

May 2, 2025

Interrogatories for MECL and Sargent and Lundy – On-Island Capacity Studies

Form and Purpose of Quantitative Analyses - On-Island Capacity Studies

1. References: "Capacity Resource Study, Evaluation of Various Technology Options for Maritime Electric Company", December 9, 2022; and "Extreme Weather Event Capacity Impact, Addendum to December 2022 Maritime Electric Capacity Resource Study", July 12, 2023; and "MECL Application and Evidence", December 18, 2024, including at page 7, "2024 net present value ("NPV") analysis", and including the confidential Appendix E ("Net Present Value Inputs and Calculations") of the December 18, 2024 Application and Evidence:
 - a. Summarize the specific methods and objectives of the December 2022 and the July 2023 quantitative analyses conducted to determine on-Island capacity supply needs, including the modeling tools utilized, the economic or other metrics used to evaluate the amount and the type of resource options, and if or how the analyses built upon MECL's 2020 Integrated System Plan (ISP).
 - b. Were any explicit capacity expansion and production cost analyses - using industry standard integrated resource planning tools to develop optimal or near optimal supply plans - conducted for PEI or the MECL territory on PEI, for either the analysis contained in the December 2022 report, or for the updated analysis contained in the July 2023 report?
 - i. If so, state which modeling package was used and provide all modeling outcome results and input assumptions utilized (in Excel file format).
 - ii. If not, explain if, or how the combined studies (December 2022 and July 2023) determined an economically optimal or near-optimal resource plan for On-Island capacity supplies.
 - iii. If the studies noted did not determine an economically optimal resource plan, explain why.
2. Reference: December 2024 Application and Evidence
 - a. Confirm, or explain otherwise, that the December 2024 "Net Present Value [NPV] Analysis" contained in confidential Appendix E represents a singular cost comparison for one specific portfolio (containing 10 MW BESS, 50 MW CT, and 90 MW RICE capacity resources) in comparison to procuring the portfolio-equivalent amounts of capacity and a portion of load following and spinning ancillary services otherwise purchased from New Brunswick Power.

- b. Confirm, or explain otherwise, that the NPV analysis in confidential Appendix E does not represent a comparison of costs or benefits of potential alternative mixes of on-island capacity resources associated with the 150 MW of total capacity in the specific scenario reviewed.
- c. Confirm, or explain otherwise, that the NPV analysis does not attempt to find an economically optimum resource plan for MECL's system for the 50 years considered in the Net Present Value assessment, or for any portion of the 50 years analyzed.
- d. Provide in Excel format (with all formulas intact) all of the confidential Appendix E tables.
- e. What is the source of the New Brunswick Power rates included in the NPV Analysis table in confidential Appendix E and what assumptions were made if any extrapolations of such costs were used?
- f. Confirm, or explain otherwise, that any transmission tariff costs associated with import of capacity or energy from New Brunswick is excluded from the avoided cost estimations contained in the NPV analysis table in confidential Appendix E.

3. Reference: Portfolios A through D, Section 6.2 of December 2022 report. At page 89 of the December 2022 study, it is stated: "This portfolio was selected due to its ability to most cost effectively meet the three most critical needs of Maritime Electric: ...", in regards to Portfolio D.

- a. What metrics were used to compare cost-effectiveness across Portfolios A through D?
- b. What are the quantitative results of the cost-effectiveness comparison across the four portfolios?
- c. Over what time frame is the noted cost effectiveness applicable?
- d. Is there any tabulation of the total costs to provide energy and capacity services for MECL ratepayers for each of the four portfolios? If so, provide those costs. If not, explain why not.
- e. Was any explicit production cost modeling of the four portfolios conducted as part of the December 2022 study? If so, please provide the production cost modeling results for each of the four portfolios if not already provided in response to question 1b.
- f. The last page of Appendix B to the December 2022 report contains a 20-year comparison of operational costs for a 50 MW BESS unit and a 53 MW RICE unit. What is the purpose of providing this comparison of costs? What are the energy costs (fuel) associated with the RICE resource in the table?

What is the overall energy cost or benefit effect of the charging and discharging of the BESS resource?

- g. If the Capacity Resource Study was limited to comparing the four portfolios listed and described in Section 6.2 of the December 2022 report, provide any additional modeling results and workpapers (in Excel format) associated with each of those portfolios if not already included in the report.
- h. Were any other portfolios, besides those four, specifically considered or analyzed? If so, provide such analysis. If not, explain how the specific makeup of those four portfolios was determined for comparison.

Peak Load and On-Island Capacity Needs – Reference Section 2.2.4 of December 2022 Study

4. Provide annual, historical firm and non-firm import capacity from NB to PEI since the completion of the first two interconnection cables. For each year, include the primary reason for the import capacity limit, e.g., cable capacity, NB transmission concerns, or NB resource availability.
5. Provide annual, historical On-Island winter peak load (including Summerside) (MW) and On-Island winter capacity resources (including Summerside) from periods starting with the completion of the first two interconnection cables.
6. Provide all underlying MECL analyses pre-dating the December 2022 Capacity Resource Study of estimating the need for On-Island capacity as a percentage of Island peak load.
7. What is MECL and S&L's basis for assuming that 50% of winter peak load is a reasonable target for on-Island capacity? Please discuss, and consider the following questions:
 - a. Is the target of 50% only based on historical trends?
 - b. Should the target consider 50% of a 50/50 normal peak load forecast, or 50% of the more extreme 90-95% point on a winter peak load forecast distribution (under probabilistic terms)?
 - c. How should the target consider the potential for AMI-based enabling technologies to significantly reduce peak load, at least for a few hours?
 - d. Does the target consider the current 4-cable infrastructure level, vs. a historical 2-cable infrastructure?
 - e. How do N-1, or even N-2, planning standards impact the assessment of a reasonable minimum level of firm import capacity?

Disconnection or Partial Disconnection of PEI from Mainland New Brunswick

8. Reference: December 2022 Capacity Resource Study, Executive Summary, page III, “... (since 2004, there have been nine times when PEI was either fully or partially disconnected from the mainland)”. Section 2.2.3 describes the events in general terms, with limited detail on loss of load specifics.

- a. For each of the nine events referenced, list the following:
 - i. the dates,
 - ii. event duration (hours),
 - iii. the normal firm interconnection capacity available at the time of the event,
 - iv. specific cause(s) of the event and preceding steps taken by MECL, and NB Power, if applicable (e.g., known/anticipated weather)
 - v. specific level and duration of disconnection (i.e., number of cable or cables disconnected, or other disabling event effect, magnitude of loss of MW import capability, etc.)
 - vi. loss of load effect on PEI – specific level(s) of MW and MWh loss of load arising from event, and indication if loss of load was interruptible or firm load
 - vii. status of supply and demand resources on PEI during the event,
 - viii. description of the resolution of the disconnection event, and
 - ix. Other factors not included in the above if relevant to the event and its resolution.

9. Hold To Schedule Section 2.2.3.1 and Table 2-6, Historical CT Operation 2019-2021

- a. For the “NB Power “Hold-to-Schedule” table item (2,106 MWh total), the average event MWH is computed as 40.5 (=2,106/52) and the text indicates that events are “typically short in duration (i.e., an hour)”. What is the actual range of capacity that has been used for the hold-to-schedule events for the period listed (2019-2021)?

10. Reference: Historical Frequency of Mainland Disconnections, Section 2.2.3

- a. Has MECL or S&L conducted any probabilistic analysis of the chance of partial or full disconnection of the import capacity from NB? If so, provide such analysis.

11. Mandated Reliability Requirements Under NERC or NPCC or NB Power.

- a. What is MECL’s reliability requirement under NERC and/or NPCC guidelines, or NB Power control area requirements, with respect to maintaining

resource adequacy on PEI (or within MECL's service territory on PEI) under an event with complete or partial disconnection of import capacity from New Brunswick? Discuss the nature of the specific on-Island capacity MW obligations MECL is under for conditions of complete or partial disconnection.

- b. Is it MECL's position that the decision to require some minimum level of On-Island capacity is based on PEI's needs and assessments of economic loss under loss of load conditions, or based on minimum requirements under certain NERC or NPCC or NB Power guidelines or mandates, or something else?

Cost Estimates

12. Reference: Application and Evidence, page 7, and cost estimates, Table 13, page 62. At page 7 it states that the cost estimate "does not include inflation or cost changes due to market dynamics between 2024 and the time of construction". At page 128 of the Application and Evidence, MECL states "The factors that will influence the estimated impact on rate base, revenue requirement and customer rates include...the impact of CT and RICE equipment market pricing dynamics in a period of high demand".
 - a. Since the last assessment of CT and RICE equipment costs, how has MECL or S&L directly considered increasing upward cost pressures on CT and RICE equipment given the market effects associated with the North American demand increases from data center load forecasts?
 - b. What is MECL or S&L's current estimate of the cost of CT or RICE technologies?
 - c. The Application and Evidence refers to the December 2022 Capacity Resource Study, which contains an estimate for a 50 MW, 4-hour BESS resource of \$2,670/MW. While Appendix A of the Application and Evidence contains an updated BESS cost, it is only for a 10 MW, 4-hour BESS resource. What is MECL's or S&L's current estimate of the cost of a 50 MW, 4-hour BESS resource?
 - d. How has MECL or S&L considered the effect of scale (i.e., 50 MW vs. 10 MW) on per unit costs for BESS resources? Would MECL expect per unit costs for BESS technologies at a 50 MW scale, vs. a 10 MW scale, to be lower? If so, by how much? If not, why not?
 - e. Has MECL considered the potential cost contribution or financing cost reduction for BESS resources under Canada's SREP (Smart Renewables and Electrification Pathways) program?
 - i. If so, what effect would the SREP options have on BESS resource costs to MECL ratepayers?

- ii. If not, why not?

Wind Performance Synergies – Wind Energy and Battery Storage on PEI / Performance going forward

13. Reference: December 2302 report, at page 11. MECL estimates that without CT3 online during a disconnection event, wind resources might not be able to assist at all (“...thus , an estimated 0% of the on-island wind generation could be utilized without risking system collapse”). With an increased level of BESS resources on-island, wouldn’t the system collapse risk be much lower, thus always enabling wind resources to contribute to energy and capacity needs during a disconnection event? Please discuss.
14. What specific steps has MECL taken since the February 2023 extreme weather event to address the performance of wind power resources on PEI, either those contracted directly to MECL or contracted for delivered of power off-island?
15. S&L noted in the July 2023 report that “S&L recommends further information sharing and/or a technical conference, between MECL, the wind operators, and the wind generator original equipment manufacturers to fully understand what transpired and find solutions to prevent a repeat of the changes experienced between February 3 and 5, 2023”.
 - a. Was a technical conference or similar forum held to fully understand the circumstances and find solutions to the performance issues of February 3-5, 2023?
 - b. If so, what was the result of that conference or forum, and what steps are currently underway to ensure improved performance of the wind resources?
 - c. If not, why not?
 - d. What is MECL’s current planning assessment – i.e., MECL’s current assessment of expected wind turbine operation - for wind resources on PEI during extreme winter weather events?

AMI

16. Reference: Application and Evidence, pages 41-44, including Capacity Requirements Forecast Table 9.
 - a. Confirm, or explain otherwise, that potential winter peak load reductions from demand response resources associated with the planned implementation of advanced metering infrastructure (AMI) is fully excluded from the Capacity Requirements Forecast of Table 9.
 - b. What is MECL’s expectation for potential peak load reductions from the planned AMI installations for the years following completion of the AMI project?

c. How has MECL quantitatively considered the potential for increased levels of peak load reduction from utilization of AMI coupled with enabling technologies to result in materially significant increases in “controllable DSM” during emergency periods of extreme winter weather (Application, page 42, “Examples of controllable DSM programs include incentivizing the installation of controllable water heaters and heating system thermostats, which can be controlled by the electric utility during system peaks”)?

Canadian Federal Issues

17. Reference: NS-NB approved new 345 kV transmission intertie in 2028/2029, and impact on NB-PEI capacity import reliability.

- a. In what way has MECL or S&L considered or accounted for the planned 2028/2029 completion of the second 345 kV tie between Nova Scotia and New Brunswick when considering the availability and cost of capacity and energy for import to PEI from New Brunswick?
- b. In what way has MECL or S&L considered or accounted for the planned 2028/2029 completion of the second 345 kV tie between Nova Scotia and New Brunswick when considering the relative reliability of the transmission system in New Brunswick and its effect on PEI capacity and energy import availability and reliability during times of highest system stress?

18. Reference: SREP (Smart Renewables and Electrification Pathways) program – funding for utility-scale battery energy storage. MECL has obtained Canadian Federal funding through the SREP program for a planned AMI system in its service territory on PEI. Nova Scotia Power has obtained SREP funding for 150 MW of utility-scale battery energy storage systems to facilitate wind energy integration in Nova Scotia.

- a. Has MECL considered or discussed with Canadian Federal entities the potential to use SREP funding in support of installation of battery energy storage facilities on PEI?
 - i. If so, describe the current status of such discussions, including any information available on the impact of the cost reduction of BESS systems available under SREP.
 - ii. If not, why not?

19. Reference: Figure 1 of April 23, 2025 filing (capacity balance): Please provide hourly data from December 1, 2024 through March 31, 2025 (in Excel format) listing MECL load and resources used to meet those hourly loads (NB firm, NB non-firm, PEI wind, Maritime Electric CTs, Pt. Lepreau, other). If such data is available for all of PEI (inclusive of Summerside), please also provide the broader set of the same information. If available, please indicate what the NB-to-PEI import capacity was in total for each of the hours listed.