Economic Assessment of Suitable Feed-In Tariffs for Nova Scotia

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Introduction

The global renewable energy (RE) industry has experienced substantial growth over the past decade resulting from an increased awareness of the negative effects of using fossil fuels for energy generation and the rising scarcity of oil supply. Much of the growth is spurred by government policies which support, either financially or through renewable obligation laws, RE installations (Celik et al., 2009). Recent growth in the number of regions implementing FIT's is an indication of their effectiveness at helping nations meet renewable energy targets, GHG reductions, energy security and with job creation. Figure 1 shows some of the most and least experienced regions with respect to RE generation.

Feed-in Tariffs are a policy tool used:

i. In over 63 countries and regions
ii. To promote the development and installation of RE technologies (REN21, 2009)
iii. To provide payments to generators of RE
iv. Provide access to the grid
v. Provide a fixed contract term

The majority of FIT's offer payments:

i. Based on an 8-10% return on investment (ROI)
ii. At a fixed rate
iii. Which are usually degressed or adjusted over time to take into account decreases in the cost of the technology and inflation

Renewable energy policies can have several goals and defining those goals is important in choosing the appropriate policy.

• FIT's are best suited to encouraging investment in RE technologies at both a small and large scale however they can, depending on several factors, lead to increases in electricity costs to consumers.

• If the overall goal is to decrease GHG emissions FIT's are good (figure 2).

• FIT's blend aspects of decreased government involvement in RE development, GHG reduction targets and a profitable RE industry.

The objective of this project is to present three main themes of successful policy around the world and apply them to N.S.:

1) Tariffs based on a reasonable rate of return
2) Governments commitment to the policy
3) Minimal bureaucratic processes

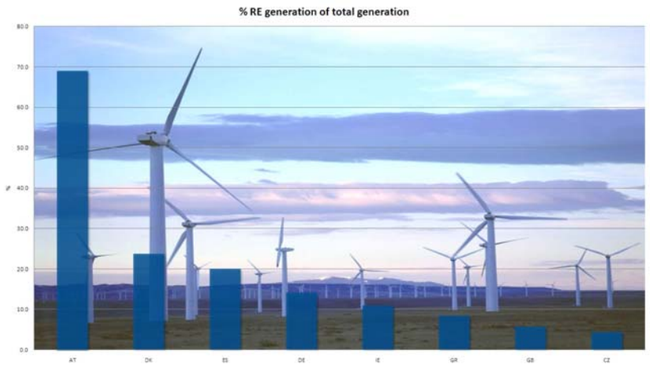

Figure 1: Renewable electricity generation

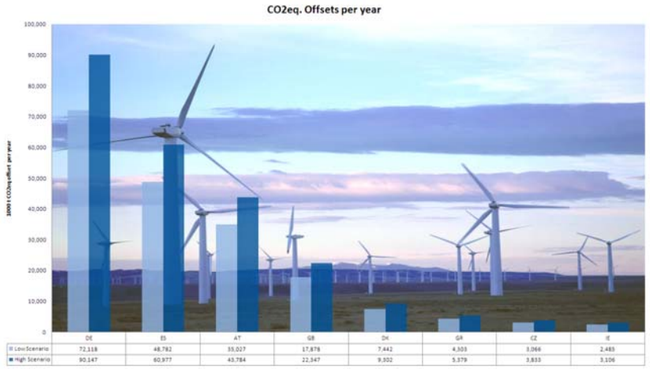

Figure 2: Carbon Dioxide offsets

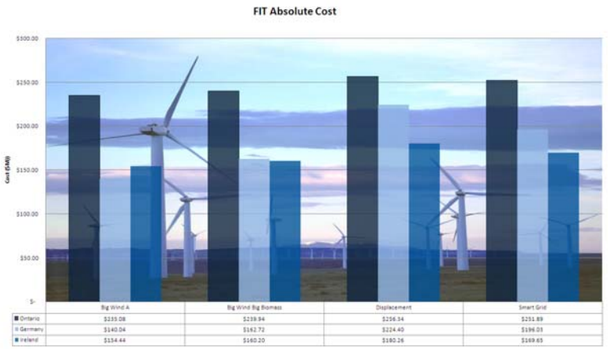

Figure 3: Costs of Ontario, Germany and Ireland FITs applied to a Nova Scotia Scenario

Method

Four suggested scenarios from the Wheeler report (2009) were combined with existing FIT rates from in Ontario, Germany and Ireland to determine the potential impact of installed capacity and consumer cost of feed in tariffs for Nova Scotia based on these scenarios. Figure 3 shows the absolute costs of each scenario with the respective region's FITs.

Results and Discussion

The absolute cost is similar for the big wind and the big wind, big biomass scenarios for Germany and Ireland FIT's, costing around $150M, with the cost for Ontario's FIT being higher at about $235M. The cost for the displacement and smart grid scenarios are very similar as well, with Ontario's FIT also being the most expensive, followed by Germany and Ireland respectively.

It is expected that the cost in Ontario is more representative of the cost in NS, since FIT rates are based on a 5-10% return on investment and in NS these are more similar to Ontario. As well, Germany and Ireland have more mature FIT policies that have degressed over time, allowing their current policies to cost less.

Offset electrical use can reduce electricity consumption. Grass biomass is a major resource in Nova Scotia and can be used to offset electricity used for space and water heating. There are other benefits with grass biomass including:

1)Local Energy Security
2)Rural Development
-Local jobs creation
-Money usually spent on foreign imports for energy now stays within the local economy for grass production
3)Improved soil from planting perennial grasses
-Minimized erosion, runoff and nutrient leaching

These benefits demonstrate why grass biomass should be considered as a major renewable resource within the province.

References:
Gagnon, Y., Wheeler D., Adams, W., 2009. Nova Scotia Renewable Energy Stakeholder Consultation process: draft synthesis paper

Celik A.N., Tarif M., Clarke P. A review of installed solar photovoltaic and thermal collector capacities in relation to solar potential for the EU-15. Renewable Energy 34:849-856. 2009.

REN21 (Renewable energy policy network for the 21st century). Renewables. Global Status Update 2009. Paris France.