

Comments on Maritime Electric Company Limited (MECL) application to IRAC for  
*Approval to Purchase Combustion Turbine (UE20723)*

Anna Keenan, Hunter River  
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## Introduction

I am a recent arrival in Prince Edward Island. Since moving here, I have noted with interest the very active public discussion (in the PEI Guardian newspaper, and also socially or ‘around the kitchen table’) regarding MECL’s desired purchase of new peak generating capacity, submarine cable upgrades, large wind-farms on the island, and the seemingly rapid expansion of residential solar energy.

I have been working in the area of energy politics and climate change policy, both in Australia and internationally, for 8 years. My academic background is in Physics and Economics. Upon arriving here on PEI I was surprised to find how under-developed the public discourse is around energy policy, and the lack of transparent, easily-available data about on-island energy supply. I was also surprised to learn also how reliant the island is on one utility (MECL) - with the interesting exception of Summerside - and how heavily reliant the island is on purchases from the mainland/New Brunswick. I - like many I have met since arriving - believe that the Island could develop a much more ambitious and forward-looking energy policy and practice, which could diversify the energy supply, produce more energy on-island, and increase energy efficiency. Many local people seem inspired by the idea that the island could move towards 100% renewable energy, a target which is now widely acknowledged by various international organisations and agencies as a valid and realistic global goal by 2050.

This is my first submission to IRAC. Unfortunately I was not aware of IRAC’s processes, nor the opportunity to submit questions to MECL, before the July 24 deadline for interrogatories had passed.

# 1. Comments, including areas of concern

## 1.1 Duration of the commitment

The lifetime of the proposed CT4 50MW generator is 50 years. Thus, the CT4 generator could be expected to retire in 2065. I question whether a short-term energy shortage should be used to justify a 50 year commitment, especially when the proposal would replace aged generating technology introduced in the 1970s with 'more of the same'. Is it not time to look forward to the next 50 years, and utilise the latest technological advances that will remain relevant for decades to come?

There is a vibrant national and international debate around climate and energy policy, and terrific uncertainty around future fuel prices. With any new investment, future policy changes and fuel-price volatility should be considered as a risk to be managed. Especially considering the upcoming October 2015 federal election, and the global UN climate summit in Paris this December, changes in energy policy might be arriving sooner rather than later. Will the proposed generator purchase be compatible with the country's potential future energy policy over its 50 year lifetime, or would it become a stranded asset? Will the generator still be the most cost-effective in the face of predictable global fuel price increases in the coming decades?

I don't believe these risks are adequately mentioned or taken into account in the proposal, and I would suggest that other alternatives (notably ambitious energy efficiency and demand-management, discussed more below) could be lower-risk, lower-cost and future-proof.

## 1.2 Timeline, transparency and democratic discussion of the proposal

The language used by MECL in the proposal indicates a significant time-pressure... e.g. on page 6, MECL states that they *have "communicated with the Province that it is essential that the Application ... move forward without delay."*

I hope that this 'imperative' does not stifle democratic discussion of the Island's energy supply. The time-pressure added also makes me question MECL's risk-management and long-term planning expertise - surely a prudent energy supplier would have been able to forecast risks to future energy supply in such a way that such significant applications could be made without a sense of urgency. Sufficient time should be allowed for adequate democratic discussion, a public hearing, improvement of the proposal, without risking generation capacity crunches.

A substantially longer timeline would be required to fully investigate alternative proposals and to facilitate input from the interested public. MECL's urgency in this proposal should not be seen as an imperative for approval without full discussion and investigation.

The project timeline offered in Schedule 1 does not offer much room for movement, and there also seems to be some confusion between Schedule 1 - which states that the 50MW capacity would come online only at the end of December 2017, and Schedule 2, which implies that the capacity delivered by CT4 would be available during the entire year of 2017 - and it compares this annual capacity with the annual peak load, which occurs in January, well before the completion of the proposed CT4.

Finally, many people I have met were not aware that as citizens they had the opportunity to read the original application and, as citizens, provide comments to IRAC. As such, there have been more 'letters to the editor' about this topic than formal submissions to this IRAC process. In any case, would not have the time to provide written input. A public information session and public hearing could facilitate broader input from the passionate public.

### **1.3 Lack of innovation, behind global best-practice**

Were MECL's proposals following current global best-practice, they would be moving in the direction of increased renewable energy supply, and aggressive demand reduction, rather than starting a new lifetime of diesel peak-generation to solve a short-term peak capacity constraint.

I was disappointed to see on Page 21 of MECL's application that both "*Increased Energy efficiency and DSM (Demand-Side Management)*" and "*Increase the use of Renewable Energy*" had been deemed 'unsuitable alternatives' to continued diesel peak generation. I believe these two alternatives were too easily dismissed and warrant further investigation and costing.

Especially considering that MECL's simultaneous application to IRAC (UE21406 - DSM and Energy Conservation Plan 2015-2020) also intends to address peak-load capacity constraints, I feel that it would be appropriate to consider, investigate, and put to a public hearing, both applications simultaneously.

#### **1.3a Energy Efficiency as an alternative to CT4**

On page 21, MECL states that DSM and Energy Efficiency "*will displace short term capacity purchases*", however asserts that it is "*unreasonable to suggest that increasing the scale of energy efficiency and DSM programming would eliminate the need for CT4.*"

I would suggest that it is, on the contrary, not at all unreasonable, noting that MECL's rather-basic proposed energy efficiency and DSM plan, if fully implemented and successful, would result in a solid 10 MW peak demand reduction. And this from a plan that seems to be based purely on rebates - quite a blunt incentive instrument.

Considering that MECL states that the increase in annual peak load "*is being driven, in part, by the growth in the use of electricity for space heating*" (page 6), it should be noted that space-heating - unlike, for example, lighting or cooking - is one of the more time-flexible electricity applications. Therefore, more innovative pricing and load-shifting incentives such

as off-peak tariffs, smart-metering and time-of-day pricing would be effective to reduce peak demand. Implementation of newer physical technologies across the province, such as combined-heat-and-power (CHP) units or district heating networks, would also reduce peak demand effectively. These methods, which both help MECL avoid unnecessary investment *and* which help consumers save on their monthly bills, deserve more thorough investigation.

I was interested to note that in Schedule 5, there is 14MW of 'Interruptible load' recorded in the table. Without knowing the details of what this load is used for or by whom, I am cheered to see that MECL already uses interruptible load tariff agreements with some (presumably commercial) customers. Those sorts of agreements could be a basis for a broader DSM program, but are not mentioned in either of the proposals currently before IRAC. I was concerned to see that the 14MW was not forecast to increase in the coming decade in Schedule 5.

I feel confident that with the proper planning and input, a more ambitious, global-best-practice DSM and Energy Efficiency plan could deliver a 50-60MW saving at peak by 2020, at a comparable cost, thus displacing the need for a new generator and saving islanders money in the long term.

The details noted in Schedule 2 also show that MECL is forecasting an increase in peak load of 70MW between 2014 (227MW) and 2024 (297MW), an increase of a significant 30% over only 10 years. A more-detailed explanation of the assumptions behind this large increase in peak load, and why it can't be entirely avoided with improved DSM practices, would be welcome.

I was also disappointed that the Energy Efficiency alternative was not included as part of the Terms of Reference given by IRAC to the independent energy expert consultant.

### 1.3b Renewable Energy options

MECL stated on Page 21 that *"installing more wind generation would provide more energy, but little additional capacity value. Installing solar power would provide energy, but no capacity,"* due to the after-sunset timing of annual peak load. Here, I take up two issues:

Firstly, MECL's analysis on Page 15-16 explains well that a more-than-doubling of wind capacity contracted to MECL (from 92MW to 200MW) under current grid-management practices would result in only a 7MW increase in effective peak capacity (from 21MW to 28MW). While this is small relative to the 50MW combustion turbine proposed, it should not be totally ignored. However, in Schedule 2, MECL does not include any increase in peak supply from wind at all, over the coming 10 years. Why does MECL's forecast include a 0MW increase in peak capacity, when up to 7MW (or more) might be possible, at a time when the wind industry is growing globally, and when grid-management practices are constantly being improved to be able to include a greater proportion of wind in a local energy mix?

Secondly, MECL neglects to consider expansion of other (non-wind, non-solar) renewable energy options. The options which are most apparent to me as being relevant for PEI include shallow geothermal (a significant source of energy and/or heat, especially at the winter peak); energy-from-waste, and sustainable biomass from agricultural wastes. Have these options been adequately investigated on PEI? Has there been a direct comparison of what new capacity could be achieved with a \$68 million investment in any one of those technologies? Or have such options been assumed to be unfeasible, before even being considered, let alone investigated or costed?

## 1.4 Cost effectiveness

While \$68 million over a 4-year period might be considered a 'low capital cost', and thus appropriate for a peaking generation unit, I'm sure that many Islanders would question whether this is the best use of resources in both the short and long term. With 58,000 residential customers, this investment amounts to over \$1,100 per residence.

If \$68 million were invested in residential or commercial energy-efficiency; distributed, small-scale renewable energy or combined-heat-and-power peak electricity generation, could a 50-60MW peaking generator investment be avoided? Or, considering the same question in reverse, in order to avoid 50-60MW of new peak capacity, what innovative options would result in a cost lower than \$68 million?

I agree that of the three diesel-generator options costed in the proposal, the proposed 50MW CT4 is the most cost-effective. However, it is the options that have not been included in the proposal which could be more cost-effective in the short term, saving islanders money on their electricity bills, and in the long term, saving islanders money through their provincial taxes which support MECL. What other alternatives could this money be spent on, to address peak electricity needs?

Considering that the CT4 is only "*expected to operate in the order of 100 to 200 hours per year*", during the very coldest days of the year when peak demand occurs, I want to know that other options have been explored to address peak demand needs, and if they would be able to benefit islanders also year-round, not only at the peak times.

Of course, with MECL having an effective monopoly on island energy supply, it is difficult to get real competitive proposals and alternatives considered, unless IRAC would order a pitching process for such proposals to be initiated.

## 1.5 Long-term solutions and ambition

I am additionally concerned about the issues mentioned on Page 18 of MECL's proposal...

*"with the installation of CT4 in 2017... Maritime Electric expects to be able to meet its peak load under the worst-case New Brunswick transmission system constraint until 2019." ...*

However: “for 2020 and beyond, additional measures will be required, such as additional on-Island generating capacity, participation in a new natural gas fired generating plant in the Moncton area, or upgrades to the New Brunswick transmission system to address the current constraint.”

Here, MECL indicates that a similar expenditure to CT4 will again be needed before 2020. Again, MECL pre-emptively implies that they would not consider ambitious energy efficiency, DSM or renewable energy to be a reasonable alternative to another combustion generator.

## 2. Requested IRAC actions

### 2.1 Combined Public Hearing - generator and DSM proposals

**IRAC to hold a public hearing on the matter of annual peak capacity**, considering both this \$68 million financing request (UE20723) alongside MECL’s concurrent DSM proposal (UE21406) - both of which seem designed to address the same urgent challenge of forecast annual peak capacity shortages during the winter months.

- The public hearing should be appropriately promoted in province-wide media, to encourage participation.

### 2.2 MECL: Investigate and cost ambitious Energy Efficiency alternatives

**IRAC to order MECL to develop an Energy Efficiency and Demand-Side Management plan of high-enough ambition to displace the need for a new 50MW generator purchase.** I understand that IRAC has this authority under the *Electric Power Act*.

I suggest ordering MECL to develop a plan which could deliver 60MW of annual peak savings over 5 years (equivalent to 26% of the island’s current peak demand of 227MW).

MECL’s current proposed DSM plan (also submitted to IRAC as UE21406) offers only 10MW of annual peak savings (4.4% of the current 227MW peak). A larger-scale DSM proposal, if implemented, would present a real alternative to the purchase of a new peak generation diesel-combustion unit.

Ordering MECL to produce such an ambitious plan might encourage them to invest in engaging national or international energy-efficiency consultants who could aid them in developing a plan which uses more creative and robust measures than simple rebate and cost-incentive schemes, which I feel are widely considered to be a ‘blunt instrument’ by energy efficiency experts, when compared to measures like Smart Metering, Off-peak Tarrif structures, and so on.

## **2.3 MECL: Investigate and cost Renewable Energy alternatives**

IRAC could order MECL to investigate and evaluate for cost-effectiveness, renewable-energy alternatives (or additions) to the CT4 50MW generating unit, and to return with an updated draft of their application.

## **2.4 IRAC engage an independent Energy Efficiency & DSM expert**

**IRAC to directly engage an independent expert in Energy Efficiency and Demand-Side Management to analyse, assess, and to make recommendations regarding MECL's related DSM & Energy Efficiency proposal (UE21406).**

Considering that MECL is attempting to address annual peak demand which occurs during the coldest months of the year, I would recommend that Scandinavian experts in cold-climate energy efficiency could be engaged to provide their independent expertise. In particular, Danish experts may have particular experience in island-based grid infrastructure connected to a mainland supply.

## **Conclusion**

I am concerned that MECL have not done their due diligence to create an innovative and modern solution to the current peak-capacity crunch on the island. The two proposals currently before IRAC represent a default, uninspiring continuation of the *status quo*, rather than modern, out-of-the-box thinking that would be a progressive advancement for island energy supply, and a better use of the money that islanders pay both directly and indirectly to MECL.

**Anna Keenan**  
5281 Route 13  
Hunter River RR2  
P.E.I. C0A 1N0  
**(902) 621 0341**  
anna.c.keenan@gmail.com