

Chapter 13

Energy

13.1 Energy supply and demand

Canada's energy needs are met by oil, natural gas, coal, uranium and electricity. In terms of primary energy consumption, the share of oil as an energy source is 44% while natural gas and coal account for 21% and 8%, respectively, with 7% of this total being used to produce electricity. About one third of total energy consumption is supplied in the form of electricity which, in turn, is produced from hydro, coal, oil, natural gas and nuclear energy sources. Although nuclear power accounts for little more than 1% of total supply, it will become increasingly important as a source of electric power. Hydro-electricity and the thermal generation of electricity from coal, while remaining significant, will decline in relative importance as nuclear power development increases and the use of natural gas and oil is gradually phased out. Notwithstanding these changes, oil and natural gas are still likely to account for over 60% of total primary energy consumption at the end of the century.

The role and relative importance of the several energy sources may also be viewed in terms of Canada's trade in energy commodities. As Table 13.1 illustrates, there was a marked change in the export-import balance in the 10-year period 1963-73, from a deficit of \$160.6 million in the value of energy in 1963, on a trade balance basis, to a surplus of \$1,095.8 million in 1973. In 1974 the first signs of a reversal of this trend became apparent as the decline in crude oil exports signalled that the energy trade surplus prevailing since 1969 would diminish rapidly within a few years.

Canada's primary energy demand increased at an average annual rate of 5.3% over the 15-year period 1960-74, while energy use per capita grew annually by 3.6%. The impact of higher energy prices and the increasing attention being given to energy conservation measures are expected to lower per capita growth to an annual average of about 3.2% during the remainder of this decade but the trends in energy supply and demand for each of the principal energy sources indicated in Tables 13.2 - 13.5 are expected to continue with little change.

Growth in oil usage and the related supply trends since 1963 are illustrated in Table 13.2. Production of crude oil and gas liquids almost tripled in the 10-year period to 1973; declines in production and exports became evident in 1974. The growth rate in domestic demand began to moderate toward the end of the year. The most notable trend in 1973-74 has been the decline in the export-import surplus from 370,000 to 193,000 barrels a day (b/d). This surplus is expected to disappear in 1975 or 1976.

The natural gas supply and demand situation is illustrated in Table 13.3. In the 10-year period to 1973, production of marketable pipeline gas and domestic demand almost tripled. In 1974 exports declined while domestic demand continued the growth rate of previous years. With no new export approvals given since 1970, and none planned, domestic demand growth will relate directly to the ability of the industry to increase supply from present producing areas pending the opening of new sources in frontier areas.

The coal supply and demand picture in Canada has changed considerably in recent years, as Table 13.4 shows. In the 10-year period to 1973, production more than doubled, but most of the increase occurred in the years 1970-73. Domestic demand grew throughout the period, reaching a peak in 1970. Despite a slight decline since that year there are indications of renewed growth in the near future. Imports increased steadily until 1970 and remained within a narrow range of the 1973 level followed by a decline in 1974 due to a tightening in US supply. The most pronounced change in the coal supply and demand balance was the export increase in the years 1970-73 which accompanied the production increase. Present trends point to a stabilization of imports, and demand increases in the domestic market. Exports are expected to grow but only to the extent that expanded production exceeds domestic needs.

Electric energy supply and demand (Table 13.5) shows a doubling in domestic demand over the period 1963-73 and indicates a continuation of this growth. Until 1968 exports remained close to the 1963 level and have since quadrupled while imports have not changed significantly since 1963. However, exports have remained less than 6% of total electrical generation. In 1963 thermal power based on coal, and to a lesser extent on oil and natural gas,