Submission to the
Standing Committee on General Government
Re: Bill 150 The Green Energy and Green Economy Act

Cherise Burda, Ontario Policy Director
Tim Weis, Director, Renewable Energy and Energy Efficiency
The Pembina Institute
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Overview
The Pembina Institute is a Canadian sustainable energy think tank. Our mission is to advance sustainable energy solutions through innovative research, education, consulting and advocacy.

We are a founding member of the Green Energy Act Alliance (GEAA), and are signatories to the GEAA's expert analysis and submission, prepared March 26, 2009. Therefore, we support all of the amendments proposed in the GEAA analysis, and take the opportunity in this submission to highlight some key amendments proposed by the GEAA, as well as some areas that are not directly addressed.

Please note also that the Pembina Institute's official submission includes our recent report: *Plugging Ontario into a Green Future: A Renewable is Doable Action Plan.* Executive Summaries of this report were made available to the Standing Committee on April 7 by Keith Stewart of WWF and on April 21 by Cherise Burda of the Pembina Institute The full report is available at: www.renewableisdoable.com

Overview
The Pembina Institute congratulates the Ontario government for demonstrating provincial and national leadership by introducing Bill 150. The mechanisms introduced in this Act are second to none in Canada and represent an approach to green energy procurement that will encourage uptake and benefits for Ontarians. The Green Energy and Green Economy Act is arguably the most progressive renewable energy policy in North America in the past 20 years, and Ontario has demonstrated significant continental leadership in tabling it. The precedents being set in Ontario are very important not only for Canada but for North America as a whole, as a growing number of American states have also tabled Feed-in-Tariff (FiT) legislation on the heels of Ontario's initial Standard Offer Program.

Given the importance of this legislation, not only for developing clean energy in Ontario, but for its potential to develop a new manufacturing base for the province and to foster the uptake of FiTs across the continent, it is important that every effort is made to maximize the benefits of this legislation, and in this spirit several recommendations are made below.

As stated above, The Pembina Institute is a signatory to the expert analysis and submission to the Standing Committee presented by the Green Energy Act Alliance. Rather than repeating all of these, our submission focuses on two key areas that are not directly addressed or require further emphasis.

1. Ensuring priority procurement and maximum growth of conservation and renewable energy

Currently, Bill 150 does not go far enough to ensure priority procurement for conservation and renewable energy or that their maximum potential will be realized. In order to achieve the Ontario government's stated goals of "boosting investment in renewable energy projects, creating a culture of conservation and increasing green jobs and economic growth to Ontario", the GEA must create a pathway for green energy to play the dominant role in the province's electricity supply mix. In order to realize full potential for green energy, including conservation, sufficient space needs to be made on the grid for green energy and any de facto caps are removed

The GEAA Expert Analysis' first proposed amendment addresses the need to ensure ongoing priority for conservation and renewables in planning regulation, procurement and operation. We support and stress the need for these amendments.

1.1. Prioritize green energy over less sustainable options

In particular, the GEAA submission recommends an amendment to section 6(1)(h) to read: *"ensure that the following objectives are pursued as priorities in the planning, development, procurement, and operation of energy services in Ontario…"* This should be understood as prioritizing green energy options *before* non-green options are pursued.

This necessitates another important change recommended in the GEAA submission – To change the proposed Electricity Act section (4.1)(a) to read: the procurement of electricity supply or capacity ***limited to*** supply and capacity derived from renewable sources or high efficiency combined heat and power". This ensures that the GEA and the new authority it provides to the Minister of Energy and Infrastructure isn't used to bypass the OEB process to directly procure large, centralized and non-green energy projects, such as nuclear or single cycle (SC) and combine cycle (CC) gas projects.

1.2. Ensure the full potential of conservation is pursued

As we point out in the GEAA analysis, Bill 150 fails to ensure the pursuit of all cost-effective conservation in the various fuel sectors.

OPA's own studies shows the achievable and cost-effective potential for 10,000 MW of savings in 2020 via CDM[1], yet only 6300MW by 2027 has been accounted for in the IPSP — the minimum required to meet the government's previous directive.[2] In addition, the OPA's Robustness Study, Case 3A and 3B, shows that by adding 50% of additional conservation resources up to 3200 MW of new supply could be eliminated.[3]

Finally, separate analyses of energy efficiency and fuel switching potential by ICF (2006)[4], Marbek (2006)[5], MKJA (2006)[6] and The Pembina Institute (2004)[7] show that with the right policies and an objective to achieve as much cost-effective CDM as possible, even higher potential savings could be achieved. The savings can also be achieved much faster than the OPA is proposing and would address both base load and peak demand reductions.

A recent report from the Vermont Energy Investment Corporation (VEIC) analyzes the broader market and sector growth potential for CDM in Ontario and concludes that with a relatively unaggressive approach, Ontario can achieve an additional 8511MW / 22 TWh of CDM (including small-scale on-site generation) savings by 2019 over what is currently planned by the OPA. This is approximately twice the CDM than the OPA has currently planned and 23% more than the OPA identified as potential.

The GEAA recommends a number of amendments to Bill 150 to stimulate and increase the contribution of CDM via planning, policies, procurement and operation. Additional recommendations for achieving the full potential of CDM are presented by Roger Peters in the Canadian Renewable Energy Alliance's (CanREA) submission and the presentation by Marion Fraser. We support all of these as well.

It is clear from the above research that there is significant potential for CDM in the province. The main barrier to achieving this potential is the OPA's interpretation of 6,300MW target as a cap on CDM.

On September 18, 2008, George Smitherman, Ontario Minister of Energy and Infrastructure, directed Ontario Power Authority ("OPA") to review a modest portion of its proposed Integrated Power System Plan ("IPSP"), focusing on renewable energy and conservation. The review is intended to ensure that the IPSP maximizes Ontario's potential to provide clean, green, renewable power while creating new "green-collar" jobs and industries in the province.[8] Unfortunately the new directive does not aim to *increase* the targets for CDM but simply "accelerat[ing] the achievement of ***stated conservation targets***, including a review of the deployment and utilization of smart meters".

Therefore, the Green Energy Act must set the conditions for achieving full potential for CDM in Ontario by:

a) Removing the cap by interpreting the supply mix directive targets as minimums and not maximums,
b) Requiring the OPA to not only accelerate conservation but increase minimum targets to reflect the full potential in Ontario.[9]

1.3 Ensure the full potential of renewable energy is pursued

According to the IPSP, new renewable energy will only comprise 8 percent of Ontario's Electricity Supply Mix by 2027. The GEA needs to be more than simply a vehicle to procure and implement the current targets for green energy, which are far lower than the true potential.

The GEAA submission makes a number of recommended amendments to Bill 150 to ensure that the highest level of renewable energy can be procured; these include requiring that FiTs are the primary procurement mechanism for renewable energy and facilitating community-based development.

However, unless caps are removed from renewable energy, the full potential cannot be realized. The Ontario government's *Supply Mix Directive* has set *minimum* targets for renewable energy.[10] The OPA's plan clearly interprets the directives as *maximums* and places limits on renewable energy.[11] Germany set a target for 12.5% renewable electricity by 2010, and upon accomplishment of this goal 3 years early subsequently revised its targets upwards[12]. Following this example, it is important for the Ontario government to continually raise the targets once the goals have been reached.

The Minister of Energy and Infrastructure's most recent directive asks the OPA to review "the amount and diversity of renewable energy sources in the supply mix".

Therefore, the Green Energy Act must set the conditions for achieving full potential for renewable energy in Ontario by:

c) Removing the cap via interpreting the supply mix directive targets as minimums and not maximum caps
d) Increasing these minimum targets to reflect the full potential in Ontario for renewable energy. The GEAA proposes: 10,000 MW of new installed renewable energy by 2015, over and above 2003 levels and 25,000 MW of new installed renewable energy by 2025 over and above 2003 levels.

Please see our report: *Plugging Ontario into a Green Future* for a detailed analysis of renewable energy potential in Ontario.

1.4. Foster maximum deployment of Combined Heat and Power

Many submissions, including those by the GEAA, WWF-Canada and Ontario Clean Air Alliance make the case for maximizing the potential for combined heat and power, primarily through a FiT for CHP. The Pembina Institute supports these recommendations.

1.5. Creating space on the grid for green energy

All of the above priority recommendations for the GEA are aimed at achieving maximum potential procurement and deployment of CDM, renewable energy and combined heat and power. However, unless space on the electricity supply and transmission networks are made for green energy, these green energy sources will remain marginal, along with the potential for investment and environmental and social benefits of green energy.

The key problem lies in the OPA and the IPSP's interpretation of the supply mix directive's maximum of 14,000 MW of nuclear capacity as a target resulting in a plan for Ontario's grid — transmission and distribution — designed around these minimal roles for CDM, renewable power, and combined heat and power, and a maximum role for nuclear power. Analysis of grid development in other countries confirms any power

system based on nuclear power is so highly centralized that it effectively precludes \distributed energy sources from ever becoming major power sources.[13]

Thus, the OPA's plan effectively imposes a "nuclear ceiling" over the renewable energy industry in Ontario, sending a message to the market that opportunities for renewable and conservation industries in Ontario are limited.

The Independent Electricity System Operator has already noted that the OPA's current plan already has a problem of too much "baseload" production at times of low demand.[14] This creates a further disincentive for comprehensive conservation because the existing plan may already require nuclear plants to be turned off at various points during the year, which is difficult and risky to do quickly. The only way to lift the cap on conservation is to make room for its expansion as a baseload energy source by reducing baseload sources (i.e. nuclear) elsewhere.

Ultimately, the province must choose between green energy (conservation/ renewables/ CHP) and nuclear. Given the cost overruns, performance problems, refurbishment delays and consequent GHG emission increases, and life extension risks associated with nuclear power, the greener choice is the better choice.

Statistics released by Ontario's Independent Electricity System Operator (IESO) show that the demand for electricity in Ontario declined by 2.3 % in 2008 and will decline by 1.3% in 2009 and 2.6% in 2010. This drop is a product of:[15]

- Ongoing, long-term structural changes in the economy away from energy-intensive activities combined with the 'natural conservation' that occurs as older equipment is replaced with more efficient equipment as the capital stock turns over.
- The success of conservation programs.
- The economic downturn (although demand had already dropped significantly before the financial crisis hit).

Over-reliance on nuclear energy will lead to a problem of too much baseload generation, which creates system stability problems and crowds out renewable energy.[16] The latest reports from the IESO make it clear that we have to either scale back the number of nuclear reactors on-line in the future or actually pay companies to take the power that they produce at times of low demand. The IESO predicts ongoing decreases in electricity demand due to planned conservation initiatives even after the economy picks up, further exacerbating the surplus baseload problem.

With cost of nuclear plants going up, the demand for electricity going down and the rapid growth in renewable energy internationally, the Ontario government has good reason to implement green alternatives to nuclear energy.

The IESO states: The Pickering decision could affect Ontario's electricity system capacity by the retirement of 2,000 MW of capacity from Pickering B combined with the possible re-assessment of sustaining the 1,000 MW of operable capacity from Pickering A. This

capacity and associated energy might be replaced with stepped-up implementation [external link] of conservation, more installation of renewables, more intensive operation of existing gas generation, the introduction of new build gas generation, or higher volumes of imports."[17]

Therefore, the Green Energy Act should not only prioritize green energy procurement but set the conditions to increase the contribution of conservation, renewable energy and combined heat and power to the electricity supply mix with respective decrease of contributions of nuclear power and CC and SC gas generation. (Coal is assumed to be phased out by 2014.

The Pembina Institute and its partner organizations have made our case before the Ontario Energy Board on how a mix of conservation, green power and recycling waste energy into electricity that would avoid this problem of surplus baseload generation. Minister Smitherman should allow these hearings to be completed prior to making any commitments to buy new nuclear reactors, which could squeeze out or preclude effective investment in green energy.

2. Ensuring maximum and equitable participation of and benefits to all Ontario communities

The Pembina Institute recommends that the Government of Ontario consider a special set-aside or mechanism for its remote communities to take advantage of green power. Canada has over 200 remote communities, mines and other industrial sites, many of which are located in Northern Ontario. The majority of these sites rely on diesel power for their electricity generation, which is not only very expensive, but also comes with health risks of local air pollution and ground contamination.

Many remote communities have been looking to renewable power to not only reduce costs, but to also improve local sustainability. Unfortunately, with the exception of British Columba, there are no support mechanisms in Canada either at a Federal, Provincial or Territorial level to encourage the development of renewable energy in remote communities. Bill 150 does not address green energy for remote communities.

Remote community electrification offers another opportunity not only to reduce Ontario's reliance on non-renewable energy sources, but also to develop new technologies that can be manufactured in, and exported from Ontario. There are already several manufacturers of equipment based in Ontario that is appropriate for remote community renewable electrification. Supporting the deployment of renewable energy systems in Ontario's remote communities offers the opportunity for such companies to develop their technologies domestically to prepare for a rapidly developing international market. Alaska's governor, Sarah Palin has recently made significant commitments to clean community power projects, including a 5-year $300 million dollar clean energy fund[18].

Bill 150 offers an important opportunity for Ontario to assist its remote communities in developing clean energy sources. It is the view of the Pembina Institute that production

incentives (such as feed-in-tariffs) are the best policy tool to ensure the implementation as well as the on-going successful operations of such projects. Bill 150 currently offers no opportunity for remote communities to participate in green power procurement.

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1 SeeThe Pembina Institute. Plugging Ontario into a Green Future: A Renewable is Doable Action Plan. November, 2008

2 IPSP OPA OEB Filing Exhibit D4.1 page 15

3 IPSP OPA OEB Filing Exhibit G1.1 page 14

4 ICF Consulting Toronto. Consulting for the Ontario Power Authority, Electricity Demand in Ontario – Assessing the Conservation and Demand Management (CDM) Potential. 2005.

5 Marbek Resource Consultants and Altech Environmental Consulting. Potential for Fuel Switching to Reduce Ontario's Peak Electricity Demand. September 2006

6 MK Jaccard and Associates & Marbek Resource Consultants Ltd. Demand Side Management Potential in Canada: Energy Efficiency Study. Prepared for Canadian Gas Association. May 2006

7 The Pembina Institute, Canadian Environmental Law Association. Power for the Future: Towards a Sustainable Electricity System for Ontario. 2004.

8 George Smitherman (Ontario Minister of Energy and Infrastructure), Amendment to the Supply Mix Directive, Issued September 17, 2008. Available online at: http://www.powerauthority.on.ca/Storage/83/7831_Ministry_Directive_PSP_Sept_18_08.pdf

9The GEAA proposes 6,000MW of conservation by 2015 with an additional 2.5% annual reduction in energy resource needs from conservation from 2015 onwards GEAA. A Green Energy Act for Ontario: Executive Summary. December, 2008

10 The Ontario government's Supply Mix Directive dated June 13, 2006, sets out the following priorities and goals in order of importance:

1. Use conservation and demand management (CDM) to reduce peak demand by1,350 MW by 2010 and by another 3,600 MW by 2025.
2. Increase renewable generation to increase supply by 2,700 MW by 2010 and to a total of 15,700 MW by 2025.
3. Plan for nuclear power to meet baseload requirements but limit installed in-service capacity to 14,000 MW.
4. Use gas-fired generation as needed to meet peaking requirements and for applications that allow high efficiency use of this fuel.
5. Phase out coal-fired generation and replace it with cleaner resources at the earliest practical time.
6. Strengthen the transmission system to facilitate the development, use and integration of renewable resources.

11 In contrast, the Ontario Energy Board guidelines setting out how the directive should be interpreted require greater quantities of conservation and renewable energy to be included in the plan if they are "shown to be prudent and cost-effective against other resources." http://www.oeb.gov.on.ca/documents/cases/EB-2006-0207/IPSP_report_final_20061227.pdf , pp 5 -6

12 German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. New Thinking - New Energy, Roadmap for Energy Politics 2020. January 2009. Available online at: http://www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/roadmap_energiepolitik_bf.pdf

13 New Nuclear Power: Implications for a sustainable energy system . Catherine Mitchell and Bridget Woodman, University of Warwick UK, Published by Green Alliance, March 2006

14 Independent Electricity System Operator, "IESO Operability Review of OPA's Integrated Power System Plan", IESO Report 0411 2.0 (2008).

15 “IESO 2008 Electricity Figures Show Record Levels of Hydroelectric Power”. *Canadian News Wire*, January 12, 2009. Available online at: http://www.newswire.ca/en/releases/archive/January2009/12/c6755.html

16 Green Resource Portfolios . Development, Integration, and Evaluation by Paul Chernick, Jonathan Wallach and Richard Mazzin. Resource Insight Inc. Filed August 1 2008
(see http://pubs.pembina.org/reports/oeb-green-resource-portfolios.pdf).

17 Independent Electricity System Operator, “IESO Operability Review of OPA’s Integrated Power System Plan”, IESO Report 0411 2.0 (2008).

18 Stefan Milkowski, “Alaska Is a Frontier for Green Power”. *New York Times*, February 17, 2009. Availablie online at : http://www.nytimes.com/2009/02/18/business/18alaska.html?_r=1&hp