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September 23, 2021

Ms. Cheryl Mosher
Island Regulatory & Appeals Commission
PO Box 577
Charlottetown PE C1A 7L1

Dear Ms. Mosher:

**UE 20733 – 2022 Capital Budget Application
Clarification Questions from Roger King**

Please find attached the Company's responses to Clarification Questions from Roger King with respect to the 2022 Capital Budget Application filed with the Commission on July 14, 2021.

Yours truly,

MARITIME ELECTRIC

A handwritten signature in blue ink that reads "Gloria Crockett".

Gloria Crockett, CPA, CA
Manager, Regulatory & Financial Planning

GCC25
Enclosure

All our energy.
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Via email: randjking@pei.sympatico.ca

September 23, 2021

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

**UE 20733 – 2022 Capital Budget Application
Clarification Questions**

Please find attached the Company's response to your Clarification Questions with respect to the 2022 Capital Budget Application filed with the Commission on July 14, 2021.

Yours truly,

MARITIME ELECTRIC

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Gloria Crockett, CPA, CA
Manager, Regulatory & Financial Planning

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**Response to Clarification Questions
with respect to the
2022 Capital Budget Application
from
Roger King**

**2022 Capital Budget Application
UE20733**

Submitted September 23, 2021

Section 5.6: System Meters: The Exclusion of a “Smart Meters” Category in the 2022 Capital budget and the 2020 Integrated Resource Plan (IRP):

IR-1 As the 2020 and 2021 Capital budgets captured the Smart Meters category total expenditure of \$630,000 as tangible assets, is there a report available to the Commission where the findings and conclusions have been documented and the summary strategy linking the two capital projects is introduced?

Response:

In 2020, an Advanced Metering Infrastructure (“AMI”) business case report was completed for Maritime Electric, by an independent consultant, to document the benefits and costs of proceeding with AMI technology. The report also includes the potential scope and design of an AMI program, risks and mitigation strategies, a financial analysis, and an AMI deployment strategy. The report will be submitted to the Commission in 2022, when the Company applies for approval to invest in AMI. A key finding from the report identifies the need for implementing a new Customer Information/Billing System (“CIS”) to leverage the full benefits of AMI.

In 2021, the Company will define the scope of a new CIS as referenced above. A new CIS is a key enabler for the implementation of AMI. The Company is working with an external vendor to assist in the process of scoping the new CIS. This process is expected to be completed around mid-October 2021. The resulting development and implementation strategy will be submitted to the Commission in 2022, when the Company applies for approval to invest in a new CIS.

IR-2 Noting that the introduction of demand based tariffs does not require AMI technology but could be at first enabled by deployment of the new Customer Information System/Billing System (CIS) and then followed by deployment of AMI, is this two-step approach being considered?

Response:

The response to this interrogatory is based on an assumption that the referenced “two-step approach” is as follows:

1. Deploy the new Customer Information/Billing System (“CIS”) and introduce new demand-based tariffs;
2. Deploy Advanced Metering Infrastructure (“AMI”).

The two-step approach described above is not being considered. The potential introduction of new demand-based tariffs would require both AMI and a new CIS to be deployed, as the AMI smart meters are necessary to collect customer demand interval data. It would also require detailed analysis of this data in order to design the new tariffs, to ensure that for each customer class, such changes are fair and publicly justifiable.

IR-3 The factors relating to the above questions are:

- a. The 2020 “Smart Meters” Budget Category of \$300,000 was set to “... allow the Company to engage third party expertise to develop a business case for the viability of full deployment and evaluate the proposals submitted through a competitive Request for Proposal process. Once these have been established, a small pilot project will be initiated with the successful vendor as a proof of concept”. The planned activities were to be:
 - i. Business Case Development \$100,000
 - ii. RFP Development, Evaluation and Selection \$100,000
 - iii. Proof of Concept/Reference Site Visit \$10,000
 - iv. Internal Resources \$90,000
- b. The 2021 Capital Budget Application interrogatories cited that the transition to AMI was continuing under the 7.2 Information Technology budget as project “7.2c Customer Information System/Billing”. This project, which had a proposed budget allocation of \$330,000 “will help Maritime Electric define its CIS requirements, identify potential CIS solutions, and develop a strategy and approach for migrating to a new CIS”.
- c. The 2021 Capital Budget Application interrogatories also explained that the approach for Commission approval for deploying “Smart Meters” and transitioning to full AMI was to be in two stages: 1) the Company will prepare an application seeking approval to invest in a new CIS that is designed to leverage the full range of AMI technology benefits and 2) the Company will then prepare an application for investing in an AMI conversion project.

Response:

As stated, IR-3 does not appear to be a question but rather relating factors to provide background on IR-1 and IR-2.

The AMI conversion project:

- IR-4 The 2022 Capital Budget “List of future capital projects” now includes two new listings of a) “Smart Meters (AMI)” and b) “a MDM/R-CIS Billing” both planned to start in 2023. Please provide:
- i. the AMI cost-benefit financial analysis
 - ii. a description and road map of the intended AMI deployment,
 - iii. a listing of the major advantages for customers,
 - iv. a description of individual customer energy use information that will be available
 - v. an explanation of how the opportunities for customers to engage in new tariffs might evolve.

Response:

- i. The Advanced Metering Infrastructure (“AMI”) cost-benefit financial analysis is part of the AMI business case that will be submitted to the Commission in 2022, when the Company applies for approval to invest in AMI.
- ii. The AMI business case will include a potential AMI deployment strategy which will be refined when the successful vendor is selected.
- iii. The AMI business case will provide a listing of potential advantages for customers that will include:
 - New tools for Maritime Electric customer service representatives to better serve customers with access to real-time account information and the ability to interrogate meters if necessary;
 - Collection of data that will feed a customer web portal, enabling customers to review their consumption profile and see the detailed results of their conservation efforts;
 - Self-service options for customers to access data and utilize data analytics tools to better understand their usage and provide flexibility, such as choosing the bill period or billing date;
 - Meter remote connect and disconnect functionality to serve customers more quickly and efficiently;
 - Two-way communication capability between operators and customer meters, to facilitate more effective outage restoration; and
 - The ability to perform time-of-use metering which could then potentially be used to offer customers varied rates by the time of day that energy is consumed, pending regulatory approval.
- iv. As stated above, AMI will enhance the customer experience by providing data that will feed a customer web portal, providing customers the ability to review their usage and see the results of their conservation efforts on a much more granular level than today. The information that will be available through the web portal will be determined when an AMI vendor is selected and could include:
 - Current and historical usage;

- Projected monthly usage and bill amount;
 - Load disaggregation;
 - Neighbourhood comparison;
 - Personalized energy tips; and
 - Alerts and notifications.
- v. Development of innovative rates using the AMI network and updated Customer Information/Billing System will take considerable effort and potentially outside expertise. It will take time to monitor data, establish target outcomes in consultation with external stakeholders, propose appropriate rates and seek approval from the Commission. Customers will also be provided the opportunity to provide input into the development of new tariffs; however, the details of how this will occur have not yet been planned.

IR-5 When will the 2020 Integrated System Plan be updated to describe the AMI plans?

Response:

The Integrated System Plan (“ISP”) is typically updated every three to five years, or as needed if system conditions change significantly. While there have been some system changes since the 2020 Integrated System Plan was published, there is nothing that has caused a material shift in load forecast, energy supply or public policy. As such, the current ISP continues to reflect a reasonably accurate picture of the future Island system.

At this time, Maritime Electric expects the next ISP to be issued in the 2023 to 2025 timeframe.

West-East Transmission Infrastructure:

IR-6 The Clyde River Substation including the Y109-Tap transmission project were both approved for the 2020 capital budget application. When will this new Substation be energized and operational?

Response:

Construction of the Clyde River Substation and the associated Y-109 tap line is now substantially complete. Testing and commissioning of substation equipment, such as the 138 kilovolt (“kV”) breaker, the 20 megavolt ampere (“MVA”) power transformer, the 25 kV reclosers and the protection and control systems is currently underway. It is expected that the substation will be energized and operational in the fall of 2021.

IR-7 When will the Y109 transmission line section from Connolly Woods to Bannockburn Road be replaced by the new Y119 section currently under construction?

Response:

It is expected that all Y-119 line construction work will be completed by the end of 2021.

IR-8 When will the Y-109 transmission section identified in IR-7 be refurbished and ready to replace Y-111?

Response:

Current load projections indicate that Y-109 will be refurbished based on the age and condition of Y-111. This is provisionally planned for the 2027 to 2029 timeframe; however, field inspections on Y-111 will determine if the timing should be otherwise.

Peak load increases higher than currently forecast could require the earlier replacement of Y-109.

IR-9 What is the latest planned year when the refurbished Y111 will be extended to provide the third West-East transmission corridor? Have the route extensions now been set?

Response:

A refurbished Y-111 has been included in the 2020 Integrated System Plan as a third west-to-east transmission corridor, to provide improved reliability and stability to central and eastern PEI as load increases. The route for the extension has not yet been selected. The timing and construction design of the refurbished Y-111 will involve the following considerations:

- System load growth (including the location of growth);
- Impact of any innovative rate structures in shifting load from peak periods to off-peak periods;
- Duration of low load periods where system maintenance can be undertaken without undue impacts on customer service;
- Financial impact of a third line in helping reduce system losses;
- Location of any incremental non-dispatchable and dispatchable generation;
- Impact of energy storage (if it becomes economically viable);
- Determination of building material (wood vs steel) and design (single vs double circuit); and
- Impact of proposed Atlantic Loop infrastructure in energy delivery (if it proceeds).

IR-10 The “List of future capital projects” also includes the two-year phasing of a “CT4 Combustion Turbine” starting in 2025. a) What will be the on-Island and off-Island infrastructure conditions that will determine the need for adding on-Island capacity? b) What size and cost for CT4 is envisaged and where is the most likely siting?

Response:

- a. Maritime Electric must ensure that it has sufficient resources owned or under contract, both on-Island and off-Island, to reliably supply energy to its customers and at the same time meet its capacity obligations. The required resources include: a) energy supply; and b) capacity (as well as other ancillary services).

Maritime Electric is currently purchasing system energy and system capacity from New Brunswick Energy Marketing (“NBEM”) under a contract that extends to December 31, 2026. Generating capacity reservations, and the associated transmission capacity to deliver the energy to PEI, must be purchased on a yearly basis such that the off-Island purchased capacity plus the on-Island capacity is more than the peak load projected for the year. Without a corresponding amount of generating capacity, system energy cannot be purchased.

While there is a total of 560 megawatts (“MW”) of thermal interconnection capacity between NB and PEI via four submarine cables, the NB-NS/PEI maximum firm interface transfer capacity is currently 300 MW.¹ This is likely to be the off-Island capacity limit of PEI for the foreseeable future and is a major consideration factoring into the Company’s plans for additional on-Island generating capacity.

The decommissioning of the Charlottetown Thermal Generating Station units will leave Maritime Electric with approximately 89 MW of dispatchable generation in 2022, including Combustion Turbine #1 (“CT1” at 15 MW), Combustion Turbine #2 (“CT2” at 25 MW) and Combustion Turbine #3 (“CT3” at 49 MW).² The City of Summerside has approximately 15 MW of dispatchable generation, which also factors into on-Island generating capacity planning.

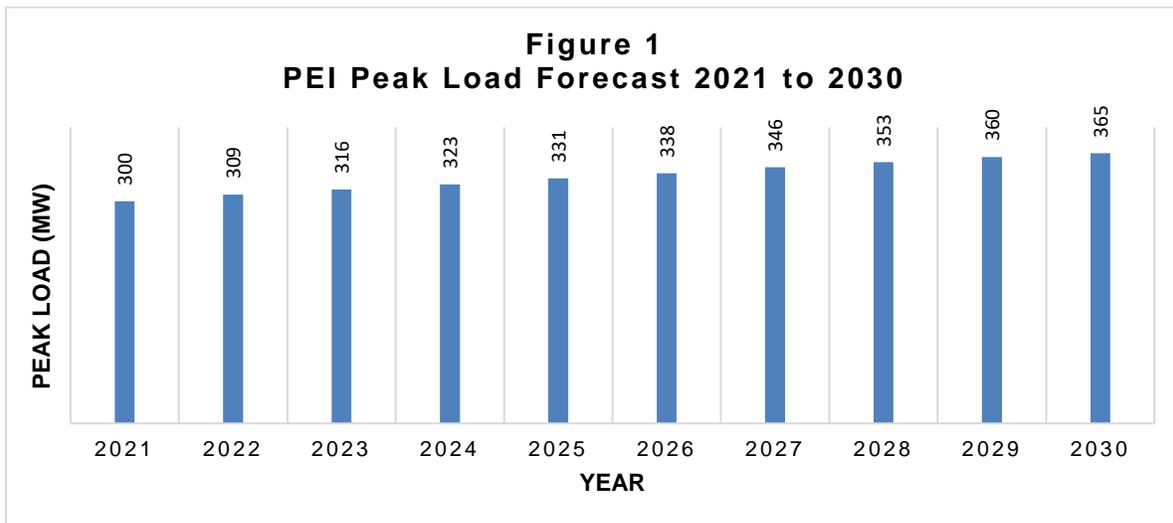
Maritime Electric’s current peak load forecast for PEI from 2021 to 2030 is shown in Figure 1.³ Once the Island peak load increases beyond 355 MW, Maritime Electric will no longer be able to meet its security of supply planning obligations under an N minus 1 (“N-1”) contingency protocol.⁴ Wind generation is not considered in security of supply planning as it is not dispatchable, and therefore cannot be counted on to be available in real time, if required.

¹ There are times when the NB system cannot provide the 300 MW and the PEI system is reliant on on-Island generation to make up the difference.

² The gross output of CT3 is 50 MW; however, 49 MW is the output delivered to the system after subtracting the unit’s station service.

³ The PEI peak load forecast shown in Figure 1 was produced by Maritime Electric in February 2021.

⁴ N-1 considers a loss of worst-case single element outage which in this case is CT3. Under N-1 contingency planning for security of supply, loss of CT3 means the total available amount of load serving capacity is as follows: 300 MW (NB-NS/PEI interface) + 40 MW (Maritime Electric) + 15 MW (City of Summerside) = 355 MW.



For the reasons provided, and assuming that the firm interface transfer capacity to PEI does not change, additional dispatchable on-Island backup generating capacity will need to be constructed and operational by 2028.

To address concerns around future security of supply, the Company plans to engage an independent consultant in 2022 to undertake an unbiased and in-depth analysis of the regional capacity market and future capacity prospects, as well as determine the optimal size, location and timing for additional on-Island generating capacity. This “On-Island Generating Capacity Study” is described on pages 46 to 48 of the 2022 Capital Budget Application.

- b. The required size of on-Island backup generating capacity has not been finalized at this time and the proposed On-Island Generating Capacity Study project will help to answer this question. Preliminary indications are that, at minimum, a generating capacity range of 50 MW to 100 MW will be required.

The cost to establish 50 to 100 MW of new on-Island generating capacity has not yet been estimated. An application was filed with IRAC in 2015 to construct a 50 MW combustion turbine at an estimated capital cost of \$68 million. Construction costs have increased over the past six years and it is expected that the new capacity will have a higher per MW cost. For financial planning purposes, Maritime Electric’s budget to complete a combustion turbine multi-year project in 2025 and 2026 is \$90 million.

The 2020 Integrated System Plan document indicates in Sections 7 and 10 that the most strategic location for new dispatchable, on-Island backup generating capacity would be the Charlottetown Plant site. Also, the Charlottetown Plant Site Long-Term Plan includes the accommodation of additional generating capacity.⁵ To confirm the suitability of the Charlottetown Plant site for new generating capacity, the location will be reviewed and addressed in the proposed On-Island Generating Capacity Study project.

⁵ The Charlottetown Plant Site Long-Term Plan was included in the Company’s application for a CT3 Equipment Building and Demolition of the Existing Steam Plant Building, filed with the Commission as a supplemental capital budget request on June 8, 2021.