Nova Scotia Utility and Review Board

NSUARB-BRD-E-R-10

Renewable Energy Regulations under the *Electricity Act*, R.S.N.S. 2004, c. 25, s. 1, as amended

-and-

Renewable Energy Community Feed-In Tariffs

FINAL SUBMISSION PREPARED BY:

E3 ANALYTICS

ON BEHALF OF:

Ecology Action Centre

AND

novaSEA

Nova Scotia Sustainable Electricity Alliance

March 25, 2011

Contents

Introduction

At the request of the Ecology Action Centre (EAC) and the Nova Scotia Sustainable Electricity Alliance (novaSEA), E3 Analytics was retained to review and comment on the COMFIT Proposal prepared by Synapse Consultants for the Province of Nova Scotia and UARB review. Ecology Action Centre and novaSEA respectively submit this evidence and supplementary exhibits for the Board's careful consideration in the matter of NSUARB-BRD-E-R-10: Renewable Energy Community Feed-In Tariffs.

Q. Please state the name, position and background of the person sponsoring this evidence.

A. Toby Couture is ***Director of Energy Analysis*** with E3 Analytics, an energy consultancy based in London, UK. He focuses on the economic and financial aspects of renewable energy markets.

Couture has worked with a wide range of companies, including Deutsche Bank's Asset Management Group and Navigant Consulting, and he has collaborated with a number of private equity firms in the UK and Europe. He has authored several influential reports for the U.S. *National Renewable Energy Lab* (NREL), and worked with jurisdictions throughout the U.S. and Canada on renewable energy policy issues. He has recently completed a detailed analysis on feed-in tariff policies for the National Lab that is widely considered to be the most comprehensive report published on the subject to date.

Couture is a recent Fulbright recipient, holds a Masters in Energy and Environmental Policy from the University of Moncton, in Canada, as well as First Class Honors in Philosophy from Mount Allison University. He is currently completing an MSc. in Financial and Commercial Regulation at the London School of Economics, in London.

See Exhibit B for a more detailed CV.

Evidence as Prepared by E3 Analytics

1. The Board has received submissions from numerous interveners over the past months, and each intervener is bringing forward different concerns. Some of these concerns have to do with the access to capital, others with the insufficiency of the rates, and still others about the design of technical provisions, such as the fuel adjustment mechanism. These are all legitimate concerns, and deserve a fair hearing.

   However, it should be pointed out that in designing feed-in tariff rates, there is invariably a tradeoff between standardization (setting a fixed price to capture a range of projects) and customization (accommodating different project-specific concerns). The objective is to arrive at an appropriate set of prices that is sufficient to capture a wide range of projects, based on a reasonable set of assumptions.

Having looked at the Consultant's submissions on the COMFIT rate setting exercise, I believe they have done a good job at balancing these concerns. However, a number of issues have been identified. For instance, some have argued that the rates in some classes may be too high, while others have argued that they may well be too low – this submission seeks to add to that discussion, pointing out a few areas where both the rates, and their design, might be improved. It is hoped that this can contribute constructively to the rate-setting hearings currently underway.

2. By and large, the tariffs proposed by Synapse stand up to financial analysis, and are in the right range to allow projects to be profitably developed. This is supported by evidence from projects in other jurisdictions throughout North America, and indeed, around the world that have been successfully developed at prices at or below this range. This notwithstanding, a number of concerns remain, some of which are within the scope of the rate-setting process, and others which are beyond it. I will focus primarily on the former, with a few concluding remarks on the latter. The first portion of this submission will focus largely on the financial details.

3. Synapse is correct to assume a higher average amount of equity than Ontario. The 40/60 weighting is likely more appropriate, and enables community-based projects to take a greater stake, while taking on more responsibility for projects' success. A 50/50 capital structure may even be necessary in some cases, as highlighted in the Consultant report. However, assuming a higher equity weighting is itself problematic, and fraught with challenges, as little has been done in Nova Scotia to date to address how this equity will be obtained. In highly active renewable energy markets, such as California, setting an adequate FIT price may be sufficient to attract capital, and get projects built; in Nova Scotia, with a fledgling sector, a limited developer track record, a smaller pool of available capital, and a stringent limitation on project ownership, it may still prove difficult for many potential projects to obtain financing. In particular, the restrictions that 25 community members invest in the project is virtually unheard of, and may restrict the ability of projects to move forward in a timely manner. Other jurisdictions such as Ontario enable any citizen living in the Province to invest in community projects in any area of the Province, thereby widening the pool of capital, and introducing a less restrictive framework for participation.

   While some have suggested that Nova Scotia's CEDIF structure is suitable for the purpose of raising and allocating capital, substantial doubts remain. Over-reliance on this mechanism may prove insufficient to develop the number and diversity of projects targeted by the Government.

4. The added costs and challenges of developing community-based and community-owned renewable energy projects should not be underestimated. Experience in Ontario, Minnesota, Vermont and elsewhere suggests that such projects do require a higher tariff to obtain financing, and do experience significant challenges in obtaining initial capital resources for pre-feasibility and scoping work. In contrast, larger, privately backed projects in these markets have had little difficulty finding capital. This highlights the significant difference between COMFIT and large, private projects.

   Moreover, access to capital for renewable energy projects tends to be more challenging in Canada, which does not offer anywhere near the wide array of federal tax incentives, cash grants, etc. offered in the U.S. Federal incentives in the U.S. have given rise to a host of financing structures based on tax equity, which provides a readily available pool of capital to invest in renewable energy projects. As a result, provided the economy is generating significant tax liabilities, equity is easier to come by. While community groups themselves generally cannot make use of these tax incentives (as they do not pay taxes), they can often partner with private investors who do. The existence of these many (often overlapping) incentives in the U.S. makes comparisons between the availability of equity in the U.S. and Canadian renewable energy markets tenuous at best.

   This highlights the importance of ensuring that COMFIT projects can benefit from a decent return on their investment. It is neither reasonable, nor advisable, to assume that projects will be built on good will, or that endless pools of time and money will be freely and readily available to support COMFIT projects. This makes it important to assume, as the Synapse team has done, that COMFIT projects should be offered rates that are sufficient to earn a reasonable, risk-adjusted return on their investment.

5. Turning to the issues surrounding debt, it is widely acknowledged that leverage (particularly on these kinds of projects) is harder to come by in the wake of the recent financial crisis, as lending standards have been tightened almost across the board. One of the consequences of this for Nova Scotia's COMFIT policy is that traditional lenders are likely to demand more from each individual project in order to make debt financing available. This is likely to include that developers have a proven track record of executed projects, which could easily create a chicken-and-egg problem for a fledgling RE sector like Nova Scotia's.

6. I believe that the debt rate assumed by Synapse, namely 8%, is in the right range, though some projects may be able to obtain lower than this based on a number of factors.

However, based on experience in Ontario and British Columbia, it is unlikely that amortization periods of 15 years will be available, at least in the early years, and particularly for projects with greater performance risks. On these grounds, the assumption that projects will obtain 15-year amortization periods may be optimistic; as this is unlikely to dramatically alter the investment case. It may be advisable to wait until the first round of projects has been attempted, and then revise this assumption, among others, in subsequent rate adjustments based on the evidence available at the time.

7. On the issue of interest rates, the rate charged on bank debt is always subject to the Bank of Canada's decisions in the months (and indeed years) ahead. Inflationary trends could force rates upward, particularly if oil and food prices remain high. This could introduce new pressures on COMFIT projects, pushing up the required debt service costs for both new and existing projects.

   This suggests that like the amortization period, a periodic revision of the financing costs is critical to the viability of the COMFIT policy. The 18-month period should be sufficient for this purpose. It is advisable to rely on a fixed schedule for revisions, rather than introducing revisions based on the attainment of capacity targets, as the former increases stability and predictability in the market, both for investors and for the Government.

8. The following paragraphs turn to more specific comments about the proposed rates themselves.

9. First, there is a wide disparity (roughly of a factor of 3) between the <50kW tariff and the >50kW tariff. This presents a glaring opportunity for regulatory arbitrage, as project proponents may seek to exploit the higher tariff by stringing together smaller projects. For instance, rather than developing one 750kW turbine project with the equity capital that a community has at its disposal, a community might opt to install ten smaller 50kW units instead. The end result is less renewable electricity delivered to the grid, at a higher cost to ratepayers.

   This is clearly not a desirable outcome. In fact, a similar situation developed in Spain in 2007-08, as developers broke up larger solar PV projects into multiple interconnection points in order to exploit the higher tariffs available to smaller projects. As designed, the COMFIT wind market is at a risk of "clustering" around the 50kW turbine size, installing multiple 50kW units rather than larger single units, putting more upward pressure on rates, and decreasing the overall efficiency and cost-effectiveness of the policy framework.

It is noted in the Regulations (Article 28.2) that a 5MW cap is to be imposed on 50kW turbines, which would limit this risk. However, this is likely to introduce considerable uncertainty in the market, as farmers, coops, communities and other participants remain in the dark about how many such projects are in the pipeline, and whether their own project will make the cut or not. Furthermore, a first-come-first-serve system is likely to create a rush to fill the available capacity, leaving many communities that have viable proposals unable to move forward. (Note that although the Board rejected NSPI's proposal for a 20MW distribution cap earlier this week [see Exhibit A], the COMFIT policy as a whole retains a projected target of 50-300GWh per year by 2015, which suggests an upper limit of roughly 100MW of installed capacity. This may create similar uncertainties as the program nears that upper limit.)

A further difficulty is that the 50kW threshold fails to recognize that communities will not raise equity evenly (and certainly do not raise equity in conveniently apportioned 50kW blocks). While some communities may be able to raise well over $1 Million, others may struggle to raise more than $100,000.

10. These challenges aside, it should be clear that introducing such a large disparity at the 50kW threshold is likely to create undesirable incentives. These unintended consequences need to be anticipated, and measures should be taken to avert them.

The policy mechanism would be made more efficient both for communities and for NS ratepayers if communities were able to scale their turbine purchases to their financial resources, choosing the best turbine size category for their area, as well as the turbine that bests suits their community's context. In order to achieve this, a tariff structure that is more reflective of real economies of scale should be introduced.

It is important to note that this does not require a complete revision of the wind tariff structure. Based on their interpretation of the Regulations, Synapse put forward two rates, one for small wind (modeled on a 50kW turbine) and the other for larger wind (modeled on a 1.5MW turbine). While both rates should allow each of these particular project sizes to be profitably built, they ignore project sizes in between (and indeed, beyond).

Three options have been used elsewhere in the world to resolve this problem:

1. **a series of tiers** capturing broad project-size categories (e.g. <50kW, 50-100kW, 100-500kW, 500kW-1MW, 1-5MW, etc.)

2. **full tariff differentiation**, as is done in Germany, Switzerland, France and a few other countries, that captures both resource and project size variation in one mechanism.

3. **a linear interpolation model** that traces a line between the two proposed tariffs.

As the first approach is clumsy, and more difficult to design without leading to similar "clustering" effects, and the second is likely beyond the scope of the Consultant's remit, this intervener proposes adopting the third approach. This is similar to that adopted in Portugal for eligible hydroelectric systems (see Figure 1).

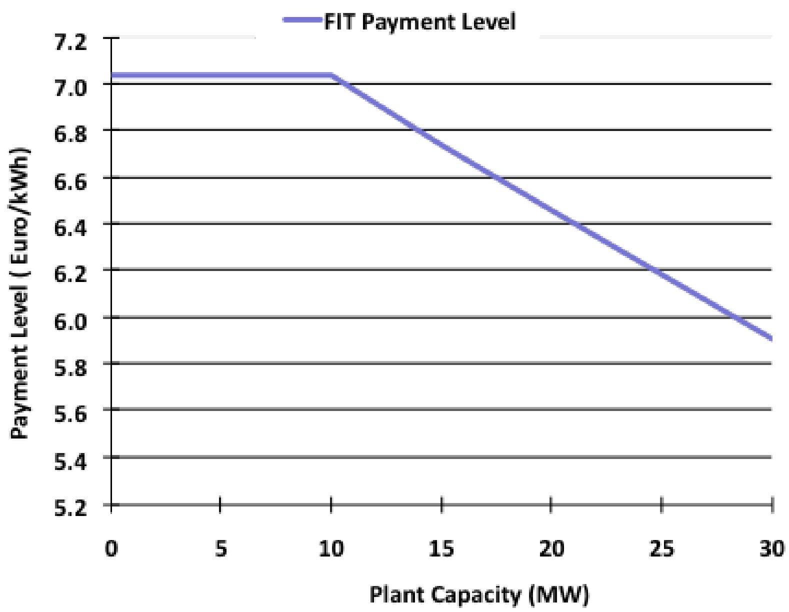
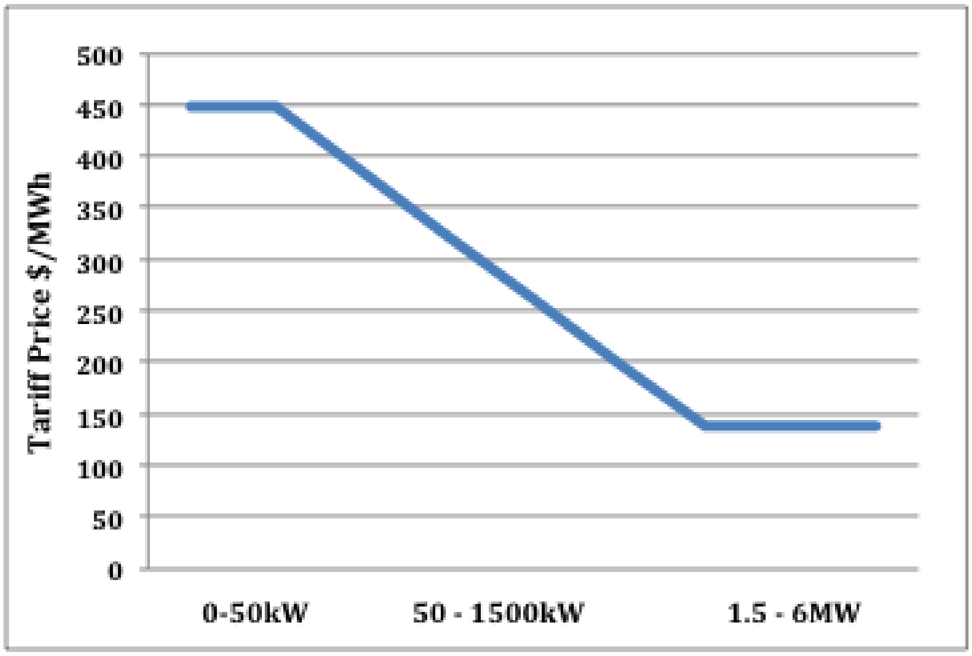


FIGURE 1: PORTUGAL HYDRO POWER TARIFF STRUCTURE (2008)

Figure 2 provides a stylized version of what this would look like in Nova Scotia, based on the Consultant's report (see next page).

FIGURE 2: STYLIZED WIND TARIFF FOR COMFIT



Adopting this approach would enable communities to scale projects (and their turbine choice) to their financial resources, providing significant benefits for communities, and allowing them to exploit economies of scale in turbine size. Significant additional benefits are that it would help minimize ratepayer impact, while alleviating local opposition, as projects could consist of 1-2 turbines, rather than 10-20. In light of opposition to wind projects that has emerged in Nova Scotia in the past, preemptively mitigating NIMBYism is extremely important, and represents a significant advantage of this approach. The advantage of this last point should not be underestimated. And finally, it avoids the undesirable clustering effects that are likely to result from retaining a strict 50kW threshold, particularly one with such a large disparity between the two tariff prices.

11. A final concern that has been raised is the assumption of a 31% capacity factor for larger wind projects. Available data from turbine output in throughout the region (e.g. PEI, NB, and NS) suggest that a higher capacity factor may be warranted, such as 33-36%, with some suggesting potential capacity factors upwards of 40%.

    A few points need to be made here. Experience around the world suggests that only larger wind projects are able to consistently maintain such high capacity factors. There are a number of reasons for this: first, larger turbines have a greater hub height, benefiting from higher average wind speeds; second, larger wind farms (e.g. >50MW) spread the wind output variability over a larger number of turbines, and over a larger swath of land, both of which contribute to statistical smoothing; and third, when one turbine in a large wind farm comprising 25 turbines needs maintenance, the whole wind site experiences a 4% decline in output, all else being equal; however, when a single wind turbine in a two-turbine site needs maintenance, the project experiences a 50% decline in output. These different factors explain why it is investors are often cautious about relying too much on forecasted capacity factors, particularly in small projects with few turbines.

In fact, initial capacity factor forecasts have become notorious for overestimating the wind resource. Awareness has grown of unpredictable and idiosyncratic maintenance problems, such as the freezing rain that recently halted a wind farm in northern New Brunswick. Also, average wind speeds do vary from one year to the next, leading to above-average as well as below-average years. When the below-average years occur near the beginning of a wind project's life, this can put significant pressure on a project's debt service coverage ratio, and even push highly leveraged projects temporarily into the red.

As a result, most experienced investors have taken the habit of rounding down by 10% as a rule-of-thumb, and support the project only if it can be demonstrated that it will be profitable at that lower capacity factor. In other words, an expected capacity factor of 35% would be rounded down by 3.5% to 31.5%. This suggests that while the 31% number used by Synapse appears low, it may not be significantly so for the average COMFIT project being built in Nova Scotia.

12. Concerning the tidal tariff: while it is currently offered for 20-years, it is unlikely that existing tidal technologies will last for the full duration of the contract term, for a host of technological, engineering, and performance reasons. This may justify a shorter contract length (e.g. 5-10 years), which would allow for future tidal turbines to replace old ones, and to come in at a lower $/MWh cost. This could provide value for ratepayers, while still providing an incentive to develop the technology. In combination with the other incentives being offered by the Nova Scotia Government to encourage tidal technology, the current rate of $652/MWh should be more than sufficient (see Comment 13) to create an incentive for tidal developers as they work to reduce costs, enhance turbine performance, and improve reliability.

13. Also, two recent reports published from tidal researchers in the UK suggest different figures for tidal power than those presented by the Consultants (Aggidis et al. 2010, Allen et al. 2011). Allen et al. suggest a "levelized cost of energy" (LCOE) of £81.25/MWh for tidal in-stream technology sited in the UK, which would suggest a tariff in the range of $160-180/MWh CAD, to target a comparable return on equity of 15%.

    Allen et al. assume an installed cost of £1,461/kW, which works out to $2,325/kW CAD. This was drawn from a range of costs from $2,230 – 4,775/kW ($2011), based on a number of technologies surveyed. However, it should be noted that it was for a 100MW project. While there are undoubtedly significant economies of scale in a 100MW project, the difference between these numbers and the Consultants' (at $10,076/kW) reflects a significant disparity that cannot be explained by economies of scale alone. Indeed, Synapse reports that Champlain Tidal Energy estimates that early production projects will come in at $5,100/kW.

This disparity between the costs for tidal turbines in the UK versus those being installed in the Bay of Fundy needs to be accounted for.

14. The Consultants are correct in assuming that in-stream tidal projects are likely to be invested in primarily by equity investors, and that due to the greater risks, these projects should be accorded a higher ROE. It is fair to assume that these will be commercial ventures, rather than purely community-driven projects, at least until tidal power emerges from its 'pre-commercial' stage.

The inclusion of tidal power in the COMFIT program makes it one of the first tidal FITs in the world, signaling that it is part of a broader strategy by the Government to build on a natural comparative advantage. This objective may justify paying a substantially higher rate to this technology in the early years, in order to encourage trial-and-error and to foster innovation. However, the trouble is that the 'true' costs of tidal power are difficult to determine, not least because they are contingent on how long the turbines last. Much like the beginnings of the wind turbine industry in the 1970s and 80s, it can be expected that a number of lemons have yet to see the light of day.

This makes the treatment of emerging technologies like tidal power under a FIT a particularly difficult issue: shorter contract lengths would push up the required tariff, all else being equal; and yet, without a performance-based incentive (i.e. which pays for output in $/MWh), cash grants and other incentives may not be the best policy tools to encourage performance improvements. This suggests that a FIT-like mechanism is justified, if only to encourage new technologies to enter the market, and compete with one another. In the final analysis, it is unlikely that they will last the full 20-years, thereby minimizing the overall impact to ratepayers of the (admittedly high) initial tariff.

However, as with all technologies experiencing rapid cost reductions, it may be advisable to introduce tariff degression to both track, and encourage, technological change in the tidal sector. This can occur either via a pre-determined formula, or by periodic adjustments applied on projects installed in subsequent years. The primary role that pre-determined degression plays is that it communicates a clear signal to the market, encouraging manufacturers to improve their technology, and reduce costs. It also has the advantage of reducing costs to ratepayers over time.

15. A final set of comments on the COMFIT program more generally.

16. First, no provision is made for resource diversity. This means that there is a risk that all or most distribution line capacity is taken by one or two resources. Countries such as Switzerland introduce a limit on the percent share that any individual technology can have of the entire program. In Switzerland's case, the limit is of 30% for wind power, and 50% for hydro. A similar approach may wish to be considered by the Board at a later date to ensure a wider diversity of projects is developed under the COMFIT.

    However, it should be recalled that limits in any form also create uncertainty.

17. Greater transparency as to the state of the distribution grid in different parts of the Province is going to be critical for the COMFIT to be a success, as is the greater clarity about the process for grid interconnection in general. Delays on getting grid access of connectivity can significantly deter investors, and create unnecessary uncertainty in the market. The rules on grid access should be clear, and well defined, with clear provisions on available line capacity, voltage requirements, technical specifications, and a host of other factors that will help COMFIT project proponents move forward. Also, requirements should be imposed to ensure that interconnection studies and procedures occur in a timely manner, with penalties for excessive delays. Addressing these issues could help reduce the project costs and risks associated with grid connectivity, and accelerate the pace of project deployment. See also Exhibit A.

References:

Aggidis, G.A., Allan, G.J., McCabe, A., McGregor, P.G., Rothschild, R., Swales, J.K., Turner, K., (2010). "Modelling the potential economic impact of tidal devices on the UK," University of Strathclyde Discussion Paper in Economics, October.

Allen, G., Gilmartin, M., McGregor, P., Swales, K., (2011). "Levelized costs of Wave and Tidal energy in the UK: Cost competitiveness and the importance of "banded" Renewables Obligation Certificates," *Energy Policy*, (39, 1), pp.23-29.

Exhibit A: UARB Net Metering Decision

Note: The EAC and novaSEA offer this recent Board decision on Net Metering as a supplementary exhibit to support the reasonable claims by COMFIT stakeholders that accessibility to the NSPI SO distribution grid and informational transparency with regards to distribution zone capacity limitations and opportunities for interconnection are critical aspects that may impact the implementation of the COMFIT.

This is further upheld in the amended Electricity Act, Section 4A (with respect to COMFIT) which states: "A public utility shall (a) permit generators that qualify under this Section to connect a renewable low-impact electricity-generation facility to its electrical grid in the manner provided by the regulations; and (b) pay for the electricity generated in accordance with the tariff set by the Board pursuant to this Section."

DECISION NSUARB-P-188 2011, NOVA SCOTIA UTILITY AND REVIEW BOARD IN THE MATTER OF THE *PUBLIC UTILITIES ACT* & IN THE MATTER OF AN APPLICATION by NOVA SCOTIA POWER INC. for approval to amend Regulation 3.6 - Net Metering (p.16-19, in particular items 40, 41 and 47b.)

2. Capacity limits

[38] The amended *Electricity Act* states that the net metering program will permit any customer to generate electricity for the customer's own use and to sell any excess electricity to the utility. It also states that the capacity of the customer's generator is to be sized to meet the expected annual consumption of the customer and that the program will permit the customer to generate up to one megawatt of electricity. There is no other reference to an overall system limit for the net metering program nor any limit based on a range of generator sizes.

[39] In its Application, NSPI established a total system limit of 20 MW and separated that total capacity into two distinct classes with specific capacity limits. Class is proposed to include generators up to 100 kW in size with a total limit of 5 MW while
Class 2 is proposed to include generators between 101 kW up to 1 MW with a total limit
of 15 MW.

[40] NSPI's reason for establishing those limits is that it will allow the utility to monitor and evaluate the program's cost recovery implications. However, ***NSPI also stated that the 20 MW limit is subject to distribution level capacity constraints within a distribution zone and doesn't guarantee that all connection requests can be accommodated*.** Mr. Whalen agrees with NSPI.

[41] Having considered the matter, the Board is not persuaded of a need to firmly impose either of those capacity limits at this time. ***The Act appears to be directed at encouraging increased levels of renewable energy from various participants. Imposing a capacity limit without providing compelling evidence to justify that limit seems inconsistent with the intended objective. The only capacity limitation that needs to be noted is the capability of each individual distribution zone.***

[42] However, establishing two distinct classifications (up to 100 kW - Class 1 and 101 kW up to 1MW - Class 2) does appear to be appropriate in order to facilitate the interconnection process.

[43] NSPI provided no supporting evidence that it needs to impose a 20 MW capacity limit as a trigger to undertake a cost recovery analysis. In the Board's view that analysis can be undertaken at any point in time. If any action by the Board is required NSPI can request it. The Board anticipates that NSPI will be monitoring the level of uptake of the net metering program on an ongoing basis. The Board directs NSPI to provide the Board with an annual report regarding the level of uptake and the overall status of the net metering program.

VI SUMMARY OF FINDINGS

[47] The Board approves NSPI's amended net metering Regulation 3.6 with the following modifications:

a) revise the lower limit of its Class 2 grouping to be 101 kW instead of greater than 100 kW

b) remove the system-wide subscription limit of 20 MW as well as the Class 1 limit of 5 MW and the Class 2 limit of 15 MW.

[48] In addition, the Board accepts NSPI's requested day implementation delay in order to provide sufficient time to ensure that all necessary administrative processes related to the application process and billing are in place.

[49] NSPI is directed to file an annual report with the Board by January 31st each year which provides a listing and details regarding each net metered customer generator connected to each distribution feeder. This annual report should also include details regarding any aggregated customer net metered load which was temporarily or permanently transferred to another distribution zone and. the proposed reconciliation relative to the OATT.

[50] NSPI is to provide a form of Regulation 3.6 revised in accordance with this Decision by March 31,2011, following which an Order will issue. **DATED** at Halifax, Nova Scotia, this 21st day of March, 2011.

Exhibit B: Curriculum Vitae

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EDUCATION:

October 2010 – 2011	**London School of Economics,**
	MSc Financial and Commercial Regulation
October 2009	**Paris Ecole des Mines**, Sophia Antipolis
	Post-Master's Course in Renewable Energy Finance
2007-2008	**Université de Moncton**
	MA Energy & Environmental Policy
2002-2006	**Mount Allison University**,
	BA, First Class Honors in Philosophy, Minor Environment

WORK EXPERIENCE:

May 2009 – Present	**Director of Energy Analysis**
	E3 Analytics, London UK
Sept. 2008 – May 2009	**Energy and Financial Markets Analyst**
	National Renewable Energy Laboratory (NREL), U.S.
Sept 2007 – Sept. 2008	**Research Analyst**
	K.C. Irving Chair in Sustainable Development

August 2006 – Aug. 2007 **Energy & Climate Change Researcher**

Atlantic Canadian Sustainable Energy Coalition

May-July 2005 **Project Coordinator**

Reef Doctor (UK), Tulear, Madagascar

AWARDS & SCHOLARSHIPS:

Social Sciences and Humanities Research Council (SSHRC) Doctoral Scholarship,

Fall 2010 (Declined).

Baxter & Alma Ricard Foundation Scholarship:

Grant recipient Fall 2010.

Canada-US Fulbright Scholarship:

Grant recipient for 2008-09.

Research Assistantship: Renewable Energy Policy Researcher:

K.C. Irving Chair in Sustainable Development, 2007-08.

Philosophy Departmental Award: 1st Prize for Excellence in Philosophy

Mount Allison University 2006.

The Treash Memorial Prize: scholarship awarded by the Department of Philosophy

Mount Allison University, in recognition of distinction 2005.

Allison Heartz Johnson Scholarship: scholarship awarded by the Department of Philosophy

Mount Allison University, in recognition of distinction, 2005.

SELECT PUBLICATIONS:

- Couture, T. D., “FITs vs. Auctions,” *Analytical Brief*, E3 Analytics, Available at: http://e3analytics.ca/documents/AnalyticalBrief2_2.pdf

- Couture, T., Gagnon Y., (2010). “An Analysis of Feed-in Tariff Remuneration Models: Impacts on Renewable Energy Investment,” *Energy Policy*, Vol. 38, No. 2, pp.955-965

- Couture, T., Cory, K., Kreycik, C., Williams, E., (2010). “Policymaker’s Guide to Feed-in Tariff Policy Design,” National Renewable Energy Laboratory, August 2010, Available at: http://www.nrel.gov/docs/fy10osti/44849.pdf

- Couture, T. (2009). “Feed-in Tariff Policy: Design, Implementation and RPS Policy Interactions,” *United States Association of Energy Economics* (USAEE), Dialogue, Vol. 17, No. 1, pp. 21-28. Available at: http://www.usaee.org/pdf/Mar09.pdf