Biomass Heat on Prince Edward Island:
A Pathway Forward

Recommendations of the Environmental Advisory Council –
Public Forest Council Joint Working Group on Biomass Heat

Hon. Richard Brown
Minister of Environment, Energy, Forestry
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Dear Minister:

The Environmental Advisory Council – Public Forest Council Joint Working Group on Biomass Heat has completed their deliberations. We are pleased as Co-Chairs to present to you our final report entitled "Biomass Heat on Prince Edward Island: A Pathway Forward."

The Joint Working Group acknowledges that Prince Edward Island is a land of prosperity-rich in soil, in land, in resources and in people. From our review of Biomass on Prince Edward Island, it is recognized that we possess the potential to regain our position as a world leader in the Biomass Industry.

Biomass energy can act as a positive catalyst through sustainable and environmentally sound initiatives for government to achieve this goal.

Government has the opportunity to lead by example. The expansion of Biomass heat has the potential for numerous environmental benefits while benefiting the Island economy and communities. However, the most important message in our report is that our Islands, renewable energy resources cannot be destroyed in the process.

Expansion of biomass on PEI can provide markets, increase economic development opportunities, support other PEI industries and employment.

Our report makes a number of significant recommendations that, if implemented, should enhance various aspects of Islanders lives. We have made every effort to develop recommendations which ensure that industry can be developed in an environmental and sustainable manner.

The Joint Working Group recognizes the success of this initiative will depend on the cooperation of stakeholders.

We are grateful for the opportunity to contribute to this meaningful process and are encouraged as we look to the future - that Biomass heat presents for Island prosperity.

On behalf of the committee members, we wish to thank the staff of the Department of Environment, Energy and Forestry, as well as the many presenters and resource people who assisted our group during this process.

Sincerely,

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Alan Hicken

Members of the Committee

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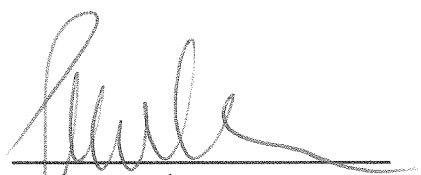

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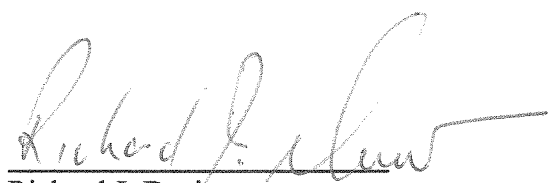

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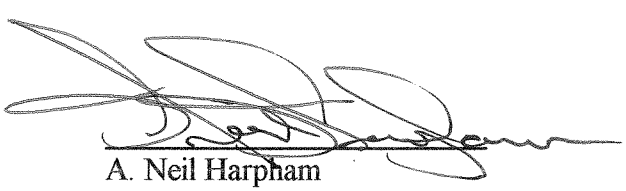

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1.0 Executive Summary

The Environmental Advisory Council and Public Forest Council Joint Working Group on Biomass Heat (herein referred to as the "Committee") considers the expansion of biomass heat on Prince Edward Island to be an opportunity for economic development and job creation while taking steps to reduce green house gas emissions. The expansion of biomass has the potential to assist in re-vitalizing Prince Edward Island's main industries and encourage small business and technology while saving money for Islanders. This can be achieved by ensuring that one of our most precious commodities, our natural resources, are managed in a sustainable and environmentally responsible manner for the future benefit of all.

The Committee therefore respectively submits the following recommendations:

- That the Province of Prince Edward Island expand the use of biomass for heat to decrease our dependence on fossil fuels.

- That expansion of biomass be executed in a manner supportive of local communities with consideration of the Island's valuable natural resources: soil, forest, environment.

- That the immediate expansion of biomass use be accomplished by test pilot projects geographically dispersed throughout the Island. The projects should be representative of the three primary biomass feedstock sources on Prince Edward Island; Forestry, Agriculture and Construction and Demolition.

- That priority in selection of test pilot projects be given to local Prince Edward Island sources. Where possible onus must be placed on the development of technology and harvesting of biomass feedstock from Prince Edward Island.

- That sustainable and environmental well-being be the paramount consideration in analysis of the test pilot projects; economic cost of the energy is a less important factor during the testing phase. The test pilot projects provide an opportunity for study of best practices and collection of data supporting further expansion of biomass energy.

- That government participate by purchasing BTU heat from proponents operating biomass heat operations in provincial facilities. Proponents will be responsible for the capital costs of installation and operation of the heating units in the facilities selected by government for the period of the project.

- That each proponent company must maintain emission and maintenance testing, and use biomass feedstock harvested within recognized sustainability guidelines.

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2.0 Introduction

The 2008 Prince Edward Island Energy Strategy, Securing Our Future: Energy, Conservation and Renewables outlined the targets for Prince Edward Island in the areas of alternative energy for the reduction of our dependence on fossil fuels.

In the 1980's when energy costs hit an all time high, Prince Edward Island was a pioneer in the area of renewable energy by going back to a technology which had been a tradition in Island homes - the woodstove. From this humble foundation, the Island became viewed as an innovator in the development, demonstration and use of renewable energy systems. Technicians from Prince Edward Island who worked on the conversion of biomass into thermal energy were sought out worldwide.

Today, as rising energy costs once again have become a major concern which negatively impacts on individual Islanders, businesses and institutions, Islanders are looking for alternatives to fossil fuels. However, through the years, society has become ever more concerned for our environment and the importance of the protecting of our natural resources. We recognize that steps taken today must be considered thoroughly because of potential consequences. Our responsibility to the environment and our people require that we not make hasty decisions.

Fossil fuel energy use has dramatic consequences through global warming and other negative impacts to the environment. The PEI Energy Strategy takes us away from Prince Edward Island's dependence on fossil fuels by building upon our already important alternative energy initiatives. This future includes the expansion of the use of Biomass.

Biomass

Biomass heat, traditionally derived from the burning of raw wood and pellets, is a familiar heating source in Atlantic Canada and currently represents approximately 10% of our provincial energy consumption. Imported liquid fossil fuels (petroleum products) represent approximately 75% of our energy supply.

Government is seeking to replace liquid fossil fuels with renewable and domestically produced alternatives as a means of lowering greenhouse gas emissions, protecting our environment and reducing our dependence on fossil fuels.

Biomass has typically involved the private residential burning of forest products and straw as a heating fuel on PEI in wood stoves and furnaces with recent trends toward pellet burning equipment. PEI pioneered the use of wood chips to supplement energy from waste systems and the current district heating system in Charlottetown uses wood chips for approximately 30% of their fuel requirements.

3.0 Committee Deliberations

Maximizing the potential for the development of the Island's renewable energy assets and ensuring they are developed wisely requires long term planning.

Further to this goal, the Government of Prince Edward Island and the Honourable Richard Brown, Minister of Environment, Energy and Forestry, in January, 2010 requested that his Ministerial Advisory Committees, the Environmental Advisory Council and the Public Forest Council, establish a Joint Working Committee to review how the province might effectively meet the targets under the 2008 Energy Strategy.

The terms of reference for the group included the identification of areas of concern associated with expanded biomass production and its use on PEI. The Committee was asked to meet with staff and external experts as needed:

- to become familiar with biomass production, harvest, transport and use
- to review practices in other jurisdictions including North America and Europe
- to identify any areas of concern from the expansion of biomass use
- to determine where government may have a role to play in this expansion
- to develop recommendations for government's action

The Joint EAC-PFC Committee consisted of 9 members Patrick Birtwistle, Rosalind House Cross, Richard J. Davies, Daryl Guignion, A. Neil Harpham, Alan Hicken, Paula MacKinnon, Tom Rath and John J. Rowe; there were six EAC members and three PFC members. The co-chairs were Alan Hicken, Chair of the EAC and John J. Rowe, Chair of the PFC.

In their consideration of expanded biomass on Prince Edward Island, the Committee explored numerous issues identified as relevant including:

- air quality
- quality and availability of Biomass product
- size and location of Biomass facilities
- impact on economic development
- environment considerations
- sustainability of resources
- manufacturing capabilities of biomass equipment

Deliberations included:

- clarifying area of study to be reviewed
- hearing from various invited presenters and engaging in thoughtful discussions
- collecting data on the availability of biomass product on Prince Edward Island
- identifying specific challenges
- reviewing current legislative provisions and the potential need for change

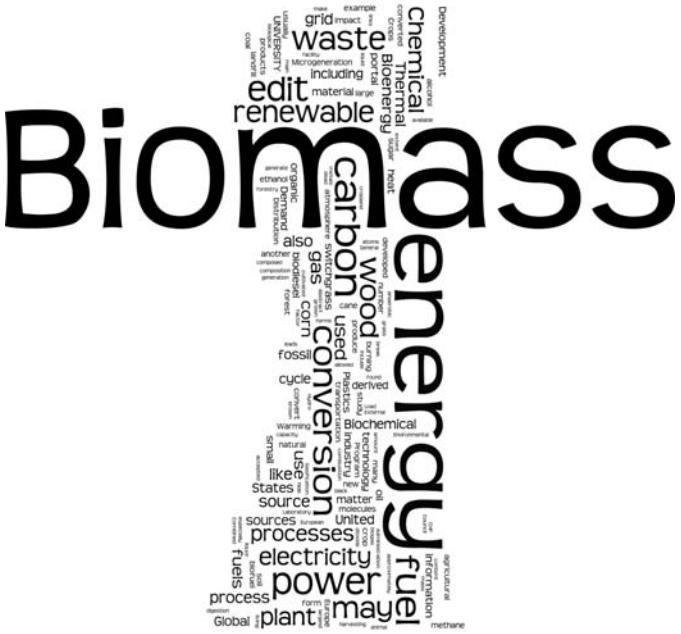
Experts included:

- resource people from the Province of Prince Edward Island
- experts in particular sectors of the Island economy including agriculture and forestry
- manufacturers of biomass heating sources currently servicing industry and business in Prince Edward Island
- private business leaders on potential limitations of biomass use
- environmental experts etc.

Members of the Committee were also very active in researching resource material for consideration by the group. In addition, the Committee sourced information on:

- National, Provincial and International legislation, regulation and policies
- studies and reports completed by government and other experts
- information on C&D sites on Prince Edward Island
- future potential sources of biomass
- various technologies under development
- assorted data presented at information sessions and conferences including the Farm Energy Conference

A portal was established for the sharing of information between committee members.



4.0 Forestry

Local biomass use connects community and forest resources by bringing together economic development, renewable energy and sustainable forestry practices at the local level.

The forests of Prince Edward Island offer a wide range of benefits to our Island. Island forests and the forest sector have played a vital role in the Island's culture, environment and economy. Managing woodlots sustainably through the use of good forestry practices benefits the overall health of our environment and supports other sectors including manufacturing, tourism, education and recreation. Therefore, biomass expansion must be considered in a manner that respects our precious forest resources.

The Prince Edward Island Forest Management Act requires a full inventory of Prince Edward Island forests be completed every 10 years.

- The last forest inventory was completed in 2000:
- Public forests account for 12% per cent of Island forests.
- 85% of privately owned forest on Prince Edward Island is potentially available for harvest.
- In 1990, forests covered some 48% of PEI. By 2000, this had dropped to 45%, largely due to forest conversions to agriculture, blueberry production and other developments. The loss of forest land trend has probably continued over the last decade but there is no up to date information available.

Burning wood is considered to be carbon neutral. Trees store carbon as they grow. When wood is burned it is released and trees absorb the carbon again. This aids in the reduction of green house gases.

Recommendation:

- That Government undertake Test Pilot Projects using forestry biomass feedstock.
- That government complete a forest inventory as required under the Forest Management Act to provide accurate and up to date information on the state of the Island’s forests.

4.1 A History of Forest Biomass on PEI

Forest biomass is not a new concept on Prince Edward Island because products such as firewood, wood chips and sawdust have been used as heat sources for generations. Traditionally people gathered their firewood from their own woodlands but over the years, Islander's connections to the forest have changed. Throughout much of the 20th century, people moved away for the land and those who remained sought out new fuels such as oil and electricity that were easier and cheaper to use.

When oil prices skyrocketed in the late 1970's and early 80's, many Islanders returned to traditional methods of heating. Firewood businesses flourished in many island communities and new biomass ventures sprang up across the province. The 1980's were the age of the wood chip on PEI and the Island was often seen as a biomass leader. At that time, the Island had a significant supply of rapidly maturing white spruce for which there were only limited markets. This resource arose on abandoned agricultural lands across the province. It was well suited to wood chip harvesting and burning technologies, so the province decided to create a biomass market and support it with a Forest Management Program to plant biomass harvest sites for interested land owners.

In the 1990's, oil prices declined. At the same time a building boom in the U.S. created demand for softwood stud wood, creating more demand and higher prices for the same resource. The costs associated with large scale woodchip boilers was also increasing and these factors led to a significant decline in the use of forest biomass as a fuel source. However some operations such as the Montague Hospital continued to use wood chips and boilers for their heating needs.

Today, demand for forest biomass, firewood and other wood-based heating products, is growing again. This growth is driven by concerns over energy prices, the need to reduce greenhouse gas emissions and other factors. At the same time, society has come to understand that creating environment benefits must not lead to any environmental damage, particularly in terms of forest harvest and management practices. The emphasis should be on restoring forest health with multiple silvicultural tools rather than simply planting a site and walking away.

Today, many islanders still rely on oil and electricity for their heating needs. Those who use fuelwood or other wood based products tend to buy it from a forest contractor rather than harvesting it themselves. Currently, PEI's largest biomass market is firewood. In 2009, the Island's fuelwood harvest was estimated to be some 230,000m^3 (100,000 cords), most of it harvested, perhaps, with minimal strategies for the future health and productivity of the resource. PEI's current demand for woodchips is estimated at 45,000 tonnes.

The method used to track softwood inventory on Prince Edward Island was the softwood check-off system as contained in the Forest Management Regulations. This check-off was a fee collected on all commercial softwood either shipped from the Island or used in a PEI sawmill and used to fund Forest Management Plans.

An update to these regulations to govern the harvesting of biomass feedstock would assist in providing updated records on the state of our forests. The consensus is that forestry products will continue to be the main source for biomass feedstock on Prince Edward Island and represent the most available source for any expansion of biomass heat requirements.

A change to the Forest Management Act requiring property owners and harvesting companies to maintain records on each woodlot harvest would ensure current information on the state of Island forests. A Forest Woodlot Audit Program would allow Forestry Officials to update the Forest Inventory on a regular basis and have readily available data after harvests.

This system will provide a vehicle for monitoring Island forests while fostering traceability and sustainability. Data on current forest levels by a process similar to the check-off system would provide a better understanding of the levels of potential biomass product.

The Forest Woodlot Audit Program could be phased in within the next two years after the release of the 2010 Forest Inventory.

Recommendation:

- That the use of forest feedstock be re-defined to include product harvested by recognized best forest management practises.
- That the Forest Management Act and regulations be updated to provide a method of traceability of harvested product taken from both public and private forests.

4.2 Forest Management Plans

In 2006 the province announced a new forest policy for Prince Edward Island. This policy was based on extensive consultations with land owners, industry, environmental groups and individuals who were interested in the future of the Island's 260,000 hectares of public and private forest.

One of its cornerstones is that private land owners, who want public forest management assistance, must also manage their lands for "public" as well as personal goods and benefits. If they want to access public incentives and services, they must develop a Forest Management Plan in accordance with the standards in the Ecosystem-based Forest Management Manual. Each plan is tailored to the forest's species, growing conditions and to the owners' interests, goals and abilities.

Forest management plans are based on ecological standards for various cutting and thinning techniques including patch, strip and regeneration cutting, commercial and pre-commercial thinning. These techniques ensure that the remaining tree growth has better growing conditions including increased light, oxygen circulation and enhance nutrient content in the soil, while minimizing effects on wildlife, insect and bird populations all of which are important for a healthy forest.

Stand improvement techniques offer the potential for increased income from the property through the exercise of good forestry techniques. Biomass specific treatments could be added to the Ecosystem-based Forest Management Manual and incorporated into the Forest Management Plan.

Islanders have an opportunity to earn an income from their properties while improving the environment of the woodlot. To date, a small percentage of private land owners have entered into forest management plans. Forest management plans developed under this system are a vital part of any forest management or harvest operation.

A public information campaign notifying Islanders of the benefits of the program would encourage participation. Government must encourage participation by supporting the use of biomass feedstock harvested from woodlots under registered Forest Management Plans. Land owners would not be obligated to participate further in the Forest Enhancement Program, but if they wish to, the full range of program incentives and services would be open to them.

Recommendation:

- That forest feedstock used to produce biomass heat must be harvested from property with a current and registered Forest Management Plan prepared in accordance with the standards of the Ecosystem-based Forest Management Manual
- That Biomass specific planting should be added to the Forest Management Plan process.
- That a public education and information campaign should be undertaken to encourage land owners to develop Forest Management Plans for their properties. Information campaigns through public, industry and community media to promote the types of silvicultural treatments and financial incentives available to participating land owners should be initiated. This information could be circulated to forest land owners through their Provincial Tax Bill.

4.3 Forest Management Plan Preparation

Under the Forest Enhancement Program, the Department provides landowners with a list of registered foresters, forest technicians, and wildlife biologists qualified to prepare Forest Management Plans. In the 1990's, when there was much clear-cutting of forests, harvesting companies supplied their own forest technicians to private landowners saving the land owners the expense. This practice is contrary to the spirit of the Management Plan Program.

Recent amendments to the Forest enhancement program established new guidelines and provided new incentives for the private land owner. However a current drawback is that Management Plans remain voluntary and are not registered as a covenant against the land.

There is a level of subjectivity in the development of management plans. Because of the importance of a well prepared management plan there should be some assurance of the qualifications and objectivity of the management plan technician. Currently, Public Land Forest Management Plans are prepared by qualified staff of the Department of Environment, Energy and Forestry. Management plans for Private woodlots are prepared by qualified private sector individuals who are registered with the Department. Plans for public land are subject to public review, while private land plans are reviewed to ensure compliance with the required standards.

Recommendation:

- That Forest Management Plans be developed only by foresters, biologists or technicians employed by the Province of Prince Edward Island or those registered with the private land program for the land owner.

- That Government ensure the training and qualifications of forestry technicians are consistent with the new Forest Management Policy. This will result in private land owners and government having the assurance that best practices are being followed.

4.4 Forestry Practises

When used improperly or on the wrong sites, mechanized harvesting equipment can be detrimental to the forest. These practices are not supportive of best forestry practices and are inconsistent with environmental and conservation regulation of woodlots. Equipment operators who are trained in ecologically acceptable forest harvest practices have demonstrated the ability to harvest in a sensitive and effective manner.

Although the short-term financial cost of good harvesting forestry practices may be greater, income derived from the forest by appropriate harvest treatments, more frequent thinning and sale of the harvested product as forest feedstock should be encouraged as part of any biomass program. Healthy forests require maintaining a balance in the forest of such things as snags, coarse woody debris and old forest growth.

The Ecosystem-based Forest Management Manual provides a wide range of silvicultural and harvest options suited to the ecological requirements of each site. It also contains standards for road and trail construction that are incorporated into the management plan. Simple forestry methods can be used to enhance the health of our forests.

Recommendation:

- That more definition be provided through PEI forestry policy to outline acceptable methods specific to biomass harvesting in the forestry sector.
- That on site, where soil erosion is identified as a problem, extraction roads be de-commissioned once harvesting is complete to prevent run-off and erosion.

5.0 Agriculture

Farmers have increasingly expressed concern about shrinking financial returns from traditional agriculture on Prince Edward Island. This demonstrates their need to look for alternative markets to create greater financial returns.

One of the areas explored by the farming community and supported by the Department of Agriculture is the potential use of traditional farming crops for biomass feedstock and the prospect of new biomass specific crops.

Recent changes in the face of agriculture in Prince Edward Island have resulted in changes in cropping patterns including such influences as:

- The dramatic decline in the hog industry has resulted in a decline in the demand for such crops as barley, wheat and other small grains.
- Increased production of soybean on Prince Edward Island from 10,000 to 40,000 acres, with the majority of this being sold to off-Island markets.
- Although Canola is better adapted to the PEI climate than it is in most of Western Canada, Canola production on PEI has been limited because of the high transportation costs to major oil seed processing plants.

The expansion of biomass agricultural feedstock such as cereals, straw, grass and crop residue offers significant potential for Biomass heating applications. As well, this provides a market for the low quality or wasted feedstock that would otherwise be a loss to farmers.

5.1 Agriculture Biomass Feedstock

Some of the opportunities for the growth of Biomass feedstock come from straw, canola and soybean harvest.

Straw

- Straw is presently grown by potato farmers as part of their crop rotation. Because of the additional cost of removing straw from the land, those who are not livestock farmers generally cut and leave the straw. Straw is one of the main sources of agricultural biomass feedstock used in heating units.

- There are environmental concerns from leaving straw on the field because of the release of carbons from the decomposition process. There is a great advantage to taking a portion of this renewable carbon (straw) and using it to reduce our dependency on fossil fuels.

Canola

- There are several uses for Canola as an alternate energy source. Positive financial gains have been realized by an Island farm from burning Canola oil.

Soybean Oil

- Soybean is used widely in the United States for biomass heat. However it does not have the cold flow properties of Canola.

Recommendation**:**

- That Government undertake test pilot projects using agricultural biomass feedstock.

- That biomass agricultural feedstock production be encouraged as a complement to current agriculture practices. Waste or surplus farm products should be used as biomass feedstock.

5.2 Bio Economy Crops

It is common practice in other jurisdictions for alternate crops to be grown specifically for biomass feedstock purposes.

- Hybrid Willows and perennial grasses may be grown specifically as biomass feedstock. The advantage to such crops are that they take longer to root but when rooted can be harvested for a number of years.

- Fall Rye may be an alternative for agricultural feedstock as it will not be seen to be competing with the feed industry. Although it does not offer any significant advantage over other crops such as wheat or barley, it does provide good winter soil protection.

Other crops may be introduced specifically for use as biomass feedstock. There may be environmental and agricultural concerns from introducing non-indigenous plant life to our Island environment. Caution should be exercised to prevent deleterious effects on existing crop, streams, or other plant life.

Recommendation:

- That incentives for new biomass specific crops be developed.

- That testing be completed by the Department of Agriculture or through pilot projects on the growth of appropriate bioeconomy crops. Data should be collected from these studies before the introduction of a non-indigenous bio economy crop. Such testing must be exercised in a controlled environment.

- That non native bioeconomy crops should not be introduced to Prince Edward Island without the supporting documentation that they do not present a hazard to either plant life, wildlife, or other natural species.

5.3 Programs to Support Agricultural Bioeconomy

The use of agricultural feedstock for the production of biomass heat supports one of Prince Edward Island's main industries and provides an alternate source of income using current agricultural waste and surplus farm products.

Recent programs of the Department of Agriculture offer new initiatives in the farming community toward biodiversity.

1. The Renewable Energy Initiative: funding for on farm renewable energy including biogas, solar, wind and combustion.

   To qualify projects must meet specific environmental criteria including emission level testing for particulates and guidelines for equipment use pursuant to Canadian, US and European emissions standards.
   Each proposal will also have to undergo an energy audit of the facility.

2. Bioeconomy Crop Initiative: A program for the planting of crops to provide cover on harvested land.

Recommendation:

- That the Department of Environment, Energy and Forestry work with the Department of Agriculture to include biomass feedstock production within the Renewable Energy Initiative.

- That the Department of Environment, Energy and Forestry support the Department of Agriculture with the coordination of the Bioeconomy Crop Initiative.

6.0 Construction and Demolition

The regulation of Construction and Demolition debris disposal sites is a responsibility under the Province of Prince Edward Island Environmental Protection Act – Waste Resource Management Regulations. Inherent in the regulations are waste management related issues including C&D debris disposal sites.

The Waste Resource Management Regulations provisions include:

- The application process for owner/operators of C&D debris disposal sites
- Design requirements of the C&D Debris disposal sites
- Surface and groundwater monitoring
- Operation and maintenance of manuals and annual reporting.

Debris biomass sorting policies and regulations should be developed by government. In many jurisdictions wood debris from construction and demolition operations are one of the main sources of wood biomass. While there may be a limitation on the amount of such product on Prince Edward Island, any source separation benefits the environment by reducing this material destined for landfill.

C&D biomass feedstock should be defined. Re-claimed feedstock should not include: treated wood products, paper or paper products, paint or preservative, salt laden wood or wood products with chloride content 0.05% on a dry basis.

As was recommended in the C&D Report, emphasis should also be placed on the deconstruction of old properties. Demolition of a building would produce additional wood biomass; contributing to the overall well-being of the Island.

Recommendation:

- That Government undertake test pilot projects using C&D biomass feedstock.
- That waste disposal containers for acceptable wood biomass, should be placed at C&D sites for removal to a sorting or chipping location. This sorting of acceptable wood biomass will reduce the amount of product sent to C&D sites.
- That specific guidelines must be provided to C&D locations identifying what is restricted from use as woody biomass.
- That Government should create incentives by decreasing tippage fees. Because of the cost of C&D disposal, individuals are dumping C&D material on private and public lands.
- That a project for the deconstruction and reclamation from decrepit buildings be developed. Communities across Prince Edward Island would nominate buildings for deconstruction.
- That current statistics are unavailable on the amount of C&D materials entering the six sites on Prince Edward Island. Updated information from records of the C&D sites should be compiled.

7.0 Air Quality

Islanders have seen a shift in the trend from traditionally heating their homes using woodstoves and fireplaces to furnaces and outdoor burning appliances using round wood, pellets and woodchips. Forty per cent of homes on PEI have a wood burning unit. Air quality and emissions from the operation of these units is an important issue. It has been noted that many jurisdictions have regulated aspects of the use and sale of these "appliances".

Concerns to be addressed:

- Outdoor wood boilers and home-made straw bale burners have ever increasingly become a part of our Island landscape. Recent concerns have been raised about the smouldering and smoking of these devices.

- Emissions and air contamination are directly related to the quality and moisture level of the fuel consumed, temperatures reached by the units, the maintenance of the burning units and the density of their use within communities.

- The Boilers and Pressure Vessels Act regulates high pressure units and requires the maintenance and testing of these units by certified technicians. However no similar legislative provisions apply to smaller non-pressure units.

Currently, there exist Canadian standards for the manufacturing of low pressure appliances through CSA approvals. Environment Canada enforces National standards for emission and effluent release. However within provincial jurisdiction, there is no regulation for emission testing on low pressure appliances.

Recommendation:

- That the Department of Environment, Energy and Forestry should determine if updating the Boilers and Pressure Vessels Act is needed to accommodate lower scale biomass operations.

- That the Department of Environment, Energy and Forestry should review the National and International Emission standards in an effort to move toward the development of policy and enforcement of regulations.

- That the Department of Environment, Energy and Forestry consider legislation to monitor the sale, manufacture and emission testing of Domestic Burning Apparatus.

- That a campaign to inform Islanders on the effect of improper burning practices be developed. The program should include, but not limited to, emissions information, testing on efficiency of units, and stack height information.

8.0 Public Facilities: Regulating Biomass Units

The Province of Prince Edward Island does not regulate combustion from forestry, agricultural or other biomass source feedstock.

The Province does regulate and issues permits to a number of combustion devices including:

- Boilers burning heavy fuel oil and bunker oil: example, Maritime Electric, Cavendish Farms, McCain's and Agra West. The operation must obtain an operating permit from the Province annually. The Department of Environment, Energy and Forestry instructs the permit holders to hire a consultant to conduct the emissions standards testing. The Department reviews the reports for compliance.

- Incinerators: The Province issues permits and regulates both large and smaller type incinerators including the Energy from Waste Plant and Bio Waste incinerators such as the Atlantic Vet College, Canadian Food Inspection Agency and the Provinces two crematoriums.

Historically, PEI has no large scale Biomass burning units. Wood burning units have been on a smaller more residential scale such as wood stoves, wood furnaces and fireplaces. There is no regulation for low pressure burning units.

Emission standards are national and not a provincial jurisdiction; the Canada Wide Standards (CWS) and Canada-US Air Quality Agreement set overall emissions standards for provinces to enforce. However, it is noted that the Province has ambient air emissions standards for asphalt plants and are therefore both a Federal and Provincial responsibility.

Through the National Pollutant Release Inventory (NPRI), Environment Canada compiles and publishes air pollutant emission summaries and trends to inform Canadians about pollutants that affect their health and the environment, facilitate progress in pollution control, and support the development of regulations and air quality monitoring.

Provinces could however manage particulate emissions by setting a permit process and requiring information be submitted on the geographic location of the facility, type of equipment (whether used or new equipment), stack height, quality and standards of feedstock including dimensions, moisture content and burning temperatures.

Recommendation:

- That the location of one or more public infrastructure facilities for Biomass heat production on Prince Edward Island must be selected based on size, geographic location, potential emissions, biomass feedstock source, transportation issues, energy requirements, and local environment.

9.0 Test Pilot Projects

The expansion of biomass heat production represents an opportunity for economic development, revitalization of rural communities, job growth and new alternatives for the forestry and agriculture industries on the Island.

Our abundant fuel sources, coupled with the Island's energy needs, justify the expansion and exploration of biomass technologies. There are many technologies available for biomass utilization, but without field investigation it is difficult to determine which one or more types of technology will meet our community needs.

Larger size biomass facilities offering biomass BTU heat for sale represent a new initiative on PEI. There is no data specifically relating to these operations.

Test pilot projects provide an initial source of research and study to validate the expansion of biomass heat. The Department of Environment, Energy and Forestry must monitor the facilities during the period of the test pilot projects including emissions, sustainability of biomass feedstock, maintenance and construction on facilities and environmental concerns. With this information, a plan forward can be prepared.

A period of five (5) years for the test pilot projects may offer sufficient time for a proper demonstration of the operations of the facility at full capacity.

There should be a sufficient number of test Pilot Project facilities to represent each of the prescribed feedstock categories. The facilities for the testing pilot projects should be geographically dispersed across Prince Edward Island for emission and economic development reasons. In addition, this would prevent the overuse of biomass feedstock in one area and reduce transportation of product.

Economic cost should not be the determining factor in the selection of the test Pilot Project.

Recommendation:

- That the Province of Prince Edward Island undertake at least six (6) test Pilot Projects for the expansion of biomass heat on Prince Edward Island.

- That contracts for the test Pilot Projects have a length of five (5) years to allow the operation to become functional and to provide sufficient data.

- That test Pilot Projects be geographically dispersed between the three (3) counties of Prince Edward Island.

- That test Pilot Projects be representative of each of the prescribed major biomass feedstock on Prince Edward Island.

- That contracts for the test Pilot Projects stipulate the record management requirements including biomass feedstock tracking, equipment maintenance, emission testing and any other requirements as developed through this process.

- That job placements for Renewable Heat Technician students be available at the test Pilot Projects.

- That the test Pilot Projects should be completed in Two Phases.

    - Phase One: Test Pilot Projects.
    - Phase Two: Data Compilation and Assessment stage.

10.0 Contracts

Several biomass demonstration heating projects are currently operating on Prince Edward Island.

Energy contracts selling BTU heat are designed to allow the consumer to purchase heat while not having to incur the Capital Costs. The Company (seller of the heat) selling the units, purchases the material and is responsible for operations while adhering to Federal and Provincial regulations and standards.

As enacted in other Canadian jurisdictions, Prince Edward Island should adopt the requirement that that any company offering BTU heat for sale must apply to government for permission to do so. The applicant must provide details of the proposed facility, the type of biomass feedstock to be used and ownership details of the company. They must also agree to maintain records for inspection by Government officials of equipment maintenance, biomass feedstock purchases and emission testing.

Legislative provisions defining biomass on Prince Edward Island should be developed after the testing Pilot Projects. Prior to that, terms must be outlined in a contract for the purchase of BTU heat.

All contracts must be assessed by potential for self-reliance, readiness for immediate demonstration, prerequisite size and location of processing units (any distance impacts on efficiency), emissions, and economic impact.

Recommendation:

- That the term of the contract must be sufficient to support financial commitments by the contractor.
- That a company offering BTU heat for sale on Prince Edward Island must apply to the Minister of Environment, Energy and Forestry to confirm the nature of their facility, the biomass feedstock to be used, location, and ownership particulars.
- That a company offering BTU heat for sale must maintain records on the maintenance of the facility, emission testing, source of feedstock and feedstock purchase records which must be available for audit and inspection by Department officials.

11.0 A Pathway Forward

Considerations:

During the term of the test Pilot Projects, the Province of Prince Edward Island should assess projects for the following conclusions:

- Whether the venture is economically feasible for the Island
- The public funding investment required for implementation
- Acceptance from Islanders
- Increase in Forest Management Plans by private land owners
- Effect to environment and natural habitat
- Sustainability of feedstock.

Data collected must be used to develop legislation, regulations and policies defining biomass heat on Prince Edward Island, setting standards for biomass feedstock, biomass equipment, smoke stack emissions and biomass worker education programs.

- Islanders must be engaged on the Test Pilot Projects before moving forward. Open houses inviting the public should be held allowing the public to view the facility and review particulars of each operation.

- During the expansion of biomass energy on Prince Edward Island, we must always be mindful of new technologies which are now being developed. In the near future, some of these could be adapted to the Island. Examples include geothermal and algae applications.

- Building standards should be reviewed ensuring current building codes include energy efficient practices. Government should continually review their environmental energy efficiency practices including energy audits for government buildings. Biomass heat conversion should be considered in any new government construction.

- Coordinate with Holland College and the University of Prince Edward Island for training programs specific to biomass energy. Holland College has developed a Renewable Heat Technician program which will have graduates in the near future.

- Financial incentives including the Carbon Credit Strategy encourage good practices to save our environment. A Carbon Credit Strategy for Prince Edward Island should be implemented.

Conclusion:

Prince Edward Island future prosperity depends on the steps taken today to effectively manage our resources for tomorrow. The expansion of biomass on Prince Edward Island offers an opportunity for a "Made in PEI" product. Islanders can return to our pioneering reputation in alternative energy while retaining our mantle as good stewards of our environment and natural resources.

Biomass Energy Project - Terms of Reference
Environmental Advisory Council
Public Forest Council
Joint Working Group
December 2009

Background - BIOMASS Heat

Biomass heat... largely derived from burning of raw wood or wood pellets... is a traditional heating source in Atlantic Canada and currently represents approximately 10% of our provincial energy consumption. Imported liquid fossil fuels (petroleum products) represent approximately 75% of our energy supply. For reasons of green house gas reductions (GHG) and displacement of fuel imports from outside the region, Government is seeking to replace liquid fossil fuels with renewable and domestically produced alternatives.

Irving Oil have advised that due to a lack of regional production of ethanol biofuel, they do not plan to blend ethanol transportation fuels on PEI. Irving do indicate an intention to blend bio-diesel to a 2% blend, but only during warmer months. Therefore, in the short term, PEI will have limited opportunity to displace transportation fuel imports with domestic biofuels.

As a result, the potential to use biomass from our forests and agricultural by-products to displace imported heating fuel is of greater importance. In the *PEI Energy Strategy, Securing our Future: Energy, Conservation and Renewables (2008)*, government identified biomass heating targets of 15% by 2013 and 20% by 2018.

Biomass has historically been used as a heating fuel in wood stoves and furnaces, with more recent trends toward pellet burning equipment. PEI also pioneered the use of wood chips to supplement energy from waste systems and the current district heating system in Charlottetown uses wood chips for approximately 30% of their fuel requirements. Recently, a number of private firms have commenced selling biomass heat to larger institutional and industrial users, utilizing wood chips, pellets and surplus straw as BIOMASS feedstocks.

In summary, 10% of energy in PEI is currently supplied by biomass, and PEI has targets to increase this to 15% by 2013 and 20% by 2018. While Government is committed to this, it is expected that a number of issues of public concern need to be identified and addressed. Examples might include, but are not limited to: sustainable production of biomass, air quality / smoke, quality of product(s) being burned, size / location(s) of biomass plants, and/or transportation issues.

The Minister of Environment, Energy and Forestry has two advisory groups: the Public Forest Council and the Environmental Advisory Council. These bodies have been asked to work collaboratively on a project to identify and make recommendations regarding programs, policies or legislation that may need to accompany increased biomass production and use on PEI.

Objectives: (1) Identify areas of concern associated with expanded biomass production and use on PEI; (2) outline how these issues are being handled in other jurisdictions; and (3) make recommendations to the Minister of Environment, Energy and Forestry regarding how these issues should be addressed on PEI.

Participation: EAC and PFC will form a joint working group for this project:

Tasks:

Objective 1: Identify areas of concern:

1. Meet with staff and external experts as needed to become familiar with biomass production, harvest, transport and use.
2. List and −if possible −prioritize areas of concern. The Working Group may generate this list internally or via a broader process (e.g. invited guests, small focus groups or public meetings).

Objective 2: Outline handling by other jurisdictions

3. Contact other jurisdictions [*suggest we put a geographic limit on it: Canada? Eastern Canada? Eastern Canada and Northeastern US?*] to determine if they have programs, policies or legislation relating to the identified areas of concern.

Objective 3: Recommend to the Minister

A. Review the identified areas of concern and related actions taken in other jurisdictions (if any).
B. Determine in which (if any) of these areas the Working Group feels Government has a role to play.
C. Develop recommendations regarding how Government should handle these issues. Recommendations may include the full suite of options, for example: education, incentives / disincentives, programs, policies, and legislation.

Process and working methods:

a) Findings/report should be presented to the Minister by March 31, 2009.

b) Public consultations may be held, although the number may be limited by available time and budget.

c) Support will be provided by the Department of Environment, Energy and Forestry. Outside expertise will be provided if necessary.

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