

## GOVERNMENT HYDRO-ELECTRIC PROPOSALS.

The main Government scheme proposed for each Island consists of a complete high-tension transmission-system connecting all the main points of supply of the Electric-power Board districts and of the local electric-power authorities. These transmission-systems will be fed from three or four large hydro-electric-power sources in each case, and will also be connected up with the chief existing local sources of supply, including both the hydro-electric and steam power plants already in operation. Hence the urgent necessity of standardizing the system of electrical distribution throughout the Dominion. In all recent installations the standard three-phase fifty-cycle system has been adopted, and several of the older plants are being changed over to this system in order to enable them to take advantage economically of the Government supply. Out of the fifty-five generating-stations now in operation, twenty-two are operating on the standard system, comprising 26,690 kilowatts, or 58·3 per cent. of the installed capacity of the Dominion.

The main sources of supply selected for the North Island are Mangahao (24,000 h.p.), Arapuni (96,000 h.p., capable of extension to 162,000 h.p.), and Waikaremoana (40,000 h.p., capable of extension to 136,000 h.p.). In addition supplementary supplies will be obtained from Horahora power-house (8,400 h.p.), Wairua Falls (2,600 h.p.), New Plymouth Borough (ultimately 8,000 h.p.), and a standby service from the large steam plants at Auckland (ultimately 26,000 h.p.) and Wellington (12,000 h.p.). Regarding the North Island, the construction of Mangahao is now well in hand. The investigation of the Arapuni dam site is practically completed, and work will be commenced at Waikaremoana forthwith. For the main transmission-lines the specifications for the materials have been drawn up and the delivery of the poles has commenced.

Provided that no undue delay occurs in the delivery of plant from abroad, and coal for driving the construction plant is obtainable, and cement, the supply from Mangahao can be made available within three years.

The construction plant at Waikaremoana (1,000 horse-power) has been designed to form part of the permanent installation and to be large enough to give a local supply in the meanwhile to Wairoa County and Borough. This construction plant should be in operation within two years, and the main supply from Waikaremoana within two years thereafter.

The reliability of the foundations of the Arapuni dam has now been fully investigated, and in view of the importance of the work it is proposed to refer the whole of the data collected to a committee of engineers for a final decision.

In regard to the South Island the details of the transmission-system and supply points have not yet been laid out, but the system will incorporate the existing power plant at Lake Coleridge, the Dunedin City Council's plant at Waipori Falls, and the proposed Southland Electric-power Board's station at Lake Monowai, each of which should be developed as early as possible to its fullest extent. Proposals are now being investigated for the extension of the Lake Coleridge plant to the full capacity of the site (42,000 h.p.) and the survey and construction of the line to South Canterbury is in hand. Surveys of the Hawea-Wanaka and Teviot River schemes have been carried out to locate the most economical source of supply in Central Otago in order to complete the system in the southern end of the Island, and surveys will be put in hand as early as possible to locate the best sources of supply for the northern end (Marlborough, Nelson, and Buller districts), and the western districts (Grey and Westland), and for laying out transmission routes to complete the whole system on the same lines as in the North Island.

The estimates of 1918 for the North Island system (160,000 h.p.) amounted to £7,303,402. At the present enhanced costs of labour and material this will considerably exceed £10,000,000, and the South Island system will probably cost almost as much.

The prosecution of these works at a satisfactory rate of progress will call for more skilled and unskilled labour than is at present available; but it is hoped that the efforts of my colleague the Minister of Immigration will result in the early arrival in New Zealand of a sufficient number of suitable men.

The success of the schemes already in operation, and the ever-increasing difficulties in obtaining supplies of coal and fuel oil, have combined to create an insistent, widespread, and fully justified demand for the immediate development of New Zealand's water-power resources. Financial considerations require that schemes once launched should be brought to a paying stage as quickly as the available supply of labour and material will permit. Special officers, Engi-