

was delivered at a point on the interprovincial boundary 30 miles from the generating plant, and the cost of bringing it to the provincial border had to be borne by the power company. All of the Quebec power is delivered at high voltage and therefore the Quebec companies have to assume the additional cost of the transformation which is necessary to increase the voltage.

In 1916, we find the Commission purchasing an additional 25,000 H.P. from the Toronto Power Company at Niagara Falls, at varying prices from \$15.00 up.

In 1917, the Niagara System had a load of 155,000 H.P. and with the purchase of the Ontario Power Company, the total load reached 260,000 H.P., and the Commission's total investment approximated \$55,000,000. Notwithstanding the increase in capacity produced by the acquisition of the Ontario Power Company, the Commission was even then planning the great Queenston-Chippewa Development. Its first unit was not placed in service until January of 1922, and in the interim the Commission acquired a further plant, namely the Toronto Power Company at Niagara Falls. This increased the total supply of power available for the Niagara System to 355,000 H.P.

Consider the above facts. In 1917, before the Ontario Power Company was bought, the load was 155,000 H.P. At the same time that the purchase of the Ontario Power Company was carried out, plans were under way to build the Queenston-Chippewa plant at an ultimate cost of \$81,000,000., and with a capacity of 500,000 H.P. In these tremendous preparations for the future, and with not nearly so much in history to guide us, provision was being made for an increase of more than five times the existing load. In proportion, the Quebec purchases look small, and similarly in those days, there were those who said that we were wrong; that it was a mistake to be so optimistic and spend so large a sum of money. Normally one would have thought that this huge increase in the capacity of the Commission's generating plants would have been sufficient for many years to come, but the Queenston-Chippewa plant was not completed before it became evident that some new source of power had to be found. Its ultimate capacity was not achieved until 1926, and the load on the Niagara System in 1927 reached the then astounding total of 774,000 H.P.

As early as 1923, the Commission had appreciated the necessity of providing additional supplies of power for the Niagara System, notwithstanding the available capacity of over 500,000 H.P. at the Queenston-Chippewa plant. That a definite power shortage was in prospect even before this great plant was completed, is admitted, and I shall now consider the second point of my address, namely, what were the available sources of supply in 1924, 1925 and 1926.

Three courses presented themselves. One, to further develop or extend water power resources; two, to resort to steam; and three, purchase of power from Quebec.

Before any decision could be arrived at, one of the considerations, which of course, is an integral part of any program, is the matter of the time interval which will elapse between the commencement of arrangements for new supplies and the actual delivery of such supplies available for use.

The blocks of power necessary to meet the increasing demands of the Niagara System were of such magnitude as to require developments of major size, in order to supply them. Such developments as were made by the Commission, or by others from whom the Com-

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mission might contract to purchase power, required extensive preliminary engineering investigation, and the investigation of rights and titles. Moreover, in most instances, governmental leases or licenses must be obtained, and interprovincial negotiations or Federal approval are nearly always involved, which sometimes take years to accomplish.

In meeting the general power demands of its Niagara System, the Commission has in Ontario but three main potential hydro-electric sources, from which it may satisfactorily derive new power: *First*, further development could be obtained on the Niagara River if permission were granted for the use of additional water. The rejection by the United States Senate of a proposed amendment to the Boundary Waters Treaty precluded the possibility of further early development at Niagara. *Second*: On the interprovincial Ottawa River, Ontario had an equity of about 500,000 horsepower, but there are still problems there involving rights and the co-ordination of various interests calling for adjustment. Matters of this character have been cleared up in the case of Chats Falls, where the Commission, by entering into a contract to purchase the Quebec share of the power, was able to arrange for a joint development for delivery of 192,000 horsepower, of which the Commission itself generates 96,000 horsepower. Figures have been given you recently showing a remarkably low cost of power from this plant and that is indeed a fortunate thing for the people of this Province. However, it must be borne in mind that the estimates for this plant were prepared in 1929, a period of high cost. The agreements of necessity had to be prepared at the same time the construction was carried out, and the plant is operated by a joint board upon which are representatives of the Quebec Company and the Hydro, so that when the agreements were made, the risk always was that what took place when the Queenston plant was built, namely rising costs, might occur. If they did, the cost of power on the Ontario side would have been higher, and the Quebec Company on its part would have had to absorb the increase. *Third*: in the international portion of the St. Lawrence River, Ontario has an equity of about 1,000,000 horsepower. A treaty was under consideration for the development of this power in conjunction with navigation improvement of the River, but from reports in connection with the Treaty, it seemed certain that this international reach of the St. Lawrence could not be counted upon as an early source from which to meet power demands.

Thus, it is seen, the Commission was faced with the fact that from none of the three main potential sources of power in Ontario could sufficient power become actually available in time to meet the demands that would result from a continuation of the trends of growth that, over a long period of years, had been demonstrated to be characteristic of the Niagara System. The only remaining alternatives were the erection of steam plants or the purchase of hydro-electric power from Quebec.

The consideration of the above as sources of power involves the third point, namely, that if Ontario and Quebec sources were not utilized, there was the alternative of steam power. Sir Adam Beck and the former Commissioners dealt with this subject. May I give you at the outset the view which Sir Adam Beck himself expressed on this subject? On September 7, 1922, Sir Adam contributed to the Hamilton Spectator a paper in which he said:

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