13.10.5 Quebec

Over 99% of Quebec's electrical energy supply is generated hydraulically. Total electrical consumption in the province grew 5% compared with 1975. A 9.7% decline in industrial consumption was offset by increases of 22.8% in domestic and 11.0% in commercial categories. Consumption exceeded generation by some 16.5 terawatt hours, the deficiency being supplied by the Churchill Falls station in Labrador. Supply in excess of provincial demand was exported to New Brunswick, Ontario and the United States and in total was equivalent to about 48.6% of the 32.1 TWh-supply imported from Churchill Falls.

Electricity's share of the energy market in Quebec is expected to increase because of its availability and certainty of supply compared with that of oil, as well as the multiple use aspect of electric power. It is forecast that by 1990 there will be significant substitution of electricity for other forms in home heating.

To conserve non-renewable energy sources, the Hydro-Québec research institute has undertaken several projects related to development of alternative sources of generation (wind, solar, thermal, nuclear fusion) and new storage forms for energy.

Hydro-Québec's expansion program is designed to meet an average annual growth rate of 7.8% over the next 15 years. A deficit in peak-load capacity is forecast for 1979 and will be alleviated, in part, through purchase of 200 megawatts of peak-load capacity from the New Brunswick Power Commission. An additional 240 MW of peaking capacity will be provided by installation in 1979 of a four-unit combustion turbine station (La Citière) near the Hertel substation.

In 1976, the remaining five (197.2 MW) hydraulic units at Hydro-Québec's Manicouagan 3 station were placed in service, raising total capacity to 1 183.2 MW. The only addition to thermal capacity was a 53.3-MW combustion turbine unit at Cadillac in the Abitibi system. Because the Abitibi system will remain isolated from the integrated system until 1979, installation of two similar units was proposed for 1977.

Construction of the Manicouagan–Outardes hydro complex continued with completion scheduled for 1978 of three 151.3-MW units at the Outardes II station. Outardes II will be Hydro-Québec's third development on the Outardes River and will replace the present 50-MW development at Chute-aux-Outardes. Construction continued on the 685-MW single unit CANDU nuclear station, Gentilly II, near Trois-Rivières. This plant is expected to go into service in 1979.

Initial power supplies from the James Bay generation complex should become available in 1980. The La Grande River is being developed in the first phase at four sites with total maximum capacity of 10 190 MW. The first station, LG-2, will contain 16 units, each of 333 MW for a total ultimate capacity of 5 328 MW; six units are scheduled for service in 1980, six more units in 1981 and the remaining four in 1982. First power from LG-3 is expected in 1982 and from LG-1 in 1983. The LG-3 station will consist of 10 units of 192 MW each, for a total capacity of 1 920 MW. The LG-1 station will be a 910-MW development in 10 units. At the LG-4 site, seven 254-MW units are planned for service in 1984 with the eighth and final unit to follow in 1985 for a total capacity of 2 032 MW.

In conjunction with Ontario Hydro, the possibility of improving the present minimal interconnection between the Quebec and Ontario systems is being studied. Hydro-Québec has been authorized by the NEB to export power and off-peak energy to the Power Authority of the State of New York during the summer months (April to October) under a 13-year licence. This arrangement allows Quebec and PASNY to take advantage of the seasonal diversity of their respective peak demands. The Hydro-Québec system will be connected to the PASNY system by a 765-kV transmission line extending from the Châteauguay substation near Beauharnois to the Marcy substation, near Utica, NY. It was scheduled for service by mid-1978.

13.10.6 Ontario

Total electrical energy made available for use in the province in 1976 was 7.6% above 1975. Energy demand by sector showed increases in residential (5.6%), commercial (4.1%), and industrial (6.0%) categories. Ontario Hydro reported a December peak load