

As the Commission extended its power development activities and more and more municipalities joined the Hydro family, it became apparent that standardization of frequency, apart from other benefits, would be of very decided advantage in a grid-system whose development envisaged a common power pool with facilities for the interchange of power between widely separated districts.

During the period between 1926 and 1931, when the Chats Falls development on the Ottawa River was under construction and the Commission was entering into contracts with Quebec producers for additional power, frequency standardization was again debated. For similar reasons to those which had hitherto influenced the Commission, it was decided not to proceed with the project, and arrangements were made for the supply of the new power at 25 cycles. Later, in 1935, a frequency-changer station was erected at the 230,000 h.p. Chats Falls plant. Owned jointly by the Commission and the Ottawa Valley Power Company, the entire output of this plant was available to Ontario Hydro, and the frequency-changer facilities enabled the Commission to increase the supply of 60-cycle power to its Eastern Ontario Division.

During the protracted period of industrial depression which continued, with minor improvements in the situation, up to the beginning of the Second World War, the question of frequency standardization was necessarily relegated to the background. The falling-off in the demand for power affected Hydro contingency and other reserves and proved a deterrent to any consideration of the project. It was not until after the War that the Commission was in a position to entertain it seriously.

Advantages of Standardization.—After the War, the increasing demand for power and the many new uses to which it was being put both by industry and domestic consumers emphasized as never before the benefits that would accrue to consumers through frequency standardization. Modern electrical equipment for industrial plants and factories throughout North America, including fluorescent lighting, was normally manufactured for operation at 60-cycles. Turning out 25-cycle equipment was becoming more and more a special job. In many instances improvisations had to be carried out at factories using this lower frequency. Moreover, new household appliances and inventions in the electronic field were mostly adapted for 60-cycle power.

Further emphasizing the need for a change was the Commission's grid-system for which the physical structure had been created in 1944 through combining the former Georgian Bay, Eastern Ontario and Niagara systems, into one Southern Ontario System, while preserving their separate identities as "divisions" For several years there had been an interchange of power between the Niagara system and the Georgian Bay system through a frequency-changer station at Hanover, Ont. With the rapidly increasing demand for electricity, however, it was readily apparent that frequency-changer stations could only be a temporary expedient if consumers in southern Ontario, as populations increased and industry expanded, were to be assured of an adequate common power pool upon which they could draw at need. Standardization would also facilitate interchange of power with Quebec and adjacent areas of the United States.

Preparatory Planning, Organization and Construction.—All these considerations weighted the scales in favour of frequency standardization, but it was necessary to study with great care both the engineering problems and the cost factors involved. Nearly two years were devoted to investigation before active