

13.2.3 Natural gas processing and marketing

In contrast with petroleum refining, which involves the distillation of crude oil into a variety of fuels, natural gas processing involves the removal of impurities and by-products from the desired fuel. In addition, while petroleum refineries have, for economic reasons, been traditionally located close to their consuming markets and have tended to be large relative to these markets, natural gas processing plants are located near sources of supply and are designed in terms of the nature and size of the field sources. Thus, while in 1971 there were but 40 petroleum refineries in Canada, all located close to, or with easy access to the major markets, there were some 163 gas processing plants of which 146 were located in Alberta, seven in Saskatchewan, five in British Columbia, four in Ontario and one in the Northwest Territories.

Marketed or processed natural gas consists chiefly of methane with small amounts of other combustible hydrocarbons such as ethane and propane. Processing is necessary since raw natural gas may vary widely in composition. Thus, in addition to the usually predominant methane, there may be varying proportions of ethane, propane, butane and pentane plus. Another normal constituent is water vapour. While hydrogen sulphide is not present in all natural gas there is sufficient to provide an important source of sulphur as a by-product of natural gas processing. Other non-hydrocarbon gases which may be present, usually in small amounts, are carbon dioxide, nitrogen and helium.

Canadian natural gas processing capacity increased by 2,477 million cubic feet per day (MMcf/d) in 1971, the greatest annual increase in the history of the industry. This increase was mainly attributable to the completion of five large new plants and major expansion of three existing plants. Gas processing capacity was 13,000 MMcf/d by the end of the year. Processing capacity included 105,792 b/d for propane, 57,319 b/d for butane and 189,439 b/d for pentane plus. Total residue gas capacity was 10,956 MMcf/d, of which 10,406 MMcf/d was available for commercial consumption. Although a major expansion of processing capacity is under way in northern British Columbia, most gas processing capacity is concentrated in Alberta. At the end of 1971, Alberta accounted for more than 88% of the gas processing capacity, 99% of the liquid recovery capacity and 98% of the sulphur recovery capacity in Canada.

Sales of gas to Canadian consumers rose by 9.1% in 1971 to 2,743 MMcf/d. This compares with an 8.8% increase recorded the previous year. Imports of gas from the United States were at the rate of 39 MMcf/d (1.4% of consumption) while exports to the United States were at the rate of 2,495 MMcf/d, approximately equal to the rate of Canadian consumption. This export figure represented a 16.8% increase over the comparable figure for 1970.

Approximately two thirds of the increased Canadian consumption in 1971 was accounted for by industrial users whose demand rose 11% to 1,489 MMcf/d (approximately 54% of total gas sales in Canada). Demand for commercial consumption also rose by 11% to 567 MMcf/d, about 21% of total Canadian sales, while residential consumption increased by 4% to 687 MMcf/d (25% of Canadian sales).

About two thirds of the increase in Canadian sales in 1971 resulted from increased consumption in Ontario. Sales in that province rose 13.2% to 1,259 MMcf/d, nearly 46% of Canadian consumption. In Alberta, the second largest consuming province, the increase was 68% to 681 MMcf/d which was about 25% of all Canadian consumption in 1971.

13.2.4 Pipelines

Oil. There were 40 oil pipeline companies operating in Canada at the end of 1971. Principal statistics of movements of oil through these lines appear in Table 13.5. The prime components of the network of Canadian oil pipelines are the trunks of the Interprovincial Pipe Line Company and the Trans Mountain Pipe Line Company Ltd. which carry the bulk of domestic crude oil west of the Ottawa Valley. Refineries not relying on these systems are those located in oil-producing regions such as Calgary and Edmonton. The Interprovincial system carries crude oil eastward from Edmonton, receiving and discharging oil at various locations along its length. The Trans Mountain system operates similarly westward from Edmonton. Supplying these two trunk lines are pipeline systems funnelling oil from hundreds of fields into storage tanks at the pipeline terminals. Some of these feeder lines are impressive in themselves, not only in size of pipe and in length of route but in the volume of oil that they transport. Most of the feeder lines are, as might be expected, in Alberta, because of the predominance of that province in oil production.