

2.4 Conventional hydro-electricity

Canada is one of the foremost countries in the world in hydro development: hydro-electricity supplies about 24%* of present total primary energy and constitutes more than 60% of total electrical production. The provinces of British Columbia, Manitoba and Québec rely almost entirely on hydro power, while hydro supplies more than half of the electricity in Ontario and the Atlantic provinces. Only the two prairie provinces of Alberta and Saskatchewan rely primarily on other sources of electricity (mainly coal). Electrical consumption is expected to rise by some 20% over the next ten years as oil substitution programs take effect. A number of conventional hydro sites remain unexploited in British Columbia, Manitoba, Quebec and Newfoundland and could contribute to this growth. The Government of Canada is encouraging such developments and, through the formation of the Lower Churchill Development Corporation is actively participating with the Government of Newfoundland in the future development of some 2300 MW of capacity in Labrador.

Generation facilities in Canada range in size up to the 5000 MW Churchill Falls project in Labrador, and the 10,200 MW James Bay development in Quebec. Many projects are in isolated locations, distant from population centres, so that Canadian expertise has developed in remote control techniques and sophisticated load forecasting, grid integration, and transmission technology, as well as in the development and manufacture of distribution systems designed to serve a wide variety of customers. Canadian firms and utilities (mainly provincially owned) have participated in hydro power development schemes in more than 30 countries, supplying generation and control equipment of their own design and manufacture, providing power planning and market analysis assistance, hydrological surveys and site feasibility studies, and offering support and training services for local personnel. Canada (Manitoba and Quebec) is recognised as a leader in transmission line technology, particularly very high voltage transmission.

2.5 Small Scale Hydro

There are relatively few smaller hydro sites (under 10 MW) operating in Canada today, and still fewer in the mini and micro hydro ranges. under 1 MW. However, rising fuel prices have spawned a number of studies of the power potential of small rivers in Canada, and preliminary estimates suggest that the potential may be above 67,000 MW installed capacity. The most promising locations are in remote, off-grid areas where small hydro can substitute for

* based on 10,000 Btu/kwh primary equivalent.