

uranium has the added attraction of being available in commercial quantities in Canada.

At Douglas Point on the shore of Lake Huron, the country's first full-scale nuclear power station went into operation in 1966. The station, built with the co-operation of Ontario Hydro, houses a 208 MW CANDU reactor. Experience gained in the design and operation of the NPD and Douglas Point reactors encouraged and contributed to the development of larger units. Construction of the 2,160-MW Pickering nuclear station near Toronto is now complete; two of the station's four units came on line in 1971 and units 3 and 4 produced their first electricity, ahead of schedule, in 1972 and 1973. All four units have performed exceptionally well with capacity factors in 1973 ranging from 70% to 93%, for an average of 83.4%. Over 18% of Ontario Hydro's total primary energy requirements in 1973 were provided by the Pickering nuclear station. Work on the Bruce nuclear station for Ontario Hydro is proceeding on schedule with four 750-MW units planned for installation from 1975 to 1978. In addition, a duplicate of the Pickering station, at the same site, has been committed and Hydro-Québec has started construction of a 600-MW CANDU station at Gentilly.

A further step in the development of the CANDU reactor is the use of boiling light water instead of pressurized heavy water as the coolant. The Gentilly nuclear power station near Trois-Rivières utilizes boiling light water in its CANDU reactor. This station came into service in 1971 with 250 MW of nuclear-electric capacity.

13.7.4 Generating capability and load requirements

Power generating capability is the measurement of the available generating resources of all hydro and thermal facilities at the time of the one-hour firm peak load for each reporting company and is not equal to the capacity of such generating facilities. For example, a hydro plant may have a capacity of 100 MW but, if at the time of peak load the water available for generation is only 80% of the plant capacity requirements, then its capability is 80 MW.

Total generating capability has grown at a rapid rate especially in the past few decades. The annual rate of increase was 7.1% in the period 1962-72 and 8.3% in the period 1968-72. In comparison, the forecast rate of growth for the years 1973-77 is 7.6%; thermal generating capability is expected to grow at an average rate of 12.5% a year in the forecast period compared with 11.8% in the period 1962-72, and hydro-electric capability is expected to increase at 4.8% a year compared with 5.4% in the 1962-72 period. This rate of growth in hydro generating capability in the forecast period is attributable to the large power projects under construction in relatively remote areas that will be completed within the next few years.

Among the provinces, Ontario has the largest generating capability, followed by Quebec, British Columbia and Newfoundland. Quebec has the largest hydro-electric generating capability, followed by Ontario and British Columbia, but Ontario has the largest thermal capability, followed by Alberta and British Columbia. The first full-scale nuclear power station went into commercial operation in Ontario in early 1967.

The largest absolute growth in generating capability for the forecast years 1973-77 is indicated for Ontario at 8,794 MW, followed by Newfoundland at 3,170 MW, British Columbia at 2,776 MW and Quebec at 1,737 MW. Ontario will meet most of its increased generating capability by adding 6,473 MW in fossil-fuelled capability and 2,023 MW nuclear. Newfoundland will add 2,966 MW hydro and 204 MW thermal, and British Columbia 2,477 MW hydro and 299 MW thermal.

Firm power peak load is the measure of the maximum average net kilowatt demand of one-hour duration from all loads, including commercial, residential, farm and industrial consumers as well as the line losses. Such load demand increased at the rate of 7.4% a year from 1962 to 1972 and 6.5% a year from 1968 to 1972; peak load demand is forecast to increase at the average rate of 6.9% a year in the period 1973-77. As a result of the rapid increase in generating capability and the somewhat slower but steady increase in the peak loads, together with the slight reduction in deliveries of firm power to the United States, the indicated reserve on net capability in the 1961-71 period increased each year except 1961, 1963, 1964, 1966 and 1972. Increases are forecast for each year from 1973 to 1977, with the exception of 1974. The reserve ratio as a percentage of firm power peak load reached a high of 28.2% in 1960 and fell to 13.7% in 1968 but is expected to increase to 25.1% in 1977. Absolute figures are given in Table 13.12.