Water Power Development

Canada is Estimated to Have About 20 Million Horse Power and is Surpassed Only by Norway in Development of Available Power

The Dominion Water Power Branch, Department of the Interior, and the Dominion Bureau of Statistics, Department of Trade and Commerce, have through co-operation, just completed an exhaustive census and analysis of the developed water power in Canada. The figures, which are complete to January 1st, 1920, are exceptionally interesting and are indicative of the marked manner in which the water power resources of the Dominion are being put to advantageous use. Practically every great industrial centre in Canada is now served with hydro-electrical energy and has within easy transmission distance ample reserves of water power. Active construction in hydro-electrical enterprise is fast linking up the few centres which are still unserved, and which have water power resources in their vicinity. In those localities where water power is not available, nature has bountifully supplied fuel reserves of coal, gas or oil.

According to a recent commutation the water power resources of the British Empire have been placed at from 50 to 70 million horse power. This does not include such territories, formerly under control of the Central Powers, as will fall in future under British influence. To this total Canada contributes in the neighborhood of 20 million horse power. This figure represents the power available at sites at which more or less definite information is to hand. Continued investigations will undoubtedly add to this figure.

According to the statistics just compiled there is installed throughout the Dominion some 2,418,000 turbine or water wheel horse power of which 2,215,000 horse power is actually and regularly employed in useful work. The larger figure includes the total installed capacity at full rate, including reserve units. It does not, however, include hydraulic excite units. A large number of the plants now operating are designed for the addition of further units as the market demands. The ultimate capacity of such plants, together with that of new plants now under construction, total some 3,385,000 horse power.

Of the total power installed, 1,756,791 horse power or 72.7 per cent is installed in central electric stations. By central electric stations are meant stations which are engaged in the development of electrical energy for sale and distribution. Central station power is sold for lighting, mining, electro-chemical and electro-metallurgical industry, milling and general manufacturing. It is apparent therefore that the central station total listed in Column 3 includes a portion of the totals listed in Columns 4 and 5 as used in other industries. In the pulp and paper industry 473,265 horse power is utilized of which 381,631 horse power is generated directly from water in pulp and paper establishments while 91,634 horse power is purchased from hydro central electric stations.

Hydro power used for other purposes and other industries may be listed as follows,—for lighting purposes 434,613 horse power; in mining industry 177,728 horse power; in flour and grist mills 42,736 horse power; in lumber and saw mills 37,918 horse power; in other manufacturing industries 172,955 horse power. These figures are evidence of the widespread manner in which the Dominion's water power resources are being applied to the furtherance of its industrial development. In further reference to the foregoing total of water power developed in Canada, it might be noted that during the fiscal year ending March 31st, 1919, there were exported from plants included in tabulation, 175,000 h.p. years.

An analysis of the number and capacity of the water wheels and turbines installed, is of considerable interest. The total installation of 2,417,896 horse power is comprised of 3,370 units of an average capacity of 715 h.p. While 2,244 of these units are of 100 h.p. or under, they contributed only 82,204 h.p., or 3.4 per cent to the total. A total of 1,845,427, or 76.3 per cent of the whole is contributed by units of 2,000 h.p. and over 1,391,025 or 57.6 h.p. per cent by units of 5,000 h.p. and over; 1,029,900 h.p. or 42.6 per cent by units of 10,000 h.p. and over; and 160,000 h.p. or 6.6 per cent by units of 20,000 and over. This is illustrative of the modern tendency towards the installation of large units. Reference might be made in this connection to the 50,000 h.p. turbines which are contemplated for the new development of the Hydro-Electric Power Commission at Queenston.

Further statistics refer to the developed water power used in connection with the central electric station industry. The central station industry has made great strides in Canada in recent years. A network of transmission systems, which are being rapidly extended from year to year, covers central and southwestern Ontario and southern Quebec. Other systems established in numerous centres from coast to coast are likewise rapidly extending their scope. Ninety-one point four per cent of the primary power used in the central stations throughout the Dominion is derived from water, evidencing in a striking manner the advantageous location of the water power resources to industrial centres.

The total installed water wheel and turbine horse power in hydro central electric stations is 1,756,791 h.p. Fuel auxiliaries installed as standbys to these hydro stations brings the total installed primary capacity up to 1,873,989 h.p. connected to 1,449,180 k.v.a dynamo capacity. The total capital invested in these central stations, inclusive of transmission and distribution systems, is $369,464,961 or an average of $210 per installed primary horse power.

Of special interest to engineers is the actual cost of construction of hydro-electric power stations, exclusive of transmission and distribution systems. The figures of 70 representative hydro-electric stations throughout the Dominion with an aggregate turbine installation of 745,797 horse power show a total construction cost of $50,740,468 (pre-war figures) or an average of $69.11 per installed horse power. This cost includes the capital invested in construction of dams, flumes, penstocks, and all hydraulic works, and of power stations and equipment. It excludes real estate and transmission and distribution equipment. The figure in brief represents the capital cost of construction at the power site.

With a water power development of 274 h.p. per thousand population, Canada stands well in respect to availability and utilization of hydro power resources, being only surpassed in this respect by Norway. The enormous water power reserves still untouched form a substantial basis for the progressive exploitation and development of other natural resources, and, if properly co-ordinated with the development and utilization of the enormous fuel resources of the Dominion, are an assurance of continued industrial expansion and prosperity.

Dividend Notice.

Lake of the Woods Milling Company, Ltd.

DIVIDEND NOTICE

Notice is hereby given that the regular quarterly dividend of 1¾ per cent on the Preferred Stock of the LAKE OF THE WOODS MILLING COMPANY, LIMITED, for the three months ending May 31, 1920 has been declared payable on Tuesday, June 1st, 1920 to Shareholders of record at the close of business on Saturday, May, 22nd, 1920.

By order of the Board.

R. NEILSON
Assistant Secretary.

Notice is hereby given that a dividend of 3 per cent on the Common Stock of LAKE OF THE WOODS MILLING COMPANY, LIMITED, for the three months ending May 31st, 1920, being 2½ per cent from the earnings of the Lake of the Woods Milling Company, Limited, and one-half of 1 per cent from the earnings of the SUNSET MANUFACTURING COMPANY, has been declared payable on Tuesday, June 1st, 1920 to shareholders of record at the close of business on Saturday, May, 22nd, 1920.

By order of the Board.

R. NEILSON,
Assistant-Secretary.

Distribution of Developed Water Power in Canada by Provinces and by Use of Power, Jan., 1st, 1920.

	DEVELOPED WATER POWER — Total Waterwheel and Turbine H.P. installed for use in							
	Total Waterwheel and Turbine Horse-Power Installed	Central Electric Stations	Pulp and PaperIndustry	other Manufacturers Industries	Total Horse-Power actually employed	Ultimate Designed Capacity of Plants now operating or under construction in H.P.	Installed H.P. per 1,000 Population	UNDEVELOPED WATER POWER
1	2	3	4	5	6	7	8	9
Yukon	13,199	10,000	.....	.....	11,349	13,199	1,467	100,000
British Columbia.	308,167	211,043	46,962	46,094	276,795	350,832	429	3,000,000
Alberta	32,992	32,580	.....	17	31,754	33,070	56	466,000
Saskatchewan	.....	.....	.....	.....	.....	.....	.....	567,000
Manitoba.	83,447	71,790	.....	.....	75,100	297,047	135	3,218,000
Ontario	1,015,726	794,621	158,095	99,230	934,015	1,460,920	360	5,800,000
Quebec	910,029	623,088	249,332	270,961	838,071	1,146,465	391	6,000,000
New Brunswick	18,080	9,378	2 693	6,009	16,657	29,115	49	300,000
Nova Scotia	34,323	4,064	16,183	12,276	29,359	52,202	66	100,000
Prince Edw. Island.	1,933	227	.....	1,789	1,621	1,958	21	3,000
Totals	2,417,896	1,756,791	473,265	436,376	2,214,721	3,384,808	274	19,554,000