

# Chapter 13

## Energy

In an industrialized society the term energy encompasses not only the final form of energy as purchased by the ultimate customer in the form of electricity, heat, steam or fossil fuel but also the resources such as generating stations, refineries, pipelines and transmission systems which are required to process and transport the energy. Energy may be employed directly by the combustion of fossil fuels (coal, oil and natural gas) or it may be converted into a secondary form – electricity, using as a primary source the same fossil fuels. In addition, electrical energy is produced from hydraulic resources and in thermal generating stations based on the controlled fission of uranium.

Topography, geology, precipitation and geography all play a significant role in the availability of energy resources, and in all of these Canada is singularly well-endowed.

Canada's energy sources of water power are invariably converted to electrical energy and limited only by their accessibility and by the state of the technology required to transmit developed power to areas of demand. Unlike other forms of energy, electricity cannot be economically stored in large quantities. Consequently, it is produced only to meet a specific demand and this fact accounts for a substantial reserve of generating equipment which is designed to meet daily and seasonal variations in that demand.

The non-renewable fossil fuel resources of coal, oil and natural gas are more diverse in their uses. Coal is used not only to fuel steam plants to produce electricity, and as a direct-heating commodity at the industrial and domestic levels, but carbonized coking coal is essential in steel manufacturing. Oil is refined into a variety of products to operate engines of all types (including automobile, railway and aircraft), serves as a source of heat for furnaces and boilers (some of which is converted to electrical energy) and also forms the base of a vast petrochemical industry. The supply of oil is limited not only by the number, extent and dispersal of the sites where it may be found but also by the capacity and accessibility of the total delivery system, including the pipelines needed to move raw crude to the refineries or by the relative ease of access for imported crude, destined for refining, entering the delivery system at deep-water ports from tankers of ever-increasing size. Natural gas, some of which may be used as it is found, must also be gathered and distributed through pipelines to market areas or to treatment plants, as is the case with much of the gas in Canada, to be purified and to have valuable by-products such as the pentanes, butane and sulphur removed.

While natural gas is not well suited to mobile applications it is directly competitive with oil and coal in stationary fuel use. Its clean burning qualities and simplicity in burning and control make it especially attractive for domestic and industrial use.

It may seem difficult to separate the fossil fuel industry from the mining industry but once the products are extracted and enter the delivery system, which consists of the gathering, transmission, processing and marketing chain, they become a part of the energy supply base.

### 13.1 Energy policy

#### 13.1.1 Department of Energy, Mines and Resources

The Energy Development Sector of the Department is responsible for co-ordinating, promoting and recommending policies and programs with respect to energy on a national scale. Its mandate entails studies and appraisals of all aspects of energy resource development, production, transportation, processing and use. It is concerned with such matters as the quantity and quality of existing and projected resources of energy; the demand for energy in Canada and whether there are surplus resources available; regional development aspects associated with energy; energy transportation systems and the lead time for their development; policies to control foreign ownership of energy resources; the role of the federal government itself vis-à-vis energy resource development; the economic impact of the energy industries and the financial needs of those industries; the scale and type of energy research that should be carried on in Canada; the outlook for developing new energy resources to meet future needs; and the environmental problems posed by the development, transportation, processing and use of various energy forms. It also has a mandate for the management and conservation of non-renewable resources in certain land and off-shore areas under federal