

Bill 150 – The Green Energy Act

Comments submitted by Ron Tolmie, Kanata

CO2 reductions In 2004 the per capital production of CO2 in Canada amounted to 20.0 tonnes, an increase from 14.3 tonnes a decade earlier (US Dept. of Energy data). In that year the US per capita production amounted to 20.4 tonnes but that was only slightly higher than the value of 19.5 tonnes in 1994, suggesting that by now Canada will have surpassed the US as the world's worst offender amongst the major nations.

In comparison France generated 6.2 tonnes in 2004, Sweden 5.6 tonnes and Switzerland 5.5 tonnes. The UK and Germany produced 9.8 tonnes. All of those countries achieved stable or declining rates during the previous decade.

The Canadian government had made a commitment under the Kyoto agreement to reduce our production to 12 tonnes per person by 2012, with the intent to achieve substantially greater reductions after that. We now face the need to make a really drastic reduction, amounting to about a factor of four. This week Environment Canada released the CO2 figures for 2007, showing that the production now stands at 22.9 tonnes per person, a level that can only be described as disgraceful, and for which every Canadian politician should feel ashamed.

Power generation Bill 150 deals primarily with the potential to make changes in the sub sector that deals with the generation of electrical power, but that sub sector accounts for only 4% of the CO2 production in Ontario. The body of the Bill deals primarily with power generation and most of the specific recommendations also deal with that very small part of the problem. The remaining 96% of the CO2 generation is either ignored altogether or is dealt with by vague “motherhood” statements that are not likely to lead to material changes in our CO2 production.

Peak demands One of the consequences of the Ontario government's preoccupation with electricity is that it commonly uses megawatts as a measure of energy, instead of using the appropriate units (petajoules or kWh). Power values are certainly important in electricity because supply and demand have to be exactly matched at all times, but fossil fuels store their energy chemically so they are capable of delivering energy when it is needed, and they can provide it at whatever rate (power) is appropriate. For this reason fossil fuels are used for Ontario's peaking plants to handle the extra loads in the winter, the summer peak caused by air conditioning, and the large daily demand variations. This ability to deliver energy when it is

needed is also essential for the energy we use to heat our homes, power our cars, and operate our factories.

Natural sources of energy like the wind and the sun have no capacity to store energy so they are not useful for peaking plants and they are difficult to use for baseload applications as well. Some natural energy sources (like heat) can be efficiently stored so even though they may not generate any electricity at all they can handle many of the peak demand situations and they can free up the hydro resource so it can be used to cope with the supply fluctuations from sources like the wind or sun. Thus our success in using renewable energy will be primarily determined by our ability to replace fossil fuels for the peak demand periods.

Heating About a quarter of Canada's total energy consumption is used for the mundane task of heating and cooling our homes and other buildings, and for domestic hot water. That application could be quickly, completely and inexpensively converted from its present reliance on fossil fuels to the use of renewable energy. Bill 150 imposes a major obstruction to doing that by strongly encouraging the retention of fossil fuels, achieving comparatively trivial CO2 reductions via conservation by using the building code, grants and legislative measures. Where we could and should be eliminating this source of CO2 altogether Bill 150 proposes that we should instead support and subsidize the existing fossil fuel regime.

Atmospheric Energy (AE) Systems My personal contribution to the CO2 solution has been to develop a system that extracts heat from the summer air and stores it in the ground for use for home heating in the winter. Nearly every home and building in Ontario could use such a system, which is the least expensive way to heat a building on a long term basis (The energy is free but there is a modest capital cost.) Such an approach could eliminate the need to use natural gas, heating oil and electricity for heating, thus achieving a huge reduction in CO2 production.

By using this form of stored energy to meet both the winter and summer energy demand peaks AE systems flatten the demand peaks, decreasing the demand for electricity during those periods, which in turn makes it much easier to employ power alternatives like wind turbines. Together, such sources could readily eliminate Ontario's need for fossil fuel peaking plants, and they might eventually eliminate the need for nuclear power as well. See the November, 2008 issue of Sustainability-Journal.ca for details.

Who benefits? Some of the benefits of renewable sources like AE systems are important to the homeowner

and some are more important to the government, representing society as a whole. For example, air conditioning can be accomplished in an AE system by reversing the heat pump, which can be done very inexpensively, but that contributes to the summer power demand peak. An alternative is to use the cold in the ground directly, which is more expensive to accomplish but greatly reduces the electric power demand. This is only one of several such choices that call for governments to consider how they could maximize the public benefit, but for that to happen Bill 150 needs to set up a process for evaluating such options.

Nuclear power The almost universal premise behind the support for the use of nuclear power is that we have no other choice – the alternatives are inadequate or too expensive. That premise is not true at all. There is essentially an unlimited amount of energy available from the summer air, and from the sun and wind, and from deep geothermal sources. Once people realize that nuclear power is not actually essential there will be an increased interest in using renewable energy for large scale baseload applications. Bill 150 should anticipate this development instead of assuming that nuclear power will be with us forever.

Transportation Both the transportation and the industrial sectors offer opportunities that are much larger than the potential for CO2 reductions in power generation. For example, a switch to plug-in hybrid cars could be accomplished within a couple of decades, and that would both reduce the CO2 from gasoline and flatten the power load. Since the cars would be plugged in at night there would be a large reduction in the diurnal power fluctuations (especially if solar power is collected during the day). Flattening the seasonal and daily fluctuations is the key to eliminating the need for employing fossil-fuelled peaking generators.

Jobs If we build 3 million AE systems for Ontario's buildings that is going to create a very large number of jobs that are spread around every community in the Province. It will also create a great deal of wealth because we will be using a native source of energy instead of importing it. If Ontario were to task itself to become the center for building plug-in hybrid cars instead of spending billions on companies that have consistently resisted such changes then we would soon create many more jobs.

Bill 150 will increase CO2 By neglecting the three sectors of the Ontario economy that are presently producing most of the CO2 Bill 150 will undermine the efforts to make real changes. For example, the support for conservation via changes in building regulations

supports the retention of fossil fuels in a sector that needs to switch from oil, natural gas and electricity to renewable energy. With the former the reductions would be minuscule compared to the 20% of the overall total for the latter. The argument that “we need to save energy” is silly in the buildings sector. The air contains as much energy as we will ever be able to use for heating purposes.

The savings argument is not even valid for the proposal that we need to encourage the development of wind power via feed-in tariffs. Wind turbines contribute to the baseload sector, not the peaking power. Every new turbine will require an increase in the peaking capacity to handle its fluctuations, plus a further increase to make up for the loss in peak demand capacity. Wind turbines will make a large and positive contribution in Ontario only after we have first eliminated the need for the peaking plants.

Recommendations The existing planning and regulatory agencies (like the OPA and OEB) are so narrowly focused on the economics of specific energy sources (electricity and natural gas) that they are not capable of dealing with the need to remodel all of Ontario's energy regime. We need to quickly reduce CO2 generation by about a factor of four and that will require shifting the priority from costs to the environment, but Ontario lacks both a plan and a process for making such a sweeping change. No one is minding the store.

Adopting alternatives like feed in tariffs shifts some of the decision making power away from the OPA and OEB but we also need to address the remaining 96% of the CO2 generation problem, and we need to have a process for choosing trade-offs between economic and environmental concerns that can be publicly and periodically reviewed, not just set in stone via legislation like Bill 150.

As it stands, Bill 150 fails to set any target for switching to green energy, in either quantity or time, and it fails to establish any process for achieving that target.

The Bill should not proceed until both of those deficiencies are corrected. Any legislation that purports to be a “green energy act” must show how it sets up a process for achieving that transformation or else it will be just another obstruction to the real reforms that are needed.