

treal, with a lateral line to Buffalo. It has a capacity to pump 1,528 thousand barrels/day (243,000 m³/d) and for the last few years has been running at or near capacity. The storage capacity of this large pipeline system is about 16.25 million barrels (2.6 million m³).

The third pipeline system serving Canadian refineries is the Portland-Montreal Pipe Line. This 380 km pipeline has a design capacity of 550 thousand barrels/day (87,440 m³/d) but since mid-1976 has been operating very much below this level since Montreal began receiving roughly 300 thousand barrels/day (47,700 m³/d) from Western Canada through the Interprovincial extension.

A system of gas pipelines delivers Western Canadian gas to markets across the country from Vancouver to Quebec, but the Maritime Provinces and Vancouver Island have yet to be connected to this distribution system. The Westcoast Transmission Company serves British Columbia and western U.S. markets with gas from British Columbia, Alberta, the Yukon and Northwest Territories. This system delivered a total of 146 billion cubic feet (4.13 billion cubic metres) to British Columbia markets in 1979. In addition the system is licensed to export 869 million cubic feet per day (24.59 million cubic metres) to the United States.

In Alberta, the Alberta Gas Trunk Line operates a total of 10,836 kilometres of pipeline to collect gas from the many small wells scattered throughout the Province. This system feeds into the large-diameter system operated by TransCanada PipeLines Limited. TransCanada's pipeline extends from Alberta to Quebec with lateral lines stretching to the international border at Emerson, Manitoba; Sault Ste. Marie, Sarnia and Niagara Falls, Ontario; and Philipsburg, Quebec. The total system comprises 9,344 km of pipeline and transports an average of 85 million cubic metres of natural gas daily to almost two million Canadian customers.

Recently a license was granted to extend the TransCanada system beyond Montreal to Quebec City. In the National Energy Program the Federal Government announced its intention to ensure that the system is extended still further to serve the Maritime Provinces by 1983. The extension will be designed to allow for gas flow in either direction so that it can be delivered from the Maritimes should commercial discoveries be made off the East Coast.

In the future, new pipelines will be required to connect frontier and offshore gas to markets. To accommodate this need several proposals have been put before the National Energy Board. The "Dempster Lateral" would be used to transport Mackenzie Delta gas to Canadian markets in conjunction with the larger Alaska Highway Natural Gas Pipeline System, which has already been given Canadian approval to carry U.S. gas to American markets.

The Arctic Pilot Project seeks permission to deliver Arctic gas to southern markets in liquified form, and the Polar Gas Project is designed to bring both Mackenzie Delta and Arctic gas to southern markets via pipeline. The recent gas find off Sable Island could be connected to the mainland by pipeline, but no proposal for such a line has yet been made. This must await better definition of the gas reserves available.

Existing and proposed natural gas distribution systems are illustrated in Figure 3-18. Proposed distribution systems include those presently in the regulatory approval process.

4. REGIONAL CONSIDERATIONS

Not yet revealed in our discussion are the regional energy imbalances which exist in this country. Figure 3-19 brings this situation into focus, displaying the production of primary energy in Canada by region against the net energy demand within that region, for the year 1978. Saskatchewan, for example, had a primary energy production that year of 517 petajoules and a net energy demand of 306 petajoules. Even allowing for conversion losses, Saskatchewan produced from within its own borders substantially more energy than it required for its needs (although not necessarily in the appropriate form). Consequently Saskatchewan was a region of Canada with surplus energy which could be sold in other parts of the country and abroad.

Now consider all the regions of Canada represented in Figure 3-19. Only in the western part of the country—British Columbia, Alberta and Saskatchewan—does primary energy production exceed net energy demand. Alberta dominates as an energy supplier; Ontario and Quebec as energy consumers. Thus the prevailing flow of energy in Canada's system is from west to east. Based upon 1978 data, Alberta alone produced 71% of Canada's energy while consuming only 12%. In contrast, Ontario accounted for less than 4% of Canada's primary energy production but 37% of its net energy demand. It is not difficult to understand why the two Provinces have had opposing views on energy pricing. Neither is it hard to understand why different regions of the country view opportunities in the alternative energy field in such varying ways.

Moreover, this regional energy imbalance is greater than that indicated in the statistics of primary energy production alone — Western Canada contains two energy resources, in addition to conventional crude oil and natural gas, which are presently being exploited at only a fraction of their potential, namely coal and the oil sands. This region of Canada will continue to dominate the supply side of the domestic energy scene for many years to come.