



Environmental Health Strategies Inc. (EHS) provides scientific, technical and economic advice to government and private sector clients to assist decision-making in the area of protection of human health and the environment.

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GHG emissions reduction targets – wishful thinking or reality

Canada is moving rapidly toward regulation of Greenhouse Gas (GHG) emissions. A year ago the federal government announced its Regulatory Framework for Air Emissions (2007), http://www.ecoaction.gc.ca/news-nouvelles/20070426-1-eng.cfm. Since then, a number of provinces have adopted targets for reduction of GHGs. The provincial targets have been generally expressed in terms of percent reduction from 1990 levels, in keeping with the original Kyoto targets adopted by the Chretien government, EM. August 2007 and January 2008. Table 1 summarizes the targets adopted by Canada's federal and provincial governments. While these targets are important political and environmental goals, the real work will be in developing implementation plans and in actual implementation.

Table 1. Canada's GHG reduction targets (note 2)

Table with 4 columns: Regulator, Reduction target, year, Reduction target, %, Base year. Rows include Canada, British Columbia, New Brunswick, Nova Scotia, Ontario, and Saskatchewan.

Note 1. First reading of the Greenhouse Gas Reduction Targets Act. Note 2. Alberta, Manitoba, Newfoundland & Labrador, PEI and Quebec have not announced reduction targets.

A highly interesting implementation scenario to achieve similar reduction targets was recently published by Electric Power Research Institute (EPRI) in EM April 2008 issue. The author of the article, Revis James, shows two scenarios. An EIA (Energy Information Administration) base case (www.eia.doe.gov/oiaf/archive/aeo07/index.html) and Full Portfolio scenario based on an aggressive adoption of technically feasible technologies such as:

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end-use energy efficiency, renewable energy, advanced coal power plants, coal with CO₂ capture and storage; Advanced Light Water Nuclear Reactors and life extension for existing nuclear reactors, plug-in hybrid electric vehicles and distributed energy resources (see the original article for detailed description of these technologies). The results show that the Full Portfolio scenario can reduce US CO₂ emissions by about 45% in 2030! There is no single technology that helps to achieve majority of the reduction but rather it takes a combination of all of the above technologies to reach the target.

It's instructive to relate this analysis to Canada's inventory of GHGs. A year ago, Canada published its 2005 Greenhouse Gas Inventory Report, http://www.ec.gc.ca/pdb/ghg/inventory_report/2005_report/toc_eng.cfm. Since 1990, Canada's GHG emissions increased by about 25%. A 20% reduction from 2006 (which will have very similar GHG emissions to 2005) will be extremely challenging. Equally challenging will be provincial targets of 15-30% reduction from 1990 levels.

While Canada's energy mix is more environmentally friendly than the energy mix in USA (i.e. less fossil fuel and more hydro), the long term trends have been in wrong direction. For example, by 2005, hydropower's share of the generation mix had fallen from 63% to 60%, while fossil fuels' share had risen from 22% to 25%, worsening the average GHG intensity of production. The end result was that from 1990 to 2005, electricity generation rose 28% while GHG emissions increased 35%, about 1.25 times the generation increase. Overall, there appears to be little evidence of initiatives in Canada that would be needed to achieve the emission targets set by the federal and provincial governments.

On the positive side, the GHG emissions associated with coal-fired electricity generation have begun to decrease since peaking between 2000 and 2002. Also, although having minimal effect in the pre-2005 period, non-hydro renewable energy sources are predicted to have an impact on emission reductions post-2005.

In the next issue of EHS newsletter, I will explore how Canada's favourable energy mix can be used to competitively position Canada's products vis-à-vis imports using carbon footprint analysis.

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