13.7.5 Utilization of electric energy

In 1972 Canada's generating facilities produced 240,213 GWh (gigawatt-hours = millions of kilowatt-hours) of electric energy, after allowing for the energy used in the power stations themselves. Of this total, 74.9% was produced in hydro-electric stations and the remainder in thermal stations. Electric power exported to the United States exceeded imports by 8,656 GWh during 1972, so that the total energy available in Canada amounted to 231,557 GWh.

As indicated in Table 13.13, total electric energy consumed in Canada during 1972, after deducting about 9% for losses, was divided among commercial users (15%), domestic and farm consumption (22%) and industrial loads (54%). The energy distribution for this latter group can be subdivided approximately as follows: one third to the mineral industry (including smelting and refining), one quarter to the pulp and paper industry, one tenth to chemical manufacturing and the remaining portion to all other industrial categories. The availability of electric energy, at reasonable cost, is an important element in Canada's industrial growth.

For a few industries the cost of electric power is a key element in economic competitiveness. For most industries, however, electric energy is but one of the many cost elements which influence the opportunities for expansion. The assurance of a reliable supply of electric energy, the availability of assured supplies to meet the needs of growing demand without delay, and attention to the many other factors influencing industrial development will normally be a more effective element in industrial growth than one which assumes that "low cost power" is an essential or sole ingredient for success.

Over the past two decades, the portion of the country's total electric energy consumed by industry has dropped appreciably (from 67% in 1950 to 54% in 1972) while consumption by other sectors has risen significantly. This is not to say that there has been an actual decline in industrial demand but rather that industrial expansion has been less energy-intensive and there has been a more rapid growth by the other users. Domestic and farm consumption has shown the highest increase, from 13% of the total in 1950 to 22% in 1972. Commercial consumption has also risen noticeably, from only 11% in 1950 to 15% in 1972. The growth among non-industrial customers results from a greater reliance by Canada's population on facilities powered by electricity. Tremendous quantities of electric energy are required, for example, to meet rapidly escalating demands for heating, cooling, lighting, transportation, elevators, electrical appliances and farm machinery. The shift of population from rural areas to cities and towns, where electrical demand is greatest, has also been a contributing factor to this growth.

Details of the provincial pattern of electric energy use can be seen in Table 13.14. Of total energy made available in Canada during 1972 more than two thirds was consumed in Ontario and Quebec with the remaining one third shared by all other regions. The share of total consumption by these other regions has, however, been rising (combined total of 26% in 1960 compared to 33% in 1972) while it has been declining in Quebec (40% in 1960 as against 33% in 1972) and has remained constant in Ontario at 34%. In all parts of Canada industrial users have been and still are the prime consumers. The actual portion of total energy consumed by industry in 1972, for instance, ranged from a high of 62% in British Columbia, which includes the energy used in both the Yukon Territory and Northwest Territories, to a low of 47% in the Prairie region. Domestic and farm consumption remains greatest in the Prairie Provinces and Ontario but for somewhat different reasons. In Ontario, where the majority of people are urban dwellers, it is the high demand from the large cities that accounts for the higher level, while in the Prairies it results from a substantial farming load combined with a normal level of domestic usage.

Part of Canada's growing need for electric power reflects a growth in population but in addition the consumption per capita increased in 1972 by 8.2% to 10,600 kWh per capita. Since 1960 consumption per capita in Canada has risen by more than 73.8%. The Atlantic Provinces experienced the largest increase, 185% to 7,400 kWh per capita, followed closely by the Prairie Provinces with 161% to 8,100 kWh. The lowest over the period was in Quebec with only a 47% increase to 12,600 kWh per capita but the level was already very high. British Columbia recorded the highest per capita consumption in 1972, 14,000 kWh. Table 13.15 sets out details of this per capita consumption by region.

Electric energy generated in Canada during 1972 was equivalent to 54.9% of the amount which in theory could be generated if the total installed capacity at the end of the year were