

Nicole Godbout

Regulatory Counsel
Nova Scotia Power Incorporated
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July 9th, 2014

Dear Ms. Godbout,

RE: M05522 – 2014 Integrated Resource Plan
Ecology Action Centre Comments on June 25th Technical Conference

Thank you for the opportunity to comment further on the Integrated Resource Plan. The initial results for the selected candidate resource plans were informative and EAC looks forward to further results. Our specific comments and suggestions are as follows:

Demand Side Management

Particularly given new legislation on energy efficiency, it is essential that DSM programs be treated on equal economic footing to supply side options without constraining allowable investment in DSM so that viable DSM scenarios are not prematurely rejected.

While EAC does not at this time have specific comment on the Avoided Costs of DSM discussion introduced at the technical conference, we would like to reiterate our stance that the Program Administrator Cost test is a more appropriate test to use within the context of the IRP. Though the Total Resource Cost test has been used to date, it fails to adequately quantify the total benefit of a portfolio of energy efficiency programs.

Candidate Resource Plans

EAC is concerned that both the number of plans considered and the potentially large number of fair solutions for each CRP will be difficult to present and examine for potential Preferred Resource Plans. As stated in the Terms of Reference, 3a, the effort should be inclusive to avoid premature rejection of options.

We agree with comments made at the recent technical conference regarding cost accuracy. It is clear that because the analysis inputs are estimates and many assumptions are speculative, Strategist solutions with similar overall predicted costs are, within the accuracy of the analysis, equivalent cost solutions. Although they may be ranked above or below each other, EAC feels that solutions with NPV costs within 5% of each other should be examined thoroughly.

It would be good to see which Strategist supply side and demand side alternatives are selected for solutions that rank within 5% of each other for overall NPV. Understanding which of the commonly

selected alternatives will help avoid premature rejection of options. These alternatives should include the options, or variations on them, listed in the final assumptions (Supply Side Options, Future Environmental Control Technologies, Future Supply-side Thermal Options and PPAs/Import Options). For example, EAC feels that it is of particular interest to Nova Scotians to know which, if any, regional transmission options (especially NB2 and NB3) offer cost effective solutions.

Please consider including in future CRP results a table, or something similar, with options/alternatives listed against considered CRP's that shows which CRP sub-solutions employ each listed option. It may be that listing specific sub-solutions for each option is too cumbersome in which case, simply showing the number of top 5% cost solutions that employed the option in each CRP would be instructive.

Worlds to Consider

The assumptions established to date are based on modest deviations from the current trends of increasing fuel prices, higher renewable content and more restrictive emissions constraints. Identifying resource plans optimized for these conditions makes sense. Notwithstanding, change has swept through the Nova Scotia electricity system in the past as we transitioned from fuel oil to coal generation and the potential for future shocks of this type is growing.

For this reason, ***EAC feels that three alternate worlds should be examined.***

> **World 1, Business as Usual:** This is the world established within the existing assumptions.

> **World 2, Zero GHG World:** This is a world where carbon emissions from stationary sources like power generation are no longer permitted. Emission sequestration options would become mandatory. GHG emissions would be limited to transportation, forestry and agricultural activities.

> **World 3, Renewable World:** This a world where carbon emissions from stationary sources like power generation are no longer permitted and sequestration of CO₂ is either not permitted or locally impractical. GHG emissions would be limited to transportation, forestry and agricultural activities.

While EAC recognizes that these are extreme perspectives, they do represent worst case change scenarios for our power generation system. Solutions that emerge from these worlds bound the range of low carbon transformation options for our power system and will help to focus selection of a 'no regrets' Preferred Resource Plan in World 1.

These options represent real conditions that may result from further Federal government regulation, either as a component of the current administration greening an overall resource intensive fossil fuel exporting economy, or as the result of policies choices within a future government formed by one of the opposition parties (see Appendix 1 for a discussion of potential future national political realities).

Demand Side Management and High Wind Resource Plans

Understanding that Strategist as a planning tool may not fairly examine resource plans with high variable generation and low load, EAC strongly recommends that Plexos be used to examine a high wind and high/medium DSM case. Understanding the capacity factor for existing thermal plants, the value of regional interconnection and the degree to which wind curtailment / export becomes necessary is important so that resource plans of this type are not prematurely rejected.

Demand Response and Storage Evaluation

Likewise, Strategist may not fully reveal the value of Demand Response or Storage options. **EAC strongly recommends that Plexos be used to examine a high wind and high/medium DSM case so that both the potential benefit and cost implications of these options are clear.** Understanding the potential value and costs of demand response and storage is important so that resource plans of this type are not prematurely rejected.

COMFIT Assumption

EAC recommends that the Full COMFIT allocation be applied to all CRP's. EAC recommends that the assumptions as stated be retained (Total 150MW of COMFIT wind generation by the end of 2016), but that an additional COMFIT generation capacity of 25 MW per year in 2017 and 2018 be assumed to bring full amount on line.

Notwithstanding this assumption, **EAC recommends that the COMFIT be extended indefinitely.** This IRP will aid in identifying the amount and type of COMFIT generation that should be included in the future.

Regional Balancing and Interconnection Options

In addition to ensuring that import options are considered, EAC feels that the assumptions and CRP's are not well configured to explore the potential benefits of improved regional interconnection and power balancing. **A CRP that reflects improved regional interconnection and balancing and also reflects the potential cost sharing of these improvements should be investigated.** Balancing in particular may offer the chance to narrow the duration of low wind periods.

Changes to meet our needs may well benefit the power system within other Atlantic region provinces. As an example, the Maritime Link has the potential to improve congestion within areas of the New Brunswick power system, a windfall to ratepayers there. Regional interconnection costs may well be something that can be shared.

Sensitivities

EAC recommends that the assumed price of carbon emissions be one of the sensitivities explored.

EAC recommends that sensitivities explored for all options be non-linear. That is, that the negative cost sensitivity be less than the opposing positive cost sensitivity. This reflects the unfortunate mathematical reality of cost differences. In our world, the probability that a cost may increase 10% is typically greater than the likelihood that it will decrease 10%. In the extreme, while there is a chance that a cost will double (+100%), the chance that the cost will go to zero, (-100%) is far smaller.

Likewise, the magnitude of the sensitivity considered should not be small. As discussed in the technical conference and echoed here, the accuracy of the Strategist solutions is dependent on the input assumptions. Within small sensitivities, the effects are not likely to be significant and will not show that the prospective resource plan is robust. EAC recommends that sensitivities examined take the form of -25%/+50%. Plans that respond in proportion to these sensitivities are clearly robust. Plans that do not are clearly riskier.

Sincerely,

Catherine Abreu

A handwritten signature in cursive script, appearing to read 'Catherine Abreu', rendered in a light grey color.

Energy Coordinator
Ecology Action Centre

Appendix 1: Potential Future National Political Realities

On a global per capita basis, a Canadian target consistent with the goal of preventing greater than 2°C would set national GHG emissions reductions by 2050 at 95% below 2010 levels. In the 2039 IRP timeframe, national targets would limit GHGs to approximately 1/3 to 1/4 of present-day emissions.

These reduction targets lie within the range of policies under consideration by Canadian federal parties. The Climate Change Accountability Act Bill C-311 (2010) proposed similar limits and passed third reading in the House of Commons in 2010. Originally sponsored by Member of Parliament Bruce Hyer (then an NDP MP and now a Green Party MP), Bill C-311 achieved broad support including, among others, current leaders of both opposition parties. Bill C-311 was only defeated on second reading in the Senate in 2010. The current official opposition has resubmitted this bill for consideration and policies similar to it are likely to remain under active consideration for the foreseeable future.

Stationary emissions, especially electrical power generation facilities, present the largest opportunity for easy reductions today, particularly when compared to the difficulty associated with reducing emissions from transportation or oil and gas extraction. For this reason, under potential future federal emissions reductions regulations, electricity generation will be looked to virtually eliminate GHG emissions as soon as possible.