Hydro-Québec **Annual Report** 1979

To meet the challenges of the 1980s "Hydro-Québec is counting on the excellent calibre and competence of its personnel and on the abundant hydraulic resources that nature has bestowed on Québec." And technology provides the link that enables men and women to put these resources to work.

Facts in Figures

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
Financial situation (1) *(in millions of dollars)*										
Total assets	15,505	12,886	10,649	9,133	7,068	5,814	5,088	4,640	4,249	3,890
Net value of property and plant in service	7,691	5,396	4,879	4,703	4,215	3,955	3,894	3,721	3,435	3,142
Construction work in progress	6,565	6,221	4,283	2,634	1,970	1,197	752	465	411	389
Long-term debt	10,687	9,095	7,653	6,647	5,000	4,063	3,516	3,229	2,928	2,676
Reserves or net worth	3,628	2,882	2,359	1,977	1,667	1,437	1,260	1,140	1,041	913
Annual investments in fixed assets	2,817	2,588	1,950	1,267	1,142	616	551	424	389	293
Revenue from sales of electricity	1,956	1,600	1,263	1,071	904	783	662	569	524	483
Total operating and interest charges	1,231	1,099	904	781	692	621	554	481	408	378
Net income before allocations to reserves	746	523	382	311	230	177	121	99	128	117
Indicators of Growth										
Priority requirements (2) in billions of kilowatthours	91.4	89.5	82.8	79.7	71.0	69.2	62.4	58.2	53.8	52.8
Priority requirements (3) in megawatts (4)	17,582	17,059	15,785	14,783	13,337	11,932	11,446	10,244	9,435	9,302
Installed capacity in megawatts (5)	14,475	12,979	12,523	12,409	11,356	11,123	11,148	11,107	11,107	10,617
Sales of electricity in billions of kilowatthours	97.0	92.6	87.5	85.2	77.5	77.9	69.2	61.0	52.8	50.9
Total number of customer accounts (in thousands)	2,372	2,318	2,265	2,188	2,136	2,081	2,017	1,943	1,895	1,852

(1) The consolidated financial results comprise the financial statements of Hydro-Québec and all its subsidiaries, including the Société d'énergie de la Baie James.

(2) The electricity that Hydro-Québec must provide under its mandate as defined in section 22 of the Hydro-Québec Act: "The object of the Corporation shall be to supply power to the... citizens of this Province at the lowest rates consistent with sound financial administration." Priority requirements therefore exclude sales of secondary electricity in Québec and deliveries outside Québec.

(3) At the time of the system peak demand for the winter beginning in December of each year.

(4) 1 megawatt = 1,000 kilowatts.

(5) Since 1972, in addition to its own installed capacity, Hydro-Québec has also had access to most of the production of the Churchill Falls powerhouse, which has a rated capacity of 5,225 megawatts.

Hydro-Québec **Annual Report** 1979

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The LG-2 spillway.

René Lévesque, Prime Minister of Québec, at the inauguration of LG-2.

Gouvernement du Québec
Cabinet du ministre de l'Énergie et des Ressources

Monsieur Clément Richard
Président de l'Assemblée nationale
Québec

Monsieur le Président,

I have the honor of presenting to you the annual report of Hydro-Québec for the year ended December 31, 1979.

Yours respectfully,

Yves Bérubé
Le ministre de l'Énergie et des Ressources

Québec, May 15, 1980.

Comments by the Chairman of the Board and the President and Chief Executive Officer

The 1979 activities of Hydro-Québec produced outstanding results in terms of financial operations, power generation, and construction. A number of noteworthy achievements were realized during the year.

Four of the 16 generating units planned for LG-2 power station were commissioned during the last three months of the year. Even with only these initial units in service, LG-2 now ranks in capacity as Hydro-Québec's second largest power station, after Beauharnois. Additional units will be placed in service in 1980 and 1981.

Work on the James Bay transmission system culminated in the commissioning of the first of five 735-kV lines in October. This line, which transmits

Lucien Saulnier, Chairman of the Board of Directors of Hydro-Québec and its subsidiaries, Robert A. Boyd, President and Chief Executive Officer of Hydro-Québec, and Michel-André Demers, Secretary, at the signing of the Financial Statements for the year 1979.

energy from the La Grande hydroelectric complex to Montréal, also connected the Abitibi region to Hydro-Québec's main power grid.

The relatively low cost of hydroelectric production enabled Hydro-Québec to maintain its electricity rates among the lowest in the world and to complete its financial year with a net income of $746 million.

Most of this income was used to finance nearly 25 % of the 1979 construction program, whose total cost exceeded $2.8 billion.

The generating stations now under construction in Québec will serve to meet the growth in electricity demand during the next five years.

The year's electricity sales showed a slower rate of growth than in previous years, reflecting the effects of a mild winter, work stoppages affecting a few large industrial concerns, and energy conservation measures. Although encouraged by higher electricity rates and information programs, energy conservation was difficult to quantify because many residential customers converted to electric heating in reaction to the rising cost of other energy sources.

The year 1979 marked the centenary of the first commercial application of electricity in Québec and the thirty-fifth anniversary of the founding of Hydro-Québec. The information in this annual report well illustrates the progress made. One hundred years ago, electricity was a scientific novelty, a subject of curiosity. Today, it has become a dynamic industrial activity and a major force in Québec's economic development.

In order to provide its customers with the best possible service, Hydro-Québec has always given special attention to the quality and reliability of its installations. Many of these installations have ranked as firsts of their kind in the world.

Hydro-Québec's financial administration has helped it to maintain one of the best credit ratings in international financial markets. In addition, the utility attaches great importance to the training of specialists for its engineering, management, financial and research activities.

These policies will be maintained. The utility will remain attentive and receptive to the needs and requests of its milieu, including industry and the population at large. It will also continue to coordinate its activities with energy policies established in collaboration with the Québec government.

We believe that these attitudes will assist Hydro-Québec in meeting the exciting if formidable challenges of the 1980s. This new decade heralds uncertainties in many areas. Resources that before seemed inexhaustible may well be augmented by energy sources as yet unknown or insufficiently utilized.

Finally, to meet the challenges that lie ahead, Hydro-Québec is counting on the excellent calibre and competence of its personnel and on the abundant hydraulic resources that nature has bestowed on Québec.

All these factors give Hydro-Québec every reason to look to the future with confidence.

Lucien Saulnier

Chairman of the Board of Hydro-Québec and its subsidiaries.

Robert A. Boyd

President and Chief Executive Officer of Hydro-Québec.

May 12, 1980

Board of Directors of Hydro-Québec, Société d'énergie de la Baie James and Hydro-Québec International

Roland Giroux and Georges Gauvreau.

Chairman
Lucien Saulnier

Members
Robert A. Boyd
Nicolle Forget
Georges Gauvreau
Roland Giroux
Hervé Hébert
Pierre Laferrière
Claude Laliberté
Guy Monty
Claude Roquet
André Thibaudeau

Pierre Laferrière, Lucien Saulnier and Claude Laliberté.

André Thibaudeau.

Nicolle Forget and Claude Roquet.

Hervé Hébert, Pierre Laferrière and André Thibaudeau.

Georges Gauvreau.

Officers of Hydro-Québec

President and Chief Executive Officer
Robert A. Boyd*

Vice-president,
Administration
Jean Boulanger

Vice-president,
Construction Program
Paul Amyot

Vice-president,
Customer Relations and Regions
Pierre Godin

Vice-president,
Finance
Edmond A. Lemieux

Vice-president,
Human Resources
Jacques Durocher

Vice-president,
Information
Marcel Couture

Vice-president,
Production and Transmission
Jean-J. Villeneuve

Secretary
Michel-André Demers

Chief Counsel
André E. Gadbois

General Auditor
Marcel Jean

Director of Corporate Planning
Joseph Bourbeau

Director of l'Institut de recherche d'Hydro-Québec
Lionel Boulet

Treasurer
Georges Lafond

Assistant to the President
Michel De Broux

**Also member of the boards of directors of the three corporations.*

Robert A. Boyd, President and Chief Executive Officer of Hydro-Québec.

Claude Laliberté, President and Chief Executive Officer of Société d'énergie de la Baie James

Officers of Société d'énergie de la Baie James

President and Chief Executive Officer
Claude Laliberté*

Vice-president,
Administration
Gilles Bacon

Vice-president,
Engineering and Development
Gilles Marinier

Project Director,
La Grande — phase 1
Laurent Hamel

Secretary and Chief Counsel
Jean Bernier

Chief Auditor
André Potvin

Treasurer
Georges Lafond

Director of Public Relations
Fernand Kéroack

Officers of Hydro-Québec International

President and Chief Executive Officer
Guy Monty*

Vice-president, Marketing
Michel P. Boudriau

Secretary
Michel-André Demers

Treasurer
Georges Lafond

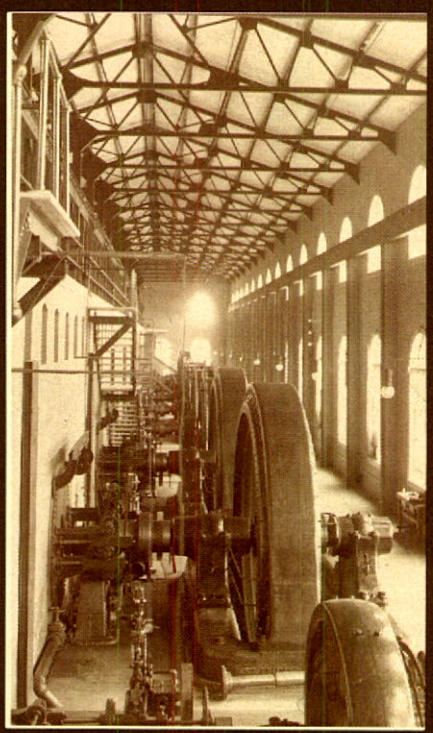
Guy Monty, President and Chief Executive Officer of Hydro-Québec International.

High-Falls, Hydro-Québec's smallest power station now in operation (340 kilowatts).

Les Cèdres power station under construction in 1912.

From modest beginnings... ... to the impressive achievements of today

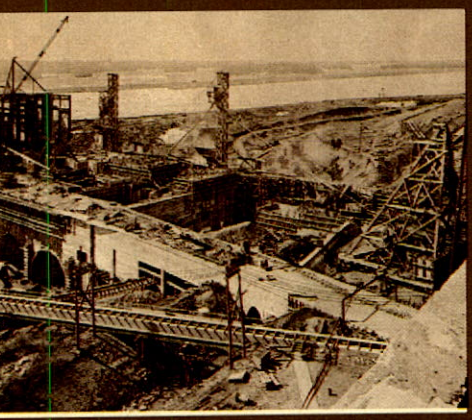
Les Cèdres
The power station completed.

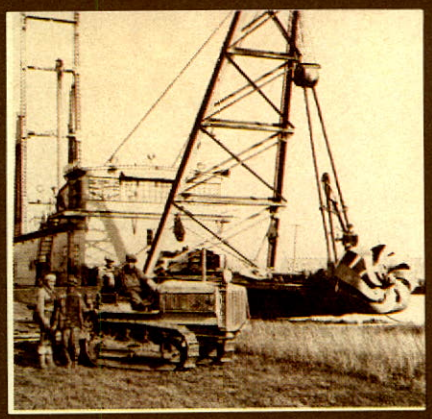


Horizontal axis generating units at Chambly power station.

Control room at Shawinigan-2 power station in 1912.

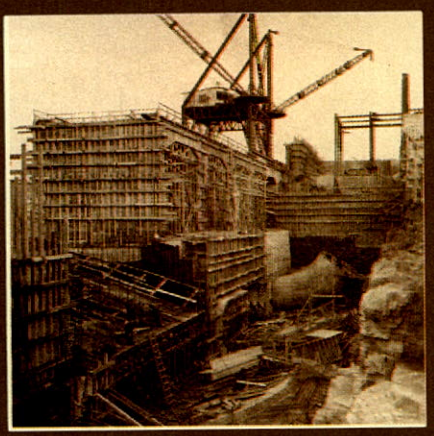
Rapide-des-Quinze construction site in 1923.



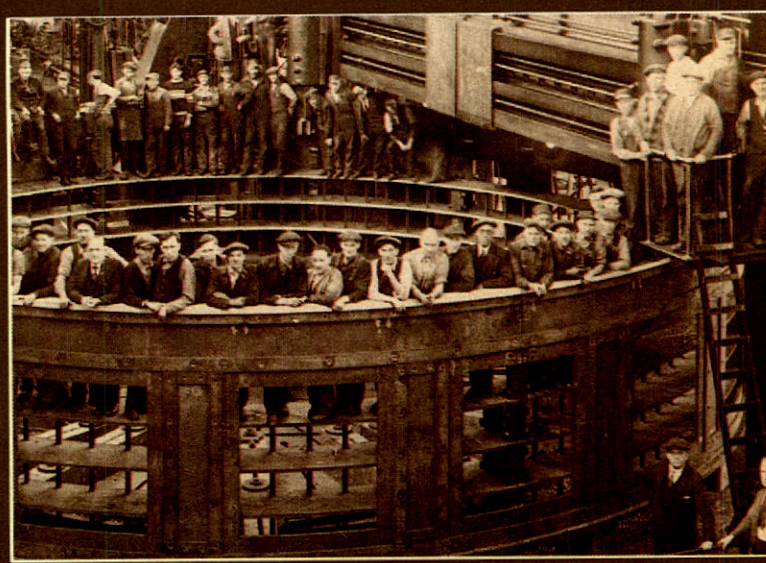


In the background, a pump dredger used for opening up the canal.

Beauharnois
General view of the power station.

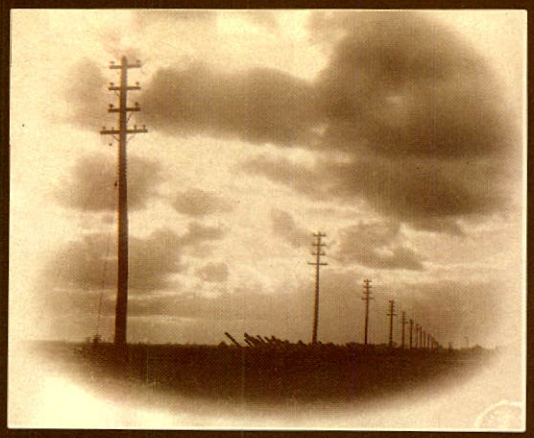


Work begins on the first section, 1930.

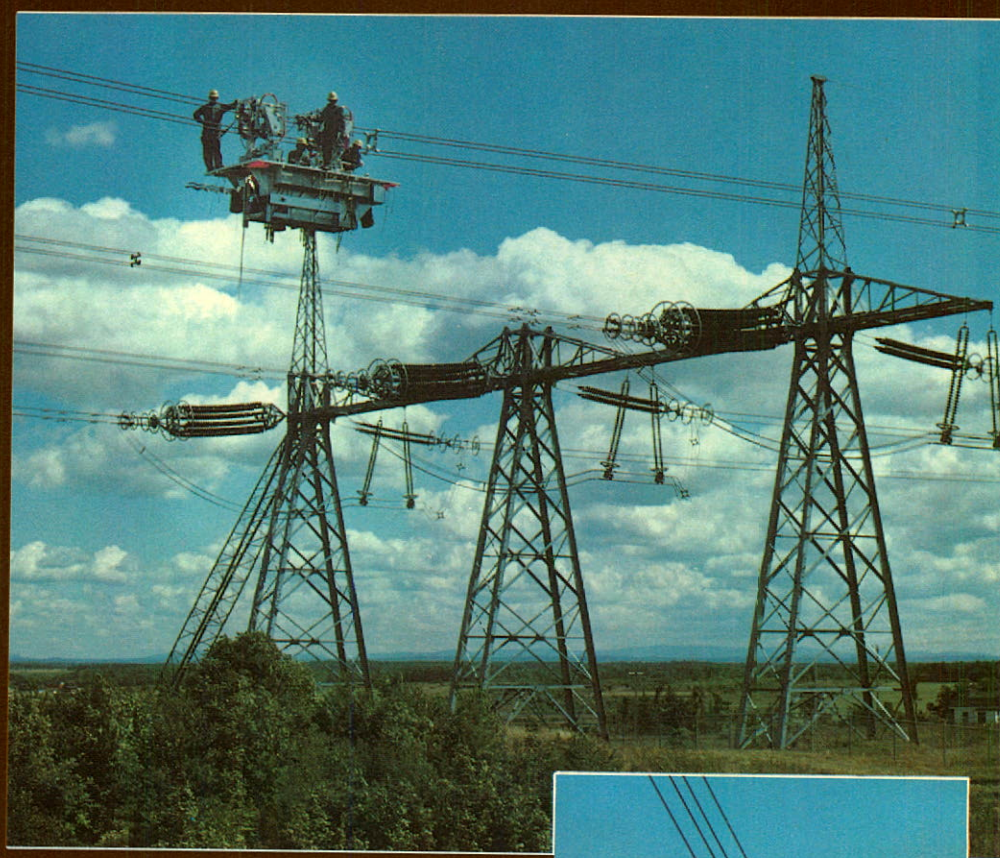


In the 1930s the largest generating unit of the time was installed in Beauharnois powerhouse.

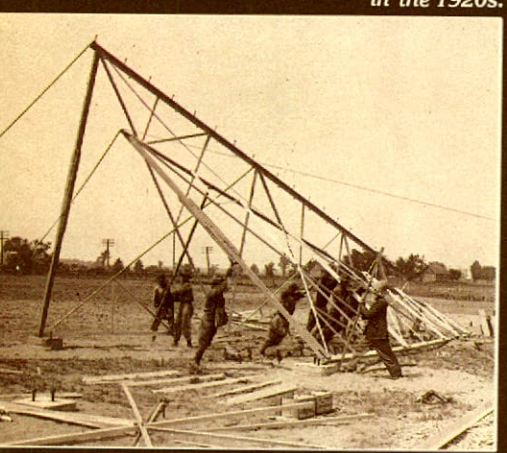
An early transmission line: 1910.

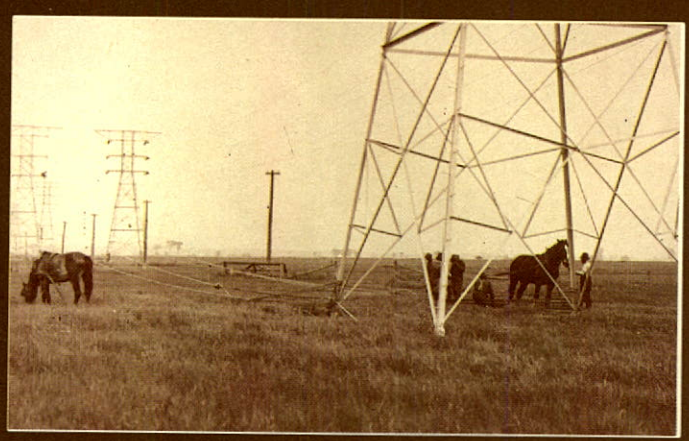


A 735-kV transmission line.

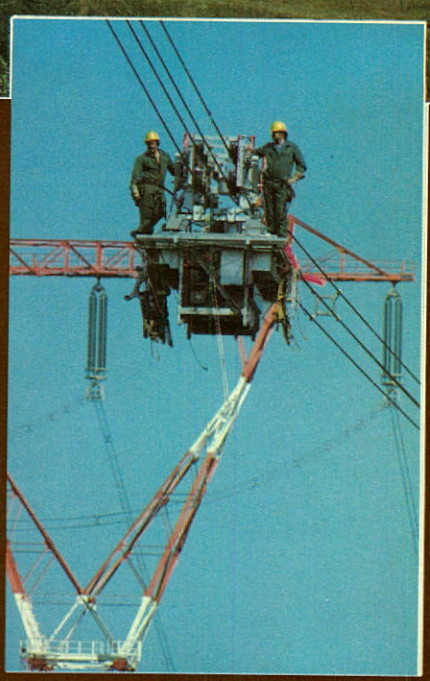


Erection of a transmission-line tower in the 1920s.



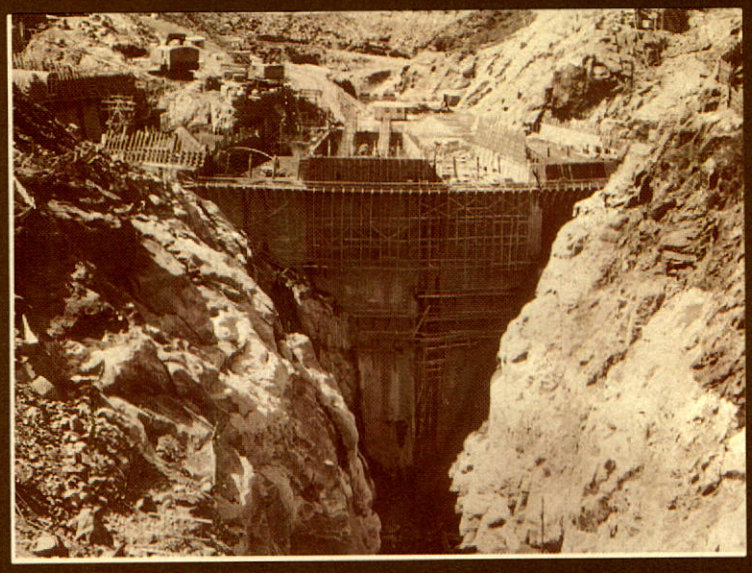


When horses were used to pull cables: 1920.

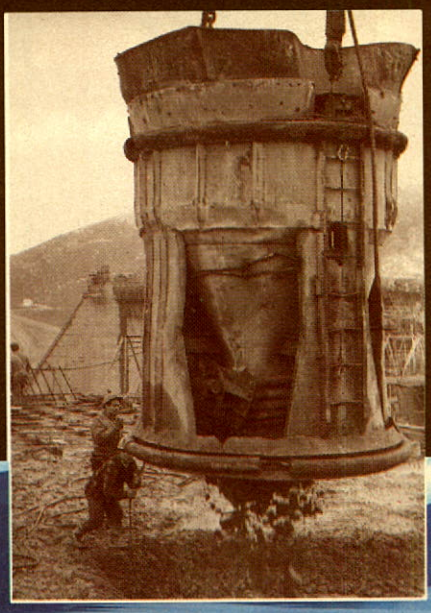


Transmission lines crossing the St. Lawrence River.

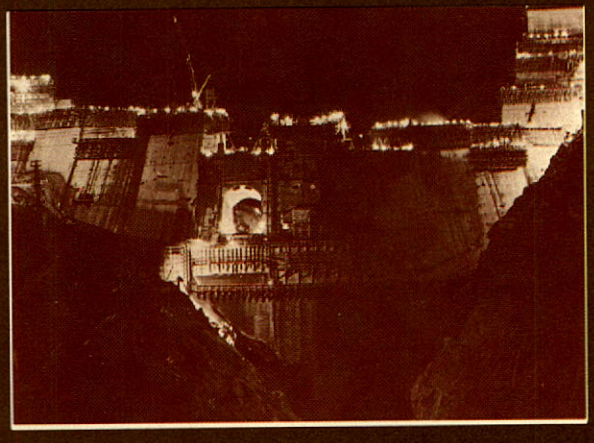
Gorge in the foundation rock at Manic-5.



Concreting at Manic-5.



Daniel Johnson Dam.



Pouring concrete, day and night.

Financial Results*

The favorable condition of the Québec economy in 1978 was consolidated during 1979, although a slowdown became evident toward year-end. With a gross domestic product totaling $62.0 billion, the Québec economy in 1979 grew at a rate of 3.2 % in real terms. This growth rate was slightly higher than the comparable rate for Canada as a whole, which was 2.9 %.

Electricity consumption in 1979 was affected by work stoppages that drastically reduced demand by several industries which normally consume large amounts of electricity. Moreover, residential sales experienced a lower growth rate for a number of reasons, including milder temperatures than in the previous year, fewer housing starts and, probably, the effects of energy conservation programs.

This is the context of the year's financial results.

The utility's gross revenue totaled $1,977,558,000, compared with $1,621,614,000 in 1978. This 21.9 % increase was largely attributable to higher electricity rates and a considerable increase in sales of primary and secondary electricity outside Québec, particularly to the United States. Exports to the U.S. represented 7.9 % of sales in kilowatthours, a record level.

Total expenses, including interest, amounted to $1,231,347,000, against $1,098,671,000 in 1978. This 12.1 % increase was mainly the result of inflation and higher operating costs due to normal growth.

Net income before allocations to reserves, a good indicator of Hydro-Québec's financial health, totaled $746,211,000 compared with $522,943,000 in the preceding year, an increase of 42.7 %. This growth in net income was necessary to help finance the more extensive capital-equipment programs.

Revenue

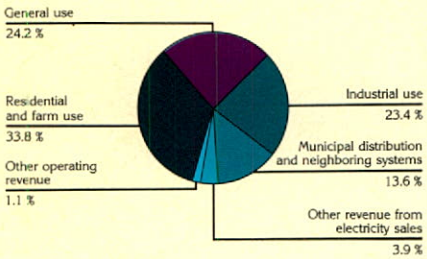
Kilowatthour *Sales of primary electricity* (or firm electricity) to Québec customers increased 2.0 % in 1979, compared with 8.6 % in 1978. Revenue from these sales rose by $264,615,000 or 18.1 %, compared with a 26.5 % increase the year before. The higher electricity rates that came into effect on January 1, 1979 produced nearly $210,000,000 of the year's additional revenue. Revenue from *Sales of secondary electricity* (or surplus electricity) within Québec was $11,637,000, about the same as in 1978.

Sales of primary and secondary electricity outside Québec brought in $221,243,000, which was $92,240,000 or 71.5 % more than in 1978.

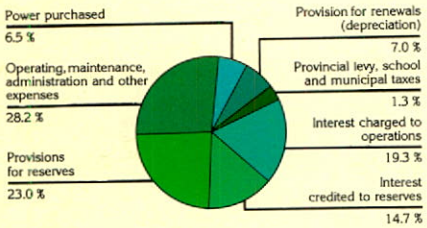
North of the 53rd parallel, the east side of James Bay.

*Words in italics in this section are terms used in the **Financial Statements and Statistics.***

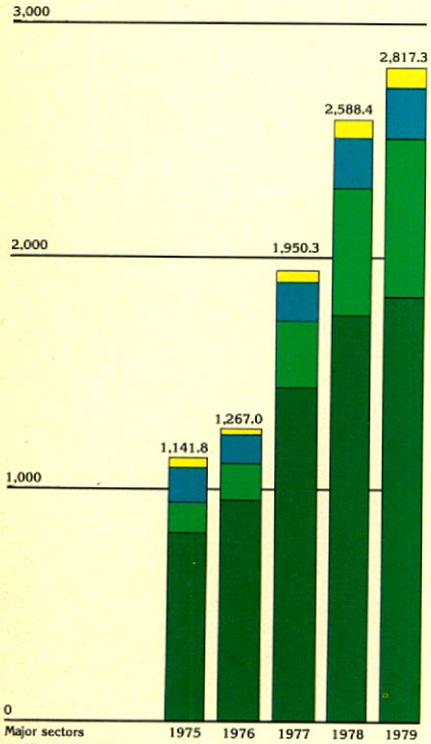
Source of revenue dollar in 1979



Application of revenue dollar in 1979



Capital expenditures by major sectors, 1975-1979
(in millions of dollars)



Major sectors	1975	1976	1977	1978	1979
Miscellaneous*	38.9	28.5	42.2	76.1	93.8
Distribution	150.8	126.5	187.5	215.5	211.5
Transmission	135.0	153.8	284.1	545.0	687.7
Generation	817.1	958.2	1,436.5	1,751.8	1,824.3

*Includes general property and construction, operation and research facilities.

Expenditures

Operating, maintenance, administration and other expenses rose 24.3 % to $557,662,000, against $448,740,000 in 1978. This increase is attributable to higher employee benefits and salaries, to the larger staff required to meet the firm's operating needs, and to inflation which in Québec was reflected in a 9.1 % average increase in prices.

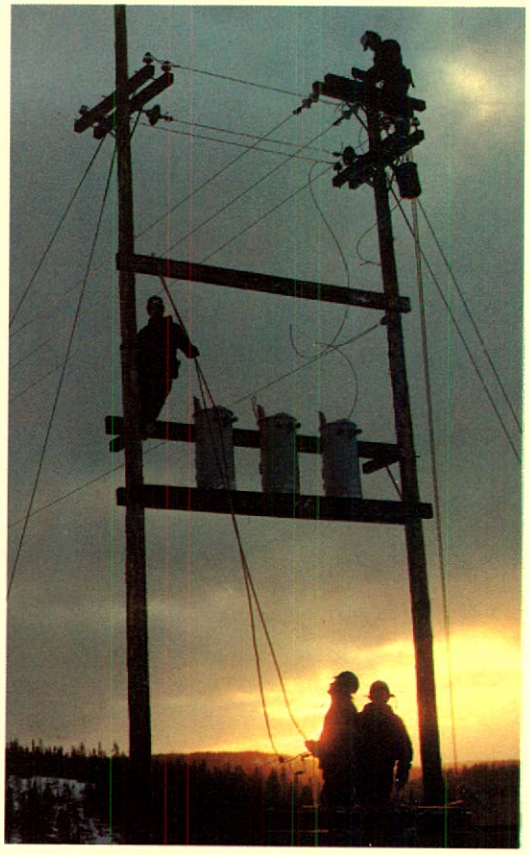
Gross *Interest* costs for the year (see Note 3 to the Consolidated Financial Statements) were $1,102,719,000, against $861,058,000 in 1978. This increase of 28.1 % mainly reflects larger debt, exchange losses on borrowings in foreign currencies, and higher interest rates.

The *Interest* expenditure listed in the *Consolidated Statement of Operations* amounted to $381,027,000, compared with $375,980,000 for 1978. This increase is small mainly because the accounting methods were changed so that capital expenditures now reflect exchange losses incurred when interest payments are made (see Note 1-i to the Consolidated Financial Statements).

Capital expenditures

Plant investments for the year totaled $2,817,259,000. Slightly more than two billion dollars of this amount was for construction of the La Grande hydroelectric complex and the transmission lines being built to carry energy south from the James Bay region to the major consumption centres. The year's capital expenditures were 8.8 % higher than the $2,588,411,000 invested in 1978, and they represented nearly 24 % of all public and private investments made in Québec during the year. Hydro-Québec financed 24.9 % of its plant investments from internally generated funds.

The utility's *Assets* totaled $15,504,975,000 at December 31, 1979, compared with $12,886,485,000 one year before. In 1978 the value of *Construction work in progress* was, for the first time in the utility's history, greater than the net value of *Property and plant in service*. This situation returned to normal in 1979, with *Construction work in progress* totaling $6,565,439,000, compared with $7,691,247,000 worth of *Property and plant in service* following commissioning of the first four units at LG-2 generating station and the first 735-kV line of the James Bay transmission system.



Financing

The year's long-term borrowings produced a net amount of $1,766,109,000. This was 14.9 % more than in 1978, in contrast to an average annual increase of 25.3 % in this item since 1970.

In 1979 the net volume of borrowings on the Canadian market totaled $905,585,000, which was two and a half times the highest figure for such borrowings in any previous year. This exceptional use of Canadian sources of financing included Hydro-Québec's first direct loan from the Alberta Heritage Savings Trust Fund, which provided a net amount of $189,439,000.

During the year, financing had to be carried out within a more difficult financial and economic climate and with rising interest rates. Hydro-Québec's last public issue in Canada during 1979 bore a nominal interest rate of 11.0 %.

One of the notable events of the year was the renegotiation, signed in January 1980, of the U.S. $1,250,000,000 credit granted in 1978 by an international banking consortium headed by several major Canadian banks. As a result of the renegotiation, the cost of this credit was lowered significantly and its term extended.

Financial situation

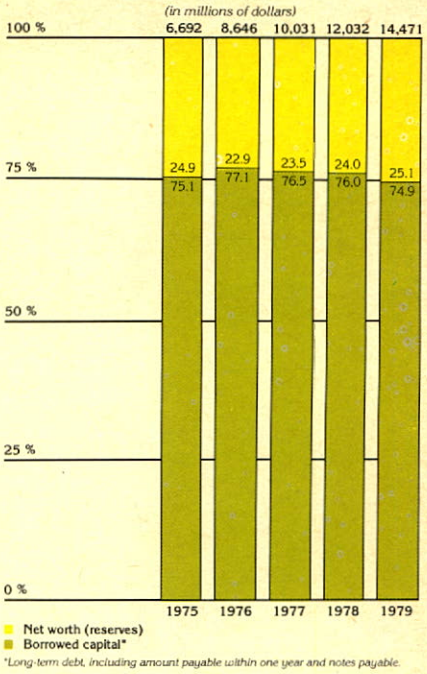
The cash position at December 31, 1979, comprising *Cash and short-term investments* ($202,174,000) less *Bank indebtedness* ($20,251,000), amounted to $181,923,000, a level considered adequate in view of the more than $1 billion available through lines of credit.

The *Consolidated Statement of Changes in Financial Position* shows that *Total financial resources provided by operations* increased by 39.1 % or $258,325,000 to reach $918,914,000. Some $218,626,000 of these resources was used to redeem long-term debt and make purchases for sinking funds, and the balance of $700,288,000 went to finance 24.9 % of *Investments in fixed assets.*

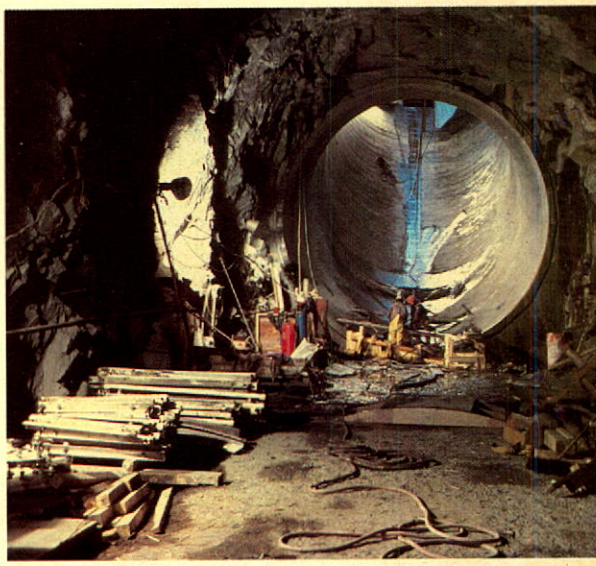
Net worth

Net worth, which is made up of earnings accumulated since Hydro-Québec was created in 1944, totaled $3,628,026,000 at year-end, compared with $2,881,815,000 one year earlier. At the end of 1979 net worth represented 25.1 % of the firm's invested capital, which is the total of *Reserves, Notes payable* and *Long-term debt* before subtraction of the *Amount payable within one year.* The equivalent figure at the end of 1978 was 24.0 %.

Composition of capital, 1975-1979

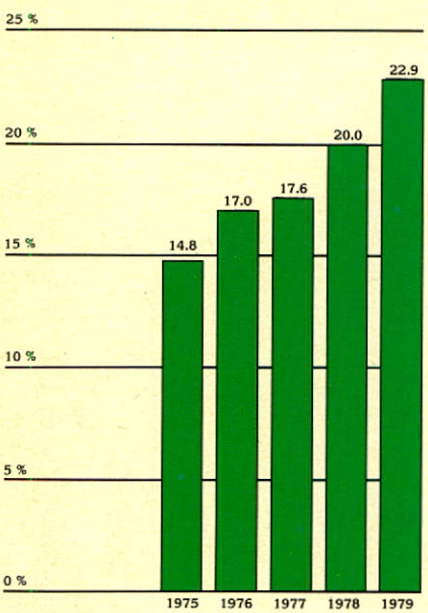


*Long-term debt, including amount payable within one year and notes payable.



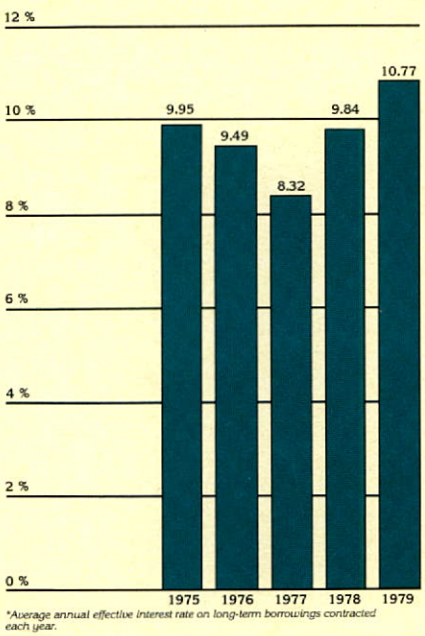
Work at a headrace.

Return on net worth*, 1975-1979



*Net income before allocations to reserves divided by the average of reserves at the beginning and end of each year.

Interest rates*, 1975-1979



*Average annual effective interest rate on long-term borrowings contracted each year.

Sales

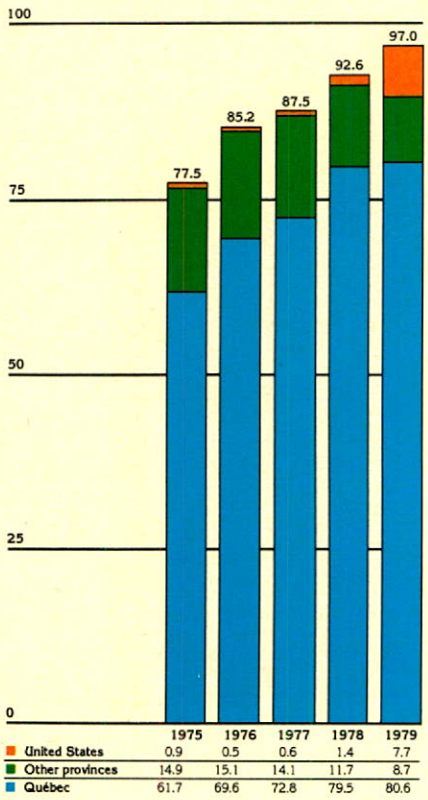
Total sales in 1979 amounted to 97.0 billion kilowatthours, an increase of 4.8 % compared with 1978. Sales of firm electricity accounted for 87.9 % of the total, and the remaining 12.1 % were sales of surplus electricity.

Some 80.6 billion kilowatthours of firm and surplus electricity were sold to Québec customers, an increase of 1.4 % over the 79.5 billion kilowatthours sold the year before. In 1979, firm electricity constituted 98.1 % of these sales and surplus electricity 1.9 %.

The higher level of total sales was attributable to a 24.8 % increase in sales outside Québec, which rose to 16.4 billion kilowatthours from the 13.1 billion kilowatthours of the preceding year. In 1979 firm electricity accounted for 37.4 % of these sales and surplus electricity for 62.6 %.

Construction of Hertel substation.

Breakdown of total electricity sales inside and outside Québec, 1975-1979
(in billions of kilowatthours)



	1975	1976	1977	1978	1979
United States	0.9	0.5	0.6	1.4	7.7
Other provinces	14.9	15.1	14.1	11.7	8.7
Québec	61.7	69.6	72.8	79.5	80.6

Sales of firm electricity in Québec

Residential use

Sales to residential customers totaled 25.9 billion kilowatthours, which represented 32.8 % of the total sales of firm electricity in Québec and produced 36.7 % of the revenue from all such sales. Residential consumption increased 5.6 % in 1979, which was somewhat less than the 7.2 % growth recorded in the previous year. However, when compared with the 10.0 % average annual increase over the last five years, the 1979 increase indicates a considerable slowdown in the growth of residential sales. Average consumption per customer account rose 3.0 %, which was less than the 3.9 % growth recorded in 1978. The number of residential customer accounts rose 2.5 %, the same rate as in 1978. The total number of such accounts at year-end amounted to 2,036,303.

Several diverging factors caused the changes in residential sales.

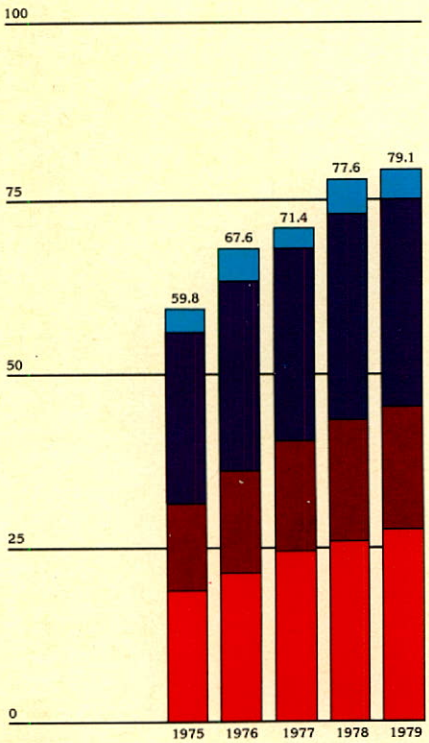
First, during the winter months of 1979 the number of degree-days, although close to the average for the ten previous years,

was nevertheless 9.0 % less than the number for the winter months of 1978, which had been a particularly cold year.

Second, there were only 41,730 housing starts in 1979, or 4.4 % fewer than in the preceding year.

However, greater use of electric heating again contributed to the growth of residential consumption. According to Hydro-Québec estimates, about 82 % of new dwelling units completed during the year are using this form of heating. In addition, some 28,000 existing dwellings were converted to electric heating, compared with nearly 17,000 in 1978.

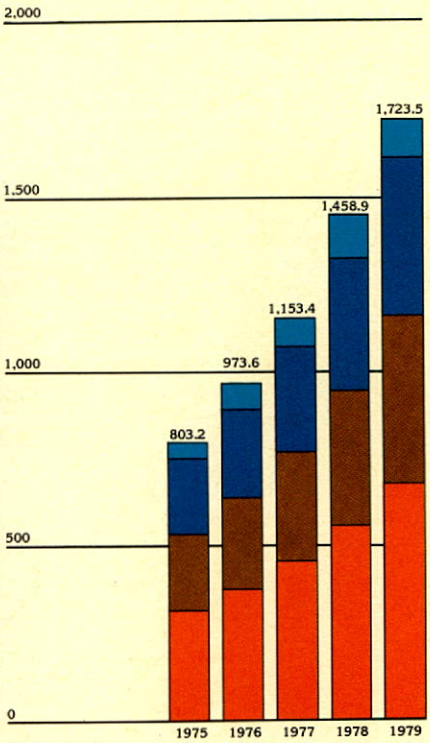
Breakdown of primary electricity sales in Québec by category of use, 1975-1979
(in billions of kilowatthours)



	1975	1976	1977	1978	1979
Other uses*	3.4	4.3	3.5	5.2	4.1
Industrial	24.5	27.0	27.7	29.4	29.8
General	13.1	14.7	15.8	16.9	17.7
Residential and farm	18.8	21.6	24.4	26.1	27.5

*Includes sales to municipal distribution systems, neighboring Québec systems, increase in unbilled sales and other.

Breakdown of revenue from primary electricity sales in Québec by category of use, 1975-1979
(in millions of dollars)



	1975	1976	1977	1978	1979
Other uses*	51.3	74.9	77.4	128.1	122.6
Industrial	218.3	260.7	304.3	376.2	453.5
General	218.2	261.0	312.8	395.7	478.0
Residential and farm	315.4	377.0	458.9	558.9	669.4

*Includes revenue from sales to municipal distribution systems, neighboring systems in Québec, increase in unbilled revenue and other.

Farm use

The number of farm accounts decreased 1.2 %, from 72,508 in 1978 to 71,639 in 1979. However, the average consumption per account rose from 21,180 kilowatthours to 22,244 kilowatthours. Sales to customers in this category totaled 1.6 billion kilowatthours.

General use

This category covers sales to commercial customers, schools, hospitals, hotels, some apartment buildings, office buildings, etc. These sales totaled 17.7 billion kilowatthours, or 4.7 % more than in 1978 when the increase had been 7.0 %. Sales to general-use customers accounted for 22.4 % of the firm energy sold in Québec during the year and 27.7 % of the revenue from such energy sales.

The situation in the commercial and institutional construction sector improved, with capital expenditures during the year amounting to $930 million, against $696 million in 1978.

However various measures taken to encourage certain customers to conserve energy resulted in a reduction in the growth of their consumption.

Industrial use

Sales to industrial customers represented 37.6 % of firm energy sales in Québec and 26.3 % of the revenue from such sales, reflecting the lower unit cost of supplying these customers. A total of 29.8 billion kilowatthours was sold to industrial customers during the year, an increase of 1.2 % compared with 1978. There were 11,257 industrial customer accounts at December 31, 1979, compared with 10,897 one year earlier.

Large increases in electricity sales to several sectors such as mining (26.0 % for metal-ore mines and 10.1 % for nonmetal-ore mines), steel-making (17.4 %) and the chemical industry (23.6 %) compensated for modest growth in sales to other sectors such as pulp and paper (1.9 %) and for reduced sales to sectors such as the electrometallurgy industry, a major customer of Hydro-Québec, which experienced prolonged work stoppages during the year.

Sales to industrial customers produced revenue of $453,524,000 or 20.6 % more than in 1978.

Berri substation.

Other sales

This category includes municipal distribution systems, neighboring systems in Québec, public lighting, "Sentinel" lighting (a service for private property), public transportation, Hydro-Québec's construction sites, and the increase in unbilled sales. Consumption for this category was 4.1 billion kilowatthours, a decrease of 20.9 % from 1978, due in large part to the acquisition of two municipal systems. Total revenue was $122,624,000.

The volume of sales to municipal systems dropped by 1.4 %, mainly because Hydro-Québec acquired the systems of Beloeil and Asbestos during the year.

Sales of firm electricity to neighboring systems within the province totaled 224 million kilowatthours, or 6.2 % more than in 1978, and they produced revenue of $2,551,000, an increase of 22.9 %.

Sales for public lighting, "Sentinel" lighting and public transportation, plus consumption at Hydro-Québec's construction sites, totaled 915 million kilowatthours, against 928 million in 1978. Total revenue was $44,456,000.

Sales of surplus electricity in Québec

Sales of surplus electricity to industrial customers and neighboring systems within the province amounted to 1.5 billion kilowatthours, or 19.2 % less than in 1978, and produced revenue of $11,637,000.

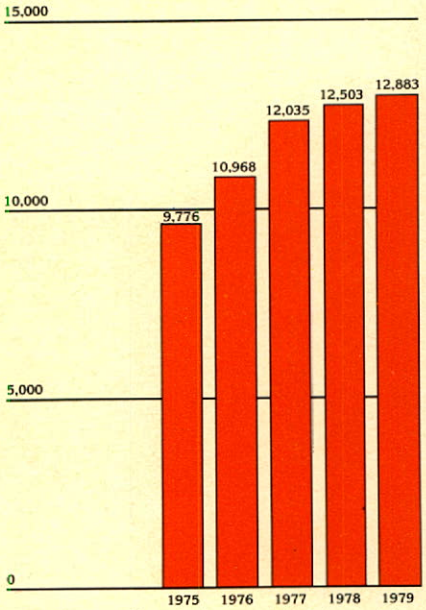
Sales outside Québec

Sales of firm electricity accounted for 37.4 % of sales outside the province. They totaled 6.1 billion kilowatthours and produced revenue of $60,349,000, or 48.8 % more than in 1978. Some 3.1 billion kilowatthours of this energy was delivered to the United States and the remainder to other Canadian provinces.

Sales of surplus energy totaled 10.3 billion kilowatthours, or 11.3 % more than in 1978, but the revenue from these sales increased 81.9 % to $160,894,000. This increase was due mainly to a much larger volume of sales to the United States, with prices based on the cost of alternative supplies.

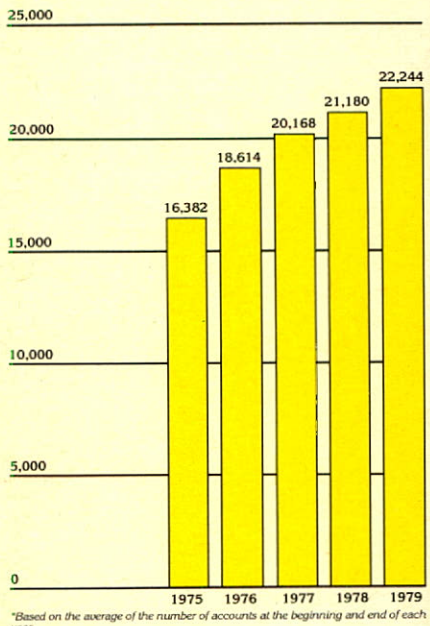
Sales of surplus electricity to other Canadian provinces declined 32.3 % to 5.7 billion kilowatthours.

Average annual consumption per residential account*, 1975-1979
(in kilowatthours)

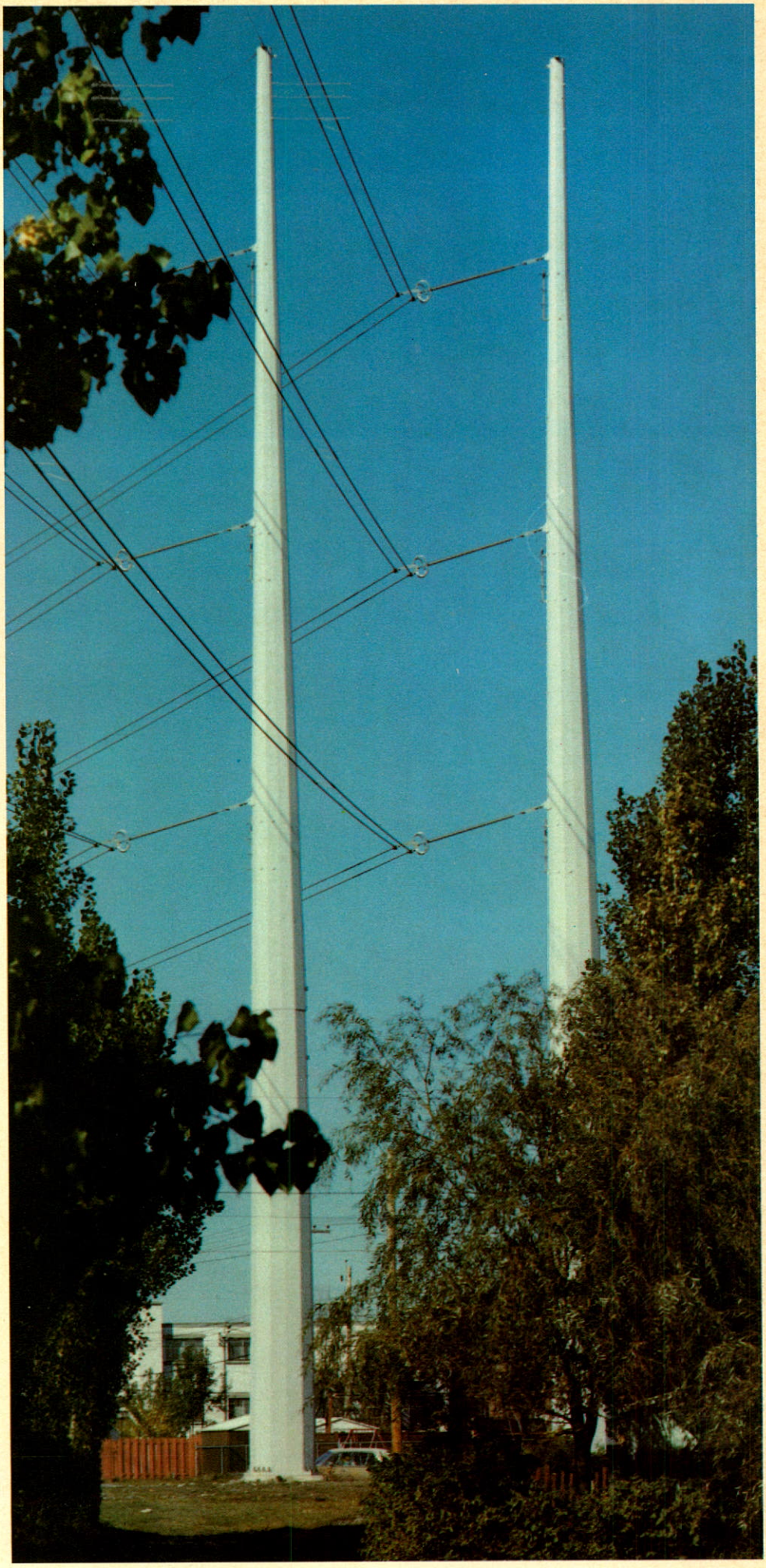


*Based on the average of the number of accounts at the beginning and end of each year.

Average annual consumption per farm account*, 1975-1979
(in kilowatthours)



*Based on the average of the number of accounts at the beginning and end of each year.



Improved-appearance 315-kV angle towers.

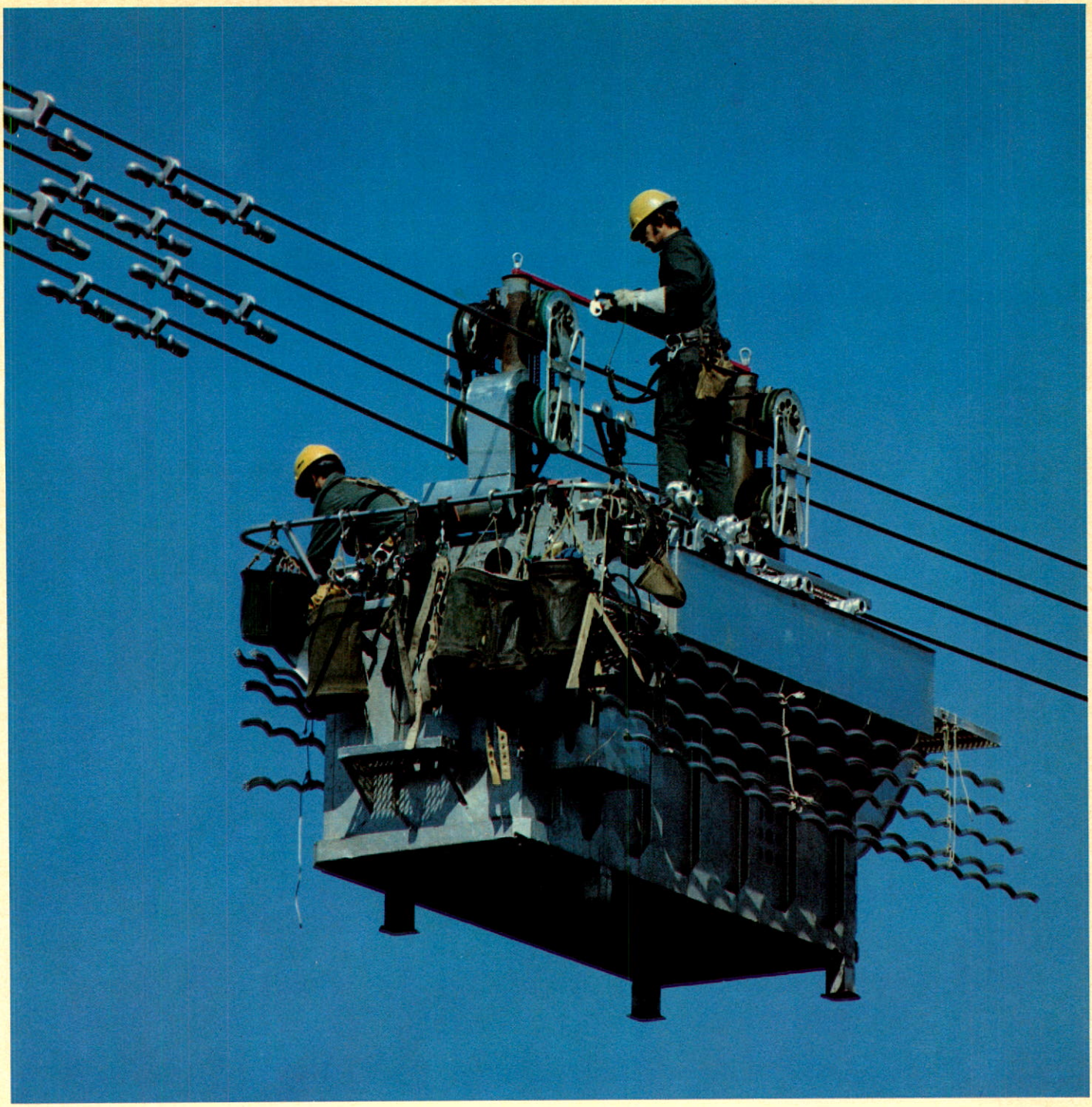
Interconnections

Hydro-Québec has agreements with neighboring Canadian systems in Ontario and New Brunswick and with neighboring American systems providing for exchanges of power and energy at times of need or surplus on one of the systems. A major interconnection with the Power Authority of the State of New York (PASNY) was placed in service at the end of 1978.

Hydro-Québec's sales to systems outside Québec and the resultant revenues increased markedly in 1979 for a number of reasons: the availability throughout the year of the interconnection with PASNY; favorable hydraulic conditions combined with careful management of reservoirs and run-of-river power stations; and lower demand than forecast from Québec customers.

Deliveries to other Québec systems

Deliveries to neighboring systems within Québec in 1979 totaled 3.8 billion kilowatthours, or 10.6 % less than in 1978. More than 88 % of these deliveries were made under existing energy-exchange agreements.



Transmission-line maintenance.

Deliveries outside Québec

Deliveries of electricity outside Québec totaled 16.5 billion kilowatthours, or 24.0 % more than in the previous year, and represented 17.0 % of total deliveries.

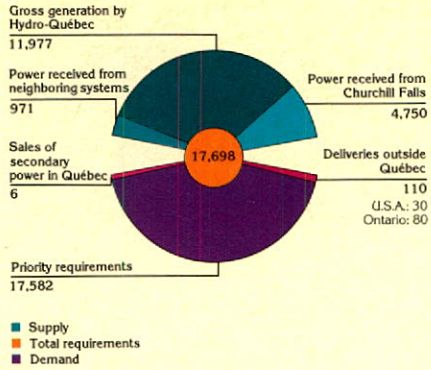
Because the new interconnection has made the United States' market more accessible, deliveries below the border rose to 7.7 billion kilowatthours from the 1.4 billion kilowatthours of 1978.

Deliveries of electricity to other Canadian provinces totaled 8.8 billion kilowatthours, which was still more than deliveries to the United States. However they accounted for only 53.5 % of total deliveries outside Québec, compared with 89.4 % in 1978, when they amounted to 11.9 billion kilowatthours.

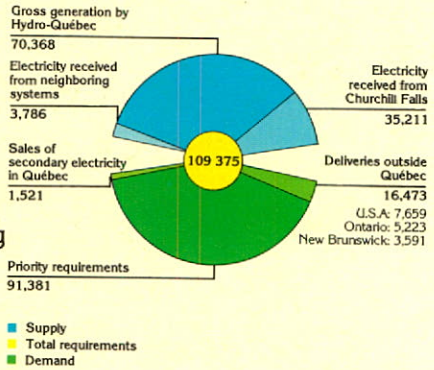
Power received

In 1979, the Hydro-Québec system received 39.0 billion kilowatthours from neighboring systems. This was 5.6 % less than in 1978. A number of generating units at Churchill Falls were temporarily out of service during the year and consequently deliveries from that plant amounted to only 35.2 billion kilowatthours, 4.7 % less than in 1978. Power received from other neighboring systems, at 3.8 billion kilowatthours, also decreased, in this case by 13.5 %.

Power supply and demand at time of 1979-1980 winter peak, at 6 p.m. on January 24, 1980
(in megawatts)



Energy supply and demand in 1979
(in millions of kilowatthours)

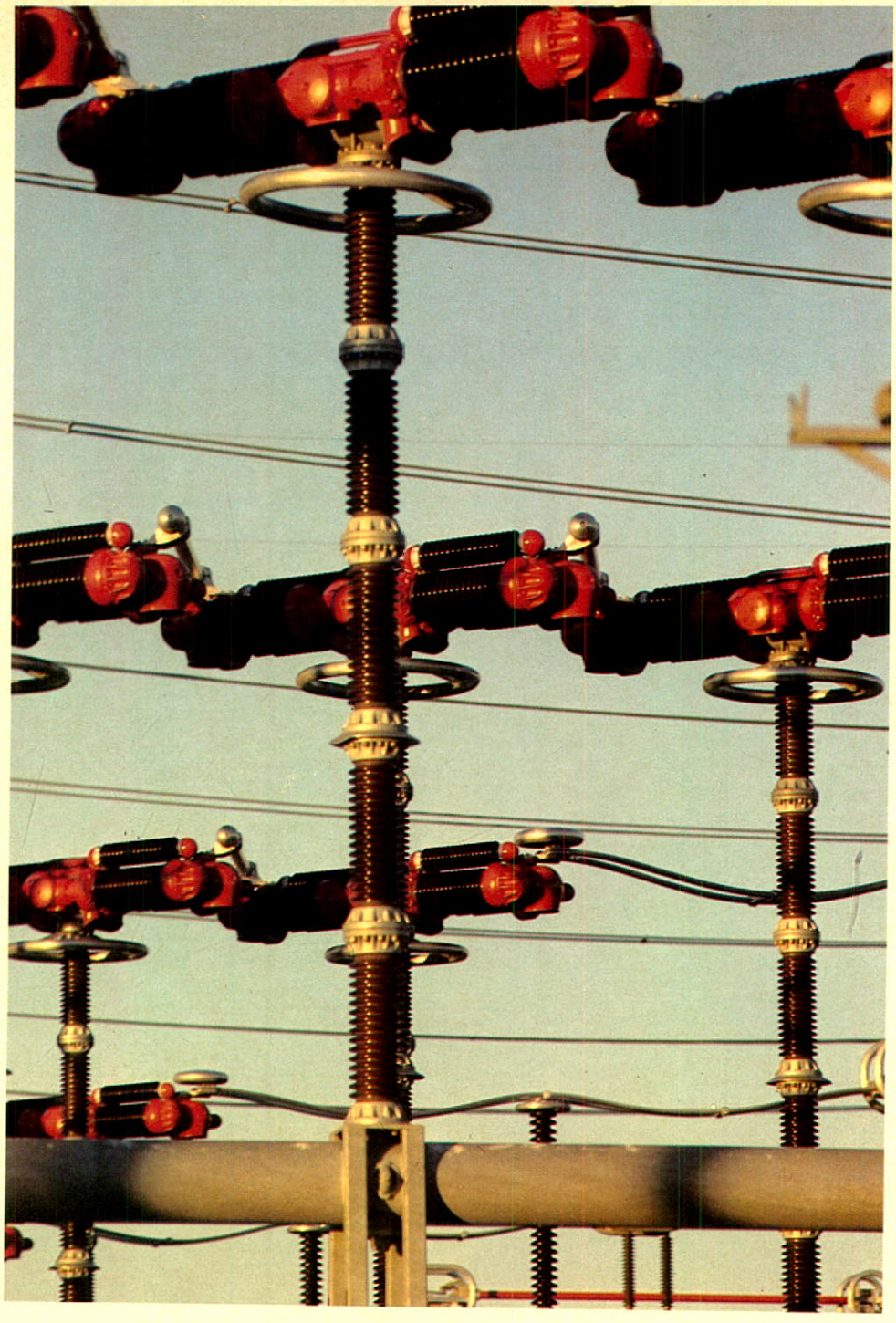


Production

Large increase in installed capacity

Installed capacity increased by 1,495,285 kilowatts during the year, bringing Hydro-Québec's total capacity to 14,474,535 kilowatts. The commissioning of the first four units at LG-2 powerhouse alone represented an increase of 1,332,000 kilowatts. Three new units in service at the La Citière gas-turbine station contributed an additional 150,660 kilowatts to installed capacity.

Two new diesel units with a combined capacity of 13,600 kilowatts were installed at the Cap-aux-Meules power station. (The name of this plant was changed to Îles-de-la-Madeleine in early 1980.) The La Tabatière diesel power station is now supplying customers formerly served by Harrington-Harbour power station, which has been retired.



Circuit breakers in a substation.

La Citière gas-turbine power station.

LG 3 construction site.

Production

During the year, the gross production of Hydro-Québec's generating stations was 70.4 billion kilowatthours, an increase of 7.0 billion kilowatthours or 11.1 % over 1978.

Hydraulic conditions

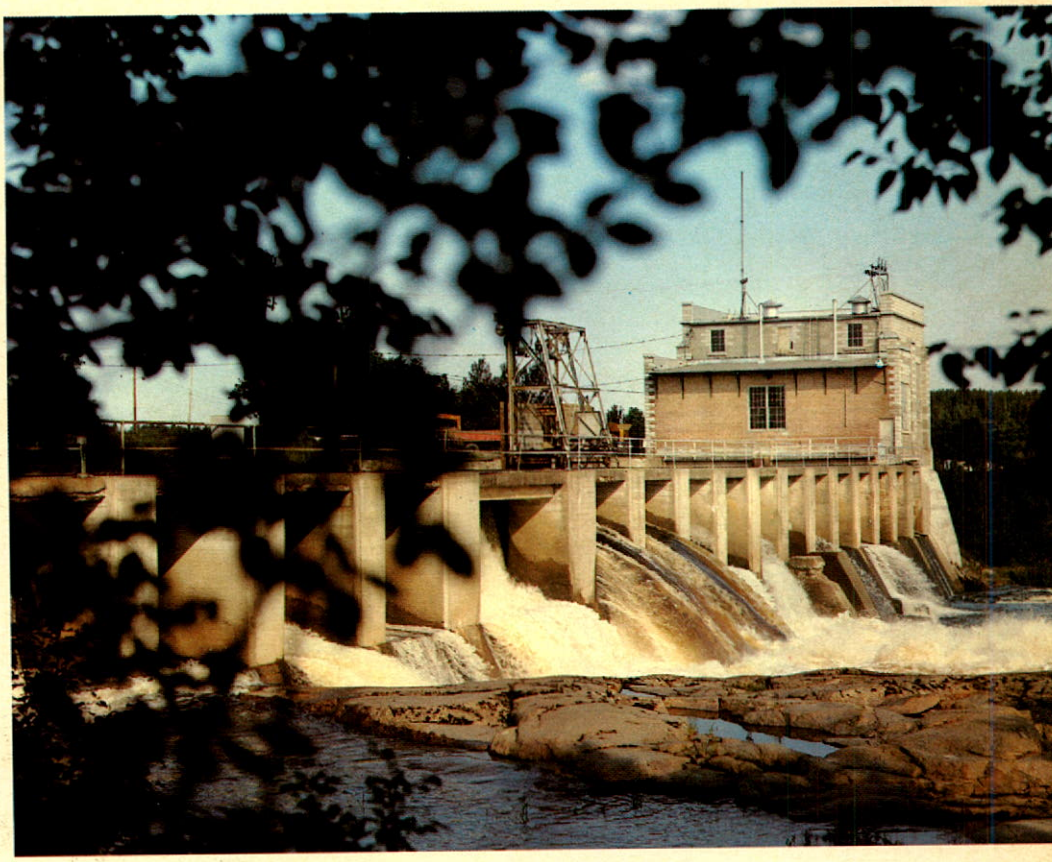
The 1979 runoff was 1.6 % greater than the average of the last 10 years for the river basins as a whole, although in the St. Lawrence and Saint-Maurice basins the runoff was 2.9 % less.

The largest runoff was in the Upper Ottawa river basin, where it was 28.3 % above the ten-year average. River basins on the North Shore of the St. Lawrence received runoff that was 13.3 % more than the ten-year average.

Reserves

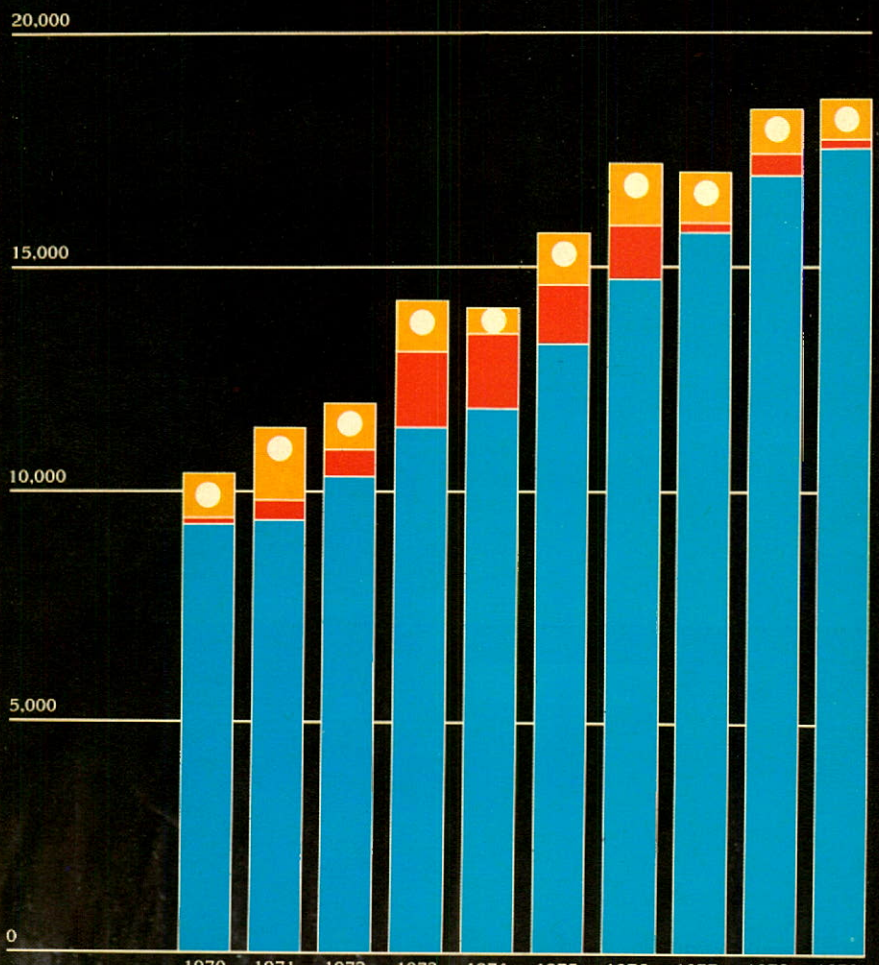
Despite a marked increase in hydroelectric production, the greater runoff in river basins with large storage reservoirs made it possible to considerably improve water reserves.

At January 1, 1980, the energy equivalent of the water in all Hydro-Québec's reservoirs was 52.5 billion kilowatthours, an increase of 10.4 billion kilowatthours in one year. At that date the reservoirs were filled to 90.2 % of their combined total capacity, which is equivalent to 58.2 billion kilowatthours. The LG-2 reservoir, newly placed in service, contributed an energy equivalent of 5.9 billion kilowatthours.



Chute-Garneau power station.

Available capacity and power requirements at time of system peak demand, for the winter period beginning December of each year, 1970-1979
(in megawatts)



	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Priority requirements*	9,302	9,435	10,244	11,446	11,932	13,337	14,783	15,785	17,059	17,582
Total requirements**	9,483	9,801	10,956	13,181	13,508	14,668	15,806	15,887	17,488	17,698
Available capacity at time of peak***	10,418	11,448	12,178	14,319	14,146	15,691	17,290	17,195	18,428	18,696
Net reserve	935	1,647	1,222	1,138	638	1,023	1,484	1,308	940	998

* *Electricity which Hydro-Québec must provide under its mandate as defined in section 22 of the Hydro-Québec Act: "The object of the Corporation shall be to supply power... to the citizens of this Province at the lowest rates consistent with sound financial administration."*

** *Total system load (at the system's generation and reception points), including losses and contractual interruptions.*

*** *Takes into account restrictions on generation and transmission.*

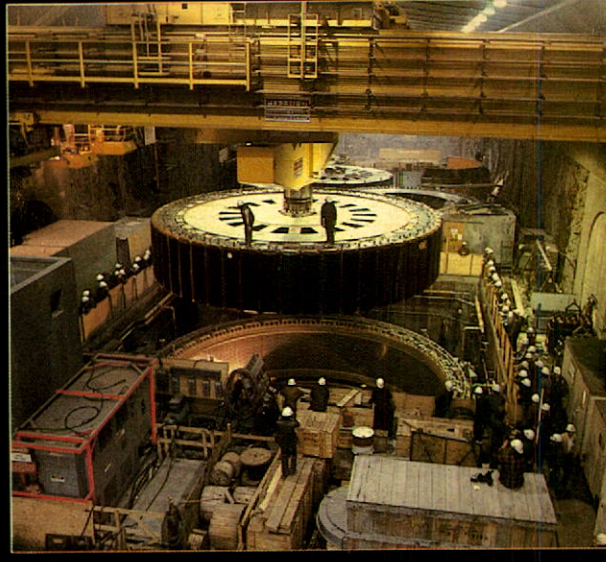
N.B. These figures include respectively 236, 138, 190 and 318 megawatts of contractual interruptions for the years 1975 to 1978.

System peak demand

The winter peak demand of the 1979-80 hydraulic year showed a smaller rate of increase than that of the previous year, due mainly to milder weather conditions.

The peak occurred at 6 p.m. on Thursday, January 24, 1980, when the firm demand on the Hydro-Québec system reached 17,582 megawatts. This was 3.1 % or 523 megawatts more than the previous winter's peak, which was recorded at 6 p.m. on February 14, 1979.

The priority requirements of the Hydro-Québec system went from 89.5 billion kilowatthours in 1978 to 91.4 billion kilowatthours in 1979. This marked an increase of 2.1 %, compared with the average of 5.7 % for the last five years.



Installing a turbine at LG-2.

The La Grande complex — phase 1, will also comprise two other power stations, LG-3 and LG-4.

Considerable progress was made on building the LG-3 dam, which is ahead of schedule. By year-end, 62% of the work on the northern section of the dam and 90% of the foundation-treatment work were finished. Work was completed on the largest of the 67 dykes required to create the reservoir. The southern dykes, 75 % completed, will probably be finished one year early.

Construction

Production equipment

Again this year construction activity, expenditures and personnel were heavily concentrated on the sites of the La Grande complex in the James Bay area.

The highlight of 1979 was the inauguration of LG-2 underground powerhouse on October 27. This was the first hydroelectric generating station in the James Bay region to be commissioned.

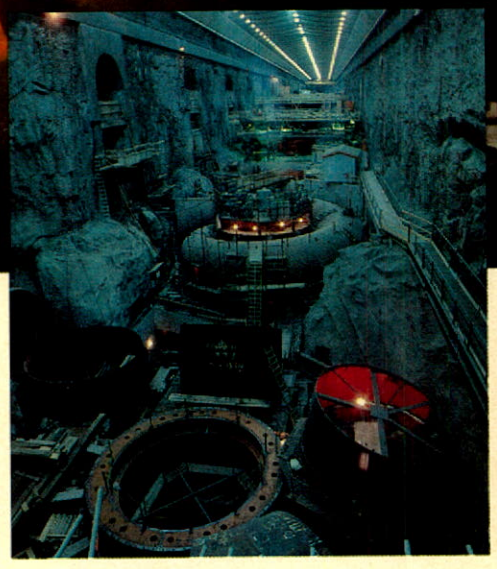
The four generating units placed in service at LG-2 before year-end added 1,332 megawatts to system capacity. When all the planned 16 units are on line at the end of 1981, this generating station will account for more than half of the 10,269-megawatt capacity of the entire La Grande complex — phase 1.

At LG-4, concreting of the bypass tunnel and excavation of the upstream and downstream plugs made it possible to open the tunnel. The heading faces for the powerhouse's nine penstocks were cleared by late November, almost four months ahead of schedule. Work on the intake, which has been excavated, is almost six months ahead of schedule.

The year also saw the end of four years' work on the EOL sites (Eastmain, Opinaca, La Grande). A reservoir with an area of 1,036 square kilometres has been created inside the drainage basin of the Eastmain, Opinaca and Petite Opinaca rivers, and the flow from the reservoir has been directed into the LG-2 forebay.

In July the Petite Opinaca river was blocked and by the end of October all the dams and dykes of the EOL project were completed. Concreting of the La Sarcelle control works was also completed in October. Impounding of the Opinaca reservoir started in late December.

Work on diverting the waters of the upper basin of the Caniapiscau river has proceeded to the stage that dykes now close certain secondary valleys at the tap-off point of the Caniapiscau, near Duplanter. The first of the two dams is 90 % complete after three years' work. For the second dam, the fill has been placed on the western section and the foundation has been treated for the eastern section. At Brisay, where the control structure of the Caniapiscau reservoir will be located, excavation of three of the six canals was begun and water was admitted to one of them in October.



Inside LG-2 powerhouse.

The LG-4-Caniapiscau road was opened in November, putting an end to five years of isolation alleviated only by winter roads and air travel. There is now a 1,130-kilometre road system from Matagami to Duplanter, covering a large part of the James Bay territory.

Construction of the generating facilities for the La Grande complex — phase 1 is generally ahead of schedule, and in certain cases, by a considerable period. At December 31, the Société d'énergie de la Baie James had invested $5,856,808,000 in the generating facilities, or 51.6 % of their estimated total cost, including $1,474,567,000 spent in 1979.

Hydro-Québec's work on generating facilities was not limited to the James Bay region. Other projects were started, continued or completed.

Carillon generating station has a rated capacity of 654.5 megawatts but the presence of shoal rock in the tailrace impeded the flow of water and thus reduced the actual capacity to 600 megawatts. Excavation of the shoal rock, started in 1979, will raise the capacity to 642 megawatts when the work is completed in 1980.

Work on building the La Citière gas-turbine generating station, with a rated capacity of 200.9 megawatts from four turbo-generators, began in June 1978 and was completed in the fall of 1979, when three of the generating units were placed in service. The fourth went on line in January 1980.

At Cap-aux-Meules, on the Îles-de-la-Madeleine, three 6.8 megawatt diesel generating units were installed, a new building was erected to house four diesel units, and an oil pipeline and auxiliary equipment were installed between the Cap-aux-Meules wharf and the power station. Two of the three units installed were commissioned at the end of 1979.

At Tracy thermal power station, in order to respect the new standards for environmental protection, a number of modifications had to be made to improve the quality of the air both outside and inside the powerhouse. This work started in the fall of 1979.

Construction of Gentilly-2 nuclear power station began in October 1973, and the plant was originally scheduled for commercial operation in late March 1981. In early 1979 damage was discovered in tubes of the steam generators after they had been delivered. Following investigation, it was decided to replace all the piping and to repair the steam generators on site. An agreement covering the repairs was signed with the supplier in November 1979. The project schedule is now being revised because of these repairs. By year-end about 96 % of the project's engineering work had been completed and 95 % of the permanent equipment had been delivered. Actual construction work was 90 % completed. Commercial operation is now expected in 1983.

Aerial view of LG-2.

Transmission system

The year saw many important accomplishments on the James Bay transmission system, which comprises the 735-kV power lines and substations that will link the La Grande complex to Hydro-Québec's main transmission system.

The first 735-kV line between LG-2 and Montréal was placed in service in October 1979, along with the LG-2, Némiskau, Abitibi, La Vérendrye and Chénier substations. These commissionings were three months ahead of the original schedule.

With the placing in service of Lebel substation in January 1980, the Abitibi system was connected to the main Hydro-Québec system. From now on, this region of Québec will have access to the power produced in the James Bay region.

Substantial progress was made on building certain sections of the second line. The LG-2-Némiskau section will be placed in service in 1980. Work is also proceeding on schedule on the section between Némiskau and Chénier substations in preparation for commissioning in July 1980.

The 735-kV line linking LG-2 power station, Chissibi substation and the LG-3 site was placed in service in January 1980, permitting important savings of diesel fuel at LG-3.

At year-end, capital expenditures for the James Bay transmission system, excluding the Montréal loop, amounted to $1,158,353,000, which is 30.7 % of the total estimated cost, and includes $540,896,000 spent in 1979.

A total of $144,571,000 had been spent, at year-end, on the 735-kV loop around Montréal, including $16,383,000 in 1979.

The southern section of the Montréal loop, between Hertel and Châteauguay substations, was placed in service in the spring of 1979, and the northern section, between Châteauguay and Duvernay substations, in October. The Montréal loop is now complete.

During the year, a total of more than 1,600 circuit kilometres of line rated 69 kV or more was added to the system, including 1,140 kilometres of 735-kV circuits. At year-end, the transmission system comprised a total of 26,210 circuit-kilometres, including 5,460 kilometres rated at 735 kV.

Distribution system

In 1979, Hydro-Québec spent $211,494,000 to extend and improve its distribution system. Operating and maintenance expenses totaled $136,627,000, compared with $115,556,000 in 1978, an increase of 18.2 %. The system was extended 2,800 kilometres, compared with 1,515 kilometres added in 1978. At year-end, distribution circuits totaled 83,215 kilometres in length, of which 3,250 kilometres were underground.

System automation and telecommunications

Work continued on the system automation program which is designed to provide a rapid, efficient source of information for system operators, enabling them to exercise continuous direct supervision of the system's main components and to plan their operating programs with the aid of computers.

Work proceeded on the data acquisition and processing system for the control centre and all the hardware, computers and peripheral equipment is now in operation at the supplier's plant.

Most of the year's work within the framework of this program concerned development of the software. Integration of the system was begun, and commissioning is now scheduled for late 1981.

Construction of the telecommunications system to link the James Bay power stations to consumption centres continued in 1979. The LG-2-Montréal microwave link was placed in service, along with the mobile-radio network and carrier-current system required for operation, maintenance and protection of the first James Bay line.

The first microwave relay receives its power supply from overhead ground wires. In 1980, the seven other relays on the system will be supplied by this new power-supply method developed entirely by Hydro-Québec.

The Abitibi-Pandora and Chénier-Saint-Jérôme-Duvernay microwave links were also placed in service.

A Chinese delegation invited by Hydro-Québec International.

Hydro-Québec abroad

The first complete year of activity of Hydro-Québec International was devoted to formulating market-development strategies and programs.

The corporation selected several target countries on which it will concentrate its efforts in coming years. Most of these countries are in South America and French-speaking Africa. Hydro-Québec International concluded agreements with various Québec consulting-engineering firms for joint promotion in some countries. Promotional activity was particularly intense in the People's Republic of China and Saudi Arabia.

Human Resources

At December 31, 1979, Hydro-Québec had 17,880 permanent employees, which was 950 or 5.6 % more than it had one year earlier. Their average age, 37.2 years, and their average length of service, 12.2 years, were virtually unchanged from 1978.

The number of temporary employees averaged 1,839 operating personnel and 3,105 construction workers, including Hydro-Québec personnel working at the construction sites of the Société d'énergie de la Baie James.

The utility paid $526,214,000 in gross salaries to its employees, including $88,467,000 to construction workers; in 1978 these amounts were $499,444,000 and $122,050,000 respectively.

In 1979, fringe benefits, including paid absences and the employer's contributions to employee-benefit plans, represented more than 40 % of basic salaries for permanent operating employees.

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nos dern

At the height of construction activity in the summer, the Société d'énergie de la Baie James and its subcontractors employed nearly 17,000 people, including 845 at head office. Hydro-Québec International, in its first year of activity, had 11 permanent employees.

On December 18, 1979, special legislation adopted by the Québec National Assembly ended a 21-day strike by three of Hydro-Québec's major union locals which group the trades employees, office workers and technicians, representing respectively 5,300, 4,700 and 1,700 permanent employees.

The new working conditions set out in the legislation are applicable until December 29, 1982. They include an indexing formula to protect salaries against inflation, and a stabilization formula to maintain Hydro-Québec salaries in line with those in comparable industries.

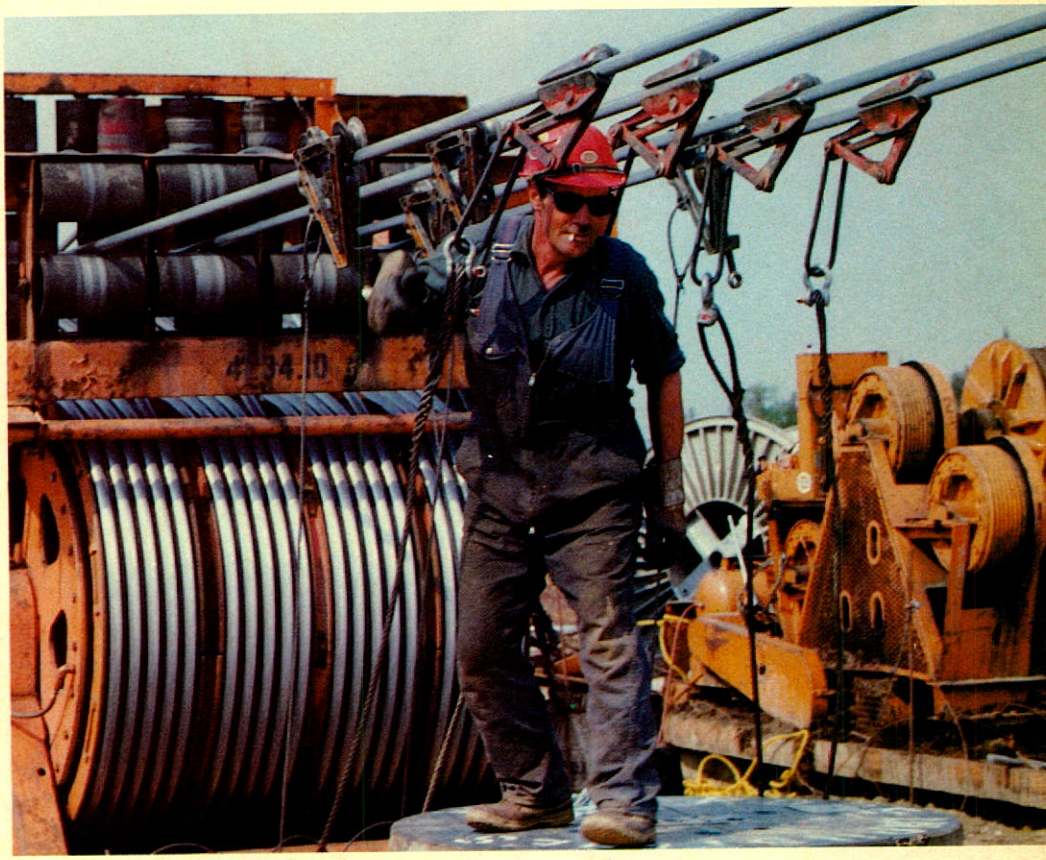
Improvements to fringe benefits include optional retirement at age 60 without penalty, annual indexing of pensions to a maximum of 2 %, the introduction of a pre-retirement program and additional pre-retirement vacation starting at age 60. A plan of parental leave was also introduced.

In addition, Hydro-Québec adopted measures to increase the pensions of its retired employees, their widows and beneficiaries.

Collective agreements with other groups of employees are in the process of being renewed. During 1979 negotiations began for the renewal of the collective agreement of the Fraternité des constables spéciaux d'Hydro-Québec. At the end of the year negotiations started for the renewal of the collective agreement of the Syndicat professionnel des ingénieurs d'Hydro-Québec, representing about 970 engineers.

On August 15, 1979, the Société d'énergie de la Baie James and local 6833 of the United Steelworkers of America, representing construction workers at the La Grande construction sites, renewed their collective agreement for a period of three years. Signature of this agreement ended a labor dispute between SEBJ and its unionized construction workers that had started on May 18.

On April 30, the construction-industry decree governing the majority of workers at the La Grande sites expired. It was extended to July 31, and negotiations have been under way since that date.



Preparing for the Future

In order to determine what installations it will need to meet electricity demand during the 1980s, Hydro-Québec conducts a program of studies and research that provides it with the data on which to base informed decisions regarding types of installation and their completion dates.

The various uncertainties facing industrial enterprises in the 1980s oblige them to adopt a more rigorous, yet more flexible, definition of their orientations. Before the end of this century, Hydro-Québec will be required to meet a larger electricity demand in a situation where some variables cannot be defined at present. The utility is taking this problem into account in the planning of its construction program, and in the steady pursuit of research in all fields related to electricity generation and the management of its installations.

Hydro-Québec continues to centre its construction program on the development of hydroelectric installations. Projects include base-load generating stations, pumped-storage stations, additions to existing hydroelectric plants, and studies on the feasibility of exploiting small rivers.

Base-load hydroelectric generating stations

Several studies on proposals for base-load hydroelectric generating stations are already well advanced. Some of the most important of these involve the James Bay region.

Phase 2 of the La Grande complex will comprise the harnessing of the Brisay, Laforge and Eastmain rivers, and the construction of the LG-1 power station. Studies indicate that this phase will add about 3,000 megawatts to the complex's installed capacity.

During the year, evaluation studies continued on the possible development schemes for the Nottaway-Broadback-Rupert (NBR) complex, in the southern part of the James Bay region.

Other studies are at various stages of advancement in the Ungava Bay region, on certain rivers in the Lower North Shore region (Petit Mécatina, Natashquan, Magpie and Moisie) and in the Saguenay region (Chamouchouane).

Hydro-Québec is also participating in a study of the Archipel project. This study is undertaken by the Québec government to examine the possibilities of developing the Lachine Rapids, on the St. Lawrence River.

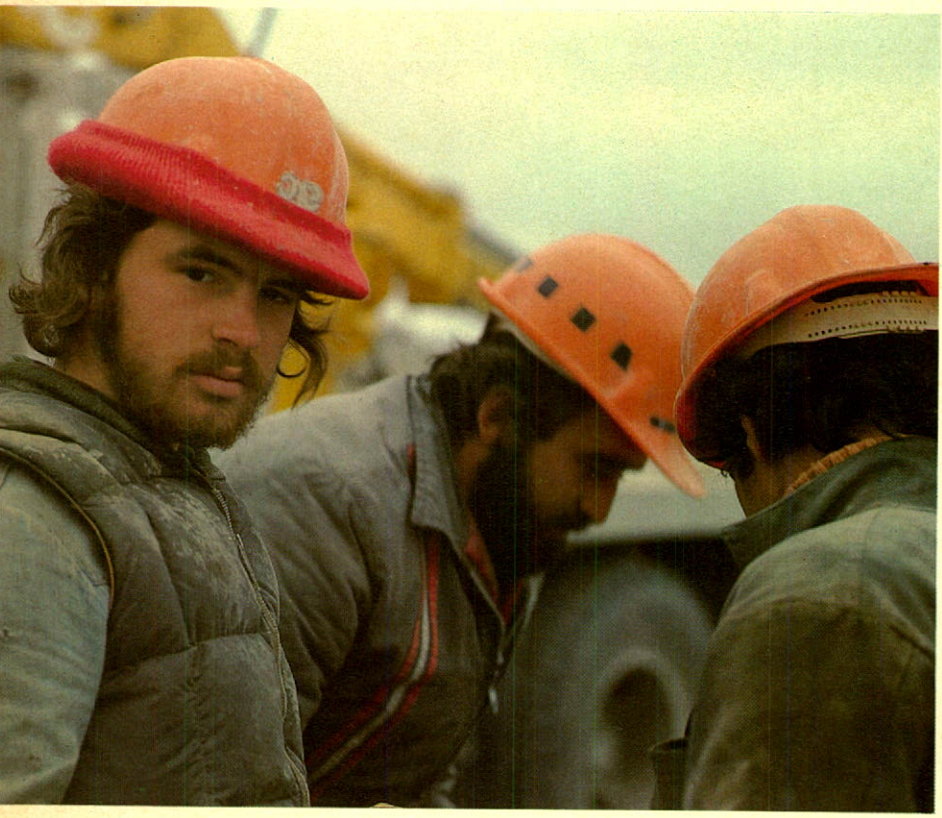
Pumped-storage generating stations

In 1979 studies for a pumped-storage station focused on three possible development sites: Lake Delaney near Saint-Raymond-de-Portneuf, Lake Proulx near Hull, and Lake Louis, near Saint-Tite-des-Caps. Each site could provide an installed capacity of 2,000 megawatts.

Additional capacity at existing generating stations

The project to build additional capacity at Manic-5 reached an important stage in 1979 when Hydro-Québec received complete authorization from the Québec government to proceed with construction. The project will comprise an underground powerhouse with four 250-megawatt generating units, built downstream from the Daniel Johnson dam. Work will begin in 1980, and commissioning of the powerhouse is scheduled for 1985.

Also in 1979, studies began on the construction of additional capacity at Bersimis-1, Outardes-4, LG-2 and LG-1.



Development of small rivers

Studies are under way on the possibility of developing small rivers, which have an estimated potential of 10,000 megawatts in Québec. The feasibility of several sites is now being verified.

Alternative production sources

Given the changing patterns of electricity demand and the fact that most of the economically-viable hydroelectric potential will be harnessed by the end of the century, Hydro-Québec is already looking at alternative energy sources.

Projects under consideration include gas-turbine generating stations for the production of peaking power and conventional-thermal stations for the production of base-load power.

Hydro-Québec is presently involved in construction of a 685-megawatt CANDU nuclear reactor at Gentilly, and it has been authorized by the Québec government to study the possibility of building a third reactor at the Gentilly site. The utility is continuing its analysis of the principal technical, economic and environmental characteristics of nuclear power, which is likely to succeed hydroelectricity as an economically-viable source of energy.

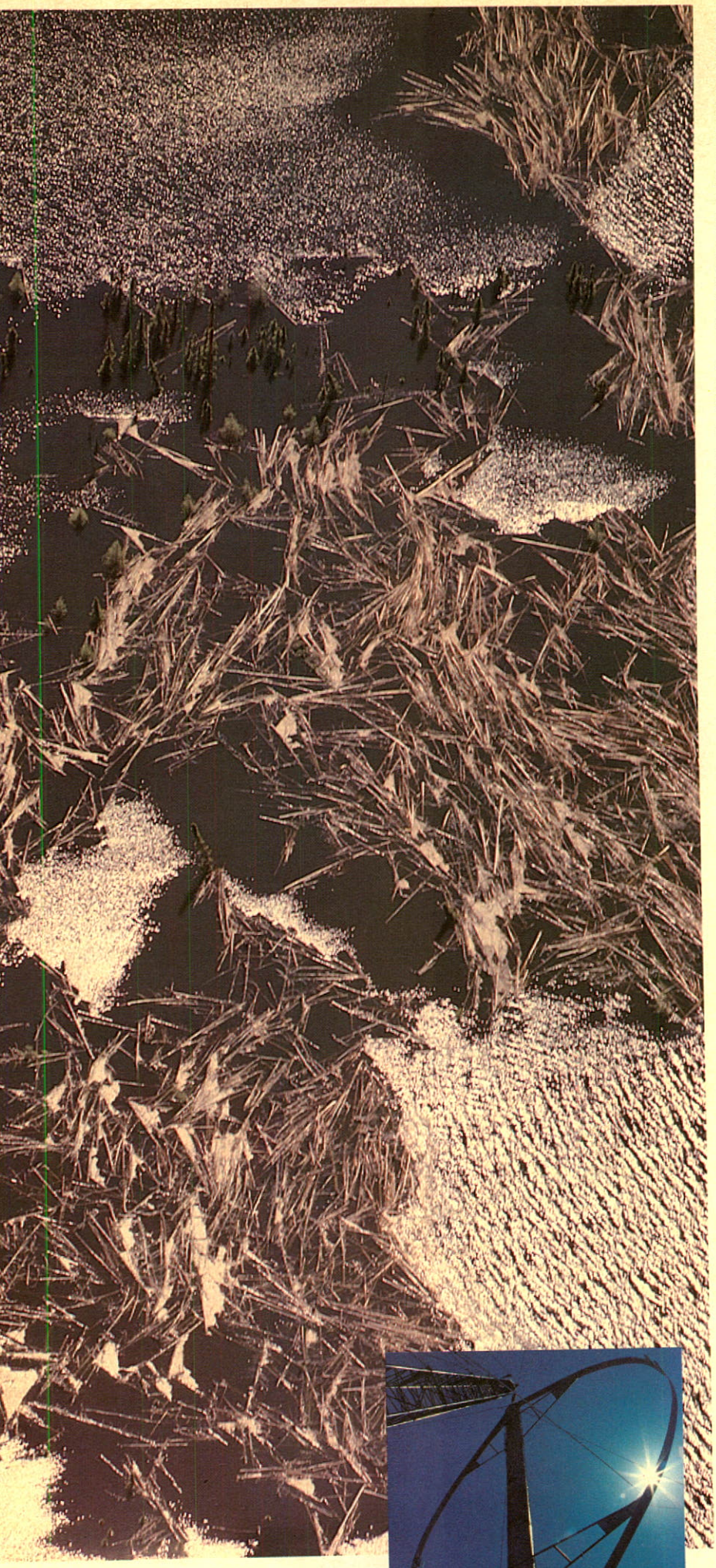
Hydro-Québec is also interested in thermonuclear fusion. The utility's research institute, IREQ, in collaboration with other Québec institutions, is conducting research in this field. It is also carrying out research on other alternative energy sources available in Québec: the sun, the wind and biomass.

Hydro-Québec's new ***chainette*** *(cross-rope) tower.*

IREQ is presently operating two wind-powered generators: a 230-kilowatt machine on the Îles-de-la-Madeleine and a 40-kilowatt machine at its own laboratories. At the request of the Québec government it completed a study on the construction of peat-fired power stations in remote regions of the province. Hydro-Québec subsequently carried out surveys to determine the location of peat deposits on Anticosti Island. Preliminary studies began in the fall of 1979 on construction at Port-Menier of a diesel generating station fueled by gasefied peat.

Hydro-Québec is also studying a proposal to build a peat-fired, conventional-thermal generating station in the Lac-Saint-Jean area, while the Ministère de l'Énergie et des Ressources is studying a similar project for the municipality of Parent, whose electrical system is not connected to Hydro-Québec's grid.

In 1979, IREQ continued studies on the use of heat pumps for space heating. Further investigation will compare the cost of electric or oil heating with the cost of space heating by various commercially-available heat pumps.



Recovery of wood residues from reservoir construction.

Wind-powered generator.

The transmission and distribution system

Over the next 10 years, the 735-kV transmission system will increase from 5,460 kilometres to approximately 13,000 kilometres with the commissioning of several hydroelectric generating stations at great distance from consumption centres. During the same period the number of 735-kV substations will double. To improve system stability and increase the capacity of interconnections with neighboring systems, Hydro-Québec will be building direct-current facilities.

Preliminary studies have begun for the addition of a 1,000-megawatt back-to-back converter station at the 735-kV Châteauguay substation. This project, which is scheduled for completion in 1984, will allow increased deliveries of power to the United States and Ontario.

At Beauharnois power station, the connection voltage of three generating units will be converted from 44kV to 120kV by 1983. The 115-megawatt output of these units could then be isolated for delivery to neighboring systems.

A study of interconnections between the Abitibi region and the Ontario system was also completed. The modifications recommended by the study would increase the capacity for surplus power deliveries from 120 to 200 megawatts.

In a continuing effort to blend its installations into the urban environment, Hydro-Québec is giving preference to the construction of substations with sulfur-hexafluoride insulation in densely populated areas.

Conversion of distribution circuits to 25 kV is continuing, and the automation program already under way on the transmission system is now being extended to the 25-kV distribution system. These improvements will reduce the number of distribution lines and substations, increase system stability at this voltage level, and ensure customers of better protection against technical breakdowns.

The improved-appearance 315-kV towers.

Energy savings and the rational use of electricity

In influencing the evolution of the demand for electricity, preference is given to promoting the efficient and rational use of energy. Energy savings and demand management are two closely related activities, and by reducing the demand for electricity or spreading it more evenly over time, they help considerably in the planning and economic utilization of capital equipment.

Hydro-Québec is therefore undertaking various studies related to energy savings and demand management. One study looks at the balance that should exist between the reliability of electricity service, the cost of providing this service, and the socio-economic consequences of service breakdowns. A second study looks at the changing energy situation and the pattern of Hydro-Québec's electricity sales. Other studies evaluate methods for the rational utilization of energy, and the overall picture of demand management and energy savings, in the light of international experience and the Québec government's energy policy.

Hydro-Québec and its Subsidiaries

Hydro-Québec is a government-owned public utility, ensuring the production and distribution of electricity throughout Québec. It was founded in 1944 with the nationalization of Montreal Light, Heat and Power Consolidated and Beauharnois Light, Heat and Power Company, both of which served the Montréal region. A second stage of nationalization in 1963 saw the purchase of most of Québec's remaining privately-owned electricity companies.

Today, Hydro-Québec supplies more than 85 % of Québec's electricity needs. The remainder is supplied by a few industrial concerns such as Alcan and McLaren Quebec Power, primarily for their own needs. Service in a few regions of the province continues to be provided by municipal systems and an electricity co-operative, which buy most of their electricity from Hydro-Québec. Hydro-Québec is however gradually acquiring these systems by mutual agreement; in 1979 the Asbestos and Beloeil systems were acquired, adding nearly 12,600 customer accounts to Hydro-Québec's system. At the beginning of 1980 Hydro-Québec acquired the Sainte-Anne-de-Bellevue system.

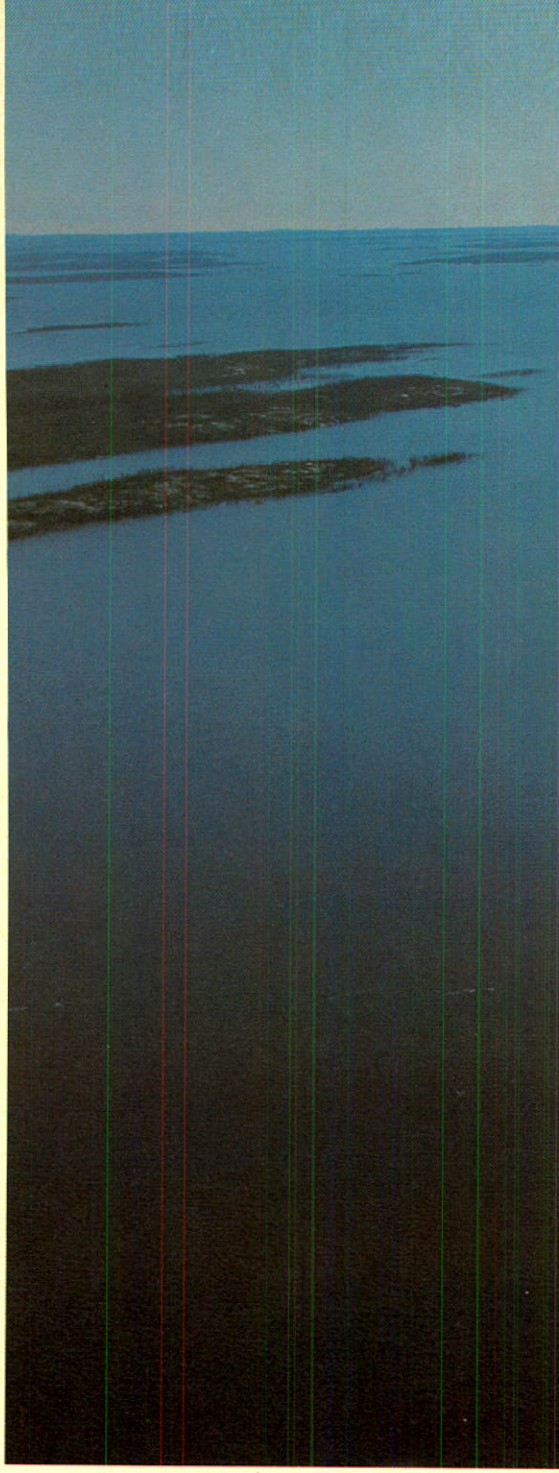
Under the terms of the Hydro-Québec Act of 1944, Hydro-Québec was created to supply power to the province of Québec at the lowest rates consistent with sound financial administration. This objective was not fundamentally changed by Bill 41, which in 1978 amended the Hydro-Québec Act, stating that: "To attain its objects, the Corporation shall estimate the needs of Québec in energy, and the means of meeting them within the scope of the energy policies that the Lieutenant-Governor in Council may otherwise establish."

tered by a board of directors whose 11 members are appointed by the Québec government. The president and chief executive officer of Hydro-Québec and the president and chief executive officer of the Société d'énergie de la Baie James (SEBJ) are ex officio members of the board.

SEBJ is a wholly-owned subsidiary of Hydro-Québec. Its mandate is to carry out, on behalf of its parent company, development of the hydroelectric resources in the La Grande Rivière basin, and in the river basins adjoining the La Grande complex. In addition, SEBJ can also be mandated by Hydro-Québec to carry out, in accordance with conditions agreed upon between the two companies, engineering, construction and project-management work for hydroelectric developments, transmission lines and substations, and any other large-scale projects entrusted to it by Hydro-Québec.

The members of the board of directors of Hydro-Québec are also, under the terms of the legislation, the directors of SEBJ. The chairman of Hydro-Québec's board of directors is also the chairman of the board of SEBJ.

Hydro-Québec International, created by letters patent on October 18, 1978, is also a wholly-owned subsidiary of Hydro-Québec. Its chairman and board of directors are the same as those of Hydro-Québec and SEBJ. Hydro-Québec International's mandate is to act as consultant on matters relating to the production, transmission and distribution of electrical energy, and to offer the know-how and expertise of Hydro-Québec in these domains for the planning and/or construction of electrical projects or the supply of services outside Québec.



Part of the immense area being developed by Société d'Énergie de la Baie James.

Financial participation in other companies

Hydro-Québec is a shareholder (35 % of the capital) with three other Québec government-owned enterprises, in Nouveler Inc. Created by letters patent on January 30, 1980, Nouveler is responsible for the production, distribution and sale of energy, fuels or installations in the domain of alternative energy: that is, all energy sources other than hydro-electricity, natural gas, oil, coal and nuclear power. Nouveler will also promote industrial, manufacturing and commercial activities directly or indirectly related to alternative energy sources and energy conservation.

In addition Hydro-Québec owns 34.2 % of the capital of Churchill Falls (Labrador) Corporation Limited (CFLCo), which operates the Churchill Falls power station. Under the terms of a long-term contract, most of the production from this 5,225-megawatt power plant is available to Hydro-Québec.

Québec, 100 years of electricity, 1879-1979.

Hydro-Québec **Annual Report** 1979
Financial Statements and Statistics

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Auditors' Report

We have examined the consolidated balance sheet of Hydro-Québec as at December 31, 1979 and the consolidated statements of operations, reserves, and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these consolidated financial statements present fairly the financial position of Hydro-Québec as at December 31, 1979 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles. These accounting principles have been applied on a basis consistent with that of the preceding year, except for the change in the method of determining the interest rate charged to Construction work in progress as described in Note 1(i) to the consolidated financial statements.

Montréal, Canada,
April 14, 1980.

Samson, Bélair & Associés
Chartered Accountants

H. Marcel Caron & Associés
affiliated with Clarkson Gordon
Chartered Accountants

Consolidated Statement of Operations

(in thousands of dollars)
for the year ended December 31

		1979	1978
Revenue	Sales of electricity:		
	Primary	$ 1,783,860	$ 1,499,458
	Secondary	172,531	100,043
		1,956,391	1,599,501
	Other operating income	21,167	22,113
		1,977,558	1,621,614
Expenditure	Operating, maintenance, administration and other	557,662	448,740
	Power purchased	128,973	125,593
	Provision for renewals (depreciation)	138,436	107,970
	Provincial levy (Note 2)	5,000	20,000
	School and municipal taxes	20,249	20,388
		850,320	722,691
Net operating income		1,127,238	898,923
	Interest (Note 3)	381,027	375,980
Net income before allocations to reserves		$ 746,211	$ 522,943
Allocations to reserves	Interest	$ 291,490	$ 200,504
	Provisions:		
	Contingencies	364,156	252,584
	Rate stabilization	39,128	31,990
	Amortization of capital invested	51,437	37,865
		454,721	322,439
		$ 746,211	$ 522,943

See accompanying notes

Hydro-Québec

Consolidated Balance Sheet

(in thousands of dollars)
as at December 31

	Assets	1979	1978
Fixed assets	Property and plant:		
	In service	$ 9,181,617	$ 6,758,979
	Reserve for renewals (accumulated depreciation)	1,490,370	1,363,095
		7,691,247	5,395,884
	Construction work in progress	6,565,439	6,220,866
		14,256,686	11,616,750
	Construction, operating and research equipment, at cost less accumulated depreciation	108,704	90,975
		14,365,390	11,707,725
Current assets	Cash and short-term investments	202,174	431,451
	Accounts receivable and unbilled revenue	501,808	386,783
	Materials, fuel and supplies	136,120	91,329
		840,102	909,563
Other assets	Investments (Note 4)	131,043	131,576
	Unamortized debenture discount and expenses	133,718	101,935
	Unamortized deferred cost on purchase of energy	34,722	35,686
		299,483	269,197
		$ 15,504,975	$ 12,886,485

	Liabilities and Reserves	1979	1978
Long-term debt	Bonds and debentures less sinking funds (Note 5)	$ 10,465,641	$ 8,900,099
	Other long-term debt (Note 6)	221,413	194,727
		10,687,054	9,094,826
	Amount payable within one year	332,866	197,368
		10,354,188	8,897,458
Notes payable	Notes payable within one year	**155,456**	55,119
Current liabilities	Bank indebtedness	20,251	52,713
	Accounts payable and accrued liabilities	592,583	479,351
	Accrued interest	421,605	322,661
	Long-term debt payable within one year	332,866	197,368
		1,367,305	1,052,093
Reserves	Contingencies	1,941,579	1,432,525
	Rate stabilization	552,632	466,336
	Amortization of capital invested	1,133,815	982,954
		3,628,026	2,881,815
		$ 15,504,975	$ 12,886,485

See accompanying notes

On behalf of Hydro-Québec:
(signed) Lucien Saulnier
(signed) Robert A. Boyd

Montreal, Canada,
April 30, 1980.

(signed) Roger Girard
Directeur général
Contrôle et Comptabilité

Consolidated Statement of Reserves

(in thousands of dollars)
for the year ended December 31

	1979				1978
	Contingencies	Rate stabilization	Amortization of capital invested	Total	Total
Balance, beginning of year	$ 1,432,525	$ 466,336	$ 982,954	$ 2,881,815	$ 2,358,872
Add:					
Interest	144,898	47,168	99,424	291,490	200,504
Provisions	364,156	39,128	51,437	454,721	322,439
Balance, end of year	$ 1,941,579	$ 552,632	$ 1,133,815	$ 3,628,026	$ 2,881,815

See accompanying notes

Consolidated Statement of Changes in Financial Position

(in thousands of dollars)
for the year ended December 31

		1979	1978
Source of financial resources	Operations :		
	Net income before allocations to reserves	$ 746,211	$ 522,943
	Items not resulting in an outlay of financial resources:		
	Provision for renewals (depreciation)	138,436	107,970
	Depreciation of operating and research equipment	16,911	14,932
	Amortization of debenture discount and expenses	10,979	9,037
	Other amortization and depreciation	6,377	5,707
	Total financial resources provided by operations	**918,914**	660,589
	Issue of debentures and other long-term debt less discount and expenses	1,766,109	1,537,194
	Increase in notes payable	100,337	36,441
	Decrease in cash and short-term investments less bank indebtedness	196,815	354,130
	Increase in accounts payable and accrued liabilities and accrued interest	212,176	212,521
	Sundry items	1,350	(1,498)
		$ 3,195,701	$ 2,799,377
Application of financial resources	Investments in fixed assets	$ 2,817,259	$ 2,588,411
	Redemptions of bonds and debentures and other long-term debt	218,626	115,480
	Increase in accounts receivable and unbilled revenue	115,025	84,324
	Increase in materials, fuel and supplies	44,791	11,162
		$ 3,195,701	$ 2,799,377

See accompanying notes

Note 1

Summary of significant accounting policies

A summary of the major accounting policies of Hydro-Québec is presented below to assist the reader in analyzing the consolidated financial statements.

a) Consolidation

The consolidated financial statements include the financial statements of Hydro-Québec and of all its subsidiary companies including the Société d'énergie de la Baie James.

b) Rates and Reserves

Under the provisions of its Act, the object of Hydro-Québec is to supply power in the Province de Québec at the lowest rates consistent with sound financial administration. More specifically, the Hydro-Quebec Act provides that the rates should be maintained at a level sufficient to defray all costs and to accumulate three reserves: Contingencies, Rate stabilization and Amortization of capital invested. Rates are fixed by Hydro-Québec and are subject to the approval of the gouvernement du Québec.

Each year, Hydro-Québec must credit to these three reserves, from its net income, interest calculated at a rate equivalent to the weighted average of the effective interest rates on all its outstanding long-term debt (10.11 % in 1979 and 8.50 % in 1978). The balance of net income is allocated to the reserves and contributes to an adequate coverage of interest charges and to the financing of part of the construction program.

The three reserves constitute the net worth of Hydro-Québec.

c) Investments

All of the short-term investments are shown at cost, which approximates market value. The long-term investments are carried at cost (see Note 4).

d) Materials, fuel and supplies

Hydro-Québec values its inventories of materials, fuel and supplies on the basis of average cost. The materials and supplies are primarily those required for the construction and maintenance of its distribution system.

e) Unamortized deferred cost on purchase of energy

In accordance with the terms of a contract with Churchill Falls (Labrador) Corporation Limited ("CFLCo") (see Note 8), Hydro-Québec absorbs the part of the interest charges attributable to the excess of the effective interest rate on the First Mortgage Bonds of CFLCo over 5½ % and on other indebtedness over 6 %. The portion of these payments that was deferred before the plant reached full production in 1975 is amortized over the life of the contract on a straight-line basis (40 years) by charges to the cost of power purchased. Annual payments which Hydro-Québec has to make under this agreement are also charged to the cost of power purchased.

f) Sinking funds

Hydro-Québec invests substantially all of its sinking funds in its own debentures and in bonds of its subsidiaries and follows the practice of carrying these investments at par, which may not be indicative of cost or current market value. The resulting profit, net of unamortized debenture or bond discount and other expenses, is included with interest expense in the consolidated statement of operations. Debentures or bonds of an issue purchased for the sinking fund of that issue are cancelled.

g) Foreign currency translation (see Note 5)

Consolidated long-term debt payable in foreign currencies is shown on the balance sheet at the Canadian dollar equivalent at the dates of borrowing. Current assets and liabilities, including long-term debt payable within one year, denominated in foreign currencies, are translated into Canadian currency at year-end rates of exchange and the resulting unrealized exchange gains or losses, together with exchange gains and losses at maturities of debentures and at purchases for sinking funds, are included with interest expense in the statement of operations.

h) Property and plant, and Reserve for renewals (accumulated depreciation)

Property and plant include generation, transmission, distribution and administration and service facilities. They are carried at cost which includes materials, direct labor and overhead costs such as engineering and administration costs that are applicable to the construction program. The cost also includes interest charged to Construction work in progress as explained under (i) below. Expenditures for additions, improvements and renewals are capitalized and expenditures for maintenance and repairs are charged to operations.

Note 1 — Summary of significant accounting policies (cont'd)

Preliminary engineering, investigation work and survey costs incurred on projects before their authorization for construction are included in Construction work in progress and no interest is charged on these costs until such authorization. When a project is abandoned, its costs are charged to operations.

The costs of generating facilities are transferred to Property and plant in service by instalments proportionate to the number of generating units completed and in service in relation to the total number of units of the project. The costs of transmission, distribution and other facilities are transferred to Property and plant in service when completed and in commercial operation.

Hydro-Québec uses a sinking fund method of providing for depreciation of its property and plant, including intangible assets, based on their respective estimated service lives. The rate of interest used in applying this method is 3 %.

The expected service lives for the main categories of Property and plant in service are as follows:

Category	Life
Hydraulic powerhouses	50 years
Hydraulic turbines and generators	40 years
Dams and reservoirs	50 years
Transmission towers (steel) and conductors	50 years
Distribution poles (wood)	25 years
Distribution conductors	40 years
Intangible assets	25 years

i) Interest charged to Construction work in progress

Interest is charged to Construction work in progress at a rate equivalent to the weighted average of the effective interest rates on debentures of Hydro-Québec issued to finance such construction. This rate was 10.47 % in 1979 and 9.02 % in 1978.

Effective January 1, 1979, the rate includes the foreign exchange fluctuations on interest payments made in foreign currencies. Prior to 1979, the rate was determined without making allowance for such exchange fluctuations. The effect of this change was to increase interest capitalized by approximately $ 69,000,000 in 1979.

j) Construction, operating and research equipment

This equipment is carried at cost. Hydro-Québec uses the straight-line method of providing for depreciation of these assets based on their respective estimated service lives. The cost of equipment used for the construction of major generating facilities is included in Construction work in progress.

k) Unbilled revenue

Revenues are recorded on the basis of cyclical billings and accrued in respect of energy delivered but not billed.

Note 2

Provincial levy

At the end of March 1979, the levy of $ 20,000,000 payable annually to the gouvernement du Québec by Hydro-Québec as a charge against revenue was eliminated, and Hydro-Québec then became subject to the retail sales tax, which is currently 8 %.

Moreover, under the new law on municipal taxation effective January 1, 1980, Hydro-Québec will continue to pay municipal and school taxes levied on its land and buildings. On the other hand, the special taxes on the production, transmission and distribution facilities of Hydro-Québec have been cancelled. Besides, an annual 3 % tax on the previous year's gross revenue from virtually all of its sales of electricity to Québec customers has been imposed. The 1980 payment for this tax is estimated at approximately $ 52,000,000. The new tax will be collected by the gouvernement du Québec for distribution to municipalities.

Note 3

Interest

	1979 ($'000')	1978 ($'000')
Interest on long-term debt	$ 971,503	$ 785,411
Interest on bank indebtedness and notes payable	12,972	5,299
Amortization of debenture discount and expenses	10,979	9,037
Foreign exchange loss on repurchase of debentures and translation of current assets and liabilities	107,265	61,311
	1,102,719	861,058
Less:		
Interest charged to Construction work in progress	651,374	414,841
Investment income	59,770	64,096
Net profit on repurchase of debentures	10,548	6,141
	721,692	485,078
	$ 381,027	$ 375,980

Note 4

Investments

	1979 ($'000')	1978 ($'000')
Churchill Falls (Labrador) Corporation Limited ("CFLCo") (see Note 8)		
General Mortgage Bonds, 7½ %, due 2010 (par value $100,000,000)	$ 90,500	$ 90,500
Common shares	34,333	34,333
	124,833	124,833
Gelco Enterprises Ltd., 4 % unsecured note, due 1991	6,119	6,652
Sundry investments	91	91
	$ 131,043	$ 131,576

The shares of CFLCo are held 65.8 % by Newfoundland and Labrador Hydro-Electric Corporation (a crown corporation of the Province of Newfoundland), and 34.2 % by Hydro-Québec. The share of Hydro-Québec in the earnings, dividends and retained earnings of CFLCo to December 31, 1979 is as follows:

	Earnings ($'000')	Dividends ($'000')	Retained earnings (see below) ($'000')
Share of retained earnings at January 1, 1978			$ 39,885
1978	$ 12,782	$ 9,882	2,900
1979	11,055	8,325	2,730
Share of retained earnings at December 31, 1979			**$ 45,515**

Dividends are included in investment income (see Note 3).

During 1976, CFLCo qualified for exemption from income taxes and added to its retained earnings of that year deferred income taxes accumulated since the beginning of its operations. In order not to deprive the Province of Newfoundland of the income tax revenues that it would have been entitled to, had the CFLCo tax status not been changed, the two shareholders have agreed that dividends would be paid by CFLCo to the Province of Newfoundland for amounts equivalent to the income taxes that it would have otherwise received.

Note 5

	Series	Interest rates	Years of issue	Years of maturity		Bonds and debentures ($'000')	
Bonds and debentures	**Debentures of Hydro-Québec — Guaranteed by the Province de Québec**						
	*"N"	3½ %	1956	1981	$	16,826	U.S.
	*"P"	4¼ %	1956	1981		13,658	U.S.
	*"S"	5 %	1957	1982		13,026	
	*"T"	3¾ %	1958	1983		24,206	U.S.
	*"W"	5 %	1959	1980		18,106	
	*"X"	5 %	1959	1984		30,325	U.S.
	*"Z"	5½ %	1960	1982		21,850	
	*"AA"	5½ %	1960	1983		16,672	
	*"AB"	5½ %	1961	1985		26,276	
	*"AC"	5½ %	1961	1985		24,455	
	*"AD"	5½ %	1962	1982		28,148	
	*"AF"	5¾ %	1962	1984		36,147	
	*"AG"	5 %	1963	1988		202,002	U.S.
	*"AM"	5¼ %	1963	1986		32,947	
	*"AN"	5½ %	1964	1984, 1994		28,121	
	*"AO"	4½ %	1964	1994		50,000	U.S.
	*"AP"	4¾ %	1964	1989		35,375	U.S.
	*"AQ"	5½ %	1964	1988		42,349	
	*"AR"	5½ %, 5 %	1965	1987, 1995		49,595	
	*"AS"	4⅝ %	1965	1985		40,735	U.S.
	*"AT"	5¼ %	1966	1987		39,616	U.S.
	*"AU"	6 %	1966	1991		37,770	
	*"AV"	5⅜ %	1966	1992		47,668	U.S.
	*"AW"	6 %	1966	1980, 1990		37,049	
	*"AX"	6¼ %	1966	1991		29,346	U.S.
	*"AY"	6¼ %	1967	1993		45,674	U.S.
	*"AZ"	6½ %	1967	1990		29,258	
	*"BA"	6¼ %	1967	1993		40,538	U.S.
	*"BB"	6½ %	1967	1992		39,629	U.S.
	*"BC"	7 %, 6 %, 7%	1967	1980, 1994		44,186	
	*"BD"	6⅞ %	1968	1989		50,708	U.S.
	*"BE"	7½ %, 7 %	1968	1980, 1994		37,524	
	*"BF"	7¾ %	1968	1986		22,329	U.S.
	*"BG"	7¼ %	1968	1991		41,382	U.S.
	* —	6¾ %	1969	1984 (75,000,000 Deutsche marks)		20,108	
	* —	7¼ %	1969	1984 (50,000,000 Deutsche marks)		13,522	
	*"BH"	7¾ %	1969	1990		206	
	*"BI"	8¾ %	1969	1999		43,352	U.S.
	*"BK"	8½ %	1969	1992		23,915	
	*"BL"	9¾ %	1969	1995		44,646	U.S.
	*"BM"	9½ %	1970	1990		5,576	
	*"BN"	9¼ %	1970	1995		54,252	U.S.
	*"BO"	9½ %	1970	1990		26,500	
	*"BP"	9½ %	1970	1997		67,760	U.S.
	*"BQ"	9¼ %	1970	1985		8,100	U.S.
	*"BR"	8¾ %	1971	1999		67,333	U.S.
	*"BS"	8¼ %	1971	1986		13,600	U.S.
	*"BT"	7¾ %	1971	1996		44,000	
	*"BU"	8¾ %	1971	1996		46,072	
	* —	8 %	1971	1986 (70,000,000 Deutsche marks)		20,885	
	*"BV"	8½ %	1971	2001		70,347	U.S.
	*"BW"	8½ %	1971	1986		20,000	U.S.
	*"BX"	7⅞ %	1972	2002		95,229	U.S.
	* —	6½ %	1972	1987 (80,000,000 Deutsche marks)		25,113	

Note 5 — Bonds and debentures (cont'd)

Series	Interest rates	Years of issue	Years of maturity	Bonds and debentures ($'000')
Debentures of Hydro-Québec — Guaranteed by the Province de Québec				
*"BY"	8¼ %	1972	1997	$ 46,430
*"BZ"	8¼ %	1972	1993	55,600
*"CA"	8 %, 8⅜ %	1972	1980, 1997	60,938
"CB"	8¼ %	1972	1996	50,000
* —	6¼ %	1972	1987 (80,000,000 Swiss francs)	21,021
*"CC"	7½ %	1973	2003	118,275 U.S.
"CD"	8 %	1973	1998	50,000
* —	6½ %	1973	1988 (90,000,000 Deutsche marks)	31,711
"CE"	8¼ %	1973	1998	55,000
*"CF"	8½ %	1973	2003	99,608 U.S.
"CG"	8¾ %	1973	1998	50,000
"CH"	8½ %	1973	1998	50,000
*"CI"	8¼ %	1974	2004	122,560 U.S.
*"CJ"	8½ %	1974	1989	27,000 U.S.
"CK"	9 %	1974	1999	60,000
"CL"	9⅞ %	1974	1996	80,000
*"CM"	10.70 %	1974	1999	150,000 U.S.
"CN"	10 %	1974	1980	50,000
"CO"	10 %	1974	1982	100,000
"CP"	10 %	1974	1982	100,000 U.S.
*"CQ"	10¼ %	1975	2005	200,000 U.S.
"CR"	9 %, 9¾ %	1975, 1977	1985, 2000	245,000
"CS"	10 %	1975	2000	80,000
*"CT"	9¾ %	1975	2005	198,750 U.S.
"CU"	10¼ %	1975	1997	65,000
—	3¼ %	1975	1980 (100,000,000 Swiss francs)	38,400
"CV"	9½ %	1975	1981	50,000
*"CW"	10 %	1975	2005	250,000 U.S.
—	3 %	1975	1980 (100,000,000 Swiss francs)	38,500
*"CX"	10¼ %	1976	1996	944,500 U.S.
*"CY"	10¾ %	1976	1996	33,057
* —	6 %	1976	1991 (80,000,000 Swiss francs)	31,900
*"CZ"	8.60 %	1976	2006	250,000 U.S.
"DA"	10 %	1976	2001	120,000
"DB"	8½ %	1976	1986	125,000 U.S.
*"DC"	8¾ %	1976	1996	47,225 U.S.
—	5⅜ %	1976	1981 (300,000,000 Swiss francs)	124,200
"DD"	10 %	1977	1997	100,000
—	8½ %	1977	1992 (20,000,000,000 Japanese yen)	80,500
*"DE"	9 %	1977	1992	112,700 U.S.
* —	6½ %	1977	1987 (183,625,000 Deutsche marks)	85,202
—	5¼ %	1977	1982 (300,000,000 Swiss francs)	131,800
*"DF"	9¼ %	1977	1997	225,000 U.S.
* —	5 %	1977	1992 (100,000,000 Swiss francs)	45,000
* —	6¼ %	1977	1987 (140,000,000 Deutsche marks)	70,882
* —	3¾ %	1978	1993 (130,000,000 Swiss francs)	75,140

Note 5 — Bonds and debentures (cont'd)

Series	Interest rates	Years of issue	Years of maturity	Bonds and debentures ($'000')
Debentures of Hydro-Québec — Guaranteed by the Province de Québec				
"DG"	10¼ %	1978, 1979	2003	$ 410,000
"DH"	10 %	1978	2003	250,000
*"DI"	9½ %	1978	1993	46,250 U.S.
*"DJ"	10 %	1978	2008	100,000 U.S.
"DK"	9¾ %	1978	1993	50,000 U.S.
—	13½ %, 15³⁄₁₆ %, 16¼ %	1978	1986	750,000 U.S.
*"DL"	10 %	1979	2009	200,000 U.S.
"DM"	10.40 %, 10¾ %	1979	1989, 2004	285,000
*"DN"	10 %	1979	1999	74,000 U.S.
"DO"	10 %	1979	1989	10,000
"DP"	9.85 %	1979	1994	100,000 U.S.
*"DQ"	10⅛ %	1979	2009	177,000 U.S.
"DR"	11 %	1979	2004	350,000
*"DS"	11¼ %	1979	2009	168,000 U.S.
Total debentures of Hydro-Québec				**$ 10,120,161**

*Sinking fund debentures

Bonds of subsidiaries				
The Shawinigan Water and Power Company				
"S"	5¾ %	1961	1981	$ 11,968
Southern Canada Power Company Limited				
"D"	3⅜ %	1951	1981	2,400
Quebec Power Company				
"G"	6¼ %	1962	1982	10,117
Lower St. Lawrence Power Company				
"F"	5⅞ %	1959	1984	775 U.S.
Saguenay Electric Company				
"A"	5½ %	1962	1982	3,280
Total bonds of subsidiaries				**$ 28,540**
Total bonds and debentures				**$ 10,148,701**

Total bonds and debentures	$ 10,148,701
Add net exchange premium at dates of borrowing on debt payable in U.S. currency	336,456
	10,485,157
Less sinking fund investments	19,516
	$ 10,465,641

Bonds of subsidiaries are guaranteed by Hydro-Québec, which guarantee is in turn guaranteed by the Province de Québec.

Hydro-Québec had two undrawn revolving standby lines of credit for U.S. $ 500,000,000 and Can. $ 500,000,000 at December 31, 1979. In January 1980, the former, together with a U.S. $ 750,000,000 term loan contracted in 1978, were renegociated to extend their term from 1986 to 1990 and to establish the interest rate at the equivalent of ½ % over the London Interbank Offered Rate (LIBOR), instead of the original ¾ %. As to the latter line of credit, it is convertible in 1984 into an additional six-year term loan at variable interest rates based upon fluctuation in the Canadian chartered banks' prime lending rate.

Note 5 — Bonds and Debentures (cont'd)

Subsequent to December 31, 1979, Hydro-Québec issued or has agreed to issue the following debentures:

Currency	Rate	Year of maturity	Debentures
U.S.	12½ %	1985	$ 200,000,000
U.S.	11¼ %	2009	32,000,000
U.S.	10⅛ %	2009	23,000,000
Can.	14 %	1985	160,000,000 (1)
Can.	Floating	1990	75,000,000
Can.	14 %	1986	200,000,000 (2)

(1) exchangeable for debentures maturing in 1990
(2) exchangeable for debentures maturing in 1992

Consolidated long-term debt maturities and sinking fund requirements in each of the next five years are approximately as follows (in Canadian dollar equivalent at the date of borrowing):

	Canadian dollars ($'000')	United States dollars ($1,328,310,000 U.S.) ($'000')	Deutsche marks (320,010,000 DM) ($'000')	Swiss francs (894,500,000 SFr) ($'000')	Total ($'000')
1980	$ 123,365	$ 111,599	$ 19,008	$ 78,894	$ 332,866
1981	84,296	159,065	22,152	128,444	393,957
1982	196,363	426,255	22,152	139,801	784,571
1983	38,611	353,842	22,152	11,942	426,547
1984	77,324	361,474	19,620	11,942	470,360
	$ 519,959	**$ 1,412,235**	**$ 105,084**	**$ 371,023**	**$ 2,408,301**

Consolidated long-term debt at December 31, 1979 includes $ 5,772,960,000 U.S., 624,000,000 Deutsche marks, 985,000,000 Swiss francs, and 20,000,000,000 Japanese yen. If the long-term debt payable in various currencies in the principal amount of $ 10,354,188,000 at December 31, 1979 were translated into Canadian dollars at the rates of exchange prevailing on this date, this principal amount would be increased by approximately $ 1,113,687,000 to $ 11,467,875,000.

Note 6

Other long-term debt

	1979 ($'000')	1978 ($'000')
Rural Electrification Bureau, 1980 — 1994*	$ 3,691	$ 4,285
Government of Canada, 1980 — 1999**	18,823	19,235
Atomic Energy of Canada Limited**	151,000	151,000
Present value of lease obligations for regional office and service facilities, for a 25-year period ending in 2004, capitalized at interest rate charged to Construction work in progress (see Note 1(i)).	47,899	20,207
	$221,413	$194,727

*Does not bear interest as long as there is no default under the provisions of the governing agreements.
**Notes guaranteed by the Province de Québec at various rates from 7 3/16 % to 10 % payable in 25 equal annual instalments following completion of the project involved.

Note 7

Pensions

The Hydro-Québec employees' retirement plan is a contributory, benefit-based plan, under which the benefits payable are guaranteed by Hydro-Québec.

Pension costs of $ 80,000,000 in 1979 ($ 52,000,000 in 1978) represent current service costs and amortization of past service obligations and experience deficiencies over a period of 15 years.

Prior to 1979, past service obligations and the cost of improvements to the pension benefits of certain employees and pensioners were substantially amortized over a period of 30 years by annual charges to operations. This amortization period has been changed to 15 years and the cumulative effect of this change at December 31, 1979 amounts to approximately $ 22,000,000 and was charged to operations in 1979.

Unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $ 385,000,000 as at December 31, 1979, including $ 167,000,000 in respect of benefits granted in 1979. These estimates were determined by independent actuarial valuations based on data of the corporation at December 31, 1977.

Note 8

Commitments, contingencies and projected capital expenditures

Churchill Falls

In May 1969, Hydro-Québec executed a contract with Churchill Falls (Labrador) Corporation Limited ("CFLCo") for the purchase, starting in 1972, of energy from a generating station at Churchill Falls in Labrador with a rated capacity of 5,225,000 kilowatts.

The power contract provides for the sale by CFLCo, for a period of 40 years from the Effective Date as defined in the power contract (September 1, 1976), of virtually all the power generated at Churchill Falls, except for an amount not to exceed 300,000 kilowatts of such power which may be recaptured by CFLCo. This contract will be automatically renewed for a further period of 25 years upon already agreed terms.

Furthermore, Hydro-Québec is obligated to pay CFLCo an amount equal to a portion of the interest charges on the debt incurred by CFLCo to finance the construction of the plant, and to pay a portion of the losses on foreign exchange incurred to service the debt issued in U.S. dollars. Subject to certain limitations and compensations, the contract requires Hydro-Québec to make payments for energy whether or not taken. Hydro-Québec can also be required to make additional advances, against the issue of units of Subordinate Debentures and shares of Common Stock, to service the debt of CFLCo and to cover its expenses if funds are not otherwise available.

On September 14, 1976, CFLCo and Hydro-Québec were served with concurrent Writs of Summons and a Statement of Claim in an action brought by the Attorney General of Newfoundland before the Supreme Court of Newfoundland, seeking a judgment declaring that Newfoundland is entitled under the CFLCo lease to make a request to CFLCo for 800,000 kilowatts of power generated from the waters of the Upper Churchill River watershed commencing October 1, 1983, that CFLCo is obliged to comply with such request, and that such compliance would not constitute a default under the power contract or the financing agreements of CFLCo.

Hydro-Québec is defending the action in the Newfoundland Supreme Court and has been advised by its counsel that the validity of such contract and the enforceability thereof according to its terms cannot be successfully challenged before the courts, and in particular that the above action, insofar as it claims a declaration which would affect the existing rights of Hydro-Québec under the power contract, is unfounded. In addition, Hydro-Québec has commenced proceedings before the Superior Court of the District of Montréal to obtain a judgment confirming, in substance, that it is entitled, under the power contract, to virtually all of the power generated by the Churchill Falls plant and that if CFLCo does not sell and deliver such power it will be in breach of the power contract. This litigation is presently before the courts.

Note 8 — Commitments, contingencies and projected capital expenditures (cont'd)

James Bay

The Société d'énergie de la Baie James is a wholly-owned subsidiary of Hydro-Québec. Its purpose is to build the La Grande complex for Hydro-Québec and, at the request of the latter, to assume the engineering, construction and management of other large-scale projects.

In September 1978, it was decided to revise the configuration of the La Grande project and to add two generating units at both LG-3 and LG-4, for an additional peaking capacity of 970,000 kilowatts. LG-1 has been deferred to the second phase of the La Grande Rivière construction program. Phase 1 of the La Grande project now consists of three generating plants with an installed capacity of 10,269,000 kilowatts at an estimated cost of $ 15,100,000,000. The first generating units were placed in commercial operation at the end of 1979, and completion of phase 1 is expected in 1985. At December 31, 1979, $ 7,015,000,000 had been invested in the project.

Hydro-Québec, the Société d'énergie de la Baie James, the gouvernement du Québec and the Government of Canada have entered into several agreements with the James Bay Crees, the Inuit of Québec and the Naskapis of Québec. These agreements provide for, among other things, the extinguishment of all respective claims of the Crees, the Inuit and Naskapis in and to certain territories in the Province of Québec, including the territory on which the project is located. Under these agreements Hydro-Québec and the Société d'énergie de la Baie James are committed to pay, in various instalments and without interest, $ 173,500,000 including $ 27,000,000 in 1979, $ 28,000,000 in 1980, and $ 118,500,000 from 1981 to 1996. These amounts, which are included in the cost of the project, are recorded in the accounts when paid.

Agreements with Atomic Energy of Canada Limited

In January 1978, Hydro-Québec signed agreements with Atomic Energy of Canada Limited (AECL) providing for the continuation by AECL of construction of the La Prade heavy water plant in Bécancour, Québec and the purchase by Hydro-Québec of a portion of the plant's production. The agreements give Hydro-Québec the option of acquiring the La Prade plant up to 1990 and the right of first refusal should AECL contemplate sale of the plant.

In 1978, AECL advised Hydro-Québec of its decision to postpone construction of the La Prade plant.

Discussions are presently being held between the Government of Canada and the gouvernement du Québec, concerning the termination of these agreements.

Projected capital expenditures

Hydro-Québec carries on a continuous construction program in anticipation of future demand for electrical power in the Province. The capital expenditures projected for the calendar year 1980 including the La Grande project amount to $ 2,868,000,000.

Note 9

Reclassification of comparative figures

Certain of the figures for 1978 have been reclassified to conform with the presentation adopted in the current year.

Summary of Consolidated Operations: 1975 to 1979

(in thousands of dollars)

		1979	1978	1977	1976	1975
Revenue	Sales of electricity:					
	Primary	$1,783,860	$1,499,458	$1,172,081	$1,027,597	$ 861,681
	Secondary	172,531	100,043	90,986	43,601	42,529
		1,956,391	1,599,501	1,263,067	1,071,198	904,210
	Other operating income	21,167	22,113	22,183	20,615	17,879
		1,977,558	1,621,614	1,285,250	1,091,813	922,089
Expenditure	Operating, maintenance, administration and other	557,662	448,740	379,759	328,874	266,392
	Power purchased	128,973	125,593	122,171	113,660	106,633
	Provision for renewals (depreciation)	138,436	107,970	97,797	92,786	84,394
	Provincial levy	5,000	20,000	20,000	20,000	20,000
	School and municipal taxes	20,249	20,388	20,217	19,209	18,806
		850,320	722,691	639,944	574,529	496,225
Net operating income		1,127,238	898,923	645,306	517,284	425,864
Interest	Interest on long-term debt	971,503	785,411	620,860	485,567	344,330
	Interest on bank indebtedness and notes payable	12,972	5,299	4,397	4,143	3,732
	Amortization of debenture discount and expenses	10,979	9,037	6,738	5,430	4,602
	Foreign exchange loss (or gain) on repurchase of debentures and translation of current assets and liabilities	107,265	61,311	10,181	(301)	192
	Interest charged to Construction work in progress	(651,374)	(414,841)	(282,047)	(186,178)	(118,826)
	Investment income	(59,770)	(64,096)	(90,592)	(93,475)	(27,222)
	Net profit on repurchase of debentures	(10,548)	(6,141)	(5,745)	(8,542)	(10,694)
		381,027	375,980	263,792	206,644	196,114
Net income before allocations to reserves		$ 746,211	$ 522,943	$ 381,514	$ 310,640	$ 229,750
Allocations to reserves	Interest	$ 291,490	$ 200,504	$ 167,877	$ 134,671	$ 107,773
	Provisions:					
	Contingencies	364,156	252,584	153,899	121,602	74,163
	Rate stabilization	39,128	31,990	25,262	21,424	18,084
	Amortization of capital invested	51,437	37,865	34,476	32,943	29,730
		454,721	322,439	213,637	175,969	121,977
		$ 746,211	$ 522,943	$ 381,514	$ 310,640	$ 229,750

Consolidated Sales and Revenue: 1975 to 1979

		1979	1978	1977	1976	1975	Average annual increase (%) 1979/1974
Electricity sales (in millions of kWh)	Primary:						
	residential and farm	27,519	26,083	24,391	21,611	18,768	9.8
	general	17,722	16,926	15,812	14,673	13,113	8.1
	industrial	29,765	29,401	27,695	27,055	24,506	1.6
	municipal distribution systems	2,577	2,613	2,402	2,178	1,968	12.2
	neighboring systems	6,360	4,134	3,673	11,147	12,356	(11.4)
	other	915	928	885	860	850	2.3
	increase in unbilled sales	378	1,425	159	1,206	585	15.6
		85,236	81,510	75,017	78,730	72,146	3.8
	Secondary:						
	industrial	1,303	1,433	1,020	1,816	1,778	(11.0)
	neighboring systems	10,476	9,663	11,444	4,677	3,598	17.7
		11,779	11,096	12,464	6,493	5,376	11.1
	Total sales	97,015	92,606	87,481	85,223	77,522	4.5
Revenue from electricity sales (in thousands of dollars)	Primary:						
	residential and farm	$ 669,428	$ 558,929	$ 458,930	$ 376,990	$ 315,358	20.0
	general	477,935	395,644	312,761	260,939	218,218	21.2
	industrial	453,524	376,211	304,332	260,736	218,308	17.5
	municipal distribution systems	42,303	37,510	28,470	23,729	17,265	27.4
	neighboring systems	62,900	42,638	19,377	54,183	58,675	2.9
	other	44,456	38,817	29,860	26,057	22,258	18.6
	increase in unbilled revenue	33,314	49,709	18,351	24,963	11,599	33.8
		1,783,860	1,499,458	1,172,081	1,027,597	861,681	19.0
	Secondary:						
	industrial	9,888	9,042	5,747	8,171	8,188	6.4
	neighboring systems	162,643	91,001	85,239	35,430	34,341	42.7
		172,531	100,043	90,986	43,601	42,529	37.8
	Total revenue	$1,956,391	$1,599,501	$1,263,067	$1,071,198	$ 904,210	20.1
Average revenue per kWh	Primary electricity:						
	residential and farm	2.433¢	2.143¢	1.882¢	1.744¢	1.680¢	9.3
	general	2.697¢	2.337¢	1.978¢	1.778¢	1.664¢	12.2
	industrial	1.524¢	1.280¢	1.099¢	0.964¢	0.891¢	15.6
	municipal distribution systems	1.642¢	1.436¢	1.185¢	1.089¢	0.877¢	13.5
	neighboring systems	0.989¢	1.031¢	0.528¢	0.486¢	0.475¢	16.2
	other	4.859¢	4.183¢	3.374¢	3.029¢	2.619¢	15.9
	Sub-total (including increase in unbilled electricity)	2.093¢	1.840¢	1.562¢	1.305¢	1.194¢	14.7
	Secondary electricity:						
	industrial	0.759¢	0.631¢	0.563¢	0.450¢	0.460¢	19.5
	neighboring systems	1.553¢	0.942¢	0.745¢	0.757¢	0.954¢	21.2
		1.465¢	0.902¢	0.730¢	0.672¢	0.791¢	24.0
	Total	2.017¢	1.727¢	1.444¢	1.257¢	1.166¢	14.9
Number of customer accounts (year-end)	residential and farm	2,107,942	2,059,581	2,011,403	1,941,604	1,893,969	2.7
	general	243,587	237,066	230,331	222,305	216,988	2.7
	industrial: primary electricity (1)	11,257	10,897	10,920	10,668	10,543	1.5
	other	9,495	10,436	12,567	13,645	14,224	(8.8)
	Total	2,372,281	2,317,980	2,265,221	2,188,222	2,135,724	2.6

(1) Industrial customer accounts were reclassified in 1978 and in 1974.

Energy Requirements of Hydro-Québec System: 1975 to 1979

(in millions of kilowatthours)

		1979	1978	1977	1976	1975	Average annual increase (%) 1979/1974
Total requirements	Generated (gross)	70,368	63,329	61,268	61,206	54,623	3.2
	Received:						
	purchased	36,630	38,650	35,255	34,381	31,687	7.1
	received as per agreement	2,377	2,677	2,564	1,917	2,598	5.7
		39,007	41,327	37,819	36,298	34,285	7.1
	Total requirements	109,375	104,656	99,087	97,504	88,908	4.5
Québec requirements	Primary sales in Québec	79,100	77,587	71,438	67,610	59,845	5.9
	Deliveries in Québec as per agreement	3,332	3,561	3,099	2,501	2,977	5.1
	Total — Priority consumption	82,432	81,148	74,537	70,111	62,822	5.9
	Generating station service	303	302	266	324	231	0.5
	Losses and other	8,646	8,037	7,972	9,218	7,974	4.2
	Total — Priority requirements	91,381	89,487	82,775	79,653	71,027	5.7
	Secondary sales in Québec	1,521	1,882	1,348	2,013	1,870	(16.5)
	Total Québec requirements	92,902	91,369	84,123	81,666	72,897	5.0
Deliveries outside Québec	Primary sales	6,136	3,923	3,579	11,120	12,302	(12.0)
	Secondary sales	10,258	9,214	11,116	4,480	3,505	26.1
	Deliveries as per agreement	79	150	269	238	204	(9.5)
	Total Deliveries outside Québec	16,473	13,287	14,964	15,838	16,011	1.9
Total requirements		109,375	104,656	99,087	97,504	88,908	4.5

Power Requirements of Hydro-Québec System for the winter beginning in December. (1)

(in thousands of kilowatts)

	1979	1978	1977	1976	1975	Average annual increase (%) 1979/1974
Total requirements	17,698	17,488	15,887	15,806	14,668	5.6
Priority requirements	17,582	17,059	15,785	14,783	13,337	8.1

(1) The power requirements of 1978, 1977, 1976 and 1975 include respectively 318 MW, 190 MW, 138 MW and 236 MW which were withheld through application of interruptible-power clauses in certain contracts.

Auditors' Report

We have examined the statement of assets of the Hydro-Québec Employees' Retirement Fund as at December 31, 1979 and the statement of changes in assets for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the assets of the Fund as at December 31, 1979 and the changes in its assets for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Montréal, Canada,
April 14, 1980.

Samson, Bélair & Associés
Chartered Accountants

H. Marcel Caron & Associés
affiliated with Clarkson Gordon
Chartered Accountants

Hydro-Québec Employees' Retirement Fund

Statement of Assets

(in thousands of dollars)
as at December 31

		1979	1978
Investments	Debentures of Hydro-Québec and bonds of its subsidiaries, guaranteed by the Province de Québec	$ 231,089	$ 187,882
	Bonds of, or guaranteed by the Province de Québec	127,670	109,560
	Municipal, School Commission, Cegep, Hospital and University bonds	50,036	36,483
	Government of Canada bonds	26,868	5,033
	Corporate bonds	8,935	1,100
	(Par value $ 453,713, market value $ 377,805)	444,598	340,058
	Common stocks (market value $ 2,321)	1,350	1,350
	Short-term investments	33,735	40,000
		479,683	381,408
Accrued interest on investments		10,734	8,194
Past service contributions receivable from employees		75	65
Amount receivable from Hydro-Québec		25,352	4,997
		$ 515,844	$ 394,664

See accompanying notes

On behalf of Hydro-Québec:
(signed) Lucien Saulnier
(signed) Robert A. Boyd

Montréal, Canada,
April 30, 1980.

(signed) Roger Girard
Directeur général
Contrôle et Comptabilité

Hydro-Québec Employees' Retirement Fund

Statement of Changes in Assets

(in thousands of dollars)
for the year ended December 31

		1979	1978
Assets, beginning of year		**$ 394,664**	$ 311,936
Increase for the year	Current contributions		
	Employees	16,249	13,375
	Hydro-Québec	31,869	26,235
		48,118	39,610
	Contributions by Hydro-Québec (Note 2)	39,465	17,809
	Additional past service contributions less cancellations	126	86
	Revenue from investments	42,309	31,386
		130,018	88,891
		524,682	400,827
Decrease for the year	Pensions paid	8,268	5,678
	Refunds to employees on termination of employment	570	485
		8,838	6,163
Assets, end of year		**$ 515,844**	$ 394,664

See accompanying notes

Notes to Financial Statements

December 31, 1979

Note 1

Accounting policies

i) These statements show only the assets of the Hydro-Québec Employees' Retirement Fund, but do not purport to show the adequacy of the Fund to meet the obligations of the Hydro-Québec retirement plan which are guaranteed by Hydro-Québec.

ii) Investments are shown at cost.

iii) Revenue from investments, contributions and pensions are recorded according to the accrual basis of accounting.

Note 2

Unfunded liabilities

Unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $385,000,000 as at December 31, 1979, including $167,000,000 in respect of benefits granted in 1979. These estimates were determined by independent actuarial valuations based on data of the corporation at December 31, 1977.

These unfunded liabilities are amortized over a period of 15 years by Hydro-Québec and include an amount of $104,000,000 covering improvements to the pensions of certain employees and pensioners. Hydro-Québec has decided to amortize also the cost of these improvements over a period of 15 years retroactive to their implementation date and has made for this purpose a special contribution of $22,000,000 in 1979.

Ce rapport est également
publié en langue française.

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Montréal, Québec H2Z 1A4

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Hydro-Québec Generating Stations

In service
or under construction
at December 31, 1979.

Generating stations in service (1)

	(kilowatts)
Hydroelectric	
Beauharnois	1,574,260
LG-2 (2)	1,332,000
Manic-5	1,292,000
Manic-3	1,183,200
Manic-2	1,015,200
Bersimis-1	912,000
Outardes-3	756,200
Bersimis-2	655,000
Carillon	654,500
Outardes-4	632,000
Outardes-2	453,900
La Trenche	286,200
Beaumont	243,000
La Tuque	216,000
Paugan	201,975
Manic-1	184,410
Rapide-Blanc	183,600
Shawinigan-2	163,000
Les Cèdres	162,000
Shawinigan-3	150,000
Grand'Mère	148,075
Rapide-des-Îles	146,520
Chelsea	144,000
La Gabelle	136,580
Première-Chute	124,200
Rapides-Farmers	98,250
Rapides-des-Quinze	89,600
Rapide-7	57,000
Bryson	56,000
Rapide-2	48,000
Rivière-des-Prairies	45,000
Chute-Hemmings	28,800
Hull-2	27,280
Sept-Chutes	18,720
Saint-Narcisse	15,000
Drummondville	14,600
Mitis-1	6,400
Pont-Arnault	5,450
Chute-Bell	4,800
Mitis-2	4,250
Saint-Alban	3,000
Saint-Raphaël	2,550
Sherbrooke	2,256
Chute-Garneau	2,240
Corbeau	2,000
Magpie	1,800
Rawdon	1,720
Chute-Burroughs	1,600
Chute-Wilson	840
Anse-Saint-Jean	400
High-Falls	340

	(kilowatts)
Thermal	
Conventional thermal	
Tracy	600,000
Nuclear	
Gentilly-1 (3)	266,400
Gas-turbine	
Cadillac	162,000
La Citière (4)	150,660
Diesel	
Îles-de-la-Madeleine (5)	52,539
Blanc-Sablon	3,800
Natashquan	3,000
La Tabatière	2,800
Fort-Georges	2,700
La Baleine	2,650
La Romaine	1,600
Parent	1,550
Saint-Augustin	1,400
Île-d'Entrée	865
Île-aux-Grues	650
Johan-Beetz	605

	(kilowatts)
Summary	
Total installed capacity of hydroelectric generating stations (51)	**13,487,716**
Total installed capacity of thermal-electric generating stations (15)	**986,819**
Total capacity of generating stations (66) in service at December 31, 1979	**14,474,535**

Generating stations under construction

	In service	*(kilowatts)*
Hydroelectric		
LG-2 (2)	1980-81	3,996,000
LG-3	1982-84	2,304,000
LG-4	1984-85	2,637,000
Thermal		
Gas-turbine		
La Citière (4)	1980	50,220
Nuclear		
Gentilly-2	1983	685,000

(1) A 230-kW experimental wind-powered generator is connected to the Îles-de-la-Madeleine system. Another wind machine is in operation at IREQ. As these are experimental installations they are not included in this list.

(2) At December 31, 1979, four of the LG-2 generating units were in service. When completed in 1981, this 16-unit power station will have an installed capacity of 5,328 megawatts.

(3) Gentilly-1 is not owned by Hydro-Québec and is excluded from the total.

(4) At December 31, 1979, three of the four units of La Citière gas-turbine station were in service. The final unit was commissioned in January 1980. The capacity of this power station is about 284 megawatts at -12°C.

(5) Previously known as Cap-aux-Meules.

Hydro-Québec's Main Generating Stations and Extra-High-Voltage Transmission System

Legend

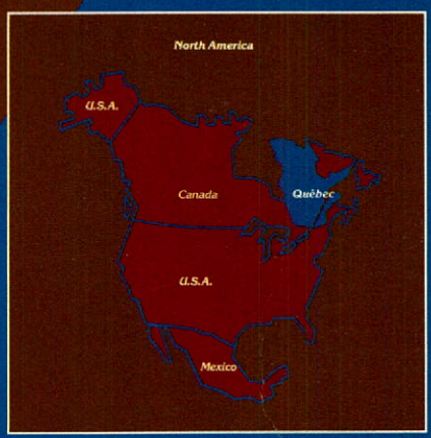
- Generating stations rated 500 MW or more
- Generating stations under construction (500 MW or more)
- 735-kV substations
- Future 735-kV substations
- Interconnections
- 735-kV lines
- Future 735-kV lines
- 735-kV line operating temporarily at 120-kV
- 765-kV line

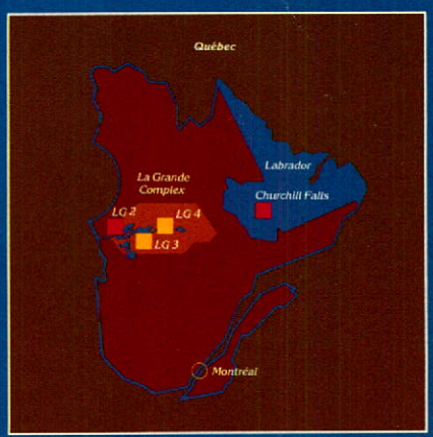
To Churchill Falls (5,225 MW)

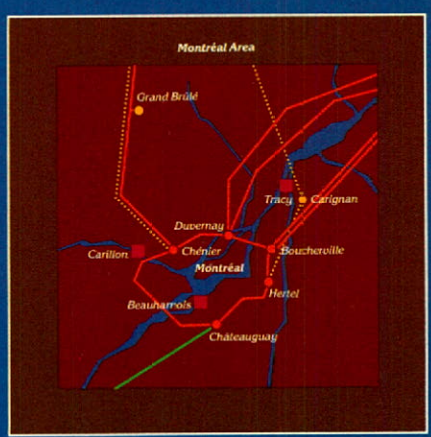
ontagnais

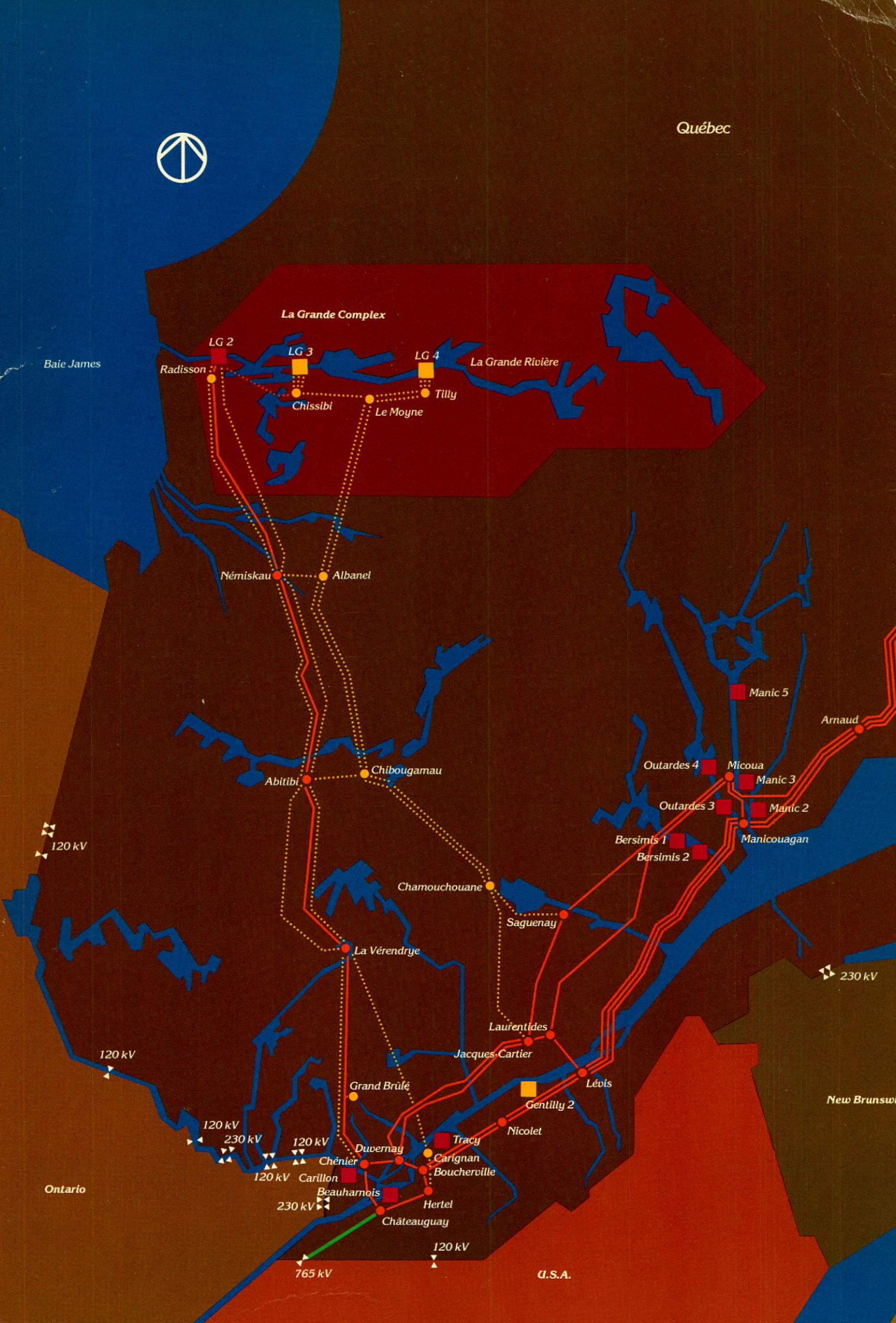
Prince Edward Island

Nova Scotia








Québec
La Grande Complex
LG 2
LG 3
LG 4
La Grande Rivière
Baie James
Radisson
Chissibi
Le Moyne
Tilly
Némiskau
Albanel
Manic 5
Arnaud
Outardes 4
Micoua
Manic 3
Outardes 3
Manic 2
Manicouagan
Bersimis 1
Bersimis 2
Abitibi
Chibougamau
120 kV
Chamouchouane
Saguenay
La Vérendrye
230 kV
Laurentides
Jacques-Cartier
120 kV
Grand Brûlé
Lévis
Gentilly 2
New Brunswi
120 kV
230 kV
120 kV
Duvernay
Tracy
Nicolet
Chénier
Carignan
120 kV
Carillon
Boucherville
Ontario
Beauharnois
230 kV
Hertel
Châteauguay
120 kV
765 kV
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