Maritime Electric Co. Ltd. (MECL) 2022 Supplemental Capital Budget Request:

Advanced Metering for Sustainable Electrification Project Application – UE20737.

Clarification Questions for MECL – January/October 2023

Context of Questions:

1) Unlike other recent Canadian AMI projects, this application is unique insomuch that the deployment of the AMI infrastructure is dependent upon the replacement of MECL's existing Customer Information System (CIS). The resulting cost to customers is therefore significantly higher (on a per customer basis) than any other recent Canadian AMI project. Hence a common element of most questions is cost alternatives.
2) For questions seeking cost information, the costing assumptions are derived from the 2023 Capital Budget Application and previous Applications' Interrogatories. Generally the intent here is to gain comparative insights of costs – not necessarily the absolute. If MECL considers some cost requests to be confidential, estimates, ball-park or budget responses will suffice.

Clarification Questions:

1) The Application cites the recent Nova Scotia Power (NSPI) and New Brunswick Power AMI projects as useful MECL references. Please describe the priority "lessons learned" from each of these two projects for each of:
    a. The AMI deployment and phased installation from the Utility's perspective
    b. The AMI deployment and phased installation from the Customers' perspective
    c. If any AMI installations were able to provide estimates of energy use allocation, segregated into particular "behind-the-meter" equipment or appliances.
    d. The integration of the AMI system with the existing CIS.
    e. The added value of an AMI infrastructure during storms and supply outages. The NSPI experience during Storm Fiona would be of particular interest here; did the RF communications remain 100% available during and after the storm?
    f. Assuming that the AMI meters deployed have the standard Zigbee local RF data communication feature, did either project utilize this feature to provide customers with their energy use information?
    g. On a per-meter basis what were/are the comparative costs (actual or budget) for all three AMI programs – NSPI, New Brunswick Power and MECL? Please explain the reasons for the differences.
2) With reference to question 1), PEI's electricity infrastructure has considerably fewer customers, is a smaller scale, has lower energy consumption, has a fully deployed RI metering infrastructure and has a high concentration of wind energy (hopefully expanding soon). How

have these unique aspects and advantages been maximized in this MECL Sustainable Electrification Project Application.

3) What is MECL's current viewpoint on the choices that any Utility has for controlling peak load and/or using excess wind or solar energy? Is it preferred to:
    a. Provide incentives for customers to optimize when and how energy is used, e.g. time-of-day, and /or time of excess available energy, and /or energy-demand tariffs?
    b. Or is it more effective for the Utility to control energy use at the individual customer level and provide customer participation incentives, e.g. monthly discounts for direct time-of-wind (Summerside Utility HFLN) or extending MECL curtailment tariffs?
4) Summerside Utility's deployment of smart meters over the past fourteen (14) years has increased iteratively as customers changed to electric heating. Having the benefit of the experiences of all three Maritime Utilities' programs, what are MECL's conclusions on the strategies of:
    a. Introducing customer tariffs and incentives and then deploying smart meters to suit customers' adoption of the new incentives
    b. Or deploying smart meters to every customer and subsequently offering new tariffs?
5) The Application justifies the "Rationale and Necessity" of AMI by prioritizing the PEI Government's objective of converting all space heating from oil to electricity by 2040. Considering the recent mismanaged contraction of available PEI wind energy and the Government's blatant disregard for the impacts of increased peak load driven by the new electrification programs, what financial contribution to the proposed capital expenditure has been sought from the PEI Government?
6) Using efficiencyPEI's installation data please provide the 2021, 2022 and part 2023 annual Heat Pump (HP) installations. To explain how these installed HPs have changed MECL's electricity peak load challenges, please compile a table for the years 2020, 2021, 2022 and part 2023 showing the monthly energy sales (MWh), the monthly peak load (MW) and the resulting monthly system load factor.
7) The two-way communications for AMI is described as a series of four (4) communication paths between five (5) modules: A radio link from the customers' meter to a neighborhood-based collector, a radio link from the neighborhood collector to the common "Head End" system and then local connection to the MDM and then on to the CIS. In the event of storms and power outages/line failures how does the reliability of this series of communication paths compare to fibre internet, direct wireless internet and cellular network. The question focus here is to assess the expected improvement provided by AMI in communicating individual customer outage situations as compared to the existing direct communication methods available to customers and MECL.
8) The Application identifies that the implementation of AMI will enable new "Time of Day" (TOD) or similar tariffs to encourage customers to change energy-use habits to either reduce the collective peak load or to enable use of lower cost energy during the day. What are the expected benefits for MECL and customers; what are the expected cost savings for both?

9) The 2023 capital budget Application suggests, for new customers:
    a. Supply and installation of single phase Watt-hour RI meters is around $200; swap-out for existing customers could be around $100. Please confirm the amounts.
    b. Supply and installation of three phase Watt-hour RI meters is around $600; swap-out for existing customers could be around $300. Please confirm the amounts.
    c. Supply and installation of (three phase) Combination RI meters is around $1000; swap-out for existing customers could be around $500. Please confirm the amounts.

    What are the comparable individual meter costs and expected installed quantities used for the AMI budget? Is it correct to assume that only single and three phase types of AMI meter are required – not a Combination type?

10) CIS Asset Value: Following the adoption of "Power Builder" as the software platform/codebase for the current MECL CIS in year 2000:
    a. What has been the accumulated capitalized annual IT investment?
    b. What is the 2022 year end asset value and how long is the remaining depreciation period before a reasonable "write-off" asset value is achieved?
11) What would be the estimated cost savings for the new CIS if detailed energy-use data was archived and only provided to customers on each monthly billing date as opposed to being available "on-line" on an hourly basis?
12) Considering that the phased deployment of MECL RI meters starting in 2004 was:
    a. First two years – 7,500 meters
    b. Next two years – 10,000 meters
    c. Final five years – 50,000 meters

    and the twenty year RI meter life renewal cycle is due to start in 2024, would it not be prudent to deploy AMI meters in a similar renewal pattern and avoid significant capital write-downs of the RI meters?

13) Noting also that the current segmentation of Residential customers' by a) energy-use and b) collective coincident peak load, for a typical winter month is:
    a. 7,017 customers using between 2,300KWh and 5,000KWh; peak load of 48MW
    b. 11,687 customers using between 1,200KWh and 2,300KWh; peak load of 37MW
    c. 41,000 customers using up to 1,200KWh; peak load of 58MW,

    an AMI deployment schedule based upon customer energy-use segmentation conveniently coincides with the avoidance of capital write downs as cited in 12) above. Enabling those customers with the highest incentives to adopt new energy-use or peak load reduction tariffs would ensure that DSM results would occur faster, progressively, and in "pilot" quantities. Does MECL agree and what other benefits would MECL identify?
14) Finally, please respond and comment on the following two <u>Alternative AMI Deployment Scenarios:</u>

A) Alternative CIS Solution:

Enable evaluation of a PEI based AMI infrastructure and the early introduction of new tariffs by retaining the current CIS and replacing a proportion of RI meters with AMI meters. The primary factors that prompt this alternative are:

a. the AMI meters have the capability to not only report energy and power usage but also provide some calculations of individual customer tariffs
b. that the Meter Data Management Module (MDM as described) provides the management of streamed meter data before billing information is compiled by the CIS,
c. that the data storage of the proposed new CIS is to be the same configuration as the existing CIS - namely "On Premises" storage rather than "cloud storage".
d. As a result, how many AMI meters could replace RI meters and still retain the existing CIS?

B) Alternative AMI Meter Solution:

Extend the recent deployment of the ITRON "Bridge Meters" (BM) to enable early evaluation of new tariffs while providing an expandable meter platform in readiness for AMI. The ITRON BM has the expandable "Open Way" architecture which enables each BM to provide a compatible path from RI to AMI metering.

For the recent pilot deployment of 600 "Bridge Meters" (BM) please respond to:

a. The Application refers to "slowing down the drive-by meter reading process" what is the quantified data here and the estimate pro-rated delay for each additional 1000 BM deployed?
b. Earlier capital budget information suggested that the average swap-out cost for a BM Watt-hour meter was $230 and for a BM Combination meter was $300. What are the current costs?
c. For these 600 meters, what are the quantities deployed for each customer class
d. How many customers recorded (and perhaps used) the monthly day-by-day energy-use information collected by their BM?
e. As the current CIS has processed the increased data from these 600 BM so far, how many additional BM could be deployed before the current CIS would require upgrades?
f. What would be the incremental cost to add the 2-way communications module to each deployed meter to enable full AMI meter features?