



Canadian Bioenergy Association

&

Maritime Bioenergy Working Group

Submission to the Province of  
Nova Scotia

December 2007

**Who we are:** Canbio is a national, industry-driven, not-for-profit organization of individuals, businesses and non-governmental organizations interested in promoting the use of bioenergy.

**Mission:** “To promote the utilization of sustainable biomass for the production of biofuels, heat and power.”

The Maritime Bioenergy Working Group is a group of people from the forest, farm and bio-energy industries from the three Maritime Provinces who come together to address specific regional bioenergy development issues. The group has been meeting on a regular basis since 2005. It has been holding regular meetings in the three Maritime Provinces. The most recent meeting was held in Doaktown, New Brunswick on December 6, 2007 on small scale bioenergy options for woodlot owners and forest industry businesses. The next meeting is planned for Truro in February of 2008. Topics include sustainable biomass harvest guidelines for private woodland operations and small scale power generation.

## **Background**

CANBIO and the Maritime Bioenergy Working Group believe that it is important that the various levels of government in Canada work together to address barriers to bioenergy development and work toward a comprehensive positive policy framework that will allow us to tap Canada’s enormous, green bioenergy advantage. Virtually all regions of Canada have substantial biomass energy resources. Nova Scotia has major farm and forest bioenergy resources that can contribute to a prosperous and sustainable energy future if we take the necessary steps in the near future to develop these resources.

Our group recognizes that energy efficiency is generally our most cost-effective energy option which must be pursued vigorously. However, we also strongly believe that biomass, in various forms, are green, local, economical energy resources that can displace increasingly expensive petroleum fuels and provide long-term employment to many rural Nova Scotians.

The principal bioenergy opportunity for Nova Scotia and the other Maritime Provinces is to use local biofuels for the production of heat and, in some cases, combined heat and power. Biomass heating is an important option, given that our heating season lasts for at least six months of the year and nearly half of the money that Nova Scotians spend annually for energy goes to heat our homes, businesses and institutions. Modern, automated bioenergy technologies used for heating homes and businesses and large systems for combined heat and power are clean-burning and efficient. Their emissions are far below comparable-sized coal systems. Efficient biomass combustion systems are considered by many experts to be roughly equivalent to natural gas systems in terms of environmental impacts.

We are all painfully aware of the trauma being experienced by the Canadian and Nova Scotia forest industries. Numerous Nova Scotia forestry enterprises have contracted while others have closed, some for good. Countless forestry families have lost their livelihoods and many more are at risk. The bioenergy industry, though currently small, is one of the few bright lights in the forestry sector. We hope that the Province can see the logic in aiding and abetting the growth of this important new industry. As the need to address climate changes impinges more and more on the lives of all Canadians, the imperative to fully develop our clean, renewable and carbon neutral biomass resources grows with each passing day.

Nova Scotia has 3.9 m acres of forest land. We estimate that the harvestable residue from the current Nova Scotia commercial forest harvest could generate approximately 2 million green tonnes of recoverable forest chips on a sustainable harvest basis. Clearcut harvests in Nova Scotia typically generate 40-50 green tonnes per acre of harvestable biomass, while still leaving adequate volumes of unmerchantable dead stems and delimbed foliage on the harvest sites to maintain future site productivity.

In addition, Nova Scotia has some 500,000 hectares of decadent and non-productive stands (equal to 12% of our forest land base) that are currently deemed to be inoperable for conventional commercial roundwood harvests. These stands represent a standing biomass energy reserve comprising some 50 million tonnes. Assuming that markets are developed for this fibre, we can raise site productivity from the present 2.5 t/Ha/year to 6 t/Ha/year by using proven silviculture practices. Harvesting these low-grade stands would also generate significant volumes of hardwood and softwood saw-timber that is urgently needed by our Nova Scotia sawmills.

Land clearing for blue berries, other farm land and urban development is producing up to 150,000 green tonnes of biomass fuel per annum. Stumps can generate up to 20 tonnes per acre of woodchips if they are cleaned and ground up for biofuel. This approach offers significant savings over burying stumps and avoids the production of harmful methane gases if the stumps go to landfills.

The creation of rural jobs is another key benefit of bioenergy development. Direct employment for biomass harvesting is in the range of 10 year-round jobs per 100,000 tonnes of forest chips produced and consumed annually. This does not include indirect jobs such as trucking, equipment maintenance and additional forest technician and silviculture services.

## **Barriers to Bio-Energy Development**

While most people would agree that developing provincial bioenergy resources would be a good thing, many do not understand that there are currently many obstacles to biomass energy development at the various levels of government. The provincial government needs to be proactive by:

1. ***Formulating a clear bioenergy policy, target and strategy for Nova Scotia.*** Without a clearly defined positive policy framework for bioenergy, development will be very slow and haphazard, which is very frustrating for people working in the field and trying to create new businesses.
2. ***Modernize regulations pertaining to labour and pressure vessels for heating plants.*** These regulations require around the clock staffing for relatively small heating plants which seriously undermines the economic viability of many potential bioheat installations. Countries such as Sweden have long-since abandoned antiquated labour and pressure vessel regulations in recognition of advances in modern computer control, monitoring and alarm systems for biomass heating plants.
3. ***Providing access to the grid and fair market prices for the production of green power from biomass fuel sources.*** Existing utilities tend to guard their monopolies and resist proposals for the production of green power from independent power producers, even when additional generation capacity is needed. Bioenergy urgently needs mandated targets similar to those already in place to support wind power. Biomass plant owners need to receive revenues equivalent to other new power generation capacity, not rates based on existing depreciated plant. (For comparison, Ontario currently has a standing offer for green power at 11.5 cents per kWh which is generating a lot of interest from independent biomass power producers.)

## **Maritime Bioenergy Working Group Submission**

**The Maritime Bioenergy Working Group asks that the Province of Nova Scotia take the following steps:**

1) **Establish clear targets for Nova Scotia bio-energy production and use.** The first task is to establish the current benchmark for bioenergy. We suggest bioenergy targets such as **20% of Total Primary Energy by 2010, 25% by 2015** (from agriculture and forest biomass). We believe that a province such as Nova Scotia should ultimately be able to obtain bioenergy heat and power energy equivalent to Sweden and Finland which currently derive about 25% of their Total Primary Energy from forest biomass, with plans for further growth. Nova Scotia's extensive combined agriculture and forest biomass resources should ultimately allow us to exceed 40% of Total Primary Energy in the longer term, including biogas and liquid biofuels. Such an achievement would have huge long-term economic benefits for this province. Large scale forest biomass production would facilitate significant improvements in the productivity, quality and value of Nova Scotia woodlands. The development of markets for agricultural biomass would help to strengthen the farm economy. Both industries are currently in crisis.

\* This 40% figure does not include growing contributions from other renewables such as solar and wind.

- 2) **Actively promote the use of solid biofuels (forest chips and farm/forest pellets) to heat public buildings** throughout Nova Scotia through the application of individual biomass heating systems and larger district heating systems using local farm and forest biomass fuels as the primary fuel sources. Bioenergy technologies for domestic and commercial heating are well developed, efficient and clean burning. They are ready for wide-spread implementation. Pellets may be the most practical option for schools and other smaller public buildings with staffing limitations.
  
- 3) **Enlist the support of the federal government to accelerate the installation of biomass heating systems in Nova Scotia homes and businesses.** The federal government has supported bioheat technology research and development and implementation through various programs for over 20 years. Unfortunately, this support came to an end in March of 2007 with the end of the **REDI Program** which was not renewed for bioenergy heating systems. This was a great loss to the bioenergy industry.

Today, oil costs are at record levels. We also need to displace GHG producing fossil fuels for environmental reasons. Assistance is needed for bioheat systems until a comprehensive and economical fuel distribution infrastructure has been put in place and Canadian equipment manufacturers and installers are firmly established.

A new federal bioheat program should be designed to achieve significant uptake in the next 3-5 years with ongoing support for a further five years to ensure that the bioheat industry is firmly established. Such a program would generate huge economic investments and provide major savings and price stability to Nova Scotia energy users. We urge Nova Scotia to lobby the federal government to implement a new bioenergy program to support residential and commercial biomass heating systems and ensure that provincial heating system programs complement any new federal programs.

- 4) **Establish a new program to support investments in urban district heating systems in Nova Scotia.** (Existing federal programs could support this initiative). Heating Nova Scotia's urban homes, businesses and institutions is going to be a major economic challenge in the coming years as oil and gas prices continue to escalate. Bioenergy-fired district heating systems offer many long-term benefits. These include: reduced GHG pollution; lower maintenance and replacement costs for individual building heating systems; direct energy cost savings; and energy price stability. But district heating energy distribution infrastructure is very costly and it has a long-term payback when evaluated using a "present-value cost analysis". Returns on investment (ROI) have not been sufficient to attract adequate private sector investment capital. District heating needs government support to develop the industry.

- 5) **Establish a Renewable Portfolio Standard (RPS) for biomass-fired CHP (combined heat and power).** Bioenergy needs a targeted RPS. Work closely with Nova Scotia Power and other businesses and agencies to develop new heat and power systems. Bioenergy power generation interfaces very well with other intermittent renewables. Biomass plant output can be turned up or down to some degree to complement the variable output from wind farms and tidal generation. New biomass power capacity can facilitate the further expansion of Nova Scotia wind farms and tidal generating systems.
- 6) **Encourage the combined use of agricultural biomass (e.g., straw) and forest chips in large heating and power generating plants wherever practical.** Nova Scotia is rich in both farm and forest biomass. Combining these biofuel resources in local heat and or power plants offers benefits to both the farm and forest industries and makes it practical to provide larger volumes of fuel to more plants. It is not economic to transport solid biofuels over long distances (over 100 km). Biomass must be used relatively close to the source of supply, which means that the economic benefits go to the region where the fuel is produced.
- 7) **Commission a study of feed-stocks and siting opportunities for anaerobic digestion systems for the production of biogas (methane).** Collective or community biogas systems are proving to be economically attractive renewable energy options in many jurisdictions in Europe and North America. The biogas can be used for both transport vehicles such as buses and heat and power generation. Countries such as Germany have created an economic power regime that has allowed municipalities and hundreds of farmers and to participate in the production of biogas-fired electricity. Nova Scotia should look to that model for guidance.
- 8) **Take steps to modernize labour and pressure vessels** regulations for biomass heating plants in recognition of advances in modern computer control, monitoring and alarm systems. Consider the Swedish approach as a model. Work with other Maritime Provinces to standardize regulations pertaining to bioenergy systems throughout the region.
- 9) **Assist the biomass industry to establish province-wide standards for biomass fuels.** Currently, many biomass fuel purchasers do not pay for fuel according to its moisture content or energy value. This penalizes truckers and biomass fuel producers and results in the trucking of many tonnes of water on highways needlessly. It also reduces the energy and economic efficiency of biomass energy systems.
- 10) **Assist the forest industry to develop guidelines for sustainable biomass harvesting on private woodlands.** Nova Scotia bioenergy producers wish to harvest forest biomass on a sustainable basis. The industry wishes to develop and publicize voluntary biomass harvesting guidelines that will encourage the sustainable harvest of

forest chips on private woodlands in Nova Scotia. We would appreciate the support of the Province in this effort.

- 11) **Discouraging the open burning or burial of woody biomass generated from land clearing.** Substantial volumes of wood residue from land clearing operations are currently being wasted through burial and open burning. This is a lost opportunity for biomass contractors and it generates unnecessary pollution. The support of the Province in discouraging these wasteful practices would be appreciated.
- 12) **Commit Nova Scotia to achieving the Kyoto targets** (a 20% GHG reduction from 1990 levels by 2012) to be achieved through aggressive energy efficiency measures and a rapid shift to renewable sources of energy, with biomass energy as a key component of its strategy. Canada may not be able to achieve our Kyoto targets by 2012, but forward thinking provinces such as Nova Scotia can certainly do so and set an example for other provinces to follow.

## **Conclusion**

Co-ordinated federal and provincial support policies and programs will be needed to achieve the full potential of Nova Scotia's farm and forest bioenergy resources. The Maritime Bioenergy Working Group asks for your support and looks forward to working with you to allow us to achieve the full potential of farm and forest biomass energy in Nova Scotia. We are prepared to meet with the Minister and Department officials to help realize our bioenergy goals.

**Submitted by: Jim Verboom, Verboom Grinders Ltd.**

[verboom@ns.sympatico.ca](mailto:verboom@ns.sympatico.ca) 902-897-0767

Nova Scotia member of  
Maritime Bioenergy Working Group

Bruce McCallum, Ensign Consulting  
Chairperson - Maritime Bioenergy Working Group  
[canbio@xplornet.com](mailto:canbio@xplornet.com) 902-621-2254