

Submission to the Standing Committee on Social Policy Regarding Bill 100: *The Electricity Restructuring Act, 2004*

The Pembina Institute

August 2004

1. Introduction

The Pembina Institute for Appropriate Development (PIAD) is a national, independent not-for profit environmental research and education organization, with offices in Ottawa, Toronto, Edmonton, Calgary, Vancouver and Drayton Valley, Alberta.

The Institute has taken a strong interest in issues related the sustainability of Ontario's electricity system. In May 2004, the Institute published, in partnership with the Canadian Environmental Law Association, *Power for the Future: Towards a Sustainable Electricity System for Ontario*. Copies of a summary of the key findings from *Power for the Future* are attached to this brief. The full report can be downloaded from www.pembina.org

Power for the future explored the possible contributions of energy efficiency measures and low-impact renewable electricity sources to meeting Ontario's electricity needs over the next fifteen years. The study concluded that it would be possible to meet the province's future electricity needs while phasing out both coal-fired and nuclear power.

The study findings were based the results of computer modeling using the Canadian Integrated Modeling System (CIMS), developed at Simon Fraser University. The computer model estimated that a 40% reduction in electricity consumption against 'business as usual' projections could be achieved by 2020, using technologies that are currently commercially available, and without significant lifestyle changes. A total investment of \$18 billion would be needed to achieve these savings, but energy consumers would recover 96% of their investment through reduced energy consumption.

The achievement of these savings would require significant policy actions by the provincial government. These would include minimum efficiency standards and incentives to adopt energy efficient appliances, promoting increased commercial and industrial co-generation and fuel switching from electricity to natural gas for water and space heating.

The *Power for the Future* also compared the cost of meeting Ontario's electricity demands through efficiency investments with the construction of new nuclear power facilities. The study found that providing, through the construction of new nuclear generating facilities, the same amount of power that could be saved through an \$18 billion investment in efficiency measures, would cost in the range of \$32 billion

The study was based on the premise that the best way to ensure the economic and environmental sustainability of Ontario's electricity system is to first maximize the technologically and economically feasible contributions from improving energy efficiency, followed by the maximization of the contributions from low-impact renewable energy sources, such as wind and hydro, and then finally addressing any remaining grid demand with the non-renewable energy sources with the best proven environmental, economic and reliability performance. This framework also informs our comments on Bill 100.

2. General Comments Regarding Bill 100

The Pembina Institute recognizes the need for major change in the structure of Ontario's electricity system. The experiments with competition have led to unstable and unpredictable energy prices for consumers, while the planned phase-out of the province's coal-fired generating facilities, and expectation that the province's nuclear generating facilities will reach the end of their normal lives by 2018, highlight the need for long-term planning in Ontario's electricity system.

The Institute also welcomes the government's focus on practical and feasible solutions, rather than the ideological approaches to market and system design that have been seen over the past few years.

Finally, the Institute welcomes the government's decision to take the unusual step of asking the Standing Committee to consider the bill before second reading. This approach allows for a broader discussion of the bill's conceptual approach, before the bill's overall direction is accepted by the Legislature.

However, the Institute has a number of serious concerns with the bill as it is currently structured. Bill 100, as presented, would establish an Ontario Power Authority (OPA) to forecast Ontario's future electricity needs, develop an integrated power system plan, and enter into contracts for electricity supply or the delivery of energy demand management programs as needed. A Conservation Bureau would be created within the OPA to promote demand management. The bill would also rename the Independent Market Operator (IMO) the Independent Electricity System Operator (IESO) and narrow the mandate of the Ontario Energy Board (OEB) significantly with respect to the electricity sector.

The Institute's concerns are focused in two areas:

- How the bill defines the goals of Ontario's electricity system; and
- The level and nature of the policy direction given to the key institutional actors in Ontario's electricity system, particularly the proposed OPA, the IESO and the OEB.

3. Electricity System Goals and Objectives

A reliable and adequate electricity supply is essential to the economic well-being of Ontario residents. However, the way in which the system that supplies that electricity is designed and operates has major implications for the health, safety, and security of Ontario residents, the quality of the province's environment, and Ontario's long-term economic health.

The public health implications of the province's electricity supply mix, for example, have been recognized through the commitments of all three political parties in last fall's election to phase out the province's coal fired electricity plants. These facilities have been identified by the North American Commission for Environmental Cooperation,¹ Ontario Medical Association,² Toronto Public Health³ and others as leading sources of emissions smog and acid rain precursors, greenhouse gases and heavy metals.

The environmental implications of the electricity sector are also reflected in the fact that Canada and Ontario are parties to a number of major international environmental agreements containing commitments directly related to Ontario's electricity sector. These agreements include the 1991 Canada-US Air Quality Accord (Acid Rain), 2000 Ozone Annex to that agreement (Smog Precursors), and the Boundary Waters Treaty (management of boundary waters (e.g. the Great Lakes and connecting channels)).

In this context, the Pembina Institute is surprised that Bill 100 does not identify the protection of public health and the environment as fundamental goals of the design and operation of Ontario's electricity system. Nor does the bill make reference to the protection of public safety and security in its overall purposes.

The implication appears to be that considerations such as the protection of public health, safety and security, and the environment, will be added-on, principally as a result of the need to obtain environmental and safety approvals of individual system components as they are proposed, after an overall system design, emphasizing Bill 100's stated goals of adequacy, reliability, acceptable price and quality of service, as been finalized by the OPA and approved by the OEB.

Past experience in Ontario and elsewhere suggests that such an approach is unlikely to be either efficient or effective. Indeed, it resembles the system design model followed by the former Ontario Hydro throughout much of its existence. That model was a major factor in the environmental and economic challenges now facing the province's electricity sector.

At the same time, experience in the private sector and other jurisdictions has demonstrated that it is much more efficient and effective to ensure that environmental health, safety and security factors are incorporated into system design from the outset, rather than as post facto considerations after a basic system design has been determined,

¹ See, for example, Taking Stock 2001: North American Pollutant Releases and Transfers (Montreal: Commission for Environmental Cooperation, 2004).

² OMA Ground Level Ozone Position Paper (Toronto: Ontario Medical Association, 1998).

³ Air Pollution Burden of Illness in Toronto: 2004 Summary (Toronto: Toronto Public Health, 2004).

as appears to be the case within Bill 100.⁴ The Pembina Institute's own consulting work with public and private sector energy firms in western Canada has reinforced our view regarding the economic and environmental benefits of taking a more holistic approach from the outset.

Similarly, although the bill references the interests of consumers with respect to electricity price (s.1(f)), the repayment of Ontario Hydro's debt (s.1(h)), and the maintenance of a financially viable electricity system (s.1(i)), the bill does not identify as one of its goals ensuring the long-term economic sustainability, on a long-term least full cost basis, of Ontario's electricity system.

The design of Ontario's electricity system also needs to consider social sustainability issues. Further increases in electricity prices are almost certain regardless of the design of the province's future electricity system. These price increases will present particular challenges to electricity consumers on low or fixed incomes, as such consumers often lack the capital resources needed to respond to price increases through investments in energy efficiency. Ensuring access to adequate electricity supply and to conservation programs by low-income consumers and other hard to reach groups should be an explicit purpose in the legislation.

Recommendation 1

The purposes section of Bill 100 should define its overall goals of with respect to Ontario's electricity system to include:

- *An adequate and reliable electricity supply,*
- *ensuring the long-term economic sustainability, on a long-term least full cost basis, of Ontario's electricity system.*
- *protection of the environment, and public health, safety and security.*
- *ensuring the access of low-income consumers to electricity supply and conservation programs*

The goals identified in recommendation 1 should also be incorporated into the mandates of the agencies created by or affected by the Bill.

Recommendations

2. *The objects and character of the IESO (Part II, s.4) should include reference to the operation of the IESO controlled grid and administered markets to ensure the protection of the environment and public health, safety and security.*
3. *The objects of the OPA (Part II.1) should reflect the overall goals laid out in section 1, including:*
25.2 (c)"engaging the activities in support of the goal of ensuring adequate, reliable, environmentally and economically sustainable, safe, and secure electricity supply and resources"

⁴ See, for example, P.Hawkin, The Ecology of Commerce (Harpersbusiness Publishers, 1994).

4. *The OEB's mandate should also reflect the overall public good-related system goals are proposing, including environmental and economic sustainability, and the protection of public health, safety, and security.*

4. The roles of energy efficiency, low-impact renewable energy sources and non-renewable energy sources in meeting Ontario's electricity requirements.

Bill 100 references the goals of encouraging electricity conservation and the efficient use of electricity, and the promotion of the use of cleaner energy sources, including alternative and renewable energy sources (s.1). A Conservation Bureau would also be created within the proposed OPA to lead planning and coordination of measures for electricity conservation and load management (s.25.11).

However, the bill does not direct the OPA to follow the widely accepted hierarchy of maximizing energy efficiency opportunities first, followed by optimizing the contributions from low impact renewable energy sources, and finally employing least-cost and impact non-renewable sources of supply to meet remaining grid demand. In fact, Bill 100 proposes to remove the references to the promotion of energy conservation, energy efficiency, load management and the use of cleaner energy sources that are currently present in the mandate of the Ontario Energy Board (*Ontario Energy Board Act* s.1(6)).

This approach is likely to lead to the marginalization of energy conservation and low-impact renewable energy sources in the electricity system plans developed by the OPA and approved by the OEB, particularly in light of the very risk adverse emphasis on the adequacy, reliability and quality of electricity service in the overall mandates proposed for both agencies.

The maximization of energy efficiency before considering the construction of new sources of supply offers a series of advantages that make it the option of first choice in the design of Ontario's future electricity system. The provincial government,⁵ the province's Electricity Conservation and Supply Task Force,⁶ and others have recognized these advantages, which include the following:

- The ongoing reductions in energy costs for energy consumers. This is particularly important in the context of energy prices that are likely to rise in the future. Investments in energy efficiency can pay for themselves in savings to energy consumers over time.
- The avoided capital costs associated with the construction of new sources of supply and electricity.

⁵ The Hon. D. Duncan, Minister of Energy, Notes for Remarks to the Canadian Energy Efficiency Alliance, February 17, 2004.

⁶ See Electricity Conservation and Supply Task Force, *Tough Choices: Final Report to the Minister* (Toronto: Ministry of Energy, January 2004).

- The avoided environmental and health impacts that would otherwise flow from the construction and operation of new sources of supply of electricity. The life-cycle environmental and health impacts of fuel production for non-renewable energy sources, such as fossil fuels and nuclear would be avoided as well.
- The avoided security risks associated with conventional sources of supply, particularly nuclear energy.
- The avoided political risks associated with dependency on fuel sources or energy imports from other jurisdictions.
- The permanent and reliable character of the savings achieved through increased energy efficiency.
- The reduced losses of energy through transmission and distribution systems.
- The improved reliability of the electricity system by lightening the load at the end of the supply/delivery chain, thereby enhancing the reliability of each link in the entire chain.⁷
- The employment benefits flowing from investments in energy efficiency initiatives as opposed to new generation.⁸

Low impact renewable energy sources, such as wind, run of the river hydro, biomass and solar sources offer a number of advantages that make them the best option for meeting grid demand once the opportunities to improve energy efficiency have been maximized. These advantages include.

- Low environmental and health externalities relative to conventional sources. Wind energy, for example, generates no emissions other than those associated with the manufacturing of generating equipment.⁹
- Low operating costs relative to conventional supply, given that the underlying energy sources, such as wind, run-of-river water, and municipal and agricultural wastes are available at little or no cost.
- Non-reliance on the import of fuels or electricity from outside of Ontario. Therefore, they provide a higher security of supply than conventional supply options. Renewable energy sources are also unaffected by the shifts in the costs of conventional fuels, such as coal and natural gas, that may occur due to international demand or market conditions that are beyond the control of the Government of Ontario.
- Low security risks relative to some types of conventional supply, particularly nuclear energy.

⁷ See R. H. Cowart et. al., “Efficient Reliability: The Critical Role of Demand-Side Resources in Power Systems and Markets” (Montpelier, VT: The Regulatory Assistance Project, June 2001).

⁸ Recent research by the Pembina Institute suggests that on average, investments in energy efficiency create over 35 person years of employment per \$1 million invested. This is approximately four times the employment created by the same amount of investment in energy supply. See B. Campbell, L. Dufay, and R. Macintosh, “Comparative Analysis Employment from Air Emission Reduction Measures” (Drayton Valley: The Pembina Institute, January 1997).

⁹ Large-scale hydro can have major environmental and social impacts. However, development of additional large-scale hydro projects in Ontario seems unlikely, given that most economic large-scale sites have already been developed.

- The distribution of supply among a larger number of technologically and geographically diversified sources reduces the risks and impacts associated with the failure of particular technologies, or upsets and breakdowns at individual large, centralized generating facilities.

Non renewable energy sources may be required to meet grid demand once the economically and technically feasible opportunities for energy conservation, load management and low-impact renewable energy have been maximized. These options should be assessed on the basis of on the basis of cost, reliability, safety, security, and lowest environmental impact.

Recommendations

5. *The hierarchy of 1) maximizing efficiency and conservation, 2) maximizing the potential contributions from renewable energy sources, 3) meeting remaining demand through the least cost and lowest impact non-renewable supply, should be expressed in section 1 of Bill 100.*
6. *The OPA integrated power system plan (s.25.28) should be required to reflect the hierarchy of efficiency, low-impact renewables, and lowest impact and cost non-renewable electricity sources.*
7. *Responsibility for the development of forecasts of future electricity needs should be the responsibility of the proposed Conservation Bureau. This approach would ensure that the overall projections of future electricity needs incorporate assessments and protections of the potential and performance of energy efficiency programs. The Bureau should also be able to undertake efficiency programs financed through a public benefits charge, or enter into business partnerships with municipal and non-governmental entities to deliver demand reductions.*
8. *The current provisions of the OEB Act regarding the promotion of energy conservation, energy efficiency, load management and the use of cleaner energy sources should be re-incorporated into the OEB's mandate in Bill 100.*

5. The Role of the Ontario Energy Board

Given the oversight and approval role proposed for the OEB through Bill 100, consideration needs to be given to the possibility of an intervener funding mechanism for public interest interveners before the OEB, to ensure that the board is presented with adequate independent evidence and analysis to review the proposals for system design made by the OPA. Work of the required level of detail and rigour cannot be effectively carried out on the basis the hope of post-hearing cost awards.

6. Conclusions

The Pembina Institute's overall concern respect to Bill 100 relates to the need for more specific policy direction to be given to the institutional actors affected by the legislation. The current draft places an overwhelming emphasis on the adequacy, reliability and price of supply. This approach, in our view, indicates to the system actors that they should be highly risk adverse, and focus on the development of new conventional sources of supply, without regard for environmental protection, public health, safety, and security, and long-term economic sustainability, and without maximizing the potential contributions from energy efficiency/conservation, load management, and renewable energy sources before doing so.

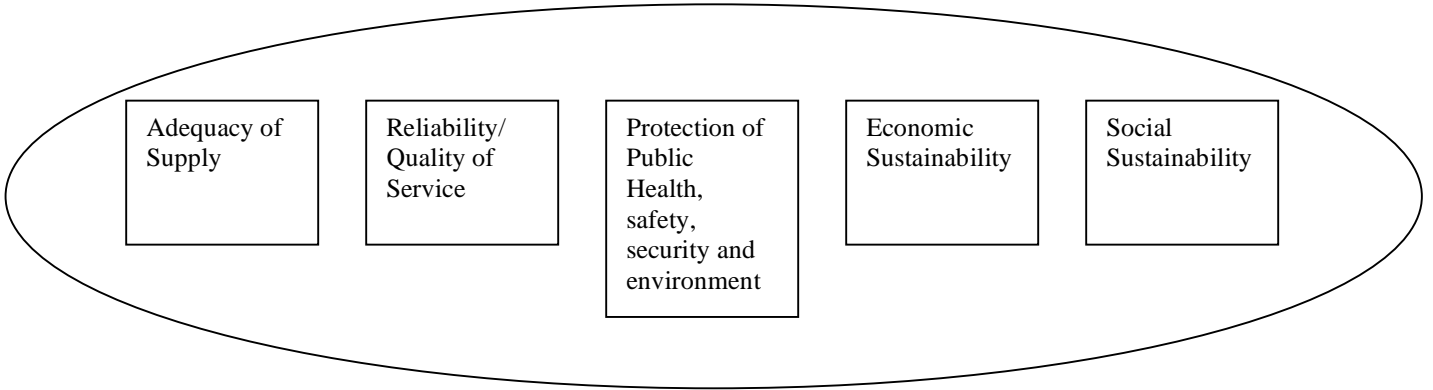
Such an outcome would be inconsistent with the government's stated policy goals with respect to the electricity sector. In order to avoid such outcomes, the public good considerations relating to the electricity sector (environment, public health, safety, and security, and long-term economic sustainability) need to be built into system design from the outset, particularly in light of Canada and Ontario's existing international commitments related to the electricity sector. Similarly, the hierarchy of maximizing efficiency and conservation; optimizing the contributions from low-impact renewable electricity sources, and then pursuing the least cost and impact non-renewable supply, should be embedded within the legislation.

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Proposed Ontario Electricity System Concept

System Goals



Approaches to Meeting System Goals

