



September 30, 2016

Mr. Mark Lanigan  
Regulatory Services  
Island Regulatory and Appeals Commission  
PO Box 577  
501-134 Kent St  
Charlottetown PE C1A 7L1

Dear Mr. Lanigan:

**2017 Capital Budget Filing Docket UE20725  
Response to Supplemental Interrogatories - Mr. Roger King**

Please find attached the Company's response to the supplemental Interrogatories from Mr. Roger King with respect to the 2017 Capital Budget Application. An electronic copy will follow.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in black ink, appearing to be "JR", written over a horizontal line.

Jason Roberts  
Director, Regulatory & Financial Planning

JCR41  
Enclosure



Via email: [randjking@pei.sympatico.ca](mailto:randjking@pei.sympatico.ca)

September 30, 2016

Mr. Roger King  
519 Simpson Rd  
Hunter River PE C0A 1N0

Dear Mr. King:

**2017 Capital Budget Filing Docket UE20725  
Response to Supplemental Interrogatories**

Please find attached the Company's response to your supplemental Interrogatories with respect to the 2017 Capital Budget Application.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in blue ink, appearing to read "J. Roberts".

Jason C. Roberts  
Director, Regulatory & Financial Planning

JCR40  
Enclosure

**Supplemental Questions Arising from MECL Responses of September 15, 2016**

**Reference 1a) response:**

Could MECL clarify how NB Power OATT charges are included in and affect the calculations of the reported “avoided capacity and operating reserves”? My current understanding is that the EPA defines both capacity and operating reserve costs but NB power OATT charges are a separate charge unrelated to PEI generated energy.

**Reference 1.a) Response:**

The estimated \$7.0 million annual value of the avoided capacity and operating reserve purchases is comprised of two components. The first is reduced capacity purchases under the Energy Purchase Agreement with NB Energy Marketing, which is a contract for the purchase of capacity and energy only. The EPA does not include the provision of operating reserve. The second component relates to reduced operating reserve purchases under Schedule 6 of the NB Power OATT in the form of either Operating Reserve – Supplemental 10-minute or 30-minute service. This ancillary service is needed to serve load in the event of a system contingency and may be provided by: generating units that are on-line but unloaded, by quick-start generation or by load fully removable from the system within ten minutes of a contingency event. If MECL does not self supply its operating reserves, then they must be purchased from the NB Power Transmission System Operator, NB Energy Marketing, or some other source.

**Reference 2d) Response:**

In addition to the reported “small price differential between on peak and off peak” energy from NB Power, the added indirect MECL operating costs of supplying increasing on-peak loads must surely be considered. Increasing EPA capacity purchases from NB Power and/or maintaining PEI generation together with the required increased PEI transmission line capacities all have significant annual cost implications. The added capital introduces annual increased financing costs, increased annual depreciation costs and increased profit for MECL. Combined with any costs of NB Power capacity increases, all three separate annual operating cost increments really result as an “overhead” to the cost of each unit of on-peak load; by including this overhead cost the true operating cost differential of on-peak load is then revealed possibly yielding the “suitable price signals for consumers to act upon”. Could MECL clarify:

- a) Why the total operating cost of on-peak energy is not used in describing the PEI case for or against a different pricing structure for different times of the day?
- b) Why the opportunity is not taken of introducing customers to the notion of time-of-day practices initially to control the increasing coincident peak load but also for the future support of integrating increased, PEI generated, renewable energy?

**Reference 2d) response:**

Maritime Electric does not currently view Time of Use (TOU) rates as being a cost effective means for PEI to reduce electricity demand during peak periods. The differential between the on-peak rate and the off-peak rate would not be large enough to incent customers to change their electricity use behavior significantly.

To provide some further perspective, the following discussion makes use of the section of the 2014 Annual Report of the Office of the Auditor General of Ontario that deals with Ontario’s Smart Metering Initiative (attached), as well as Maritime Electric’s 2014 Cost Allocation Study, which was filed with the Commission as part of the Company’s October 21, 2015 General Rate Application (GRA).

In the Cost Allocation Study process, the second step is to classify Maritime Electric’s total annual cost of providing electricity service into three categories – Demand related, Energy related and Site (or Customer) related:

- Demand related costs are those that vary as the system peak load varies, as measured in kW. All the costs referred to in the preamble to questions a) and b) are included here.
- Energy related costs are those that vary as the amount of energy, as measured in kWh, used by customers varies
- Site (or Customer) related costs are those that vary with the number of customers connected to the system

Table 5 of the Cost Allocation Study summarizes the results of the classification process, and the allocation of the classified costs to the various rate classes is shown in Schedule 1.3. The first part of the table below shows the overall breakdown and the corresponding amounts allocated to the year round Residential customers.

<b>Classified MECL 2014 Revenue Requirement (000s)</b>				
	<b>Demand</b>	<b>Energy</b>	<b>Customer</b>	<b>Total</b>
<b>As shown in the 2014 Cost Allocation Study:</b>				
Total Revenue Requirement	\$ 66,976	\$ 88,716	\$ 23,311	\$179,004
Portion allocated to year round Residential	\$ 34,985	\$ 36,528	\$ 16,101	\$ 87,614
<b>With \$ 15 m of Lepreau costs reclassified as Energy:</b>				
Total Revenue Requirement	\$ 51,976	\$103,716	\$ 23,311	\$179,004
Portion allocated to year round Residential	\$ 27,150	\$ 44,363	\$ 16,101	\$ 87,614

The second part of the above table adjusts for the fact that in the Cost Allocation Study almost all of the costs associated with Maritime Electric’s Point Lepreau participation are classified as demand related. This was discussed in the Company’s 2015 GRA (Section 13.4B(ii)), with a proposal to study other classification approaches. The above adjustment has been done here to reflect the fact that most of the costs at a nuclear power plant are incurred to produce low cost base load energy, and as such would not be impacted by TOU rates.

Under TOU rates, it is the differential between the On-peak and Off-peak prices for electricity that is used to incent customers to reduce their electricity use during On-peak times - the larger the price differential, the greater the incentive. The estimated On-peak to Off-peak price ratio for the Company’s energy related costs is shown in the table below. (On-peak hours are 7:00 a.m. to 11:00 p.m., weekdays. Off-peak hours are 11:00 p.m. to 7:00 a.m., weekdays, and all day on weekends and statutory holidays).

<b>Estimated On-peak to Off-Peak Price Ratio for Maritime Electric’s Energy Related Costs</b>			
<b>Energy Supply Component</b>	<b>On-peak to Off-peak Price Ratio</b>	<b>Portion of MECL Energy Supply (%)</b>	<b>Weighted Average On-Peak to Off-peak Price Ratio</b>
Wind	1.00	25	0.25
Nuclear	1.00	15	0.15
New England wholesale market	1.34	60	0.80
<b>Total</b>			<b>1.20</b>

Note: The on-peak to off-peak price ratio for the New England wholesale electricity market is used as a proxy for system energy purchases from NB Power.

The following table shows the estimated On-peak to Off-peak price ratio for Maritime Electric's Residential Rate energy charge if all of the demand related costs were to be recovered through On-peak usage. This analysis ignores the second block energy charge and assumes that all energy is billed as first block usage.

<b>Estimated On-peak to Off-peak Ratio for MECL's Residential Rate Energy Charge</b>			
	<b>Demand</b>	<b>Energy</b>	<b>Total</b>
Adjusted cost allocation to year round Residential (000s)	\$27,150	\$44,363	
480,053 MWh used by Residential customers in 2014.			
Assume half was used On-peak and half was used Off-peak.			
If all Demand related costs recovered through On-peak usage:			
Energy usage over which costs recovered (MWh)	240,027	480,053	
On-peak cents per kWh charge	11.3	10.0	21.3
Off-peak cents per kWh charge	-	8.4	8.4
On-peak to Off-peak ratio			2.5

The average for Energy related costs is  $\$44,363,000 / 480,053,000 \text{ kWh} = 9.2 \text{ cents per kWh}$ . Assuming half of the 480,053,000 kWh was used On-peak, half was used Off-peak and a price ratio of 1.20 between On-peak and Off-peak Energy related costs as calculated above, this results in an average of 9.2 cents plus 10 % = 10.0 cents per kWh for Energy On-peak and an average of 9.2 cents minus 10 % = 8.4 cents per kWh for Energy Off-peak.

Page 381 of the Ontario Auditor General's report describes the relationship between the On-peak to Off-peak price ratio and the expected reduction in peak demand, and indicates that for a price ratio of 4.0, a 3 % reduction in peak demand can be expected. The estimated price ratio for Maritime Electric's Residential Rate class is 2.5, so for discussion purposes assume a 2 % reduction in Demand related costs and a 1 % reduction in Energy related costs (this assumes that half of the usage reduction during On-peak is an energy saving and half is shifted to Off-peak). This would result in an annual saving of  $\$27,150,000 \times 2\% + \$44,363,000 \times 1\% = \$987,000$ .

To put this potential saving into perspective requires an estimate of the cost to implement and operate the smart metering system that would be needed to achieve these savings. The table below provides an indication of the cost of smart metering to enable TOU rates. The values for the Ontario Smart Meter Initiative are taken from the Ontario Auditor General's report (the report page number is shown for each value). Maritime Electric has 58,000 year round

Residential customers, and the average \$ / meter costs for Ontario are multiplied by 58,000 to give the cost estimates for the Company's Residential class.

<b>Indicative Cost of Smart Metering for TOU Rates</b>		
	<b>Ontario Smart Meter Initiative</b>	<b>If Applied to MECL's Residential Class</b>
Total cost to implement ( \$ millions )	2,000 (page 366)	24.2
Number of Smart Meters installed ( thousands )	4,800 (page 367)	58.0
Average cost per meter ( \$ )	417	417
<b>Projected increase in annual operating costs:</b>		
Total ( \$ millions )	50 (page 373)	0.58
Average \$ / meter	10	10

The annual estimated net cost saving would be:

- |  |                  |
|--|------------------|
| • Estimated annual saving in Demand and Energy costs | \$987,000        |
| • Less estimated increase in annual operating costs  | <u>\$580,000</u> |
| • Net annual cost saving                             | <u>\$407,000</u> |

Dividing the \$407,000 net annual cost saving into the estimated \$ 24.2 million cost to implement the smart metering system gives a simple payback of 59 years which, in Maritime Electric's view, is not cost effective.

However, notwithstanding this conclusion regarding the global deployment of TOU meters under today's landscape as described above, the Company does recognize that there may be economic value in targeted future applications of Smart Meters related to time of wind energy generation, domestic energy storage technology and the advent of electric vehicles.

**Reference 2e) response:**

**As described, the PowerShift Atlantic project infrastructure is designed and appeared to present minimal customer integration problems. Could MECL clarify the current status of the project sites and share any plans for an expanded project in the future?**

**Reference 2.e) Response:**

At the end of the PowerShift Atlantic Project all Company-owned equipment was removed from the customer sites and the customers' premises returned to their pre-Project conditions. One of the key findings of the Project was that using the customer's internet connection did not always provide the level of reliability needed for real-time load control. This was a factor in the decision to remove all Company-owned equipment and leave a clean slate for future initiatives.

At present the Maritime Electric has no pending Demand Side Management (DSM) initiatives. The Company's Energy Efficiency and DSM Plan that was filed with the Commission in June 2015 had an initiative that involved temperature control of mini-split heat pumps, whereby the heat pumps would be turned off during the coldest weather, and hence not contribute to the system peak load. However, this initiative was not approved by the Commission.

Currently the Company is waiting on direction from the Commission on how to develop an energy efficiency and DSM plan, as well as on the release by Government of its Energy Strategy.