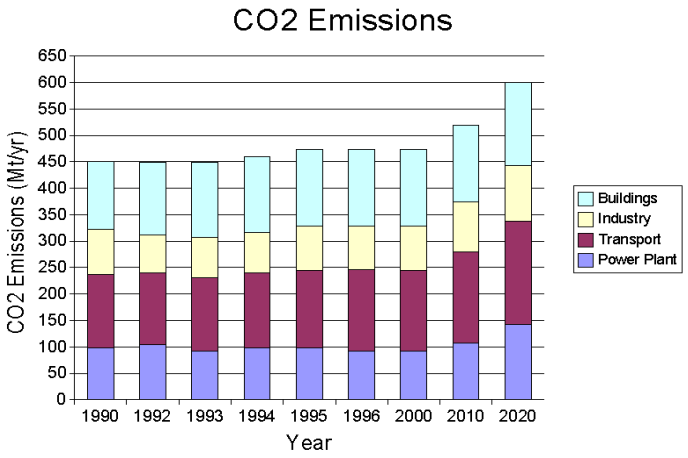
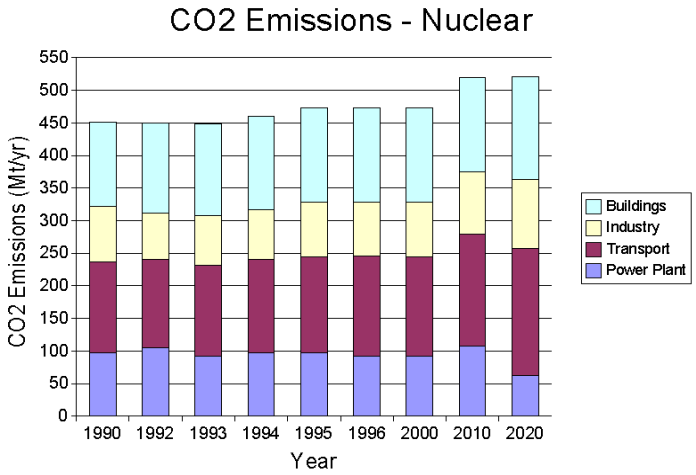
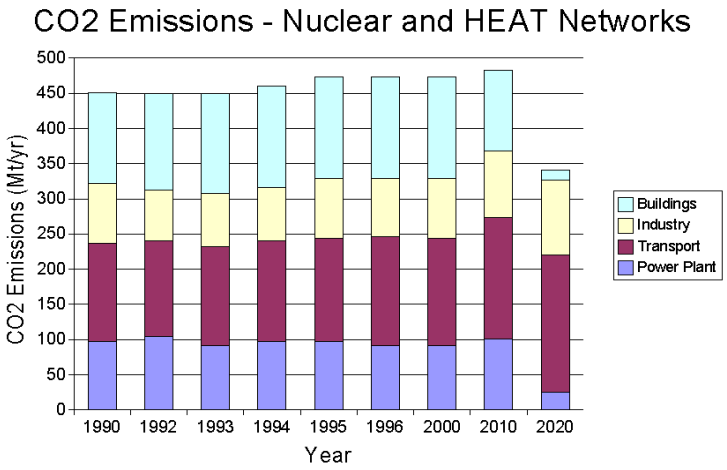
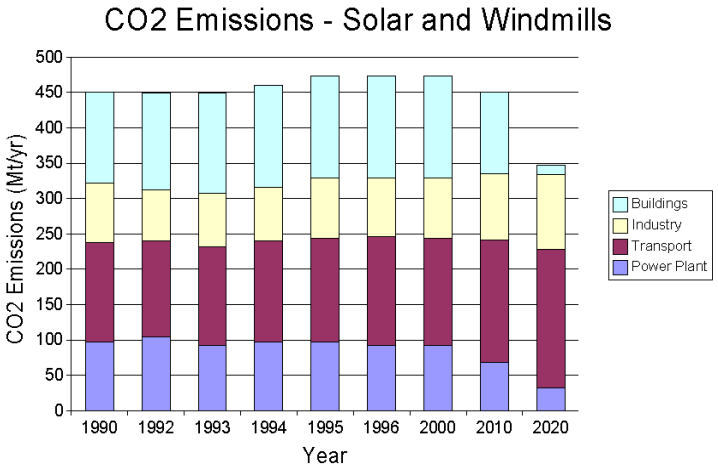
Comparing Nuclear and Renewable Energy Options

The top left graph shows the anticipated growth of carbon dioxide emissions as projected by the Energy Council of Canada (www.energy.ca). The other three graphs are "What if?" projections based on the adoption of (1) a policy of building nuclear reactors for producing electric power, (2) a policy of employing HEAT networks (urban heat storage) as well as nuclear reactors, and (3) a policy of using renewable sources of energy rather than nuclear or coal sources.









Assumptions used:

Nuclear – The first new reactor would start production in 2012 and additional reactors would add generating capacity at the rate of 7% of the 2020 power plant demand per year.

Nuclear and HEAT networks – As above for the nuclear power generation, and in addition the HEAT networks would reduce the thermal energy demand for buildings by 7% per year, beginning in 2008, and would also reduce the power plant demand by 2% per year by reducing air conditioning loads.

Solar and Windmills – Instead of utilizing nuclear power, windmills would be employed together with two forms of seasonal solar energy (HEAT networks and solar power generators) plus natural gas to maintain the power output as the storage temperature decreases during the winter. The HEAT networks calculations are as above. There would be no solar power generation in 2010 because the high temperature seasonal storage technology has not yet been developed, but it would be in place by 2020.

Note that both of the last two options would meet Canada's Kyoto commitments.