the PEMBINA institute
Sustainable Energy Solutions

Honourable John Baird, Minister of the Environment
c/o Director, Oil, Gas and Energy Branch, Clean Air Directorate
Environmental Stewardship Branch, Environment Canada
Place Vincent Massey, 351 Saint-Joseph Boulevard
Gatineau, Quebec, K1A 0H3

Re: *Notice of intent to develop a federal regulation requiring renewable fuels*

February 27, 2007

Honourable Minister Baird:

The federal government of Canada has forwarded a Notice of Intent to develop a federal regulation requiring renewable fuels content in Canadian gasoline, diesel fuel, and heating oil. Replacing petroleum fuels with renewable fuels such as ethanol and biodiesel brings the potential for significant reductions in associated air contaminant and greenhouse gas emissions, but it may also result in major social and environmental problems if not done well. The Pembina Institute's submission with regard to the proposed regulation focuses on how the federal government can ensure this regulation provides a significant overall benefit to the environment and to Canadians.

As the renewable fuel industry currently stands, the most likely source for renewable fuels in Canada is ethanol from corn and wheat, and biodiesel from canola and soy. While the production and use of these fuels in Canada are expected to generally reduce air emissions, when compared with conventional fuels on a life-cycle basis, experience has shown that there is a wide range of potential emission profiles for ethanol and biodiesel. There is also a very real impact on agricultural lands, waterways and world food markets when crops such as corn, wheat, canola and soy are used to produce fuels in very large quantities. The design of a renewable fuel regulation for Canada, along with other policies directed at renewable fuels, will have significant influence on what the ultimate environmental and social impacts of renewable fuels are.

The Government of Canada has an excellent opportunity with a renewable fuels regulation to set Canada on a path to an environmentally, socially and economically sustainable fuel supply. There are many mechanisms that could be used within a regulation to encourage lower impact renewable fuels (e.g., cellulosic ethanol), disallow high impact renewable fuels (e.g., fuels that result in an increase of greenhouse gas emissions), and position the industry to become world leaders in the next generation of renewable fuels. These mechanisms could also be used to increase the amount of lower impact renewable fuels over time, thus enabling a timely transition to next generation technologies.

After previously establishing renewable fuels policies, the United States and many European countries are now working to establish policies to transition to lower impact renewable fuels. Canada has the opportunity to learn from these past experiences and establish itself as a leader in a high value, robust renewable fuels industry from the start.

The attached submission provides more detailed input to the proposed regulation including a description of potential mechanisms for stimulating lower impact renewable fuels and supporting research. We would welcome any opportunity to provide clarification on or to further discuss these points.

Sincerely,

Jesse Row
Director, Sustainable Communities
Pembina Institute

Pembina Institute Comments on *Notice of intent to develop a federal regulation requiring renewable fuels* under the *Canadian Environmental Protection Act, 1999* (CEPA 1999), as published in the *Canada Gazette, Part I, Vol. 140, No. 52, December 30, 2006*.

J.P. Jepp, Environmental Policy Analyst
Jesse Row, Director, Sustainable Communities

February 27, 2007

Fuel Distinction Based Upon Life-Cycle Environmental Performance

As stated in the Notice of Intent (*Notice),* the use of renewable fuels can offer significant environmental benefits, including reduced greenhouse gas emissions. Unfortunately, however, there are no provisions in the proposed regulations to ensure that renewable fuels produced or imported into Canada are indeed an overall environmental benefit in comparison to petroleum fuels. Without specific measures in the regulations, all production models are possible, including the use of coal as a process fuel, as is seen increasingly in U.S. jurisdictions. The Pembina Institute believes that the regulation should distinguish different fuels based upon life-cycle environmental performance. This could result in:

- encouraging the use of low impact energy sources for process heat, such as biomass, waste heat and co-generation systems;
- discouraging the use of high impact energy sources for process heat, such as coal;
- encouraging the production and import of cellulosic ethanol;
- encouraging sustainable agriculture practices (e.g., low tillage and high manure application); and
- disallowing renewable fuels that do not result in a net positive impact on the environment.

Distinctions should also be provided to fuels that do not negatively impact world food markets (e.g., fuels that are produced from cellulose or waste materials such as agricultural and forestry residues, tallow, and yellow grease).

Canada would not be the first political body to introduce policy linking recognition of different types of renewable fuels to their specific benefits.

1. United States – The U.S. recognizes the varying benefits of renewable fuels by including a bias in how each fuel is counted towards their renewable fuel requirement. Corn ethanol receives no bias, one gallon of biobutanol is worth 1.3 gallons towards the requirement, one gallon of biodiesel (mono alkyl ester) is worth 1.5 gallons towards the requirement, and one gallon of cellulosic ethanol is worth 2.5 gallons towards the requirement.

2. Germany – The federal government plans to link tax breaks for biofuels to certification that they were produced in a sustainable way. This includes carbon dioxide reductions.[1]

3. United Kingdom – The U.K. Renewable Transport Fuel Obligation (RTFO) set a target of 5 percent renewable fuel content by 2008. As part of the fuel mandate, the UK Government has proposed to develop a carbon and sustainability assurance scheme[2]. Obligated companies would be required to report on the level of carbon savings achieved and on the sustainability of their supplies. A study commissioned on the topic concluded that a "simple, transparent and verifiable GHG certification scheme can be developed in relation to an RTFO". Further, "the cost of the system would be low for government and fuel suppliers, and negligible for the consumer"[3].

4. European Energy Board – The EEB has put out a seven point position on the need for well defined biomass and biofuel sustainability criteria. The first of these seven positions is that the use of biofuels must have clear climate benefits, and the objective of a policy for bioenergy is first and foremost to combat climate change. [4]

5. European Commission – As a follow-up to the policy report from the EEB, the Commission of European Communities published their strategy for biofuels in 2006. This document states that to capture the potential environmental benefits, a biofuel strategy has to focus, in part, on optimizing greenhouse gas benefits for the expenditure made:

> Currently, incentives for biofuels do not take into account the actual greenhouse gas benefits of the different biofuels and their production pathways. Linking greenhouse gas benefits to encouraging the provisions of biofuels would help to increase their benefits and send a clear signal to the industry of the importance of further improving production pathways in this respect. It would also allow market-based signals to be sent to fuel and feedstock producers, to further reduce carbon emissions in the transport sector. To be effective, such a mechanism must apply to both domestic and imported products in a non-discriminatory way and comply fully with WTO provisions. A multinational approach could also be explored, linked to the existing Clean Development Mechanism, which would guarantee the involvement of trade partners.[5]

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[1] German parliamentary information service Heute im Bundestag #315, October 25, 2006. Available at http://www.bundestag.de/aktuell/hib/2006/2006_315/index.html

[2] Government News Network, November 10, 2005 Department for Transport. *Darling Takes Action to Make Transport Fuels Greener* Available at http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=177217&NewsAreaID=2

[3] E4Tech, ECCM, and Imperial College of London (2005). *Feasibility Study on Certification for a Renewable Transport Fuel Obligation*. Available at http://cgse.epfl.ch/webdav/site/cgse/shared/Biofuels/dft_roads_610366.pdf

[4] European Energy Board (2005). EEB Position on Biomass and Biofuels: the Need for Well Defined Sustainability Criteria- Summary and Seven Key Points.

[5] Commission of the European Communities (2006). Communication from the Commission- An EU Strategy for Biofuels. Available at http://ec.europa.eu/agriculture/biomass/biofuel/com2006_34_en.pdf

In addition to these examples from other political bodies, the Canadian Renewable Fuels Association and the Canadian Petroleum Products Institute have forwarded a joint letter to the Government of Canada that states, in part, "there needs to be mechanisms that recognize the full life-cycle environmental impact of fuel production"[6].

The Pembina Institute encourages the Government to follow the lead of other nations who have already been significant producers and importers of renewable fuels for a number of years, and to hear the policy request as made by key stakeholders, and institute mechanisms to distinguish between renewable fuels based on their life-cycle environmental performance.

It should also be noted that mechanisms to distinguish renewable fuels based on their environmental performance should also be used to require an increasing share of lower impact renewable fuels over time, thus enabling a timely transition to next generation technologies.

Specific Requirement for Renewable Content in both Diesel Fuel and Heating Oil

The Pembina Institute believes that without a specific and mandated set-aside for diesel fuel and heating oil replacements, producers and importers of fuel may focus on the more mature ethanol fuel industry to meet all regulated renewable fuel volumes. Biodiesel fuel has the potential to result in greater life-cycle environmental benefits than some forms of ethanol fuel, and diesel fuel represents 30-40 percent of all transportation fuels sold in Canada. It is important that a national renewable fuels program include diesel fuel replacements, and that specific support be offered to this less mature industry.

Contingency of Testing for Diesel and Heating Oil Requirement

The *Notice* states that the institution of the requirement for 2 percent of diesel and heating oil is contingent upon "successful completion" of a testing program designed by stakeholders and the federal government. This raises concerns about the ambiguous definition of "successful completion", and leaves the possibility for a serious difference of opinion among stakeholders on the perceived success of a test program once completed. The Pembina Institute would expect to see the term *"successful completion"* defined, and an early notice of this determination sent to all stakeholders involved in the testing program as planning for the program has already begun.

A related concern is that both the petroleum retailers and trucking industries are key stakeholders in the testing program, and have large influence over whether the program is successful or not, yet both also have potential interest in ensuring that a biodiesel regulation is delayed. This is a serious conflict of interest. The federal agencies should provide solid oversight of the testing program to ensure good design, rigour, timely completion, and adequate funding for the program.

[6] Canadian Petroleum Products Institute and Canadian Renewable Fuels Association (2006). Essential Features of a National Policy on Renewable Fuels - Joint Letter to the Government of Canada. Available at the Canadian Petroleum Products Institute website http://www.cppi.ca/pdf/NRFSEssentialFeatures.pdf

Built-in Flexibility for Producers and Importers
The Pembina Institute supports the proposal to allow producers and importers to meet the renewable fuel standard on a company-wide basis, in annual aggregate rather than per-litre volumes, and with any number of liquid renewable fuels. Although these mechanisms increase the regulatory complexity, the allowed flexibility takes the realities of feedstock and market distribution, delivery logistics, and infrastructure into account, and will better-enable producers to deliver product to market. This facilitates overall production, distribution and consumption, while respecting the volumes goals of the renewable fuel standard.

Reporting of Associated Greenhouse Gas Benefits
The Pembina Institute believes there is a need to restate the greenhouse gas (GHG) benefits associated with the proposed regulations. The GHG benefits from gasoline replacement (ethanol) and diesel / heating oil should be separated out as they are for different time periods (2010 and 2012 respectively) and, as per the "successful completion" stipulation described above, the mandate for diesel and heating fuel replacement is not guaranteed.

Definition of Renewable Fuels
The *Notice* informs of the Government intent to develop and implement a federal regulation requiring renewable fuels, yet it does not provide any definition for the term "renewable fuels".

A recent news release on the renewable fuel standard from the federal government opens with the sentence "Canada's New Government today took further action to combat climate change"[7]. In the same release, the Honourable Minister Ambrose announced that "Canadians will reap environmental benefits" and that "cleaner fuel means less pollution". The Pembina Institute would expect to see the term *renewable fuels* defined in the regulation. Further, considering the full range of potential environmental impacts or benefits that fuel production and consumption can result in, and the stated desire of the Government to combat climate change and reap environmental benefit through the use of renewable fuels, the Pembina Institute believes that the definition of *renewable fuels* in the regulations should include a requirement that fuels qualifying under the mandate have clear life-cycle greenhouse gas and air contaminant emissions benefits relative to petroleum fuels (as is currently being implemented in other jurisdictions – see above).

Consideration for Aviation Fuels and for Fuels used in Defined Northern Regions
The Pembina Institute believes neither aviation fuels nor fuels used in northern regions should be exempted from the regulation. We offer this for four reasons:

1. Air transport is a key, and growing, source of greenhouse gas emissions in Canada;
2. Resource industries and transportation in northern regions account for large volumes of fuel consumption;
3. Companies, such as the Northwest Territories Power Corporation, are investigating the potential to use biodiesel in their diesel power plants; and

[7] News Release- *Canada's New Government Takes New Step to Protect the Environment with Biofuels*. Available at Agriculture and Agri-Food Canada website http://www.agr.gc.ca/cb/index_e.php?s1=n&s2=2006&page=n61220

4. There are no performance problems with the use of gasoline replacements (ethanol) in the northern latitudes. Ethanol is even being marketed as a natural gas-line antifreeze.

Although renewable content cannot be added directly to aviation fuel, and there may be performance issues with the use of some biodiesel fuels in specific cold weather applications, these limitations can be addressed within the proposed company-wide flexibility provision. By including both aviation fuels and fuels used in northern regions within the regulation, this will both incent the use of renewable fuels in northern regions and result in an overall greater environmental benefit through a wider use of renewable fuels.

Fuel Credit and Trading System

The Pembina Institute would like to see strict timeline and volume caps on the fuel volumes credits and deficits that can be carried over into the next year. If no limits are specified in the regulation to carry-over periods, this could risk allowing companies to delay their regulatory obligations indefinitely.

Greenhouse Gas Trading System

The *Notice* is mute on the topic of GHG emission credits and the potential to include associated credits in an offset or trading system. The Pembina Institute would like to see a clear statement that volumes of renewable fuels produced or imported to meet federal regulation cannot also be considered under any national GHG trading system, as this would lead to double counting of emission reductions.

International Sustainability Standards

The Pembina Institute believes mechanisms are needed to ensure domestic and international consumers that feedstocks and fuels in, or from, the Canadian market were produced using accepted sustainable methods. The methods for producing renewable fuels varies widely, with some being more environmentally, and socially, beneficial than others. As the domestic industry matures, Canada will become increasingly involved in international renewable fuel trade, and questions on the sustainability of feedstocks and fuel products will grow. Setting domestic sustainability standards or subscribing to established certification schemes are strategies that can help ensure that Canadian renewable fuels are produced in a responsible manner and demonstrate this to consumers and export markets. A number of countries that have a longer history as renewable fuel producers are now initiating or subscribing to sustainability standards. Other multi-national political bodies are also drafting sustainability standards and suggesting them for their member nations.

1. United Kingdom – The Renewable Transport Fuel Obligation (RTFO) sets a standard of 5 percent renewable fuel content by 2008. Regulators are stressing the importance of using fuels produced in a sustainable manner to meet this standard[8].
2. Netherlands – The federal government has adopted legislation requiring the development of a certification system for labeling sustainably produced imports of biomass fuels[9].

[8] Government News Network, November 10, 2005 Department for Transport. *Darling Takes Action to Make Transport Fuels Greener* Available at http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=177217&NewsAreaID=2

3. The U.N. Food and Agriculture Organization (FAO) is working with the Global Environment Facility (GEF) to develop criteria for sustainable feedstock.
4. Germany – The federal government has forwarded draft law stipulating that tax breaks for renewable fuels should be linked to certification that they were produced using sustainable methods[10].
5. European Energy Board – Has put out a position statement on biomass and biofuels that states "a policy for bio-energy should do more then simply provide a new outlet to continue unsustainable production patterns within the agricultural sector"[11], and concludes there is a need for well defined sustainability criteria, including that:
   a. Bio-energy policy should be based on real environmental benefits; and,
   b. A system is needed to ensure the feedstock crops meet key sustainability criteria[12].
6. European Commission – In late 2005, the European Commission agreed on a Biomass Action Plan that sets out a strategy to promote biomass as an energy source. This document proposes that only biofuels "whose cultivation complies with minimum sustainability standards count towards [biofuel] targets."[13] In 2006, the EC also issued a position on biofuels that states, in part, to capture the potential environmental benefits, a biofuel strategy has to focus on:
   a) avoiding environmental damage linked to the production of biofuels and their feedstocks; and,
   b) ensuring that the use of biofuels does not give rise to environmental or technical problems[14].

   This document also states that "it is essential that appropriate minimum environmental standards apply to feedstock production for biofuels"[15].

The National Wildlife Federation from the United States has compiled a summary of draft principles and criteria developed by a variety of organizations from various countries. This brief summary document is attached for further reference.

The Pembina Institute encourages the Government of Canada to work with stakeholders to design and adopt specific and quantifiable criteria for biofuel sustainability certification.

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[9] Juniger, M and Faaij, A. (2005). IEA Bioenergy Task 40- Country Report for the Netherlands. IEA Bioenergy and Utrecht University. Available at http://www.senternovem.nl/mmfiles/IEA_Task_40_Country_Report_NL_tcm24-152474.pdf

[10] German parliamentary information service Heute im Bundestag #315, October 25, 2006. Available at http://www.bundestag.de/aktuell/hib/2006/2006_315/index.html

[11] European Energy Board (2005). EEB Position on Biomass and Biofuels: the Need for Well Defined Sustainability Criteria- Summary and Seven Key Points

[12] ibid

[13] Commission of the European Communities (2005). Communication from the Commission- Biomass Action Plan. Available at http://ec.europa.eu/energy/res/biomass_action_plan/doc/2005_12_07_comm_biomass_action_plan_en.pdf

[14] Commission of the European Communities (2006). Communication from the Commission- An EU Strategy for Biofuels. Available at http://ec.europa.eu/agriculture/biomass/biofuel/com2006_34_en.pdf

[15] ibid

Selected Issues to be Addressed in Future Principles and Criteria for Sustainable Biofuels

I. Examples of Biofuels Principles and Criteria to Promote Sustainability

Many experts predict that in order to reduce global warming pollution, the expanded production and use of alternative fuels, including biofuels, is essential. Biofuels can contribute significantly as part of the long-term solution to global warming, if overall greenhouse gas emissions are minimized in their production and use; and they will fulfill their promise as "sustainable" fuels of the future if other essential environmental and social values are maximized. A wide variety of organizations have laid out draft sets of principles and criteria for sustainable agriculture and forestry that are relevant to the production of biofuels. Excerpts of several of these documents are summarized and presented here, to give a general idea of the range of civil society concerns that arise when a massive land use change is proposed. The expansion of the industry may be facilitated by successfully addressing these kinds of issues, to maintain public trust in the merits of biofuel production.

A. Conservation of Natural Resources, Biological Diversity, Environmental Health and Land Use

Goals or desired outcomes:

- Maintain soil structure and fertility.
- Protect biological diversity, both terrestrial and aquatic, and maintain wildlife abundance and distribution.
- Maintain water quantity and quality.

Examples of Recommended Best Practices:

- Conservation tillage, crop rotation, terraces, cover crops, buffer strips, grassed waterways, timed tillage, leaving adequate crop residues.
- Maximize use of crop diversity, agro-forestry; discourage monocultures, and use of persistent chemicals.
- No destruction of primary forests, native prairie/grasslands, or other areas containing High Conservation Values for energy crops.
- Use native species/varieties/perennials where appropriate; avoid invasive species and GMO varieties.

B. Energy Efficiency and Greenhouse Gases

Goal or desired outcomes:

- Bio-energy industry expansion contributes to reduction of greenhouse gas emissions on a well to wheel basis.
- To qualify for incentives or certification, biomass production must have substantial positive net energy and greenhouse gas balances.

Examples of Recommended Best Practices:

- Move as quickly as possible toward cellulosic technology and concentrate on wastes (agricultural, wood and municipal) wherever possible as feedstocks.
- Maximize carbon sequestration (through conservation tillage, use of perennials and deep-rooted crops and no break out of pasture, forest, wetlands or other existing habitat that currently sequester significant amounts of carbon).

C. Compliance with Laws and Regulations, including Land Rights

Goal or desired outcome:

- Compliance with all applicable local, national and relevant international laws and regulations, especially forest conservation laws.

Examples of Recommended Best Practices:

- Ensure the use of the land for biofuels does not diminish the legal or customary rights of other users, including minorities and indigenous peoples, to land and other resources.

D. Transparency and Respect for Affected Parties and Employees

Goal or desired outcome:

- General community satisfaction with projects and operations as net improvement in livelihoods and quality of life.

Examples of Recommended Best Practices:

- Reserve substantial segment of production quotas for small scale producers, especially women; support and protect small holder farms.
- Social and environmental impacts of projects are identified through participatory processes, which results in mitigation plans, which are implemented and monitored.

II. Examples of Society-Wide Issues and Concerns with Biofuels Expansion

The following are some of the issues/concerns that have been raised by various stakeholders, which would require state, national and/or international policy decisions (rather than actions at the project/investment level).

- Energy efficiency and conservation must remain priorities, not just increasing alternative supplies.
- The transition to the next generation of biofuel feedstocks must be hastened.
- Concentrate on degraded lands for wood plantations or energy crops -- but do not create incentives for displacement of soy farms or cattle ranches that will cause future degradation of other pristine lands.
- Greater farmer participation in the value added chain should be facilitated in order to enable increased economic development in rural areas.
- Focus agriculture research on mixed crops, agro-forestry, perennials, crop rotations, impacts of varying harvest/management systems, wildlife responses, and impacts on social and cultural values.
- Use of GMO and nanotechnology organisms to generate energy with biomass will be controversial.

Notes

- This list is not comprehensive nor does it necessarily represent the views of the compilers.
- This list was developed with the input of many organizations from a variety of countries.
- Special thanks for content go to:

A. Roundtable on Sustainable Palm Oil, Principles and Criteria for Sustainable Palm Oil Production, 17 October 2005; www.rspo.org

B. Brazilian Forum of Non-governmental Organizations and Social Movements for the Environment and Development (FBOMS), Sustainability Criteria and Indicators for Bioenergy, February, 2006; www.fboms.org.br/gtenergia/energia_doc.htm

C. German NGO Forum on Environment and Development, Global Market for Bioenergy between Climate Protection and Development Policy, November, 2005; www.forumue.de

D. Institute for Agriculture and Trade Policy, Sustainable Biomass Production Principles and Practices, 2003; www.iatp.org

E. International Network for Sustainable Energy - Europe, "Criteria for Sustainable Use of Biomass Including Biofuels," April, 2006; www.inforse.org/europe

F. Forest Stewardship Council, Principles and Criteria for Forest Stewardship, 1996; www.fsc.org

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