November 27, 2006

Scott McCoombs
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Halifax, Nova Scotia B3J 3P7

Submitted via email: SRMCCOOM@gov.ns.ca

RE: Nova Scotia Electricity Market Green Attribute Administration Discussion Document

Dear Mr. McCoombs:

Thank you for the opportunity to respond to the *Nova Scotia Electricity Market Green Attribute Administration Discussion Document*. We congratulate the province on its commitment to address Climate Change through the development of Green Power and related emissions trading potential.

Pollution Probe has been active in emissions trading since the mid-90's. Highlights of our work include holding a national conference and producing a report in 1999 titled *An Assessment of Emissions Trading for NO_x and VOCs*. To further public education on this subject, in November 2003 Pollution Probe released the *Emissions Trading Primer*, a copy of which is enclosed. It is available on our web site at http://www.pollutionprobe.org/Publications/emissionstradingprimer.pdf. We are also currently preparing a report titled *North American Emissions: An Updated Assessment of Emissions Trading Programs.* We will forward a copy to you once it is completed.

Pollution Probe has been active in Green Power policy development over the past four years. Initiatives include a national multi-stakeholder workshop series that formed the basis for *A Green Power Vision and Strategy for Canada* (copy enclosed) and *A Consumer Guide to Green Power in Canada* http://www.pollutionprobe.org/whatwedo/greenpower/index.html. We also co-hosted a regional workshop with the Marine and Environmental Law Institute at Dalhousie University on *Exploring a Green Power Strategy for Atlantic Canada*. This workshop and a subsequent workshop held at Dalhousie on *Renewable Energy Promotion in Atlantic Canada* formed the basis for a report titled, *Towards a Green Power Vision and Strategy for Atlantic Canada*. A copy of this report is enclosed and is available at http://www.pollutionprobe.org/Reports/Towards%20a%20Green%20Power%20Vision%20and%20Strategy%20for%20Atlantic%20Canada.pdf.

Pollution Probe's recommendations on the Green Attribute Administration Discussion Document are as follows:

1. The discussion document has inaccuracies that should be corrected.

Inaccuracies include:

i) *Statement:* The environmental drive for renewable energy sources is based in locally impactive emissions reduction (e.g., SO_x, NO_x & VOCs) which are solely a matter of provincial jurisdiction (p. 3).

Comment: These substances have been designated as toxic under the Canadian Environmental Protection Act (CEPA) and this are also subject to federal regulation.

ii) *Statement:* If we assume that GHG ERC quantification in Canada will be done at the provincial pool level, then, given Nova Scotia's high dependency on fossil generation, each MWh of renewable energy could have an ERC value as high as 1 tonne CO_2 equivalent (p.7).

Comment: Although Nova Scotia does have a high dependency on fossil generation, approximately 7 per cent of the province's electricity generation is from renewables that include hydro, biomass, tidal power and wind. Nova Scotia is also developing more renewable electricity generation. Therefore, it is not appropriate to consider an ERC value to be as high as 1 tonne CO_2 equivalent. Moreover, ERC creation should be benchmarked relative to an appropriate clean technology regulatory standard and not against the full CO_2 emission potential of a coal-fired power plant.[1]

iii) *Statement:* Most but not all renewable generation is intermittent, meaning that it is almost instantaneously dependent on weather conditions or other non-controllable parameters. This means that the dependable capacity of renewable generation is only a small percentage of its total capacity (e.g., 10% to 30%) (p. 24).

Comment: There are 5 grid-tied renewable energy options for Nova Scotia that include wind, solar PV, biomass, run-of-river hydro, and ocean energy. Of these, wind and solar PV are variable. Ocean energy (tidal and wave energy) is also considered intermittent.[2] Biomass is usually baseload power, and small hydro can be baseload, intermittent or peak power. Also, wind energy can be linked with water to provide pumped storage capacity, thereby increasing its dependable capacity and overcoming intermittency. Storage batteries are also an option which may become important in the future.

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[1] See *Emissions Trading Primer*, pgs. 14, 20, 22, 25-27, 44-49, 65-67, 69-71, 78-7, attached or can be downloaded from http://www.pollutionprobe.org/Publications/emissionstradingprimer.pdf

[2] Tidal energy is entirely predictable but will fluctuate on tidal cycles during the day, by monthly lunar and annual cycles. However, multiple tidal sites in a region have highs/lows/slack water at different times due to geography and it may be possible to operate multiple sites in a system with reduced variation within each tidal cycle. Wave energy can be forecasted, perhaps up to 5 or more days in advance. Wave fields may be generated by wind events that never come ashore and even if they do, the duration of a wave field is longer than the storm that created it. This issue is being addressed by the Ocean Renewable Energy Group at the *OREG Fall Symposium 2006* see http://www.oreg.ca/fall_symposium_2006.html.

The capacity factors sited are also highly questionable. The following table shows national averages for Green Power capacity factors. In some cases, such as wind, the capacity factors can be higher in Nova Scotia.

Technology	Capacity Factor (per cent)
Wind – onshore	30
Wind – offshore	40
Small hydro	50
Biomass	80
Solar	14
Wave	30
Tidal	30

Some poorly written or unclear statements include:

i) According to a recent report prepared by GE for "Indirect contributors to SO_x and NO_x emissions reductions in the same airshed as the regime (such as independent renewable electricity generators) can normally and subject to the rules of the program create SO_x and NO_x ERCs that can be traded to the controlled emitters in the regime or sometimes to other controlled emittors in the same air-shed." (p. 7)

ii) "In that framework, the incremental system cost to accommodate new intermittent renewables would offset the cost savings of the generation displaced, and so would reduce the null energy price (probably the capacity element of such price). The total returns to an exporter would be reduced, while it would be expected that the attribute value within Nova Scotia would tend to increase to preserve the total revenues of a Nova Scotia renewable supplier." (p. 25)

These statements should be rewritten to be more understandable.

2. The following concerns should be taken into account:

i) *Statement:* In the Nova Scotia context, it would be expected that a reputable GHG ERC creation program would be able to estimate the annual average emission intensity of the Nova Scotia generation displaced by renewable generation and would likely be somewhat conservative in the estimating methodology. On this basis, the emissions reduction benefit of the renewable energy could be quantified, thus creating a GHG ERC owned by the independent renewable generator or other entity that holds a contractual right to the ownership of the GHG ERC.

Consideration: A benchmark should be set against a 'clean' standard, such as emissions from a natural gas combined heat and power plant, versus against the annual average emissions intensity for Nova Scotia. Given the province's heavy reliance on fossil fuels, the current electricity generation mix is a poor benchmark.

ii) A discussion of peak shaving should be included in section 6.3.5. The province's 2001 Energy Strategy states that over the next 20 years, Nova Scotia's projected load growth will require additions of at least 350 MW (16.5 per cent) of new peak generating capacity (electricity load growth is projected to increase from a peak of 2,035 MW in 2001 to 2,400 MW in 2020).[3] Peak shaving programs will lessen the need for new generation, thereby saving consumers significant dollars as well as resulting in significant reductions in air pollution.

3. Pollution Probe supports 5.4.2 Scenario 3(b).

Scenario 3(b) offers the greatest long-term flexibility and would facilitate renewable energy development in excess of the RPS. It overcomes the potential for the RPS to act as a barrier to Green Power development.

4. Further consideration should be given to a regional RPS. Section 3.6, *"Surplus" attributes*, should be expanded to include importing electricity into Nova Scotia.

On July 6, 2005, the Atlantic Energy Ministers agreed to increase co-operation on renewable energy. A regional RPS would allow the Atlantic Provinces to reduce costs and maximize Green Power development. The federal government should recognize and support regional and cross-border cooperation.

Concluding Comments

Pollution Probe congratulates Nova Scotia on its efforts to develop indigenous renewable energy. We believe that significant economic and environmental gains can be achieved from a well-designed Green Attribute Administration Framework linked to a national emissions trading system.

We welcome the opportunity to consult further with Nova Scotia on these important issues.

Best Regards,

K.B. Ogilvie

K.B. Ogilvie
Executive Director

[3] See *Towards a Green Power Vision and Strategy for Atlantic Canada*, p. 20, attached or can be downloaded from http://www.pollutionprobe.org/Reports/Towards%20a%20Green%20Power%20Vision%20and%20Strategy%20for%20Atlantic%20Canada.pdf.