

figures the House will be able to realize what the opportunity of changing from steam to electricity means to our industries at present using steam.

I begin with a ten horse-power plant. Such a plant, carrying a full load, costs \$66.05 per horse-power for a ten hour day per annum. Carrying a 75 per cent load, which is the average load carried in the various works in that part of Ontario we investigated, it would cost \$111.50 per annum for a ten horse-power plant per ten hour day.

Mr. HAGGART. What is the price of coal?

Mr. COCKSHUTT. It was estimated at current rates—I think about \$3 or \$3.50. It was a comparatively low price and was taken by our engineer from actual experience and after visiting all the principal works in the seven municipalities concerned. He ascertained exactly the conditions under which they were generating power by steam and the size of the plant.

For a twenty-five horse-power plant, it would cost \$65.40 for a full load, and \$75 for a 75 per cent load. Here is a table showing the cost in each case:

Horse-power.	Full load.	75 per cent load.
25	\$65 41	\$75 00
50	47 42	52 50
100	39 05	45 00
150	33 74	40 60
250	25 77	32 00
500	22 61	27 60
750	20 32	24 00

That table indicates the yearly cost for steam-power generated at present within these municipalities. You will remark first that the plant is loaded to its greatest capacity, and secondly that only 75 per cent of this capacity is ordinarily used. This table is intended to apply to the average industrial plant throughout the districts using coal only and operating ten hours per day. It does not apply to plants operating twenty-four hours per day such as lighting plants and pumping stations. And the cost includes all the wages, coal supplies, repairs, taxes and other charges.

There you have the cost of steam-power all the way from a ten horse-power plant to a 750 horse-power plant, and all of these have been taken from existing conditions, after the various factories using these plants have been fully investigated and the cost arrived at in the most complete manner.

We hear a great deal about gas in these days

An hon. MEMBER. Hear, hear.

Mr. COCKSHUTT.* And a good many think that too much natural gas escapes in this House at times. I may be charged

with being a sinner in that respect this afternoon, but I wish to give you the cost of gas development, about which we hear so much and which, under certain conditions, is much ahead of steam-power as regards cost. But taking it all in all, it cannot at all compare with the electric power which such streams as the Niagara river are capable of furnishing. I have here a table of comparisons. A ten horse-power plant would cost per horse-power under a full load, \$65, and under a 75 per cent load, \$120 per horse-power per annum.

This is the difference, I understand, between a steam plant and a gas plant; you can load a steam plant beyond its rated capacity—that is for instance, a plant put in for 100 horse-power can be crowded up to 125 horse-power—but a gas plant put in for 100 horse-power cannot be carried a single ounce beyond a 100 horse-power for which it was installed. Therefore, the relative cost of the gas under 75 per cent loading, compared with a full load, and with steam, is a good deal more than gas with a full load. Under 150 horse-power gas would cost with a full load \$24 per horse-power, and with 75 per cent load, \$30.36. Under 750 horse-power, gas would cost \$16 per horse-power with a full load and \$19.70 with a 75 per cent load. Therefore, under gas at the very cheapest you can get it, with 750 horse-power, and with a full load, the cost is \$16 at the point of generation. Now, I have shown that electricity can be produced at Niagara free of transmission charges at \$5 per horse-power. This makes a difference in favour of electricity of \$11 per horse-power.

Mr. GERMAN. On what authority does the hon. gentleman (Mr. Cockshutt) say that power can be produced at \$5 per horse-power at Niagara?

Mr. COCKSHUTT. I have given the hon. gentleman (Mr. German) the authority—the report of the Ontario Power Commission. This report was made up by the best experts that could be found in Canada with an adviser from Washington to criticise every figure. The figures have been worked out by one of the best actuaries in Toronto and five capable men examined all the tables, approved them, and handed them out to the province of Ontario—or rather, to the seven municipalities concerned. These municipalities, I believe, were Toronto, Stratford, London, Ingersoll, Woodstock, Brantford and Guelph, which banded themselves together and spent \$15,000 to get this information. The hon. member for Welland (Mr. German) may dispute the figures. But, until he can produce authority equal to that of Messrs. Ross & Holgate, of Montreal, who are as great experts in this line as any in Canada, I shall accept the figures of the commission before any that the hon. gentleman can give out of his head. This \$5 per