

Generating Investment in Ontario

Addendum to the December 12, 2002 Report of the Renewable Energy Task Team

Introduction

The Renewable Energy Task Team has proposed an interdependent suite of recommendations built on a “Renewable Supply Objective” of adding one per-cent (1%) of the provincial load from new renewable sources annually until 2010. This target represents an addition of approximately 1500 GWh per year – a total of 10,500 GWh of new, renewable energy.

In arriving at this objective, the task team inventoried the developable potential of Ontario’s waterpower and wind power resources. Standard capacity factors were applied to convert the annual new resource potential to 375 MW comprised of approximately 225 MW of wind power and 150 MW of waterpower.

Importantly, the renewable energy industry has already demonstrated its ability to respond to proactive public policy. Ontario’s waterpower industry has committed an estimated \$200 million since the passage of Bill 140 in December 2000. This Act addressed municipal taxation issues and provided investment incentives. The resulting new waterpower capacity will provide more than 500 GWh of new renewable energy – a third of the proposed annual objective of 1500 GWh.

It is important to recognize, however, that this pulse of activity has reached the threshold at which a single economic instrument has made certain projects viable. In order to move forward with the development of Ontario’s indigenous wind power and waterpower resources, the province must adopt a coordinated strategy – as proposed in the report.

Ontario’s energy security is well served through a strong component of indigenous renewable resources in the provincial mix. However, the purpose of this addendum is to go beyond the strict energy benefits of the adoption of a Renewable Supply Objective. The addendum quantifies the economic and environmental outcomes and provides background information on investment drivers.

Additionally, the addendum presents an overview of the key issues, risks and expectations private sector developers face when considering the development of new renewables.

Economic and Environmental Benefits

Resource Royalties to the Crown

Waterpower and wind power are unique energy sources for the province. Unlike other forms of generation, they produce direct revenues to the Consolidated Revenue fund as a form of land rent or “royalty” for the occupation of Crown land (approximately 85% of Ontario’s land base is Crown land). In fiscal 2002/2003 Waterpower resource revenues will amount to \$150 million – the single largest source of such revenue to the Crown (more than forestry, mining, aggregates etc.).

Pursuant to Bill 140, these revenues will be determined based on the relationship to the market value of energy – through a gross receipts charge mechanism. Similarly, new wind projects sited on Crown land will be required to pay a land rental charge related to the value of the energy produced. Assuming a 325 MW annual addition to achieve the Renewable Supply Objective, and the prevalence of Crown land opportunities, an annual increase in resource royalties of \$3.5 million is predicted. Notwithstanding the initial 10-year exemption from royalty charges, the revenue that accrues to the Crown over the life of a facility is significant.

Estimate of Lifetime Royalties from new Renewable Energy projects on Crown Land

Waterpower

1200 MW (150 MW X 8 years) X 85% (Crown land) = 1020 MW @ 65% capacity = 5808 GWh

5808 GWh X \$4,000 (average Crown land royalty rate) = \$23.2 Million

\$23.2 Million X 75 (facility life – 10 year exemption) = **\$ 1.74 Billion**

Windpower

1800 MW (225 X 8 years) X 85% (Crown land) = 1530 MW @ 35% capacity = 4691 GWh

4691 GWh X \$1,000 (average Crown land royalty rate) = 4.7 Million

\$4.7 Million X 40 (facility life – 10 year exemption) = **\$ 0.19 Billion**

Expected Lifetime Royalties - Wind power and Waterpower - \$ 1.93 Billion¹

¹ Approximate NPV of this revenue stream is \$ 170 million.

Jobs and Investment

Ontario's waterpower industry currently employs more than 1,600 people directly and it generates an additional 2000 jobs across the province. New waterpower development is capital and labour intensive. For example, the 45 MW redevelopment of High Falls by Great Lakes Power is estimated to have resulted in more than 500 person years of employment.

Achievement of the Renewable Supply Objectives would add 10,000 person years of employment in the waterpower industry.

The Task Team believes that the wind industry in Ontario is at the verge of exponential expansion. **According to estimates provided by the Canadian Wind Energy Association, 2000 MW of new wind energy can translate into 16,000 – 32,000 person years of employment.**

New renewable energy results in significant immediate and short-term economic activity. Two hundred twenty five (225) megawatts of new wind power requires private sector investment of between \$350 and \$425 million annually. One hundred and fifty megawatts of waterpower will require between \$300 and \$375 million.

Achievement of the Renewable Supply Objective will generate an estimated \$5.2 to \$6.4 Billion in new investment in Ontario.

Importantly, a robust and stable renewable energy sector will create the rationale for manufacturers, equipment suppliers and resource professionals to locate in the province.

Greenhouse Gas Emissions Offsets

Ontario's environmental agenda associated with the commercialization of the electricity market has been dominated by air quality objectives. Emissions monitoring requirements, the cap credit and trade systems and, indeed, the Select Committee, share this purpose. It is particularly relevant in light of Canada's participation in the Kyoto protocol that new renewable energy can play an integral part of meeting Ontario's objectives.

Achieving the Renewable Supply Objective will result in the displacement of 700,000 tonnes of green house gas emissions (based on the displacement of natural gas) – 5.6 Million tonnes annually by 2010! If the positive impact of new renewables is related to the displacement of coal-fired generation, the emissions offset is doubled to 1,400,000 tonnes.

To put this potential into perspective, the Government of Canada's Climate Change Plan for Canada established a national goal of reducing emissions by 240MT – 22.6MT of which have been targeted to come from renewable energy and cleaner fossil fuels.

Therefore, at a minimum, Ontario's renewable energy initiative could satisfy 25% of the national objective for the electricity sector.

Closing the Supply Gap

A Look Back at the DSP and the NUG Program

In the early 1990's Ontario Hydro's Demand Supply Plan – "*Providing the Balance of Power*" identified the key factors influencing private sector investment in energy projects as:

- Rate of Return on Investment
- Purchase Rates and Avoided Costs
- Favourable Tax Treatment
- Consumer and Government Support
- Availability and Price of Natural Gas.

More than a decade after its publication, these same factors remain relevant. The private sector assumption of risk for new renewables is substantial – risk that can only be mitigated through a climate of investment security.

The Renewable Energy Task Team recommends that OEFC-sponsored long-term contracts be the initial instrument for ensuring timely investment in new renewable energy capacity. Understandably, there may be some reluctance to engage in direct procurement. However, one of the challenges presented by Bill 210 is that "bankable" market signals that would encourage new capacity investments are unlikely to emerge in the near term. It would appear that NUG type contracts may be required to ensure that Ontario meets its energy supply and emission reduction objectives.

Unfortunately the existing NUG contracts have been unfairly branded as a major contributor to Ontario's residual stranded debt. In light of recent developments, it is time to recognize the significant merits of the NUG program.

It is now widely acknowledged that the energy from 1800 MW of new NUG capacity was very competitive with all other supply options considered at the time.

The fact is, the NUG stations are efficient and reliable generating facilities. In the 1990's they were brought on-line quickly to meet rising demand. Today they make a significant contribution to meeting Ontario's electricity demands in a cost-effective way. At the time, the cost of the energy from the gas fired NUG's was in the range of 5.0 to 5.5 cents/kWh and the cost of the energy from the waterpower NUG's was in the range of 5.5 to 6.5 cents/kWh. These rates compare favourably with the current price of new supply.

Significantly, the NUG program featured long-term contracts that, together with a reasonable rate of return, permitted project financing.

In hindsight, it is increasingly apparent that the Province and its ratepayers would have derived considerable price, energy security and emission reduction benefits if the NUG program had been extended to add a further 2000 – 3000 MW of capacity.

Financing Renewable Energy Projects - The Case for Long Term Contracts

It is sometimes assumed that waterpower and wind power are low cost sources of energy because the fuel cost is low or nil. In reality, renewable projects are challenged with high up-front capital costs. The ratio of capital employed per kWh of renewables versus fossil is 3:1. There is also considerable completion risk during construction and performance risk on commissioning. Finally, hydrological/climate risk is present during the entire operations phase. This risk is especially high in the early years when project debt service requirements capture the bulk of project revenue.

For this reason, lenders will insist on either a high equity component (50% +) or a long-term secure power purchase agreement.

A typical waterpower project, with 70% debt financing, requires between 10 and 15 years to retire the debt. Poor hydrology in the first 5 years of the project can easily push this period out to 20 years – the same time that significant re-investment is required on concrete structures and generating equipment. Wind projects are affected in the same manner. The normal variation in annual wind speeds can cause a 40% variation in energy output. Wind parks require modest reinvestment in year 15 (new blades) and major reinvestment in years 25 – 30, to extend the life of the facility to 50 years.

Renewables and Price Stability

It is true that renewable projects require long term commitments in order to address special capital cost and risk aspects. However, because of the low and stable fuel costs, renewables can mitigate market price risk. Unlike gas-fired generation, with renewable energy sources there is no need to incorporate a fuel price adder into the power purchase agreement. More renewables in the provincial energy mix means less risk of electricity price fluctuations.

Conclusion

The Renewable Energy Task Team has proposed a proactive course of action that, if implemented, will contribute to the satisfaction of provincial energy, economic and environmental objectives. Importantly, the renewables industry can deliver. In British Columbia, the province received qualified proposals for more than 5,500 GWh of private sector renewable generation in response to its request for 800 GWh. New York State has recently announced an objective of raising its renewable energy component from 17% to 25%. Additionally, recent indications from the federal government related to the approach to achieving Kyoto objectives suggest an expansion of support for new renewable generation. It is clear that the renewables industry will invest in new opportunities. The Task Team has provided a framework to help ensure that this investment comes to Ontario.

The Renewable Supply Objective (RSO) requires a considerable investment and commitment from Ontario. The benefits outlined above, when coupled with the revenue from the sale of green attributes, could easily make the RSO “revenue neutral”. Equally important, the RSO addresses Ontario’s energy supply and emission reduction objectives.