

In the past ten years and particularly since 1945, growing demands for power have taxed the capacity of the Commission's resources. In December 1942 the dependable peak capacity of the Commission's resources was 1,766,500 kw. By 1945 the peak capacity was greater by 171,000 kw. than the 1942 capacity. The aggressive program of capital construction inaugurated in 1945, however, had resulted by the end of 1952 in a dependable peak capacity of 3,353,350 kw., or an increase of 1,415,850 kw. in seven years. Almost half of this increase represented the combined output of the Des Joachims, Chenaux and Otto Holden Generating Stations, all of which are located on the Ottawa River. Other notable hydro-electric developments have been Pine Portage Generating Station serving the lake-head area of the Northwestern Division, and George W. Rayner Generating Station in Ontario's northeastern mining area. The recent construction of two large fuel-electric stations at Toronto and Windsor, named the Richard L. Hearn and the J. Clark Keith Generating Stations respectively, marked a departure from the Commission's almost complete reliance on hydraulic resources. Even with the present greatly expanded power production, however, the Commission's resources are taxed to capacity to meet demands at time of annual peak load.

Major activity in the power development program at present is the construction of Sir Adam Beck-Niagara Generating Station No. 2 near Queenston, a project made possible by the Niagara Diversion Treaty of 1950. Water will be diverted from the Niagara River at a point about two miles above the Falls. It will be conveyed for about five miles by twin pressure tunnels that pass under the city of Niagara Falls and reach a maximum depth of over 300 feet below the surface of the ground. Returning to the surface at a point about $2\frac{1}{4}$ miles from the headworks, the water will flow through a canal to the forebay.

Twelve units at the station will have an installed capacity of 900,000 kw. In 1953, preliminary work necessary for the ultimate incorporation of a pumped-storage installation and associated generating capacity at this project will be undertaken. Such work, including widening of the canal, enlargement of the forebay, and the extension of certain parts of the headworks and substructure, can be carried out more economically and with less hazard before water is admitted to the new canal and forebay in 1954. The completed pumped-storage scheme will consist of a storage reservoir adjacent to the forebay, a reversible-pump plant, and four additional generating units at the main generating station. By this means, additional peak capacity can be made available within the limits of the Niagara Diversion Treaty of 1950, in stages as dictated by system requirements, and at a cost less than that of new fuel-electric generation.

Even the maximum development of resources at Niagara would not reduce the urgent necessity for the power that could be provided by the development of the International Rapids Section of the St. Lawrence River. This great power project was approved by the International Joint Commission in October 1952, and Ontario Hydro is prepared to proceed with it as soon as the Federal Power Commission at Washington grants a licence to an authority to carry out the power project on the United States side of the river.

In 1949 the Commission embarked on a complex program of frequency standardization in the Southern Ontario System, and this program was comprehensively treated in the 1951 Year Book, pp. 540-548. By the end of 1952, the area to be standardized had been reduced from about 12,000 to approximately 7,000 sq. miles. The magnitude and complexity of the operation have been increased, however, as the result of the growth in population and industrial production.