

External Affairs
Supplementary Paper

No. 54/1 HYDRO-ELECTRIC PROGRESS IN CANADA, 1953

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Minister of Northern Affairs and National
Resources

Although a tremendous amount of hydro-electric construction was under way in Canada in 1953, the amount of capacity brought into operation during the year was somewhat lower than that of recent years, although still appreciably above that of the pre-war period. New capacity in 1953 amounted to 638,012 h.p., bringing the total capacity of all water-power plants in Canada to 14,921,459 h.p., the net increase for the year being somewhat reduced by plant write-offs and list corrections. Plants and extensions under construction for operation in 1954 total 1,500,000 h.p. and those for later years about the same amount; also plans are being made covering other large developments. Projects completed and under construction are widely distributed throughout the country, a number of them being located in rather remote districts.

Although water power continues to be the pre-dominant source of electrical energy in Canada, an appreciable amount is also produced by thermal stations, and a number of thermal units of large capacity were brought into operation and others were under construction in 1953.

Total power consumption in 1953 was about seven per cent above 1952 but, generally speaking, all demands were being serviced although little reserve capacity was available. Some relief from the effect of peak loads was achieved by the completion of important interconnections between independent generating systems.

In the field of power distribution, construction also was very active, with new main transmission lines being completed or under construction in several parts of the country, large substations being built, and secondary lines extended.

An outline of the year's activities in each province, principally in regard to hydro-electric central-station construction, is given below.

British Columbia

The British Columbia Power Commission completed the installation of the final two units each of 28,000 h.p. in the John Hart development on the Campbell River, Vancouver Island, bringing total capacity to 168,000 h.p. To provide additional storage for this development, surveys and drilling were carried out at Buttle Lake for a dam to be built in 1954. The Commission has undertaken the re-development of

the Puntledge River plant, the dismantling of the 12,000 h.p. 25-cycle plant having been completed; a single unit of 35,000 h.p. driving a 30,000-kva. generator will be installed, with initial operation probably late in 1954. Contracts have been awarded and work commenced on development on the Spillimacheen River to consist of three units with a total capacity of 5,500 h.p. for 1955 operation, to serve the upper Columbia Valley district. The Commission's Whatshan plant of 33,000 h.p. was badly damaged by two devastating landslides during August and the station will be closed for an indefinite period. Diesel installations of 760 kw. at Smithers, 600 kw. at Vanderhoof, 800 kw. at Williams Lake, and 675 kw. at Tofino were completed. Transmission lines built during the year include about 100 miles of 63-kv. line from Vernon to Kamloops via Salmon Arm, with a number of intermediate substations, 22 miles of 60-kv. line from Nanaimo to Parksville, and 8 miles of 132-kv. line from Nanaimo to Harmac.

The British Columbia Electric Company Limited continued construction towards the installation of a fourth unit of 62,000 h.p. in its Bridge River plant for 1954 operation. The raising of the La Joie storage dam to provide increased reservoir capacity also was continued. Surveys were made covering a proposed development on Seton Creek to further utilize the water diverted through the Bridge River plant; active construction will begin in 1954 and it is planned to have the single unit of 58,000 h.p. driving a 42,000-kva. generator in operation in 1956. A 4,860-h.p. turbine and 4,000-kva. generator, which served for a few years in a temporary capacity at Bridge River prior to the opening of the present Bridge River plant in 1948, has been re-installed in the Jordan River No. 1 plant bringing the capacity to 38,985 h.p. The Company extended its 60-kv. lines by connecting the Wahleach plant to the existing line between Chilliwack and Hope, by a line from Surrey to Delta, and by one from North Vancouver to West Vancouver. New substation facilities were provided at Vancouver, Victoria, Haney, Ladner, and Langford. The Company has purchased the generating and distribution systems of the Ashcroft Water, Electric and Improvement Company and of the Spences Bridge Light and Power Company Limited.

The Consolidated Mining and Smelting Company of Canada Limited expects to complete the construction of its Waneta development on the Pend Oreille River early in 1954. The plant will contain two turbines each of 105,000 h.p. under 210-foot head driving 90,000-kva. generators. Ultimately two additional units may be installed. The plant will be tied-in to the Company's system by three 60-kv. lines built this year to the Warfield substation.

Favourable progress has been made by the Aluminum Company of Canada on its great Kemano-Kitimat project involving the diversion of the headwaters of the Fraser River through the Coastal Range. The drilling of the 10-mile 25-foot-diameter diversion tunnel from Tahtsa Lake and of the penstock tunnel was expected to be completed by the year's end. The underground power-house has been completed and the work of installing three 140,000-h.p. turbines and 106,000-kva. generators is well advanced for operation in May 1954. The 50-mile transmission line from Kemano to Kitimat has

been virtually completed. The spillway for the Kenney Dam on the Nechako River is now ready for operation. No definite commitment beyond the present installation of 420,000 h.p. has been made although ultimate capacity is more than 2,000,000 h.p.

Alaska Pine and Cellulose Limited completed the installation of a 3,200-h.p. turbine driving a 2,500-kva. generator in its plant at the outlet of Victoria Lake, Vancouver Island. Plant capacity is now 4,400 h.p., the power being used principally for pumping purposes.

The East Kootenay Power Company Limited has completed the construction of a new dam on the Bull River to serve the Aberfeldie plant of 7,200 h.p. The head is unchanged at 275 feet but about one mile of wood-stave pipe has been eliminated.

The Northern British Columbia Power Company Limited has installed a diesel unit of 2,750 h.p. as auxiliary to its hydro-electric installations. The Powell River Company Limited has added a 13,125-kv. steam turbo-generator to supply additional power to its mill at Stillwater. The City of Nelson has rebuilt its 10-mile transmission line from the Kootenay River plant and raised the voltage to 66 kv.; also new substations at both ends of the line have been completed.

Yukon Territory

The Yukon Hydro Company Limited, serving the town of Whitehorse, has added a Pelton wheel of 940 h.p. driving an 875-kva. generator to its Porter Creek plant, to bring capacity to 1,390 h.p.

Surveys and investigations which were initiated during the year will be continued in 1954 by Ventures Limited and its subsidiary companies, Frobisher Limited and Quebec Metallurgical Industries Limited, on a proposed major development in southwestern Yukon Territory or northwestern British Columbia, which would involve the storage of Yukon River headwaters and their diversion through the Coastal Range, thus utilizing the potential high head available at tidewater along the Pacific slope. Preliminary planning now under way indicates that the first step in development of this project would be the installation of a small plant on one of the rivers on the Pacific slope.

Alberta

Calgary Power Limited has under installation a third unit rated at 33,000 h.p. in its Ghost plant on the Bow River and operation is scheduled for June 1954; this will bring plant capacity to 69,000 h.p. Construction is proceeding on the Bearpaw development, on the Bow River near Calgary, to consist of one unit of 22,000 h.p. for operation in late 1954 or early 1955. In connection with the Spray River development, two pump stations are being installed to raise water from Goat Creek into the Spray canal; this additional water is expected to increase the annual output of the Spray and Rundle plants by about 75,000,000 kw.hrs. The transmission system was extended by 84 miles of 138-kv. line, 24 miles of 66-kv., 7 miles of 33-kv., and 76 miles of 22-kv. The Company now serves 14,000 farms, an increase of 4,000 during 1953.

Northland Utilities Limited have on hand a 1,000-h.p. unit for its Astoria River plant near Jasper but installation has been delayed pending agreement with the National Parks administration. Investigations were continued on a site on the Heart River but no decision on development has been made.

Canadian Utilities Limited increased the capacity of their diesel plants by 1,200 kw. at Grande Prairie and 625 kw. at Fort St. John. New transmission lines included 37 miles at 69 kv. and 80 miles at 22 kv. At the end of 1953 it was expected that service would be provided to 5,400 farms.

The City of Medicine Hat, in collaboration with Calgary Power Limited, completed the addition to its plant of a steam-turbo generator of 30,000 kw. capacity; for the present the output of this unit will be largely absorbed by the Company's system.

The City of Edmonton completed the installation of a 30,000-kw. gas-fired steam-turbo-generator in its power plant which serves the city and environs. Substation capacity was increased by 15,000 kva.

The City of Lethbridge completed the installation of an additional unit of 5,000 kw. in its steam-electric plant.

The Alberta Power Commission reported that a total of 23,000 farms in the province would be receiving electrical service by the end of 1953, directly from private companies or through distributing co-operatives.

Saskatchewan

The Saskatchewan Power Corporation completed a 20,000-kw. single-unit addition to its steam plant at Estevan, and has undertaken for 1954 operation the installation of a 25,000-kw. unit in the Saskatoon plant. A 4,300-kw. gas-engine generator set was installed at Unity. A number of diesel units were transferred from one location to another, such as a 500-kw. unit from Watrous to Swift Current. A new 69-kv. transmission line was built from Unity to Luseland and Kindersley, a distance of 45 miles. New substations were built at Estevan and North Battleford and additions at other points for a total increase of 25,000 kva. Farm electrification is proceeding gradually with a total of 5,500 farms receiving service at the end of the year.

The Birch Lake Mine is now receiving service from the Hudson Bay Mining and Smelting Company Limited over a 9-mile 12-kv. line from Flin Flon, Manitoba, which was built in 1953.

Manitoba

No new hydro-electric units were brought into operation in 1953 but the Manitoba Hydro-Electric Board continued construction on its McArthur Falls development of 80,000-h.p. on the Winnipeg River. The concrete gravity dam and the sluice-gates section were 80 per cent completed, the earth dam and forebay dyke were 40 per cent completed, and turbine erection was in progress in the almost completed power-house building. Four units each of 10,000 h.p. are scheduled for operation by December 1954 and plant completion in 1955.

At the operating plants on the Winnipeg River, improvements and repairs were carried out. At the Seven Sisters development, the crest of the 651-foot spillway section was raised 11 feet by the installation of concrete rollways. At the Pointe du Bois plant, 25 stop-log spillway sections with a total length of 328 feet were replaced by 19 openings with steel gates.

In connection with the Laurie River development of Sherritt-Gordon Mines Limited, a control dam was completed on the Loon River which creates a new storage reservoir and allows the diversion of water from the Loon River basin into the Russell Lake reservoir on the Laurie River. Surveys for a new development were made at a site about seven miles above the present plant but no definite commitment on construction has been made.

The Manitoba Power Commission continued to expand its distribution system. New transmission lines built include 85 miles at 115 kv., 64 miles at 66 kv., 32 miles at 33 kv. and 78 miles at lower voltage; also 27 miles were raised from 33 kv. to 66 kv. The rural electrification programme was extended by the inclusion of 5,140 farms and 15 villages involving 3,100 miles of distribution line. The total number of farms now connected is 39,500. Due to the greater power demand, the capacities of the Parkdale and Neepawa terminal stations were increased by 15,000 kva. and distribution substations by 13,000 kva.

Owing to delay in delivery of equipment, the second unit of 25,000 kw. in the steam plant of the City of Winnipeg will not come into operation until the spring of 1954.

Ontario

In addition to completing the final stage of its series of post-war developments on the Ottawa River and the building of its large steam plants at Toronto and Windsor, the Hydro-Electric Power Commission of Ontario was actively engaged on its new development on the Niagara River at Queenston, which is the largest project it has ever undertaken, and other developments as follows:

Hydro-Electric Power Developments

(a) Otto Holden Generating Station

Construction of this station on the Ottawa River above Mattawa was virtually finished by the end of 1952 and only the eighth unit of 33,000 h.p. remained to be installed. This unit, which was placed in service in April 1953, brought the total installed turbine capacity of the station to 264,000 h.p.

(b) Sir Adam Beck-Niagara Generating Station No. 2

Construction progress on the many aspects of the 12-unit development of 1,260,000 h.p. on the Niagara River at Queenston is well advanced and the first units are expected to be placed in service early in 1954. In tunnel No. 1, excavation has been completed and lining the tunnel will be finished by the end of the year. In tunnel No. 2, excavation is nearing completion and concrete placing has been started. Excavation for the canal and forebay is almost completed and concrete placing at the tunnel-exit portals and at the headworks is well advanced. At the power-house four penstocks

have been erected and about a quarter of the concrete for the penstock saddles and envelopes has been placed. Two-thirds of the steel for the power-house superstructure has been erected and about half the concrete has been placed.

During 1953, the Commission amended the program of work to provide for a pumped storage scheme and later, when required, for four additional generating units. A storage reservoir of about 15,000 acre-feet, and adjacent to the forebay, will be created by a dyke, and a pump-turbine plant will be built to raise water to the reservoir. The pump-turbine plant will operate as a generating station when water is being discharged from the reservoir and will have a capacity of up to 170,000 kw.

By virtue of this scheme, optimum use will be made of the Sir Adam Beck-Niagara Generating Stations since the storage reservoir can be filled at night and the impounded water can be used during the daytime by generating units which would otherwise be idle. The canal and forebay are now being enlarged and part of the headworks for the four additional units is being constructed; later, the power-house will be extended to accommodate the additional units. However, these four units will not be installed until high load-factor resources such as the St. Lawrence project and thermal-power plants have been developed.

(c) Pine Portage Generating Station

The first two generating units at this station on the Nipigon River were placed in service in 1950. In 1952 the Commission decided to install a third unit at this station and in April 1953 it was decided to proceed with the installation of the fourth unit; each of these units will be rated at 45,000 h.p. The third unit is scheduled for service in September 1954 and the fourth in December 1954.

(d) Manitou Falls Generating Station

During October 1953 the Commission decided to build a generating station at Manitou Falls on the English River. Three generating units, which will have a combined capacity of about 46,000 h.p., will be installed. Before construction can be started, a 14-mile access road from Ear Falls Generating Station must be built. Plans call for the completion of this road by early 1954, while the generating station itself is scheduled for service in 1956.

Steam-Electric Stations

(a) Richard L. Hearn Generating Station, Toronto

All four generating units of the first and second stages of this station are now in service. The fourth unit was placed in service in June 1953. Initially the first unit was operated at 25 cycles but the unit has now been changed over for operation at 60 cycles. The present installed capacity of the station, with one 25-cycle and three 60-cycle units, is 388,000 kw. However, when the remaining 25-cycle unit is changed over for operation at 60 cycles, the station's capacity will be raised to 400,000 kw.

(b) J. Clark Keith Generating Station, Windsor

All four units of the first and second stages of this station are now in service. The third and fourth units were placed in service in April and October 1953. Each of the four units is rated at 66,000 kw. and the total station capacity is 264,000 kw.

Transmission Lines, Rural Lines and Rural Customers

Extensions to the Commission's transmission and rural lines during the year 1953 are expected to be as follows:

230-kv. lines - - - -	42 circuit miles
115-kv. lines - - - -	204 circuit miles
44-to 13-kv. lines - - - -	252 circuit miles
Rural lines - - - -	1450 circuit miles

It is estimated that by the end of 1953 the number of farm services will be 133,000.

During September, an interconnection was completed with the Detroit Edison Company which will increase the flexibility of both systems in meeting peak loads.

Aside from the Commission's operations, the Great Lakes Power Company completed the construction of its development of 20,000 h.p. at Scott Falls on the Michipicoten River. The plant comprises two units operating under average head of 75 feet and the generators are rated at 8,500 kva. The Company also made good progress on its McPhail Falls project, a few miles upstream on the same river, and operation of the two-unit 15,000-h.p. plant under 48-foot head is planned for late 1954.

The Ontario and Minnesota Power Company is planning to modernize in 1954 its plant on the Rainy River at Fort Frances and will replace the present nine units totalling 15,350 h.p. by eight turbines of 2,000 h.p. each for an overall increase of 650 h.p. Generators will be rated at 2,000 kva.

Quebec

The particularly rapid expansion of industrial activity, which has been experienced in Quebec during the post-war period, continued to create new demands for hydro-electric power, thus requiring further construction of new generating stations.

The Quebec Hydro-Electric Commission added two units, one of 55,000 h.p. and one of 56,000 h.p., to its Beauharnois development on the St. Lawrence River. This completes the No. 2 power-house to its planned capacity of 666,000 h.p. and brings the overall capacity to 1,408,000 h.p. Dredging operations in the intake canal are being continued but no definite commitments for further installations have been made although ultimate capacity is estimated at about 2,000,000 h.p.

The Commission reports that substantial progress also was achieved on a number of its other projects. On the upper Ottawa River, the construction of the two-unit 32,000-h.p. Rapid II development is proceeding on schedule and operation is expected in June 1954. Construction was commenced on a major hydro-electric development on the

Bersimis River about 62 miles above its mouth. This river flows into the St. Lawrence River from the north, at a point about 200 miles downstream from Quebec City. The site has an estimated capacity of 1,200,000 h.p. of which 300,000 h.p. will be developed initially with operation scheduled for 1956. Part of the output of this plant will be sold to the Shawinigan Water and Power Company and a further part will be delivered to the Gaspé peninsula by a 32-mile submarine cable which is expected to be laid in 1954 on the bed of the St. Lawrence River from the Manicouagan peninsula to Les Boules. Construction of a 132-mile 161-kv. line from Les Boules to Copper Mountain also will be undertaken in 1954. Preliminary field work for a line from the Bersimis development to Quebec was under way in 1953. The Commission completed an 18-mile 115-kv. line between its Ottawa River plants and carried on the construction of a 146-mile 161-kv. line between St. Felicien and Chibougamau. A new 31-mile 120-kv. double line was completed from Beauharnois to Montreal and new substations were erected in the Montreal area.

The Aluminum Company of Canada Limited completed its Chute à la Savanne development of 285,000 h.p. on the Peribonka River, comprising five units each of 57,000 h.p., one of which had been put on line in December 1952. This station has been tied-in to the 154-kv. double-circuit line between Isle Maligne and Dolbeau.

Price Brothers and Company Limited late in the year completed its two plants on the Shipshaw River. The Jim Grey Generating Station at Chute-des-Georges has a capacity of 70,000 h.p. in two units, while the Adam Cunningham Station at Chute-aux-Galets is of 9,000 h.p.

The Manicouagan Power Company, a subsidiary of the Quebec North Shore Paper Company, brought into operation in January the second unit of 56,200 h.p. in its plant near the mouth of the Manicouagan River. The plant is designed for six units and the remainder will be added as required. Power is now being delivered only to Baie Comeau over a new 9-mile 69-kv. line but in 1954, the plant will be tied-in to the transmission system of the Quebec Hydro-Electric Commission, particularly for the purpose of supplying the submarine cable to Gaspé.

The Shawinigan Water and Power Company has undertaken the installation of one additional unit in each of the Rapide Blanc, La Trenche and La Tuque (jointly owned with Brown Corporation) plants, involving respectively 40,000 h.p., 65,000 h.p. and 44,500 h.p. This additional capacity totalling 149,500 h.p. is expected to be available late in 1955. The dams on the Megiscane and Susie Rivers were closed in August, thus completing the project which permits the diversion of the run-off from 263 square miles of drainage area into the Gouin Reservoir. A new 80-mile 220-kv. transmission line is being built between La Tuque and Trois Rivieres. The Company completed 30 miles of 110-kv. line from Sorel to Varennes and 22 miles from Victoriaville to Asbestos. The Company reports that it is now serving about 42,000 farms within its distribution area.

The Ste. Marguerite Power Company expects to complete in May 1954 the construction of its hydro-electric development of 17,000 h.p. in two units at "61 Falls" on

the Ste. Marguerite River. A 19-mile 44-kv. wood-pole line to Seven Islands and a 2-mile 13.8-kv. line to Clark City are under construction.

Favourable progress has been made by the City of Megantic on its initial development of 2,250 h.p. in one unit at the Gayhurst site on the Chaudiere River and operation is expected by May 1954. A second unit will be added when required by load growth.

While not adding to their generating capacity, other companies extended their distribution systems and/or enlarged their storage facilities. The Gatineau Power Company completed a 30-mile 110-kv. line from Lachute to Cedars, which provides an interconnection with the Quebec Hydro-Electric Commission's system; also a new 16-mile 26.4-kv. line Dorion to St. Polycarpe and the re-building of the St. Jovite-Labelle line for 26.4 kv. New 15,000-kva. substations were built at Dorion and Farmers Rapids and voltage-regulation equipment was installed at eight locations. Distribution lines were extended by 143 miles and 8,610 farms are now being served.

The construction of a storage dam on the Mitis River has been begun by the Lower St. Lawrence Power Company, in collaboration with the Quebec Streams Commission. The Company built a 23-mile 66-kv. line from Matane to Les Boules which in 1954 will provide an interconnection with the provincial network. Distribution lines were extended by 100 miles and 7,100 farms are now being serviced.

The Southern Canada Power Company rebuilt 11 miles of line for 48-kv. operation and increased its secondary lines by 50 miles. Its total of 72,292 customers includes 11,552 farms.

The MacLaren-Quebec Power Company has completed the construction of a new storage reservoir at the outlet of Kiamika Lake on the Lievre River.

The Saguenay Electrical Company extended its distribution system by 53 miles and its farm customers now total 5,500.

The Quebec Streams Commission successfully maintained regulation of stream flow for power production and flood control on a number of important rivers through its extensive system of storage reservoirs. Preliminary investigations of water-power sites on some of the more remote rivers in the province were continued during the year.

New Brunswick

The New Brunswick Electric Power Commission brought into operation in April its two-unit 27,000-h.p. plant at "The Narrows" on the Tobique River, normal operating head being 75 feet and generators being rated at 25,000 kva. Active investigations were carried out on the Beechwood site on the Saint John River with a view to building a plant initially of two units each of 48,000 h.p. and with provision for a third unit; the net head would be 60 feet. Surveys also were made of a site on the Sisson River, a tributary of the Tobique River, and preliminary plans have been made covering a development of 10,000 h.p. in two units under 125-foot head. In its steam plant at Grand Lake, the Commission completed early in 1953 the addition of a unit of 18,750 kw. Main transmission lines built in 1953 include two 69-kv. lines from the Tobique plant, one of 40 miles to Woodstock

and one of 24 miles to Grand Falls; also a 38-mile line from Alardville to Six Roads. Extensions to rural distribution lines totalled 306 miles.

The St. George Pulp and Paper Company Limited carried out a modernization program resulting in an increase in capacity of 2,812 h.p. in its plant on the Magaguadavic River. New draft tubes were installed and the head was raised from 40 to 53 feet. The plant is now rated at 7,812 h.p. in four units (2 x 906 and 2 x 3,000).

Nova Scotia

No new developments were completed in 1953 but the Nova Scotia Light and Power Company Limited had under construction for 1954 operation a plant of 9,000 h.p. on the Nictau River near Middleton. The installation will consist of one unit under 400-foot head driving a 8,500-kva. generator. During the year, the Company completed the installation of an additional unit of 22,000 kw. in its steam plant at Halifax; it is planned to further increase the capacity of this plant by a unit of 25,000 kw. for 1955 operation. New transmission lines constructed include 20 miles of 69-kv. line from Black River to Berwick, 11 miles at 22 kv. from Tusket to Argyle and 4 miles from Halifax to Shearwater. Distribution lines were extended by 70 miles.

The Nova Scotia Power Commission is proposing to develop 6,000 h.p. under 22-foot head on the Mersey River near Liverpool for 1955 operation but construction has not as yet begun. For its steam plant at Trenton, the Commission has on order a turbo-generator of 20,000 kw. for installation in 1955. During 1953, a 7-mile 23-kv. transmission line was built from Trenton to Sutherland's River; also 126 miles of secondary distribution line. A 21-mile 66-kv. line is under construction from the Big Falls plant on the Mersey River to Lapland.

The addition of the 18,750-kw. unit in the steam plant of the Seaboard Power Corporation at Glace Bay has been delayed and operation is now scheduled for early 1954.

Newfoundland

The Newfoundland Light and Power Company completed the construction of its second plant on the Horsechops River, 10,000 h.p. in one unit under 280-foot head, located below Horsechops Pond about seven miles above tidewater. Investigations have been carried out on Piper's Hole River on which there are three sites totalling about 31,000 h.p. within a reach of eight miles from tidewater; however, no decision on development has been made. A new 66-kv. transmission line from Rocky Pond to Mobile was completed. A diesel unit of 3,850 h.p. has been installed at St. John's for stand-by purposes.

The Anglo-Newfoundland Development Company has completed the modernization of its Bishop's Falls development on the Exploits River, resulting in an increase in capacity of 6,000 h.p. The plant now comprises seven units each of 2,700 h.p. and two of 1,500 h.p. for a total of 21,900 h.p. The capacity of the Grand Falls plant as of December 1953 was reported to be 60,000 h.p. in 14 units.

The Iron Ore Company made favourable progress on its development at Menihek Rapids on the Ashuanipi River, a tributary of the Hamilton River in Labrador, and it is expected that the plant of 12,000 h.p. in two units will be in operation in August 1954; ultimately two additional units may be installed. A 26-mile 110-kv. line from the plant to Knob Lake, which was expected to be completed in 1953, will be operated initially at 66 kv.

The Union Electric Light and Power Company carried out an investigation of a site on the Trinity River at which it is proposed to develop 2,000 h.p. under 260-foot head, although the beginning of construction has not been definitely scheduled.

The United Towns Electric Company completed a 8-mile 33-kv. transmission line from Harbour Grace to Bay Roberts.

The above review covers in brief outline the hydro-electric undertakings which were completed in 1953, are in the course of construction, or are mor or less definitely planned. There are in addition other large projects in various parts of Canada, such as the international rapids on the St. Lawrence River, which have been under investigation and which probably will be undertaken in the near future. While many of the more attractive and convenient sites have already been developed, they represent less than 23 per cent of the total water-power resources of Canada and continuing improvement in the technique of long-distance transmission has tended to make additional sites available for connection to existing generating systems.

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