Energy and the New Reality

Submission on the Renewable Electricity Plan (REP)

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Our environment and society are threatened by fuel shortages, a changing climate and energy wars. There is an urgent need to transition to a sustainable path of integrated renewable energy.

Ensuring Nova Scotians benefit from the province's energy sector, enabling Nova Scotia businesses to compete successfully in the growing energy industry and educating Nova Scotians on energy issues, are key parts of the Nova Scotia Department of Energy's mandate. Balanced with a commitment to improving the environment and informing Nova Scotians, the Department of Energy should play a key role in developing a vibrant and prosperous Nova Scotia.

Because the electricity sector is only part of the energy budget for the province, at this time it is unusual that the Nova Scotia Department of Energy is still not thinking of an integrated energy strategy that includes transportation, heating, cooling and electricity. Such an integrated strategy could be entitled: Energy and the New Reality.

While it's good that the government of Nova Scotia has set specific caps on greenhouse gas emissions and has recognized the need for a transition away from dependence on burning fossil fuels for energy this plan is not adequately structured to successfully enter the new energy reality. This transition to the new energy reality should be done to benefit all Nova Scotian citizens.

a. Cost of Electricity- the false economy

Rebalancing the discourse around the cost of electricity to the ratepayers is the first step towards achieving a new energy reality. This preoccupation with so-named "low-cost" electricity has blinded the policy makers to opportunities for our economy and energy and our social, environmental and cultural sustainability. More significantly it has done nothing to either keep the price of electricity down in the short-term or will it in the long-term.

Despite the Department of Energy and Nova Scotia Power Inc.'s (NSPI) apparent focus on the cheapest electricity price for consumers, there has been a 37% increase in conventional coal-fired electricity prices since 2002. And as of June 30, 2010 NSPI has announced it wants to increase residential rates by 12% and industrial rates by as much as 18% next year to offset the cost of clean-burning coal.

No one needs to be reminded that there is no such thing as clean coal and that as the cost of carbon rises all Nova Scotians will be penalized. The present situation and the forecast situation based on this Renewable Electricity Plan does nothing for creating real long-term benefits to the Nova Scotia citizenry. A proper integrated energy strategy would ensure everyone receives the benefit. Electricity is an infrastructure, not a commodity.

b. COMFIT-Irrational rationale

Feed-in-tariffs are the most cost-effective policies for ensuring rapid transition to a more sustainable energy system. However the effectiveness of the FIT is only as adequate as the design and implementation. The Department of Energy focus on so-named "low-cost" has delayed early adoption of Feed-in-Tariffs in the province and successful uptake of renewable electricity. Now although the REP proposes a FIT it is with restricted participation and restricted sectors and restricted size (average of 2MW but up to 6MW possible).

There are a couple of obvious problems with this COMFIT. The definition of community includes municipalities, First nations, co-operatives and non-profits but excludes or maroons small business. There is to be a COMFIT experimental tidal but the exclusion of proven solar PV.

The rationale for the restricted COMFIT is said to be to in part to manage cost; "At this time, a FIT for large-scale projects would likely have a significant impact on electricity rates." As has already been discussed this is irrational when compared to the increases ratepayers have already experienced and will continue to. But even more so with the realization that the REP includes the decision to provide a FIT for distribution connected tidal projects when tidal is still in development phase, will be hugely costly, will quite certainly never be owned locally and will have to overcome enormous operational and environmental challenges before being commercially successful or unavailable.

In January 2010 newspaper articles announced $8 and $10 million direct subsidy being invested by government in tidal energy in the province. As well there have been any number of reports about delays in targeted timelines for tidal renewable energy, equipment failure etc. Will the tidal FIT be anything other than an indirect subsidy to NSPI and one or two large companies?

Another rationale for the restricted COMFIT is said to be to ensure that projects are rooted in the community and investment returns remain there and to encourage a range of

projects widely dispersed through the province. By contrast the Department of Energy could care less that the much larger NSPI (100MW) and Independent Power Producer (100MW) remain rooted in the community and that those investment returns remain there.

The REP states COMFIT will introduce a variety of programs to assist community groups in the technical, financial and regulator work needed to develop the projects. This is essentially putting money into research and development instead of assisting real projects that are ready to build and with proper policy could get built.

Easiest of all electric renewables to deploy without spending money on R&D is solar PV. Recent estimates for costs of solar in Canada are ~$ 2.7 million/MW not much more than the ~$2.4 million/MW projected cost for wind energy. How does the Department of Energy exclude solar PV as being uneconomical when it is the most easily installed, requires the least amount of technical, financial and regulatory work and has the maximum potential for distribution and long-lasting individual ownership and benefit?

c. RFPs are a Failed Policy

At the same time that the Department of Energy has ostensibly had a focus on low rates to ratepayer, Nova Scotians have been left behind in the transition to renewables because of failed projects resulting from the request for proposal policy (RFPs). Getting a few successful "low-cost" wind-energy projects relative to the large number that failed or the number of businesses, which have stopped doing business in Nova Scotia renewable work in the province, is not an indication of success for the ratepayers. The failed RFP policy has also ensured that NSPI now effectively owns or has a large financial interest in the existing renewable projects up and running in the province.

The 2005 Support of Renewable Energy Sources by the European Commission and the 2006 Stern Review on the Economics of Climate Change both identify broad-based feed-in-tariffs as the most cost-effective way and most rapid way of procuring renewable power and yet the recent Wheeler Consultation report did not acknowledge the fundamental, over-arching and proven policy realty of FITs which are now adopted in over 50 countries. The consultants for the Wheeler report were not adequately experienced or knowledgeable to be advising about FITs especially as these relate to solar.

FITs establish the price paid for the renewable energy based on the technology cost & small profits often with an annual declining rate-they do not gouge the consumer. Had the province been an early adopter of FITs, renewable electricity would be established in Nova Scotia along with jobs in the manufacturing and installation sectors and price stability for electricity. Ontario's recent announcement about a huge solar procurement plan with Samsung projects annual costs of $1.50 per consumer. The policy is also projected to create 50,000 jobs.

An examination of the facts regarding RFPs as a procurement policy within Nova Scotia give evidence to the policy failure. In 2004, 41.9% of RFP contract awarded were built according to evidence (see attached Undertaking 5) obtained at the June 2009 URB NewPage Port Hawkesbury Strait Bio- Gen hearing. This failure of RFPs was well-known in advance of the economic down-turn of 2009 yet senior Department of Energy staff continue to defend RFPs as having brought the best price renewable energy to the province. The failure of the RFP has had a much higher cost to the Nova Scotia ratepayer than any increase in cost that would result from a FIT.

Leaving the only option for for-profit independent power producers as an RFP is not reasonable as small businesses will never be able to qualify through bidding.

d. Financial Climate in Nova Scotia

The bad renewable energy policy has not only meant project failure, it has driven away most of the businesses that were looking for opportunity here five years ago and created enormous difficulty for any and all Nova Scotia based renewable energy projects in getting financing. The direct result if a loss of jobs for Nova Scotians. Nova Scotia is not a good investment territory for renewable energy projects and in fact any potential national financing which might have been available is targeting Ontario because of the very progressive renewable energy policy there.

Two articles in the Chronicle Herald during the week of January 11th 2010, recount NSPI keeping performance bonds of $500,000 from each of two renewable energy companies at a time when the government showed NSPI leniency on NSPI's renewable target commitments. A third newspaper story recounted that NSPI had bought a 49% stake in another renewable company to ensure its success in meeting its project target.
So after its 5-year exclusion from participation in renewable energy was cut short because of regulation requirements mandating targets and timelines for renewable energy, NSPI continued to degrade the business aspect for Independent Power Producers by keeping performance guarantees and by picking up the pieces of bankrupt projects that the RFP policy had created at fire sale prices.

The ability to procure financing for renewable energy projects of any size in Nova Scotia is not working. The role of government leadership is critical in ensuring that the business community believes there is a financial functionality in the renewable energy sector. The Nova Scotia public is not interested in the Industrial Expansion Fund being used for the same old industries year after year. This Fund can be an important tool for improving the business climate for Nova Scotia based renewable energy projects by giving business loans to these projects if the developer requires a subordinated loan as part of their financial structure. This government loan would be spent directly in the province on construction costs for the projects. Projects that are locally owned contribute to the economic growth and energy security of the province.

As a model, the 2008 German Act on the Promotion of Renewable Energies in the Heat Sector allocates 500,000 Euros per year on an as-needs basis for underwriting renewable heat sector initiatives. Financial underwriting for renewable businesses would send an important signal to investors and create a climate that encourages other financial sectors to participate.

e. CEDIFS

Although conceptually excellent, CEDIFS are not a mature or to this date an appropriate financial model for renewable energy for several reasons. They require a huge investment of volunteer time and effort to create and operate; they are relatively cumbersome and costly to establish, operate or invest in; to date they have not demonstrated the capacity to raise significantly large amounts of capital; they require a better underwriting or insurance by government; conventional financial and investment institutions have highlighted the risks of CEDIFs which for them are a competing sector; and they do not have an adequate exit-strategy.

"Throwing it out there" as if CEDIFS are where its at without immediate and intense improvement of this model is as adequate as proposing that Nova Scotian "communities" will survive on the biblical version of fishes and loaves.

f. Solar Energy

In 2009, Germany, *which has a solar regime inferior to Nova Scotia*, installed a record 3,800 MW of solar PV. The previous record for solar PV of 2,600 MW was set by Spain in 2008. Industry observers speculate that Germany could install more than 4,500 MW in 2010.

In 2009 according to Gruppo Imprese Fotovoltaiche Italiane (GIFI), 93% of all solar PV in Italy is installed on rooftops in distributed applications. Data from Gestore dei Servizi Energetici indicates that about one-fourth of all Italian solar PV installations are less than 20 kW in size, or about 300 MW: less than 3 kW= 6%; 3 kW-20 kW=21%; 20 kW-200 kW=23%; 200 kW-1,000 kW=36%; and over 1,000 kW=14%

Similar to Italy, small distributed rooftop systems continue to dominate the German market despite the media's unfailing preoccupation with large multi-megawatt solar PV plants. The role of what are effectively central-station plants has grown, but they still only account for 17% of the installed capacity and more than four-fifths of the 9,000 MW of solar PV operating in Germany has been installed on rooftops: less than10 kW=18%; 10 kW-100 kW=60%; over 100 kW=6%; ground mount=17%

Yet at the November 17, 2009 public forum for the Wheeler Energy Stakeholder Consultation, Yves Gagnon, expert for the consultation stated incredibly and often that solar is NOT something to be pursued in Nova Scotia because it is an emerging

technology. Three weeks after attending this consultation we did a home stay with indigenous Karen Hill Tribe people in northern Thailand that all had had solar PV panels on their bamboo homes for seven years, a gift from the Thai King.

With Nova Scotia having a potential of 1,074 Kwh/kW (Tokyo has second largest per capita installation of solar PV and solar potential of 885 kWh/kW of installed PV) the REP ignores the huge advantage and opportunity a solar rollout for the province could create. Recent estimates for costs of solar in Canada are ~$ 2.7 million/MW not much more than the ~$2.4 million projected cost for wind energy.

During the consultation period for the REP, Neal Livingston provided his book chapter on solar roll-out as a economic driver for Nova Scotia to the Wheeler Consultation, the Premier and his advisors and several MLAs. It describes how Nova Scotia is ideally positioned for a rollout of domestic solar hot air and solar hot water followed by solar PV. This would be undertaken much as telephone, Internet, electricity, sewage or other public services have been provided to citizens. Yet, as solar PV happens worldwide Nova Scotia is opting out as the advisors and decision makers are ignorant about solar and seem unwilling to learn.

The huge advantage offered by modular solar thermal and solar hot water units is that these technologies are able to be retrofitted to existing housing and apartment units with the real benefits of reduced electricity consumption, stabilized or reduced energy costs, quick pay-back and energy security going directly to individual citizens rather than large renewable energy producers. Both solar hot air and hot water manufacturing could be ramped up within the province and as well as creating jobs would create the training and knowledge for the subsequent rollout of FITs for solar PV in three years.

This ties in nicely with the Department's mandate to improve the environment, inform Nova Scotians, and develop a vibrant and prosperous province. As individuals become producers of electricity they benefit from income generated through sales, become more conscious of electricity use and conservation with the personal benefits of increased energy security, affordability and quality of life. Solar hot water units are manufactured in the province and solar thermal units are manufactured in Newfoundland. The manufacture, installation, and maintenance of these units would all contribute to the economy.

Shifting to renewable solar technologies for hot air and hot water would substantially offset two sectors of electrical use in Nova Scotia which have increased as follows:
2003 domestic hot water: 22% home heating: 15% total: 37%
2007 domestic hot water: 33% home heating: 23% total: 56%
And of course passive solar construction would become the model for all new construction.

Perhaps senior members of the Department of Energy could benefit from a tour of the solar hot water company Thermodynamics in Burnside, the solar thermal factory

Cansolair in Newfoundland and PV facilities in Germany and Italy, solar homes and conventional homes converted to solar throughout the province.

g. Biomass

Biomass as a fuel alternative to coal, oil or gas has several drawback including low energy, high moisture and heterogeneity of physio-chemical characteristics. Large-scale forest biomass is the lowest value use of our woods and is questionable as to the social, environmental and economic sustainability. Even if wood waste is targeted for use in biomass there is no assurance that this is in fact wood waste and that other value added use could be found.

The proposed New Page 60MW project will increase deforestation in eastern Nova Scotia and at the same time increase greenhouse gas emissions from harvesting, transportation, loss of carbon sink and combustion. And the effect on biodiversity (loss of and or homogenization of habitat) and watersheds is not examined in any present economic model the government uses despite years of familiarity with full-cost accounting practices such as Genuine Progress Index Atlantic (GPI).

In Nova Scotia, all agricultural crops and forests will be under increased stress from changes in climate- both temperature and precipitation and effects from vectors and disease. No one can predict what the state of our forests will be as a result of climate change because of these shifting parameters.

The NSPI/New Page 60 MW biomass project is an outcome of the failed RFP policy in that over 50% of the renewable energy projects, which should have been up and producing by now, were not built. Now because of targets and timelines NSPI presents the biomass as the only solution for a firm renewable source. It would make more sense to extend the timeframe for the renewable target than to spend the amount of over $200 million on the wrong project.

h. Natural Gas

The REP states that the province will continue to encourage the use of locally–produced natural gas. However most of Nova Scotia's locally produced natural gas has already been exported to the US with the full cooperation of the Department of Energy. The availability and affordability of natural gas in the future is completely unsecured and unpredictable and to state otherwise is grossly misleading.

An article in the July 8, 2010 Chronicle Herald confirms that EnCana will not explore further Sable Gas. Tragically this resource, had it been exploited for the benefit of Nova Scotia could have either provided long-term energy security or the revenue from the sale could have been put into a special fund dedicated to developing long term sustainability and energy security for Nova Scotians.

Instead annual income from oil and gas industry in NS has been on par with the annual income from the Nova Scotia Liquor Commission.

i. Grid: Cleaner and Stronger

The REP states new studies will lay the groundwork for upgrading our own grid and our modest interconnection to the North American grid. On July 8, 2010 NSPI has announced it wants to spend $200 million on grid improvements to New Brunswick, undoubtedly the plan will be to have the cost coming from the ratepayers. This lines up with Emera, NSPI's parent company intention to export renewable electricity through their NB and US connections and will have no benefit to the NS economy or ratepayers or real cost reductions.

Why isn't NSPI investing in an underwater cable from Newfoundland to import hydro from the Lower Churchill Falls expansion when it becomes available? This is exactly the energy supply that could provide back up for vagaries that impede expansion of intermittent renewables such as solar and wind and shut down coal-fired generating stations.

What studies will the province be conducting to present solutions to reconcile the variability of renewable electricity supplies, the differing patterns of supply and demand and to dispel many of the myths on the topic?

j. Energy and the New Reality

Nova Scotia is uniquely placed and is rich in renewable energy resources including wind, solar and geothermal. Rather than sticking to the status quo we must move as rapidly as possible towards adopting these technologies and in a way that offers maximum advantages to individual members of our society and to our economy. With a population of less than one million it is conceivable that we can drastically reduce our reliance on fossil fuel energy.

What is the cost of not succeeding? We have had an electricity price increase of +37% since 2002 and face more increases shortly. We have no energy security and a huge economic hole in our economy as we spend ~$3 billion/year for imported oil and ~$500 million on imported dirty coal or dirty petroleum coke. We face an enormous carbon liability being one of the highest CO2 emitters in the world. And our province will be left behind as a jurisdiction where there remains a bad climate to do business and no incentive to take financial risk.

Imagine in the same month the Ontario becomes part of the solar revolution Nova Scotians are provided with a report that has no mention of solar because it presumes solar is an emerging technology. Advisors to government are quite simply solar ignorant- what

they are purporting as a decision based on fiscal conservatism is really based on a failure to understand the need for a paradigm shift which includes solar- to leave this out is irresponsible and begs the question what century do we want to be in?

Energy and the new reality require a paradigm shift that reaches beyond a consensual status quo. Let's support a renewable energy revolution in Nova Scotia that will take us into the future. This vision should ensure that all Nova Scotians reap the benefit not the few who control the means of electrical production as a result of an antiquated and unfair economic model. What right does the government have to remain so far behind the desires of the public?

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