1950-65, the average annual rate of installation of both hydro and thermal facilities was about 1,200,000 kw., with hydro contributing two kilowatts of new capacity for each kilowatt contributed by thermal. However, it is interesting to note that the average increase in thermal generating capacity over the period 1960-65 equalled the increase in hydro capacity and promises to surpass it in the not too distant future.

Table 1 shows the present status of installed generating capacity in hydro and thermal stations and the combined total for all stations in Canada as at Jan. 1, 1966.

1.—Installed Hydro- and Thermal-Electric Generating Capacity, by Province, as at Jan. 1, 1966

Province or Territory	Hydro	Thermal	Total
	kw.	kw.	kw.
Newfoundland	466,000	75,000	541,000
Prince Edward Island	—	58,000	58,000
Nova Scotia	143,000	489,000	632,000
New Brunswick	262,000	320,000	582,000
Quebec	10,339,000	447,000	10,786,000
Ontario	6,064,000	3,217,000	9,281,000
Manitoba	1,074,000	339,000	1,413,000
Saskatchewan	320,000	648,000	968,000
Alberta	445,000	959,000	1,404,000
British Columbia	2,616,000	1,020,000	3,636,000
Yukon Territory	28,000	4,000	32,000
Northwest Territories	35,000	26,000	61,000
Canada	**21,792,000**	**7,602,000**	**29,394,000**

Current Trends.—Although water power traditionally has been and still is the main source of electric energy in Canada, thermal sources some day will undoubtedly become the main supplier. The choice between development of a hydro-electric power site and construction of a thermal generating station must take into account a number of complex considerations, the most important of which are economic in nature. In the case of a hydro-electric project, the heavy capital costs involved in construction are offset by maintenance and operating costs considerably lower than those for a thermal plant. The long life of a hydro plant and the dependability and flexibility of operation in meeting varying loads are added advantages. Also important is the fact that water is a renewable resource. The thermal station, on the other hand, can be located close to the demand area, with a consequent saving in transmission costs. With the current trend to large steam stations, however, a certain amount of the flexibility of location of thermal stations is lost because large steam units require considerable quantities of water for cooling purposes, making it essential that such stations be sited close to an adequate water supply.

The marked trend to thermal development which became apparent in the 1950s can be explained in part by the fact that, by that time, in many parts of Canada most of the hydro-electric sites within economic transmission distance of load centres had been developed and planners had to turn to other sources of electric energy. More recently, however, advances in extra-high-voltage transmission techniques are providing a renewed impetus to the development of hydro power sites previously considered too remote.

Because of the relatively long starting-up time required by large thermal units, thermal stations tend to lack flexibility of operation and can be used most efficiently to meet continuous load conditions. Hydro stations, on the other hand, can put generating units on the line with minimum delay and hence are admirably suited to supply power to meet the peak loads which may occur several times each day. By combining the advantages of both hydro and thermal stations in integrated supply systems, power producers are now achieving much greater flexibility of operation.

Another trend in development designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls where water taken from the Niagara River above the Falls is carried by