

drive systems, and furnaces. Fuels (energy) switching from electricity to natural gas and fuel oil for building appliances and heating systems is estimated to reduce emissions by 890 million tons per year at a cost savings of \$62 (U.S.) per ton. However, fuel switching from coal to natural gas or oil for electricity generation is expected to have a net cost of \$30-70 (U.S.) per ton of carbon dioxide not emitted. The American study also showed that fuel switching from coal to other non-carbon dioxide emitting technologies, such as nuclear, solar or wind, for electricity generation would reduce emissions by up to 1 billion tons per year, but would have an additional annual cost of \$30 billion.<sup>77</sup> In Canada in 1991 the energy mix for electricity generation was nuclear 16%, fossil fuels 22% (coal 16.7%) and hydro-power 62%.<sup>78</sup>

Similarly, it is expected that fuel switching at Canada's large thermal-electric plants would reduce the emission of greenhouse gases but at a net cost. However, the opportunity does exist in Canada to produce a larger proportion of our electricity by cleaner means at reduced cost. Unlike electric utilities in the United States, Canadian electric monopolies are not obligated by law to purchase electricity from non-utility generators. In her written presentation to the Committee, Louise Comeau, Climate Change Campaigner, Sierra Club, called for grid access for independent power producers.<sup>79</sup> The guarantee of grid access would give additional encouragement to municipalities and entrepreneurs to tap a number of energy sources for the generation of electricity; for example, natural gas from sewage-treatment plants and landfill sites, industrial waste process heat, and renewable sources such as biomass, wind and solar energy.

#### **Recommendation No. 17**

**In recognition of the electrical grid system as an asset of national importance, and as a means to facilitate the reduction of Canadian greenhouse gas emissions, the Committee recommends that the Government of Canada work with the provincial and territorial governments to improve grid access and fair market value for all electricity generated by non-utility generators from reclaimed and renewable energy sources.**

Many of the initiatives described by Deborah Stine to improve energy efficiency in the building, industrial and commercial sectors have already been initiated in Canada with a high degree of success. Canada has been, and continues to be, a world leader in energy efficiency building design and standards. Canadian R-2000 technical standards offer significant energy savings, with a relatively small consequential increase in building costs.<sup>80, 81</sup>

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<sup>77</sup> Panel on Policy Implications of Greenhouse Warming, *Policy Implications of Greenhouse Warming - Mitigation, Adaptation, and the Science Base*, National Academy Press, Washington, D.C., 1992, Chapter 6, p. 48-64.

<sup>78</sup> Energy, Mines and Resources Canada, *Electric Power in Canada 1991*, Ottawa, 1992, p. 38-45.

<sup>79</sup> Louise Comeau, *Mitigative Action: The Economic Considerations of Implementing the Climate Change Convention*, Brief presented to the House of Commons Standing Committee on Environment, appended to the *Minutes of Proceedings and Evidence of the Standing Committee on Environment*, Issue No. 48A, 30 November 1992, p. 9.

<sup>80</sup> L.C. Myers, *Energy Efficiency: Future Improvement*, Background Paper 310E, Research Branch, Library of Parliament, Ottawa, September 1992.

<sup>81</sup> Jack Cole, Manager of the R2000 New Home Program at Energy, Mines and Resources Canada, advises that in 1992 just over 1% of new single family, semi-detached and row house units in Canada were built to R2000 standards. The extra cost involved in meeting these standards is between two and five percent of the total construction cost.