

Electricity policy decisions need more input

Environmental Coalition of PEIT

The Environmental Coalition of Prince Edward Island (ECO-P.E.I.) is a community-based action group formed in 1988. ECO-P.E.I.'s goal is to work in partnership with others and the land itself in order to understand and improve the Island environment. Our work centers on education, advocacy and action.

September 15, 2015

To whom it may concern,

Regarding the "MECL request for expenditure approval for a combustion turbine generator with the Island Regulatory and Appeals Commission"- docket # UE20723

In our opinion, this application must be rejected for 3 major reasons (detailed below), which I list as :

1. Alternatives:

Much more consideration must be given to alternatives, especially the use of publicly-owned utility-scale energy (ie, electricity) storage systems (ESS), as an option for replacing fossil fuel combustion generators (and at the same time enhancing the use of wind and solar electricity generation as base load).

2. Make better investments :

Investment in fossil fuel combustion generators is not appropriate in this time of societal shift away from fossil fuels.

3. Incomplete planning:

MECL does not appear to have a plan to resolve the "transmission system constraints on the mainland".

We also recommend that IRAC hold extensive public hearings to gather more meaningful information and input on matters pertaining to this application, and to MECL's proposal for Demand Side Management (DSM) # UE21406 .

1. Alternatives:

The construction of additional transmission cable(s) to NB will give access to additional imports of electricity to serve as base load. Although imports may not be so response-ready as thermal generation, they could, when coupled with increased renewables and investment in ESS, provide a diverse supply mix that meets reliability criteria.

Conservation, efficiency and renewable energy programs have had a history of strong support by many Prince Edward Islanders- we in ECOPEI have played our part with limited resources to promote clean sustainable energy options(1).

Generation of electricity from renewable energy sources can be substantially increased and used efficiently when complemented by ESS.

Recent major advancements in ESS have led to large battery units that are now practical and affordable for use in back-up and management of electricity systems (2). For example, the Tesla Powerpack battery system (3) is presently priced at about \$250US/ kWh (\$25000 for a 100 kiloWatt-hour unit). According to MECL's own calculations, in documents on IRAC's website (4), that equates to a cost of

\$1,625Cdn per kW, which is minimally higher per kW than the \$1,360Cdn per kW estimated cost for the proposed 50 MW generator.

Those calculations need more detailed work to include other factors, including decommissioning costs and the likelihood that the cost of battery units will decrease quickly. We believe further study will show that battery units are a much better option than the proposed 50 MW generator.

There are also many other ESS choices, e.g., "Flow batteries offer a promising solution for utility-scale wind and solar energy storage, and the US company UniEnergy Technologies is part of a new demonstration program in the Pacific Northwest that pits the technology against lithium-ion batteries. When its flow battery was fully commissioned earlier this summer, UniEnergy's press materials raised this point: "**The Uni.System's leveled cost (\$/total GWh delivered over 20 year life) is multiple times lower than the cost of lithium-ion systems such as Tesla...**" (5)

Those systems can be flexible in size and location, and very useful for reducing demand and costs at peak and other times; and are also critical for enhancing the use of wind and solar generation as base load.

With programs that encourage community involvement through businesses, municipalities &/or community co-operatives, partnerships could be formed to increase the use of our abundant PEI wind and solar energy resources.

Other peak-shaving programs that are successful elsewhere have now been tested here: "...PowerShift Atlantic proved utilities can partner with customers and shift their power use from costly, high-demand times to lower-use times to get the most out of wind energy...the project proved, on a small scale, utilities can even out electricity use and avoid having to construct new energy generation..." (6)

And the Summerside utility has a successful 'electricity to thermal storage' demand management program : <http://www.cbc.ca/news/canada/prince-edward-island/heaters-help-save-with-wind-power-1.1183732>

2. Make better investments:

Do not allow the spending of \$68M+ on a fossil fuel generator that would likely only be used a few days per year; invest instead in efficiency, renewables and especially publicly owned ESS that is reliable, fast and affordable, and can serve the same purpose of handling peak demand.

Utilities and governments in many other jurisdictions, notably Alberta, Vermont, Ohio, California, Washington and Europe are now investing in ESS systems (7)

ESS has many advantages: quick installation; flexibility of purchase options; size and location; no exhaust pollution when connected to renewables; decreased vulnerability to power outages; lower infrastructure costs such as reduced transmission lines; as well as benefits for reducing demand and costs at peak and other times; and enhancing the use of wind and solar generation.

Wind power is PEI's best and cheapest energy resource, with many excellent potential sites still available (8). Solar power is quickly also becoming a competitive choice for PEI (9). With publicly owned ESS, wind and solar can provide base load capacity and peak demand reductions.

3. Incomplete planning:

As previously stated, MECL has not presented a plan to resolve the "transmission system constraints on the mainland", which they state as part of the justification of this application. The PEI government should establish agreements with the New Brunswick government and NB Power to optimize PEI's use of the NB electricity transmission system.

Having a guarantee of high return on capital and an obligation to maximize shareholder profit, MECL has financial vested interests to promote, so MECL should not be mandated to make proposals for electrical generation, or to negotiate inter-provincial transmission issues.

That applies equally to taking DSM proposals out of MECL's role, as is justified, for example, by the situation of MECL installing new meters across PEI in recent years- they neglected to install proper smart

meters, as we and others recommended, which are very important for 'time-of-day rates' conservation programs.

Within the present regulations, IRAC must ensure that independent analysis is used for energy policy decision making.

Another factor that must be included is consideration of Greenhouse Gas (GHG) Emissions.

In the present federal election, parties have differing approaches to fulfilling Canada's commitment to the Copenhagen Accord, so 'climate action' policies and regulations could soon change drastically.

Because GHG emissions from electricity use are relatively easy to reduce, especially compared to transportation or agriculture, when future federal emissions reductions regulations are instituted, electricity generation may need to virtually eliminate GHG emissions as soon as possible; that is another reason it would not be wise to invest in a generator that uses fossil fuels.

The Organization on Economic Cooperation and Development (OECD), of which Canada is a member, writes:

“Acting now is not only environmentally rational, it is also economically rational. For example, (this) outlook suggests that if countries act now, there is still a chance – although a receding one – of global GHG emissions peaking before 2020 and limiting the world's average temperature increase to 2 degrees C. To do so would make the costs of adaptation and mitigation much more affordable. But unless more ambitious decisions are taken soon, the window of opportunity will close. Investment decisions that are being made today will lock in infrastructure for years or decades to come. The environmental consequences of emissions-intensive investments today will be long-lasting.” (10)

Since these important IRAC decisions on energy policy will have a major effect on our PEI economy for many years, it is imperative that IRAC hold extensive public hearings to gather meaningful information and input from many more sources, so all the alternatives can be properly considered.

Those sources would include independent scientists, public interest advocates (11) and the general public, as well as engineers and officials of utilities elsewhere that are using innovative solutions for generation, demand management and peak-shaving.

Those public hearings should also be used to clear up any misconceptions held by the citizens and ratepayers of PEI on how IRAC determines electricity rates, and other decisions regarding MECL.

We look forward to well-publicized, informative public hearings, and a good public education campaign, on the future of electricity policy on PEI.

Thank you for your consideration.

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Notes and further reading:

(1) e.g. ECOPEI submission to Leg Comm 2014 'A Positive Energy Policy for PEI' :

<https://www.facebook.com/notes/renewable-energy-pei/outline-detailed-notes-a-positive-energy-policy-for-pei-establishing-alternative/481752941999446>

(2) <http://rameznaam.com/2015/04/14/energy-storage-about-to-get-big-and-cheap/>

(3) <http://www.forbes.com/sites/jeffmcmahon/2015/05/05/why-tesla-batteries-are-cheap-enough-to-prevent-new-power-plants/>

(4) http://www.irac.pe.ca/infocentre/documents/UE20723-ThirdParty-Interogatories_and_Reponses.pdf
p. "...Tesla has also announced a larger version, called the Powerpack, which is intended for larger applications, such as peak load reduction. Its features are: · 100 kWh of storage; ·A price point of \$US 250/kWh, or \$US 25,000 for a unit; ...It would need an inverter to connect with the grid. The price for inverters is \$US 300/kW. With 100 kWh of storage, a Powerpack could supply 25 kW for 4 hours in a peak shaving role. This would result in a \$US 25,000/25 kW = \$US 1,000/kW price for the unit. Using an exchange rate of \$Cdn/\$US = 0.80, and without taking into account installation costs, the cost for the Powerpack would be (($\$US 1,000/kW + \$US 300$)/kW / 0.80 = \$Cdn 1,625/kW. This is higher than the \$Cdn 1,360/kW estimated cost for CT4 (\$Cdn 68 million/50,000 kW)."

(5) <http://cleantechnica.com/2015/08/30/uet-backs-energy-storage-challenge-tesla-flow-battery-info-ct-exclusive-interview/>

(6) <http://www.cbc.ca/news/canada/prince-edward-island/wind-energy-project-tied-to-maritime-electric-considered-success-1.3099745>

(7) <http://www.triplepundit.com/2015/08/energy-storage-coming-home/> : "... the utility-scale market is booming. U.S. energy storage capacity grew by 40 percent from 2013 to 2014, with 90 percent of that new capacity deployed in front of the meter (i.e., utility-scale). Storage in all markets combined is expected to grow another 300 percent in 2015...."

<http://storage.pv-tech.org/news/only-renewables-plus-energy-storage-power-spanish-island-for-four-hours> : "...The International Renewable Energy Association (IRENA) recently released its [electricity storage technology roadmap](#). The roadmap looked at how electricity storage can support increased deployment of renewable energy. In the course of doing so, it highlighted a number of priority areas, including the dual need and economic opportunity for installing [storage technologies on islands and in remote parts of the world](#), while IRENA and other experts have long said that islands could be test cases and models for the wider market...."

<http://www.greentechmedia.com/articles/read/what-advanced-microgrid-solutions-plans-to-do-with-5000-tesla-powerpack-bat>

<http://storage.pv-tech.org/guest-blog/game-changers-and-customer-benefits-integrating-a-range-of-battery-types-in>

<http://www.pri.org/stories/2015-04-07/when-grid-says-no-wind-and-solar-power-companys-technology-helps-it-say-yes-again>

<http://www.washingtonpost.com/news/energy-environment/wp/2015/09/02/spurred-by-innovators-like-tesla-the-energy-storage-industry-is-booming/>

http://albertainnovates.ca/media/23990/energy_storage_announcement_june_2015_final.pdf

<http://www.pennenergy.com/articles/pennenergy/2015/07/power-news-vermont-s-green-mountain-power-ready-for-energy-storage-revolution.html>

(8) <http://www.gov.pe.ca/envengfor/windatlas/>

(9) http://www.irac.pe.ca/infocentre/documents/UE20723-ThirdParty-Interogatories_and_Reponses.pdf p. 11 :

"...The cost for solar photovoltaic (PV) generation is approaching Maritime Electric's first block energy charge for Residential customers (13.16 cents per kWh plus HST at 14 % is 15.0 cents per kWh). Based on an advertised installed cost of \$2.10/kW for a solar PV system by a local firm, and using an annual capacity factor of 14 % and 5 % financing, the cost of solar PV generated electricity is approximately 15 cents per kWh. This, in combination with the subsidy provided by net metering, could result in a large uptake of solar PV by homeowners in the next few years..."

(10) <http://www.rappocse.esteri.it/NR/ronlyres/46562C12-A4FD-4240-99E8-CFF03D22EA85/56119/ExecutiveSummaryEnvironmentaloutlook2051.pdf>

(11) Ecology Action Centre is an important Public Interest Advocacy group addressing energy issues in NS: https://www.ecologyaction.ca/files/images-documents/file/Energy/ElectricityAndNSFuture_LoRes.pdf