

needs. In 1977, Northern Canada Power expects to have two 100-kilowatt packaged gas turbine units available for emergency use at smaller plants over its entire service area. A 2 500-kW gas turbine unit will also be available at larger plants. The addition of 2 500 kW of diesel capacity is scheduled for the Northwest Territories during 1977.

Transmission construction in 1976 included 16 kilometres of 115.0-kV line to connect the Snare Forks plant to the Snare system and completion of a portion of the 34.5-kilovolt loop at Yellowknife. In the Yukon Territory, a 34.5-kV line to Marsh Lake was completed and two reactors were added to the Whitehorse system.

13.12 Electric power statistics

Electric power statistics (Tables 13.17 and 13.18) are based on reports of all electric utilities and all industrial establishments generating energy, regardless of whether any is sold, and therefore show the total production and distribution of electric energy in Canada. Utilities are defined as companies, commissions, municipalities or individuals whose primary function is to sell most of the electric energy that they have either generated or bought. Industrial establishments are defined as companies or individuals generating electricity mainly for use in their own plants.

13.13 Financing energy self-reliance

An energy, mines and resources department analysis of the Canadian energy industry's ability to raise sufficient capital over the next 12 years indicates that some financing problems for specific energy projects are possible, but fears of widespread difficulties are groundless. A summary of the analysis *Financing energy self-reliance*, was released in March 1978. The study is a background paper to the 1976 report *Energy strategy for Canada; policies for self-reliance*.

Two analyses project energy expenditures of \$181 billion (in 1975 dollars) but in different energy supply mixes. The first, optimistic about frontier oil and gas supplies, is based on three frontier pipelines. The second projects only one frontier pipeline but places more reliance on synthetic crude oil from the oil sands and heavy oils of Western Canada and on electricity.

13.13.1 Petroleum financing

Total petroleum investments including oil sands and refinery expenditures will range from \$42 billion in the second analysis to \$49 billion in the first. Major petroleum firms will probably generate cash flows sufficient to finance all their projected investments and the strong cash flow position should enable them to borrow if necessary to enhance the economics of oil sands or heavy oil projects. Smaller firms, primarily Canadian, are not likely to enjoy the same availability of funds. Canadian content rules may give them opportunities, but funds may restrict their access to tar sands and frontier development.

The petroleum industry faces new challenges in unconventional oil, gas and frontier development. These may require innovative approaches to financing. The industry will likely step up its diversification into non-petroleum areas, especially if frontier or tertiary recovery are less profitable than hoped. The system of monitoring cash flows and capital expenditures already in place would provide adequate warning to government should this process impede national energy objectives.

13.13.2 Paying for pipelines

Capital investments for pipelines vary from \$17 billion in the second analysis to \$28 billion in the first, with most of the difference accounted for by construction of the two additional frontier pipelines. This industry can be studied in two distinct segments in future: first is the conventional pipeline industry in southern Canada; the second involves construction and operation of frontier pipelines. Financial conditions in each sector are so different that each should be considered separately.

Conventional pipelines. Capital expenditures in this sector will be confined to replacement and expansion of existing lines, with the possible addition of new lines such