

Canadian skills in the area of ocean energy are thus based primarily on our expertise in the area of hydraulics and of very large engineering projects.

2.8 Wind Energy

Wind energy system applications are many and varied, and several technologies appear promising for Canada. The main opportunities in the short and medium term appear to be in (i) remote power systems for unmanned instruments and weather stations; (ii) remote communities, isolated from the grid, to back up diesel generation (c.f. small hydro); and (iii) large wind turbines for grid-connected generation. There is considerable activity in the latter area, including R&D and demonstration projects (both stand-alone and grid-coupled). A major wind resource assessment program is being carried out by the federal Atmospheric Environment Service.

The federal government is spending \$26 million in energy R&D funds over the next five years for wind technology development by supporting, for example, special small applications (1-3 KW) in telecommunications; grid coupled field trials in collaboration with utilities (50 KW); development of a wind/diesel hybrid system; a 230 KW vertical axis turbine integrated with a small diesel fired grid in the Magdalen Island of Québec (first operational in 1977); and a large grid coupled Aeolus 4 MW vertical axis prototype wind turbine to be built after location on the St. Lawrence River in Québec, scheduled to be operational in 1983. The latter two projects are funded by the National Research Council and Hydro-Québec in cooperation with the aerospace industry.

Canada is particularly involved in the development of vertical-axis wind turbines. Many such turbines are now in field trials and are also on test in other countries. In addition, other federal/provincial demonstrations are underway across the country, and an Atlantic Wind Test Site is being established in Prince Edward Island.

In the area of incentives, wind generators are exempt from the 12% federal sales tax, and under the oil substitution program demonstrations of wind energy (among other renewable applications) will be funded in remote northern communities. In addition, studies by government are continuing on the potential for wind, industrial development strategy, and remote area deployment.

In developing areas, wind turbines have other important applications such as water pumping. There is little direct Canadian experience of developing country