily energy needs throughout the year (i.e. Base), or to serve only peak loads, or is an intermediate type that serves both energy and peak load requirements. For a Base plant, 100 per cent of fixed costs are classified as Energy related, for a Peak plant 100 per cent of fixed costs are classified as Demand related, and for an Intermediate plant the portion of fixed costs that are classified as Energy related is equal to the annual capacity factor.

Under the Base-Intermediate-Peak method, Lepreau would be determined to be a Base plant, and therefore 100% of Lepreau fixed costs would be classified as Energy related.

**3.3.8 Average and Excess Method**

The Average and Excess Method is used at the Allocation step of the cost allocation study process. Under this method, power supply fixed costs are classified as 100 per cent Demand, and then allocated to the customer rate classes using factors that are the sum of the class "average demand factor" and the class "excess demand factor".

Since the Average and Excess Method is based on the load characteristics of the various customer rate classes and the system as a whole, it is not directly applicable to the fixed costs for a particular generating unit such as Point Lepreau.

**3.3.9 Peak and Average Method**

The Peak and Average Method is also used at the Allocation step of the cost allocation study process. As with the Average and Excess Method, power supply fixed costs are classified as 100 per cent Demand related. In the Peak and Average Method, the allocator for each customer rate class is equal to the sum of the class's contribution (in kW) to the system peak demand and that class's average demand (in kW), divided by the sum of the system peak demand and the system average demand.

Since the Peak and Average Method is based on the load characteristics of the various customer rate classes and the system as a whole, it is not directly applicable to the fixed costs for a particular generating unit such as Point Lepreau.

**3.3.10 Summary**

The various Classification and Allocation Methodologies discussed in this section are usually applied as part of the assessment of a utility's entire fleet of generating assets. However, for purposes of this report, Maritime Electric has undertaken a review of the power supply fixed costs for a single generating facility, Point Lepreau. As a result, consideration has been given to each methodology in reaching a recommendation that, for purposes of future CAS, the breakdown of Lepreau costs should be classified as 25 per cent Demand related and 75 per cent Energy related.

**3.4 CLASSIFICATION OF MARITIME ELECTRIC GENERATING PLANT FUEL COSTS**

In Maritime Electric’s 2014 CAS, the fuel costs for the Company’s oil-fired generating plants were classified as Demand related because of the limited number of hours of operation of the units and in recognition of the fact that a certain minimum amount of operation is needed each year for equipment testing and operator training. This approach was consistent with previous studies.

For purposes of this report, an analysis was conducted on the use of fuel at each of the generating stations deployed by the Company. Table 9 below shows the fuel usage for 2014 at the Company’s oil-fired generating plants.

<b>TABLE 9</b>		
<b>Breakdown of Fuel Usage at Maritime Electric Oil-Fired Plants</b>		
	<b>2014 Fuel Usage</b>	
	<b>Volume (Litres)</b>	<b>Portion of Total (%)</b>
<b>Charlottetown Thermal Generating Station</b>		
- equipment testing and operator training	507,000	17
- plant heating	1,439,000	48
- system energy supply	<u>1,037,000</u>	<u>35</u>
	2,983,000	100
<b>Borden Plant (CT1 and CT2)</b>		
- equipment testing	27,000	12
- system energy supply	<u>190,000</u>	<u>88</u>
	217,000	100
<b>Combustion Turbine 3 (CT3)</b>		
- equipment testing	16,000	2
- system energy supply	<u>994,000</u>	<u>98</u>
	1,010,000	100

### ***SECTION 3 - EVIDENCE***

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Table 9 shows that approximately 65 per cent of fuel usage at the CTGS was for equipment testing, operator training and plant heating. When used for these purposes, fuel usage can reasonably be considered a fixed cost and hence should continue to be classified as Demand related. However, Table 9 also shows that most of the fuel usage for the three combustion turbines in Charlottetown and Borden-Carleton was for the supply of energy to the system and, therefore would be more appropriately considered a variable cost, and hence classified as 100 per cent Energy related.

Based on this analysis, Maritime Electric recommends that all fuel costs for the Company's combustion turbines be classified as 100 per cent Energy related while the fuel costs for the CTGS will continue to be classified as 100 per cent Demand related.

**3.5 CLASSIFICATION OF WIND POWER PURCHASE COSTS**

Both NB Power and NS Power classify wind power costs for cost allocation study purposes in a manner that is consistent with how they treat wind power for system planning purposes. In Nova Scotia, NS Power classifies a portion of its wind power costs as Demand related, which aligns with how the utility does its system planning whereby wind generation is considered to provide capacity.

In New Brunswick, NB Power considers the benefits of wind generation to the system as being limited to avoiding fuel and purchased energy costs. As a result, NB Power classifies wind power costs as 100 per cent Energy related for cost allocation study purposes since it does not rely on wind to provide any of the generating capacity required to meet the system peak load.

On PEI, Maritime Electric assigns a capacity value to its wind power purchases for system planning similar to NS Power. To be consistent, it is the Company's assessment that it should classify a portion of its wind power costs as Demand related in future cost allocation studies.

The Company proposes that the proportion of wind power costs to be classified as Demand related should be the same as the proportion of wind power nameplate capacity that is deemed as Effective Load Carrying Capability ("ELCC") for capacity planning purposes. The ELCC of the wind generation is the additional load that the system can supply due to the presence of the wind generation, while maintaining the same level of reliability. Currently this is 23 per cent of nameplate capacity. As a result, the Company recommends that 23 per cent of wind power purchase costs be classified as Demand related and 77 per cent would be classified as Energy related for future CAS.

**3.6 RECOMMENDATIONS**

Based on the analysis prepared and presented in this report, Maritime Electric recommends that the Commission approve the following changes to the classification of power supply costs for future cost allocation studies:

1. Classify 25 per cent of Lepreau fixed costs as Demand related and 75 per cent as Energy related. This will reflect the fact that most of the fixed costs for a nuclear generating plant are incurred to provide base load energy. The 25 per cent Demand related/75 per cent Energy related split is representative of the results of applying several alternative classification methods to Lepreau fixed costs.
2. Classify all combustion turbine fuel costs as Energy related. This will reflect the fact that most fuel usage by the Company's combustion turbines is to supply energy for the system. Fuel costs for the Charlottetown Thermal Generating Station should continue to be classified as Demand related because most fuel usage there is for equipment testing, operator training and plant heating.
3. Classify wind power purchase costs as Demand related in the same proportion that wind power nameplate capacity is included as capacity for generating capacity planning purposes. Currently this proportion is 23 per cent (i.e. 23 per cent of the 92 MW of wind power that Maritime Electric purchases, or 21 MW, is counted as capacity toward meeting the Company's planning reserve requirement).

Table 10 below shows the overall cost shift in the 2014 CAS to include the recommendations above.

<b>TABLE 10</b>				
<b>Impact of Proposed Cost Allocation Study Classification Changes</b>				
	<b>As classified in 2014 Study</b>		<b>What classification would be with proposed changes</b>	
	<b>Demand Related (\$ millions)</b>	<b>Energy Related (\$ millions)</b>	<b>Demand Related (\$ millions)</b>	<b>Energy Related (\$ millions)</b>
Point Lepreau Participation	19.9	-	5.0	14.9
Combustion Turbine Fuel Costs	1.2	-	-	1.2
Wind Power Purchase Agreements	-	23.0	5.3	17.7
<b>Totals</b>	<b>21.1</b>	<b>23.0</b>	<b>10.3</b>	<b>33.8</b>
Overall shift from Demand to Energy related (\$ millions)			(10.8)	10.8

Using these recommendations, classifying 25 per cent of Lepreau fixed costs as Demand related and 75 per cent as Energy related in the Company's 2014 Cost Allocation Study would have shifted \$14.9 million from Demand related to Energy related. However, this shift would have been partially offset had 23 per cent of wind power purchase costs been classified as Demand related, with a resulting shift of \$5.3 million from Energy related to Demand related. The shift due to classifying combustion turbine fuel costs as Energy related would have been \$1.2 million from Demand related to Energy related.

The impact of the proposed classification changes on the Revenue-to-Cost (RTC) ratios in the 2014 Cost Allocation Study is shown in Table 11 below.

<b>TABLE 11</b>			
<b>Impact of Proposed Classification Changes on Revenue-to-Cost Ratios</b>			
<b>Rate Class</b>	<b>Existing RTC with Lepreau 95% Demand and 5% Energy</b>	<b>RTC for sensitivity with Lepreau 100% Energy</b>	<b>RTC with proposed classification changes</b>
Residential	92	94	93
Residential - Seasonal	97	92	94
Residential - Farms	81	83	82
General Service I	117	115	116
General Service I - Seasonal	115	104	109
General Service II	120	116	118
Small Industrial	96	95	95
Large Industrial	100	94	97
Street and Area Lighting	103	104	104
Unmetered	103	100	102

As the table shows, the impact is less than that presented in the GRA for the sensitivity with Lepreau classified as 100 per cent Energy related. Although certain rate classes remain outside the Company's 90/110 RTC ratio objective, it is Maritime Electric's conclusion that the recommendations presented in this report represent the most appropriate approaches to classifying certain costs and should, therefore, be approved for future cost allocation studies.

**4.0 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 26 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 changes to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases and for certain approvals incidental to such an order.

UPON receiving an Application by Maritime Electric Company, Limited (the “Company”) for approval of changes to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases;

AND UPON considering the Application as well as the Evidence of the Company;

NOW THEREFORE for the reasons given in the annexed Reasons for Order;

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*April 27, 2017*

**SECTION 4 – PROPOSED ORDER**

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IT IS ORDERED THAT

1. The changes proposed by Maritime Electric Company, Limited to the cost allocation study classification of costs related to Point Lepreau, On-Island Generation Fuel and Wind Power Purchases are approved;
2. These changes shall be incorporated in the next Cost Allocation Study to be filed with the Commission.

DATED at Charlottetown this \_\_\_\_ day of \_\_\_\_, 2017

BY THE COMMISSION:

\_\_\_\_\_  
\_\_\_\_\_, Chair

\_\_\_\_\_  
\_\_\_\_\_, Commissioner

\_\_\_\_\_  
\_\_\_\_\_, Commissioner

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*April 27, 2017*