Hydro-Québec

Annual Report

1981

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Facts in Figures

(in millions of dollars)

Financial Situation[1]

	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Total assets	**20,730**	18,012	15,505	12,886	10,649	9,133	7,068	5,814	5,088	4,640
Net value of property and plant in service	**12,951**	10,760	7,691	5,396	4,879	4,703	4,215	3,955	3,894	3,721
Construction work in progress	**6,075**	5,878	6,565	6,221	4,283	2,634	1,970	1,197	752	465
Long-term debt	**13,713**	12,107	10,354	8,897	7,552	6,566	4,910	3,912	3,360	3,087
Net worth	**4,926**	4,374	3,628	2,882	2,359	1,977	1,667	1,437	1,260	1,140
Annual investments in fixed assets	**2,643**	2,589	2,817	2,588	1,950	1,267	1,142	616	551	424
Revenue from sales of electricity	**2,770**	2,413	1,956	1,600	1,263	1,071	904	783	662	569
Total operating and interest charges	**2,250**	1,698	1,231	1,099	904	781	692	621	554	481
Net income for the year	**559**	746	746	523	382	311	230	177	121	99

Indicators of Growth

Priority requirements[2] (in billions of kilowatthours)	**99.3**	99.1	91.6	89.7	82.8	79.7	71.0	69.2	62.4	58.2
Priority requirements[3] (in megawatts)	**19,696**	19,385	17,582	17,059	15,785	14,783	13,337	11,932	11,446	10,244
Installed capacity[4] (in megawatts)	**18,552**	16,862	14,475	12,979	12,523	12,409	11,356	11,123	11,148	11,107
Sales of electricity (in billions of kilowatthours)	**106.9**	104.0	97.0	92.6	87.5	85.2	77.5	77.9	69.2	61.0
Total number of customer accounts (in thousands)	**2,457**	2,416	2,372	2,318	2,265	2,188	2,136	2,081	2,017	1,943

(1) The consolidated financial statements 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. It includes losses but excludes sales of surplus 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) In addition to its own installed capacity, Hydro-Québec has access to most of the generation of the Churchill Falls powerhouse, which has a rated capacity of 5,225 megawatts.

Contents

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

Québec, May 5, 1982

Mr. Claude Vaillancourt
President of the National Assembly
Québec

Dear Sir,

I have the honor of presenting to you the annual report of Hydro-Québec for the year ended December 31, 1981.

Yours respectfully,

Yves Duhaime
Minister of Energy and Resources

(Translation)

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

The year 1981 was marked by an intensification of adverse trends that had first appeared in the economy the previous year. Hydro-Québec, like all business firms, whether large or small, was affected by higher interest rates and inflationary pressure on the cost of supplies, services and salaries.

The general slowdown in the economy reduced the growth in the overall demand for energy, and in the demand for electricity in Québec. The growth of electricity demand was also slowed by the energy conservation measures implemented some time ago and by rapid fluctuations in the prices of other energy sources. Furthermore, the energy situation in Québec will be greatly affected by changes in world oil prices and by the oil-pricing agreement between the federal and Alberta governments.

In accordance with the guidelines defined in the White Paper on Québec's energy policy, the Québec government has decided to increase the market penetration of natural gas by giving the Société québécoise d'initiatives pétrolières (SOQUIP) a greater role in the distribution of gas within Québec. SOQUIP thus becomes Hydro-Québec's partner in improving the energy situation. A committee comprising representatives from Hydro-Québec, the gas distributors and the government has undertaken to define the participants' spheres of activity so that electricity and natural gas will supply the market in the proportions defined as objectives in the energy policy.

On December 19, 1981, Hydro-Québec's legal status was altered with the passage of Bill 16. In particular, this new law enables the utility to take into consideration the prices of other energy sources when setting its electricity rates. Moreover, Hydro-Québec is required to contribute to government revenues through taxes and may be called upon to pay dividends on its net income. Bill 16 also gives the utility a greater role in improving Québec's energy situation. For example, Hydro-Québec has participated in the implementation of various energy-conservation programs, notably the Énergain Québec program whose objective is to reduce the energy consumption of a million Québec homes by an average of 32%.

Despite the uncertainty of the general economic climate and the current instability of the energy picture, results for the 1981 financial year were satisfactory.

While the growth in electricity demand was down, net income remained substantial at nearly $560 million and financed 26% of the year's capital expenditures.

However, because net income was lower than in 1980, Hydro-Québec has taken steps to counteract the unfavorable trends that affect its revenue and expenditures. Rate increases for 1981, which had been approved in 1978, were insufficient to maintain the rate of growth in revenue. To rectify this situation, the utility obtained approval of rate increases averaging 16.3% for 1982 and made the rates bylaw effective for a period of one year only. In addition, Hydro-Québec is pursuing two markets that proved very promising in 1981: sales outside the province and sales of surplus electricity in Québec. And measures will be applied to limit operating expenses, particularly by restricting the growth in personnel. Finally, to keep its need for financing at a reasonable level, Hydro-Québec has reduced its program of capital expenditures for 1982 by some $440 million.

Joseph Bourbeau and Guy Coulombe signing the 1981 financial statements. Also present: Roger Girard, general manager of control and accounting, and Jean Bernier, secretary of Hydro-Québec.

Hydro-Québec's main effort in its 1981 construction program was concentrated on phase I of the La Grande hydroelectric complex, which is being built by the company's subsidiary, the Société d'énergie de la Baie James. Ten years after the start of construction, most of the work on this part of the complex has been completed. The commissioning of the last generating units at LG 2 powerhouse means that a capacity of 5,328 megawatts is now available out of a planned total of 10,269 megawatts. Not only is the construction work well ahead of schedule, but in addition it is anticipated that the final cost of the project will be less than the total cost estimated in 1976. These excellent results are attributable mainly to better contract conditions and increased labor productivity.

During the year Hydro-Québec assumed responsibility for supplying electricity to isolated Cree and Inuit villages in Québec. Their electrical installations, formerly belonging to the Canadian and Québec governments, are now operated by Hydro-Québec which must modernize them and ensure the distribution of electricity.

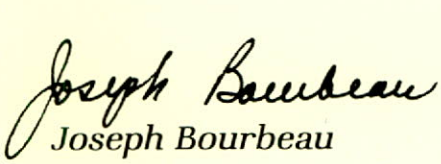
In order to meet the new requirements of the decade, Hydro-Québec intends to pursue its efforts in research and development. At Hydro-Québec's research institute, IREQ, various programs are under way to improve the reliability and cost-effectiveness of installations and equipment and to develop new technologies that will improve energy efficiency and open up new sources of energy.

Hydro-Québec International continued to improve its position in various countries throughout the world. During the year, its order book contained no less than 16 contracts in 11 countries.

One of the company's most valuable resources is its employees, on whose competence and industry the utility knows it can count in its efforts to adapt to rapidly changing circumstances. To all employees we extend our sincere thanks.

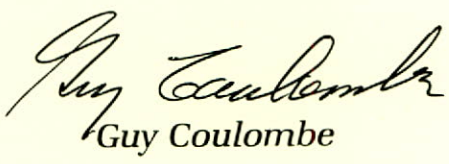
We would also like to thank Lucien Saulnier, who was the first chairman of the board and later a director of Hydro-Québec, for the effort and experience that he contributed to the company and the board. Mr. Saulnier was replaced on the board by Guy Joron.

And finally, we would like to pay tribute to Robert A. Boyd, who left Hydro-Québec in December after thirty-seven years with the company, the last three of which he served as president and chief executive officer. He helped in numerous ways to give Hydro-Québec the sound management and reputation now envied by many other firms. Undoubtedly the greatest tribute the board can render him is to acknowledge his important contribution to the initial success of the La Grande complex in the James Bay region.



Joseph Bourbeau

Chairman of the Board
of Hydro-Québec
and its subsidiaries



Guy Coulombe

President and
Chief Executive Officer
of Hydro-Québec

April 30, 1982

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

Chairman
Joseph Bourbeau

Members
Guy Coulombe
Nicolle Forget
Georges Gauvreau
Pierre Goyette
Hervé Hébert
Guy Joron
Pierre Laferrière
Claude Laliberté
Claude Roquet
Jeanne d'Arc Vaillant

**Guy Coulombe took up his duties as President and Chief Executive Officer, and Member of the Board of Directors, on January 15, 1982. Formerly President and Chief Executive Officer of the Société générale de financement du Québec, Mr. Coulombe brings to Hydro-Québec a broad experience acquired in the top management ranks of Québec's civil service.*

Guy Monty, President and Chief Executive Officer of Hydro-Québec International, is also a Member of the Board of Directors of that company.

Officers

Hydro-Québec

President and Chief Executive Officer
Guy Coulombe

Vice-Presidents

Construction Program
Paul Amyot

Customer Relations and Regions
Pierre Godin

Finance
Georges Lafond

Human Resources
Jacques Durocher

Information
Marcel Couture

Production and Transmission
Jean-J. Villeneuve

Administration
(vacant)

Secretary
Jean Bernier

Chief Counsel
André E. Gadbois

General Auditor
Marcel Jean

Director of Corporate Planning
Robert Volders

Director of Environmental Planning
Michel De Broux

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

Treasurer
Pierre Bolduc

Société d'énergie de la Baie James

President and Chief Executive Officer
Claude Laliberté

Vice-Presidents

Administration
Gilles Bacon

Engineering and Development
Gilles Marinier

Projects
Laurent Hamel

Project Director, La Grande — Phase I
Claude Pelchat

Secretary
Jean Bernier

Chief Counsel
John Lussier

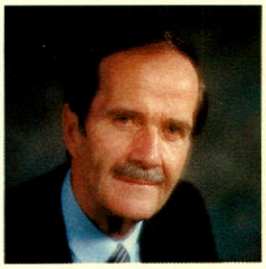
Chief Auditor
André Potvin

Treasurer
Georges Lafond

Director of Public Relations
François Aubin

Hydro-Québec International

President and Chief Executive Officer
Guy Monty



Vice-Presidents

Administration
Michel-André Demers

Market Development
Michel P. Boudriau

Project Management
Paul F. Tremblay

Secretary
Jean Bernier

Treasurer
Georges Lafond

Corporate Structure

Hydro-Québec

Hydro-Québec is a government-owned corporation that ensures the generation and distribution of electricity across Québec. It was created in 1944 upon acquisition of Montreal Light, Heat and Power Consolidated and the Beauharnois Light, Heat and Power Company, both of which served the Montreal region. In 1963 the acquisition of most of Québec's remaining privately-owned electrical utilities nearly doubled the size of Hydro-Québec.

Hydro-Québec supplies virtually all the electricity distributed in Québec, although some is generated by a few industrial firms primarily for their own needs. Service in a few areas is still provided by municipal systems and an electricity cooperative, which buy most of their electricity from Hydro-Québec. These systems are gradually being acquired by mutual agreement.

Since 1978, Hydro-Québec has been administered by a board of directors whose 11 members are appointed by the Québec government. The board members include 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. There are also seven vice-presidents. The territory is served by 11 regional administrative units, each of which is headed by a director.

In December 1981, An Act to amend the Hydro-Québec Act made the utility subject to capital tax and transformed it into a joint stock company with an authorized capital of 50,000,000 shares having a par value of $100 each. This Act also provides that Hydro-Québec may once a year be called upon to pay a noncumulative dividend, subject to the maintenance of certain financial ratios. Moreover, to bring its electricity rates more into line with the cost of other energy sources, Hydro-Québec must maintain these rates at a level consistent with sound financial administration though not necessarily at the lowest possible level. Finally, the Act broadens the role of Hydro-Québec in the energy sector to encompass the development of energy-saving programs.

Subsidiaries

Hydro-Québec has two wholly-owned active subsidiaries: the Société d'énergie de la Baie James (SEBJ) and Hydro-Québec International.

SEBJ, created at the end of 1971, is a construction-management firm acting on behalf of Hydro-Québec, which entrusts it with the engineering, construction and project-management work for proposed new generating stations, transmission lines, substations and other large-scale projects. At present SEBJ is building phase I of the La Grande complex in the James Bay region and later it will participate in phase II of this complex as well as in the Grande Baleine and Nottaway-Broadback-Rupert projects.

The members of Hydro-Québec's board of directors also form the board of SEBJ.

Hydro-Québec International was created in October 1978. Its mission is to export the expertise that Hydro-Québec has acquired in the generation, transmission and distribution of electrical power. Its main aim is to participate in major electrical-energy development projects.

Holdings in other firms

Together with three other Québec government-owned corporations, Hydro-Québec is a shareholder in Nouveler Inc. Created in January 1980, this firm has the mandate to promote energy efficiency and to develop the use of alternative energy sources. Nouveler is presently working in three main areas: energy savings in schools, hospitals and commercial establishments, the use of heat pumps in the housing sector, and applications of biomass.

Hydro-Québec also holds 34.2% of the capital stock of Churchill Falls (Labrador) Corporation Limited, which operates the Churchill Falls power plant. Most of the generation of this 5,225-megawatt plant is available to Hydro-Québec under long-term contract.

Hydro-Québec head office building in downtown Montreal.


Richards Wilcox RW
200·25
TONNES
ROTOR

Financial Results

Economic activity in North America made a moderate recovery in 1981. Gross national product increased 2.0% in the United States and 3.0% in Canada, whereas in 1980 GNP had declined 0.2% in the United States and remained stationary in Canada. The Québec economy, for its part, showed a decline estimated at 0.5% in real terms for 1981, compared with an increase of 0.6% in 1980.

The growth of Canadian industrial production was 2.8% in real terms, compared with a decrease of 3.1% in 1980. In Québec, the value added, in real terms, in the manufacturing sector increased by an estimated 0.6% in 1981, following a decrease of 1.1% in 1980.

After a rally in the first half of the year, Canada's housing construction sector experienced another setback under the effect of higher mortgage rates. Thus housing starts in Canada rose from 158,600 in 1980 to 176,000 in 1981. In Québec the comparable figures were 29,200 and 29,500.

Inflation, expressed as the average of the monthly consumer price indexes, increased considerably, going from 10.4% in 1980 to 12.5% in 1981. This increase, as well as American monetary policy, resulted in a substantial rise in interest rates in Canada and the United States. In fact, the phenomenon of higher interest rates was evident on most of the major international financial markets.

Slight economic growth, combined with inflation, higher interest rates, and the continued weakness of the Canadian dollar in relation to the American dollar were the main features of the context in which Hydro-Québec's 1981 financial results must be considered.

Hydro-Québec's total electricity sales increased 2.8% in 1981, compared with 7.2% in 1980. The reduced growth rate is attributable to the probable effects of energy conservation measures and to the economic slowdown in the mining and primary-metal industries, which consume large amounts of electricity.

After an uninterrupted period of growth from $98,903,000 to $746,211,000 between 1972 and 1979, followed by a stabilization in 1980, **net income for the year** *amounted to $558,828,000, a decline of $187,255,000, or 25.1%, from 1980.*

This decline is due mainly to a combination of two phenomena. First, the additional burden represented by the interest expenses and depreciation resulting from commissionings at LG 2 generating station coincided with a slowdown in the growth of electricity demand. Second, the rate increase that went into effect on January 1, 1981 was not proportionate to the large increase in expenses related to economic factors such as high inflation, interest and exchange rates, as well as the firm's fiscal obligations.

Words in roman letters in this section are terms used in the Financial Statements and Statistics.

Graphs completing and illustrating information in this section appear on pages 53 to 56.

On the south bank of the La Grande River, LG 3 powerhouse was built in a trench excavated downstream from the dam. It contains twelve 192,000-kilowatt generating units. Commissioning of the first units is scheduled for the summer of 1982.

LG 3 dam is 100 metres high and 3.8 kilometres long. It was built mainly with natural fill material obtained locally. The impervious core consists of glacial moraine and the rest of the structure is composed mostly of rockfill.

During 1980 and 1981 commissionings of the last 12 generating units at LG 2 powerhouse and parts of the James Bay transmission system resulted in substantial increases in **interest** charged to operations and in the **depreciation of property and plant.** For electrical utilities, the placing in service of large installations normally involves additional expenses which in the initial years are not compensated for by a corresponding increase in revenue. This factor was intensified by the decrease in the growth of sales.

Moreover, electricity rates were increased by an average of 10.6% on January 1, 1981. As the year's inflation rate was 12.5%, Hydro-Québec's electricity rates, already among the lowest in North America, actually decreased in real terms. The rates applied in 1981 were authorized by a three-year bylaw prepared in 1978 when the firm's economic and fiscal context was considerably different from that of 1981.

With the new law on municipal taxation that came into force in 1980, Hydro-Québec became subject to a 3.0% tax on electricity sales to Québec consumers. In 1981 this tax was $63,003,000. Moreover, the utility has been subject to the 8.0% retail sales tax since 1979, when the government abolished the annual $20,000,000 provincial levy that Hydro-Québec previously had to pay. In addition, Hydro-Québec is now subject to a capital tax of 0.45%.

In view of the uncertainty devolving from the economic situation, Hydro-Québec requested a rates bylaw for a shorter period of time than in the past. Thus the bylaw that became effective on January 1, 1982, which provides for an average rate increase of 16.3%, covers only one year.

Revenue

In 1981, gross revenue amounted to $2,809,291,000, compared with $2,443,586,000 in 1980, an increase of $365,705,000 or 15.0%.

Sales of firm electricity produced $2,434,920,000, which was 12.1% more than in 1980; the increase in 1980 over 1979 had been 21.7%. In 1981, some 97.2% of this category of revenue came from sales to Québec customers.

The slowdown in the growth of firm electricity sales in Québec was partially offset by the increase in **sales of surplus electricity.** These sales brought in revenue of $335,188,000, or 38.7% more than in 1980; 91.4% of this revenue came from sales made outside Québec.

Expenditures

Expenses rose to $1,343,521,000 compared with $1,054,383,000 in 1980, an increase of $289,138,000 or 27.4%.

Operating, maintenance, administration and other expenses rose by 28.3% to reach $904,525,000, against $704,787,000 in 1980. This increase is attributable mainly to inflation, growth of the utility's work force, and services purchased, notably for the operation of newly commissioned installations, as well as to the transfer of preliminary design and engineering costs of abandoned projects to operating expenses. It also reflects the increase in the firm's contribution to various government programs and the assuming of responsibility for the isolated electrical systems in the far north of Québec.

Depreciation of property and plant rose from $161,324,000 to $197,619,000, mainly because of the commissionings at LG 2 generating station.

Provincial tax (or **provincial levy**) amounted to $106,421,000 compared with $51,188,000 in 1980. This increase was due mainly to the capital tax ($43,418,000) which Hydro-Québec, like the other government corporations, has been subject to since July 1, 1981.

Interest

Gross **interest** (see Note 3 of the Consolidated Financial Statements) was $1,647,749,000, against $1,350,294,000 in 1980. This 22.0% increase results mainly from the growth of the debt, exchange losses and higher interest rates.

The **interest** expenditure listed in the **Consolidated Statement of Operations** amounted to $906,942,000, compared with $643,120,000 in 1980. This increase of $263,822,000, or 41.0%, is mainly due to the fact that interest related to the costs of plant placed in service at

Four 735-kV transmission lines leave the LG 2 transformer station. Three link the powerhouse to Montreal: the first two are already in service and work on the third is well advanced.

LG 2 and on the James Bay transmission system is no longer charged to construction work in progress.

Capital expenditures

In 1981, Hydro-Québec's plant investments amounted to $2,642,636,000, or 19.2% of estimated total investments in Québec, compared with $2,588,661,000 and 20.5% in 1980. An amount of $1,612,974,000 was allocated to the construction of phase I of the La Grande complex and the transmission lines required to carry energy from the James Bay area to consumption centres. The level of investments in 1981 was comparable to that in 1980 because construction activity reached a plateau with the completion of many parts of phase I of the La Grande complex and the start of preliminary work on phase II.

At year end, Hydro-Québec's assets totaled $20,729,676,000, compared with $18,012,459,000 one year earlier. In terms of assets, Hydro-Québec therefore still ranks as the largest of Canada's industrial and commercial enterprises.

Financing

Despite difficult conditions on the financial markets, Hydro-Québec successfully carried out its borrowing program, which exceeded $2 billion for the second year in a row. Borrowings yielded a net amount of $2,226,492,000, surpassing the year's objective by $50,000,000. In 1980, long-term borrowings had produced $2,155,635,000. The average effective interest rate on new long-term borrowings contracted in 1981 was 15.10%, compared with 12.54% in 1980.

Hydro-Québec's external financing in 1981 was characterized by greater diversification of the sources of funds. Borrowings negotiated on the Canadian market amounted to $680,000,000, which was 30.4% of the total borrowed in 1981, compared with $1,001,162,000 and 46.9% in 1980. Borrowings contracted on the United States market represented 35.0% of the borrowing program, while other markets accounted for 34.6% of the total. Two new markets were entered in 1981: the pound sterling and the European monetary unit (ECU). Hydro-Québec was one of the first non-European borrowers in these markets.

Financial situation

The cash position at December 31, 1981, comprising cash and short-term investments ($448,407,000), less bank indebtedness ($30,117,000), stood at $418,290,000. In addition, Hydro-Québec has lines of credit worth $500,000,000 in U.S. funds and $500,000,000 in Canadian funds.

The Consolidated Statement of Changes in Financial Position shows that total financial resources provided by operations amounted to $800,016,000, compared with $945,703,000 in 1980. This decrease of $145,687,000 or 15.4% reflects the decrease in net income for the year, which was commented on earlier and whose effect was partially compensated for by increases in depreciation. In 1981, the total financial resources provided by operations represented 26.0% of the total amount needed for investments in fixed assets and redemption of debentures, bonds and other long-term debt, which was $3,074,861,000. In 1980, this proportion had been 31.9%.

Shareholder's equity

At December 31, 1981, the shareholder's equity, which comprised capital stock issued and paid and retained earnings after deduction of the declared dividends of $6,900,000, amounted to $4,926,037,000. The shareholder's equity thus represented 25.3% of invested capital, which is the total of the shareholder's equity, notes payable and long-term debt (including the amount payable within one year). At December 31, 1980, net worth had represented 25.7% of invested capital.

Electricity is the lifeblood of large urban centres like Montreal.

Sales

Total sales inside and outside Québec amounted to 106.9 billion kilowatthours in 1981, compared with 104.0 billion kilowatthours in 1980. This was an increase of only 2.8%, against a 7.2% increase in the previous year. Revenue from the 1981 sales amounted to $2,770,108,000, an increase of 14.8% compared with an increase of 23.3% in 1980.

Two main factors explain these trends: first, the economic slowdown in North America, which was still affecting Québec, and second, the increase in energy costs, which has led to consumer energy savings.

Total sales of firm and surplus electricity in Québec increased by 2.2%, compared with a 7.4% increase in 1980. Sales of firm electricity in Québec, which accounted for 80.2% of Hydro-Québec's total sales, were up by only 1.3%, compared with a 7.1% increase in 1980. However, sales of surplus electricity in Québec, which reflect the increased availability of electricity, showed a marked 45.2% increase in 1981, mainly in sales to neighboring Québec systems.*

Rate increases that became effective January 1, 1981 substantially increased the amount of revenue from sales in Québec, which went up 13.3% to a total of $2,394,733,000.

Sales of electricity outside Québec grew at the relatively steady rate of 5.9% in 1981, compared with 6.4% in 1980. Revenue from these sales increased by 25.2%. Sales of electricity outside Québec represented 17.3% of Hydro-Québec's total sales, compared with 16.8% in 1980.

Sales of firm electricity in Québec

Most of the electricity sold in Québec is firm electricity. These sales can be placed in a number of categories whose characteristics in 1981 were as follows.

Residential customers

Sales to residential customers, which accounted for nearly 35.0% of firm electricity sold in Québec, reached 30.0 billion kilowatthours in 1981 and brought in revenue of $918,422,000.

* *Firm electricity is electricity whose delivery is normally guaranteed by the supplier, whereas surplus electricity can be sold or bought with no guarantee of continuity of supply.*

Graphs completing and illustrating information in this section appear on pages 57 and 58.

Assuring high-quality service is a priority. At dawn, a repair crew re-establishes the flow of current before life in the district resumes.

The increase of 7.8% in the volume of residential sales is similar to that of previous years. The number of residential customer accounts was up 1.8% for a total of 2,111,692 at year-end. Average consumption per account rose 5.9% compared with 5.3% in 1980, and stood at 14,358 kilowatthours.

The growth in residential consumption in 1981 was affected by the low number of housing starts since 1979 and by the increased impact of energy-saving programs. The gradual rise in energy prices also led to customer caution. However, there continued to be a strong increase in the market for electric space heating, both in new dwellings and by conversions in existing dwellings. Part of the increased volume of sales in this category can be attributed to the acquisition in 1981 of two municipal distribution systems: Rivière-du-Loup and Windsor.

Farm customers

Sales to farm customers totaled 1.8 billion kilowatthours and produced revenue of $52,291,000, a 4.2% increase in volume and a 15.9% increase in revenue.

The total number of farm accounts continued to decrease in 1981, from 70,733 to 69,641. This decrease reflects the gradual concentration in Québec's farming sector that began several years ago.

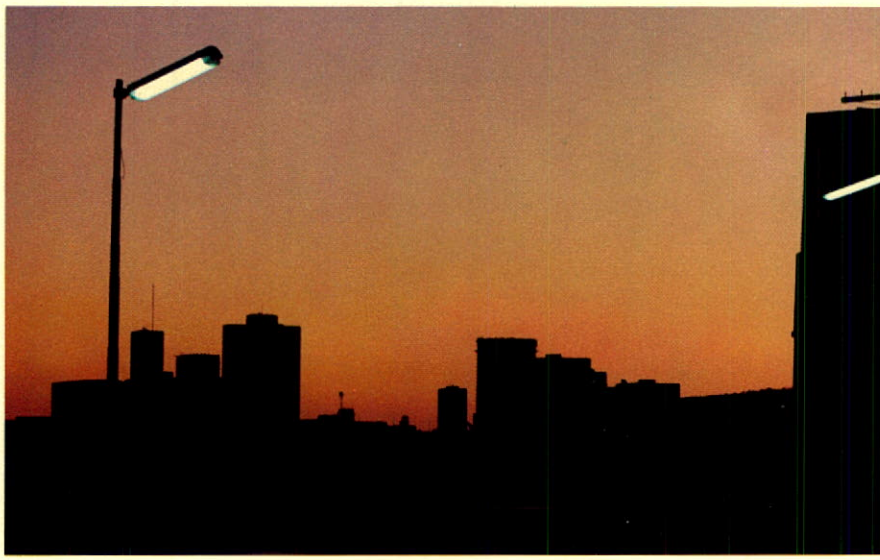
General-use customers

The 19.1 billion kilowatthours sold to general-use customers in 1981 brought in revenue of $655,779,000, a 4.3% increase in volume and a 13.8% increase in revenue. The general-use category comprises commercial customers, schools and hospitals, hotels, office buildings and some apartment buildings. In 1981 these customers accounted for 22.3% of all sales of firm electricity in Québec.

Industrial customers

Sales to industrial customers decreased for the first time since 1975, with the volume of sales at 31.4 billion kilowatthours, almost the same as that of 1980. However, revenue from these sales totaled $614,609,000, an increase of 13.6% over 1980. Sales to industrial customers accounted for 36.6% of all firm electricity sales in Québec, but only 26.0% of total revenue from such sales. There were 11,624 industrial customer accounts at December 31, 1981, an increase of 2.0% over year-end 1980.

The volume of sales to large-power customers (more than 5,000 kilowatts), which accounted for 80.0% of consumption in the industrial-customer category, dropped by 0.7%. The sectors most affected were mining, smelting and refining, transportation equipment, and cement plants. However, the pulp-and-paper, textile and chemical sectors recorded increased electricity purchases in 1981.



The overall drop in sales to industrial customers is the result of a combination of unfavorable circumstances: a weak demand for steel due to the poor performance of the U.S. automobile industry, the slowdown in Québec exports, a large number of plant closures and layoffs, and the slowdown in industrial investments due to high interest rates. These circumstances caused the almost nonexistent growth in constant dollars of deliveries of manufactured goods (0.6%) and of the value added of leading industries.

Other sales

The volume of sales to municipal distribution systems totaled 2.3 billion kilowatthours, a decrease of 9.1% from that of the previous year. The level of consumption by the municipal distribution systems stabilized, therefore, as the result of the effects of energy conservation, and the transfer to Hydro-Québec of sales on the two municipal systems acquired during the year. Revenue from total sales to municipal distribution systems amounted to $49,991,000, an increase of 4.1% over the previous year.

Sales of firm electricity to neighboring systems within Québec totaled 176.1 million kilowatthours, and brought in revenue of $2,748,000. This was a decrease in volume and a slight decline in revenue.

Sales in the category including public lighting, sentinel lighting, public transportation and Hydro-Québec's construction sites totaled 1.1 billion kilowatthours and brought in total revenue of $56,880,000.

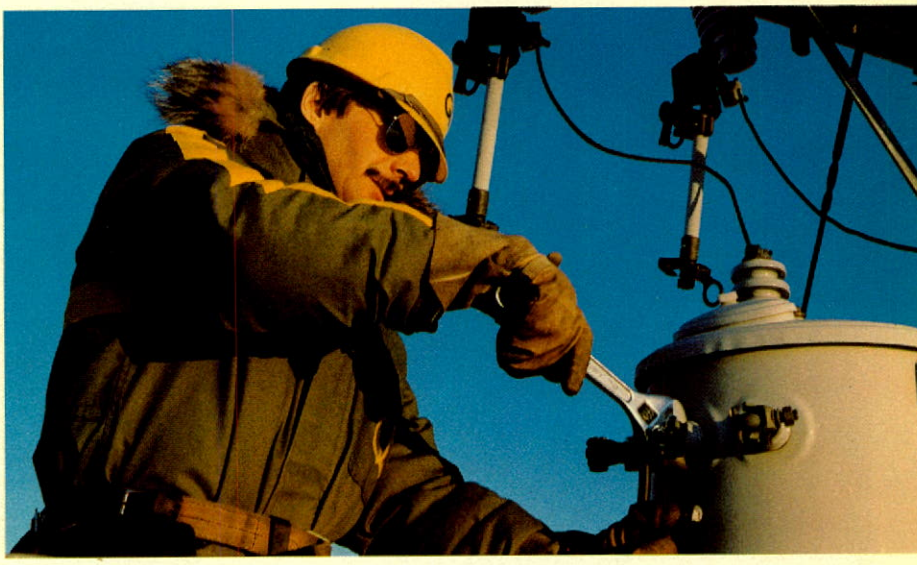
The variation in unbilled sales was negative in 1981 and amounted to 113.0 million kilowatthours. The increase in unbilled revenue amounted to $15,339,000.

Sales of surplus electricity in Québec

Sales of surplus electricity in Québec, the prime purchasers of which are industrial customers and neighboring systems within Québec, showed a marked increase, totaling 2.6 billion kilowatthours and producing total revenue of $28,674,000. These figures represent an increase in sales volume of 45.2% and an increase in revenue of 69.2% and are explained by a sharp rise in sales to neighboring systems within Québec.

Sales outside Québec

Sales outside Québec to utilities in Canada and the U.S. totaled 18.5 billion kilowatthours, comprising 5.7 billion kilowatthours of firm electricity and 12.8 billion kilowatthours of surplus electricity. Total revenue from these sales was $375,375,000, an increase of 25.2% over the previous year. Most of the increase in revenue was from sales of surplus electricity.



Interconnections

Hydro-Québec has agreements with neighboring electrical utilities for deliveries of energy. These agreements require the creation of interconnections, that is, links between the transmission systems of two utilities, and the construction of lines and substations. Hydro-Québec has agreements of this type with Québec companies producing electricity for their own use, such as Alcan and the Compagnie d'énergie Maclaren-Québec, with utilities in other provinces such as Ontario Hydro, the New Brunswick Electric Power Commission and Churchill Falls (Labrador) Corporation Limited, and with American utilities including the Power Authority of the State of New York (PASNY), the Citizens' Utilities Company and the Vermont Public Service Board.

The agreements may be in the form of energy contracts, which specify fixed amounts of power or energy to be delivered, or interconnection agreements, which serve as frameworks for day-to-day transactions depending on availability and needs.

The amount of electricity Hydro-Québec has available depends on hydraulic conditions. Moreover, its generation plant must be able to meet the yearly maximum demand, which is considerably higher than the minimum demand. Hydro-Québec regularly has excess water which, if not used to generate electricity, would be wasted. There may also be temporary surpluses when a major project is being completed and large blocks of generating capacity not immediately required by the system come on stream, or temporary surpluses may arise from events such as a reduction in demand from large-power customers.

Other electrical utilities, especially those in the northeastern U.S., do not always experience their peak demand at the same time as Hydro-Québec.

This diversity of peak demand between power systems, together with the availability of surpluses, are at the origin of the utility's interconnections. They offer excellent financial benefits and advantages in terms of system reliability and mutual assistance.

Graphs completing and illustrating information in this section appear on page 59.

The placing in service of a back-to-back converter at Châteauguay substation, scheduled for 1984, will enable Hydro-Québec to increase its sales of electricity to the United States and Ontario.

Existing interconnections

Existing interconnections include nine 120-kilovolt links and four 230-kilovolt links with Ontario, two 230-kilovolt links with New Brunswick, one 120-kilovolt link to Vermont, and two 220-kilovolt links and one 765-kilovolt link to the State of New York. The 765-kilovolt link, which begins at Châteauguay substation and delivers electricity to PASNY, was commissioned in 1978, thus

considerably increasing export capacity to the U.S.

The total transmission capacity of Hydro-Québec's interconnections is now about 3,500 megawatts. However, it is technically possible to deliver only 2,600 megawatts simultaneously to neighboring systems outside Québec: for example, 650 megawatts to Ontario Hydro, 1,240 megawatts to PASNY and 500 megawatts to the New Brunswick Electric Power Commission. These figures do not cover installations used for exchanges with other Québec producers.

Most of the electricity received by Hydro-Québec during the year was supplied by Churchill Falls (Labrador) Corporation, with which Hydro-Québec has signed a long-term contract for the purchase, via three 735-kilovolt lines, of most of the output from the Churchill Falls power plant, in Labrador.

Because of all the electricity delivered and received in 1981, there were large-scale energy exchanges. Revenue from sales to neighboring systems represented about 14.0% of Hydro-Québec's total sales. For 1982, deliveries should be more or less the same in volume and will bring in about $500,000,000 in revenue. Consequently they are of evident benefit to both the utility and its customers.

Projects

A number of projects are now under way to increase the utility's interconnection capacity. A back-to-back DC converter at Châteauguay substation is scheduled for commissioning in June 1984 and will add 1,000 megawatts to transmission capacity to Ontario and the State of New York. A new interconnection with New Brunswick will increase the delivery capacity to that province's system by 500 megawatts.

In addition, Hydro-Québec and the member utilities of the New England Power Pool (NEPOOL) are currently negotiating agreements that would involve the construction of a 690-megawatt DC line between a Hydro-Québec substation to be built near Sherbrooke, and the Vermont or New Hampshire border. The interconnection could come on stream in 1986, provided all the permits are obtained on time. Its capacity may eventually be increased to 2,000 megawatts.

Subject to approval by the National Energy Board, Hydro-Québec is now preparing to sign a new contract with PASNY for the sale of 111 billion kilowatthours over a 13-year period beginning in September 1984.

Until now, Hydro-Québec's policy regarding interconnections has been to sell only surpluses, usually temporary. The utility's priority, notably in the planning of its generation facilities, has always been to meet the needs of its customers in Québec.

However, two factors currently seem to favor increased sales of surpluses, which could eventually lead to the creation of more interconnections. The first factor is a slowdown in the growth of demand within Québec. This seems to be a lasting trend and is expected to cause considerably larger surpluses in the next few years, especially with the new generating capacity from the La Grande complex. The second factor is the possibility of reaching longer-term agreements with neighboring utilities.

Generation

Further large increase in installed capacity

The installed capacity of Hydro-Québec's generating stations again increased considerably in 1981. Some 1,689,985 kilowatts was added to the 16,862,425 already available, bringing the total capacity to 18,552,410 kilowatts at year-end.

Almost all (1,665,000 kilowatts) of the new capacity came from commissioning of the last five generating units at LG 2 powerhouse. The rest resulted from the replacement of small turbines in Bryson and Beauharnois powerhouses (14,450 kilowatts), the addition of a new diesel unit at Blanc Sablon powerhouse (800 kilowatts), and the acquisition of several isolated northern systems which are supplied by diesel units and were formerly operated by the Canadian and Québec governments (9,735 kilowatts).

Generation up 4.1 billion kWh

During the year the gross generation of Hydro-Québec's power stations was 80.6 billion kilowatthours, an increase of 5.2% over the 76.6 billion kilowatthours generated in 1980.

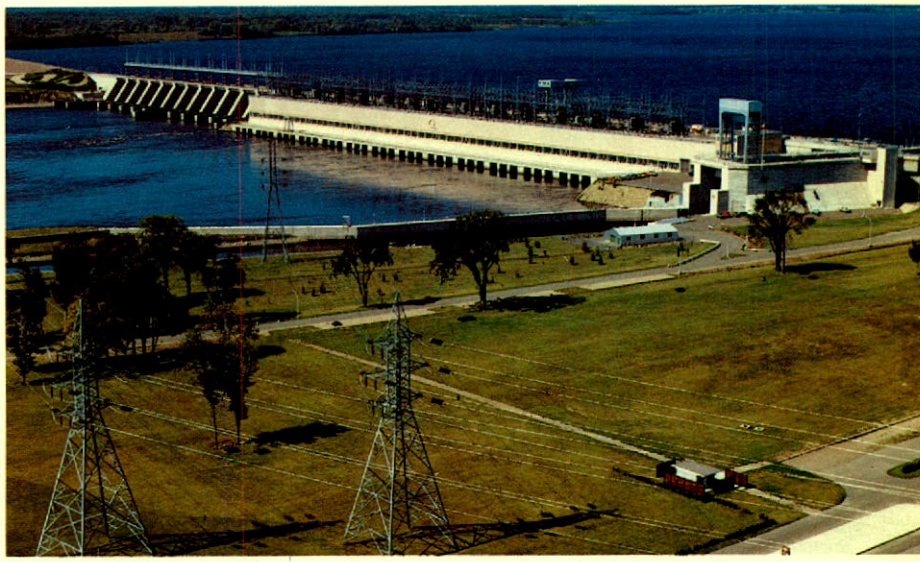
Only 0.2% of this total was obtained from thermal generating stations. Once again, LG 2 was the most productive of the utility's plants, since it produced 16.9 billion kilowatthours or slightly more than one fifth of Hydro-Québec's total generation for the year.

Graph completing information in this section appears on page 60.

More runoff than in 1980

Except for the St. Lawrence and upper Ottawa rivers, where runoff was respectively 5.8% and 6.8% less than in 1980, the main river basins received excellent runoff in 1981, with increases of 37.8% in the St. Maurice basin, 20.4% in the Manicouagan, 19.1% in the Gatineau, 16.6% in the Outardes and 15.6% in the Bersimis.

In comparison with the 10-year averages, these figures represent substantial increases, ranging from 15.2% for the Gatineau basin to 4.6% for the upper Ottawa basin. The St. Lawrence, with 5.8% less, was the only basin to receive a smaller runoff than the 10-year average.



Carillon powerhouse, on the Ottawa River, plays a dual role. In summer, it operates as a run-of-river power station. In winter, its reservoir enables it to serve as a peaking plant.

Reserves down

On January 1, 1982, the energy equivalent of the water stored in Hydro-Québec's reservoirs was 39.6 billion kilowatthours, compared with 50.8 billion kilowatthours one year before. This reduction of 11.2 billion kilowatthours was mainly attributable to discharges carried out at Manic 5 after the discovery of a crack in an arch of the Daniel Johnson dam. Water was discharged to avoid excessive pressure on the dam during the spring runoff and thus prevent further damage. The repair work was carried out rapidly, enabling reconstitution of the reservoir's usable reserve to start before the onset of winter.

The year-end figure for reserves does not include the usable reserve of LG 3 reservoir, as the impounding of this reservoir had not been completed.

System peak demand up 1.6%

The peak demand for the winter of 1981-1982 occurred on Monday, January 18, 1982 at 5.30 p.m. This demand was 19,696 megawatts, compared with the previous winter's peak of 19,385 megawatts. The small increase is mainly attributable to less severe temperatures than in the winter of 1980-1981 and to the unfavorable economic situation.

Small growth in firm requirements

The firm requirements of the Hydro-Québec system increased only 0.2% in 1981, from 99.1 billion kilowatthours to 99.3 billion. This was well below the average growth rate of 6.3% for the last 10 years.

The firm requirements represent the electricity demand that Hydro-Québec must meet under its mandate. They include losses but do not include sales of surplus electricity in Québec or deliveries outside Québec.

Water, the life force of Québec's energy development. Broadback falls, a component of the future NBR complex, which will be built in the next decade and whose capacity will exceed that of LG 2.

Major Activities

Generation Facilities

James Bay

As in the past few years, it was at the sites of the La Grande complex that most of the 1981 construction work on generating facilities took place. The Société d'énergie de la Baie James, a subsidiary of Hydro-Québec, is responsible for building this complex.

At year-end, work on phase I of the La Grande complex, which comprises LG 2, LG 3 and LG 4 generating stations and allied works, was more than 70% complete. Investment in the project to that date stood at $10,360,000,000, out of a total budget now estimated at $14,600,000,000. The initial cost estimate of $16,200,000,000, including the cost of the transmission system, was made in 1976 and adjusted to $15,100,000,000 in 1978; it dropped in June 1981 to $14,600,000,000. This $500,000,000 reduction from the previous estimate resulted from the letting of contracts at more competitive terms, a marked increase in productivity and a number of design modifications.

Hydro-Québec is entering a period of reduced activity on the construction sites of phase I of the La Grande complex, similar to the final stages of work on the Bersimis, Manic-Outardes and Churchill Falls power developments.

LG 2 — EOL

The highlight of 1981 was undoubtedly the commissioning of the last five generating units of the LG 2 underground powerhouse. After eight years of work, LG 2 was thereby completed as scheduled, in the fall of 1981, with the total planned capacity of 5,328 megawatts installed.

Early in June, the structures to divert the Eastmain, Opinaca and Petite Opinaca rivers to the LG 2 forebay were completed and placed in operation. This project is known as EOL (Eastmain, Opinaca, La Grande). It is composed of three dams and eight dikes, two spillways and a control structure, and it creates a reservoir

which provides LG 2 powerhouse with an additional usable reserve of 3.5 billion cubic metres and increases the generation capacity of the plant by 25%.

The LG 2 — EOL project is now finished, but the powerhouse is not yet operating at full capacity. It will reach its full production capability when the Caniapiscau reservoir is filled and when the third James Bay transmission line is in service. LG 2 will then be one of the largest hydroelectric power stations in operation in the world.

In the planning of its installations, the utility includes the dimension of aesthetics and harmonious integration into the environment. Viger substation was awarded a prize for excellence by the American Concrete Institute.

LG 3

The work under way at the LG 3 site, where a 2,304-megawatt ground-level powerhouse is being built, reached an important stage in the spring of 1981 when impounding of the reservoir began, as scheduled. The reservoir is now half full and should reach its maximum level of 256 metres at the end of summer 1982. The five spillway gates were installed before the water reached too high a level, and the 33 north dikes were completed during the year.

At the powerhouse, work has proceeded so rapidly that the first of the 12 generating units will be commissioned in June 1982, two months ahead of schedule. This event will mark the inauguration of LG 3.

LG 4

Work proceeded rapidly at the LG 4 construction site, where a 2,637-megawatt ground-level powerhouse is being built. The imposing 3,800-metre-long dam was completed in September, a year ahead of schedule. Seven of the nine dikes that encircle the LG 4 reservoir are completed. The intake is almost finished and the spillway is two-thirds completed. At year-end the first phase of concreting for the powerhouse itself was 83% advanced. Work also proceeded on encasing the first two penstocks and on fabricating the generating units. Commissioning of LG 4 powerhouse is still scheduled for the 1984-1985 period.

Caniapiscau

Construction at the Caniapiscau site, like that at EOL, does not involve a powerhouse, but rather the building of structures to increase the hydroelectric potential of the La Grande River. The notable event of 1981 was the impounding of the reservoir in the fall, for which the spillway, two dams and 43 dikes were completed on time. This 4,300-square-kilometre reservoir now becomes the largest lake in Québec. Because of its size, it will take two years to fill.

Its large usable reserve (38 billion cubic metres) will increase the turbine flow of LG 2, LG 3 and LG 4 generating stations, and account for 35% of their electricity production. And it will also play a regulating role: whatever the season, it will maintain the flow of the La Grande River at a level sufficient to ensure continual generation at the power plants it serves.

Other generating stations

Manic 5 (additional plant)

In 1981, commissioning of 988 megawatts of additional hydroelectric capacity at Manic 5 was postponed from 1985 to 1986. About 20% of the engineering work was carried out during the year, which means this work is now 45% complete. Several contracts were awarded and are now being carried out: excavation for the powerhouse and transformer building, excavation and concreting of the intake structures, etc.

Excavation for the tailrace structures was interrupted for four months after discovery of a crack in one of the arches of the Daniel Johnson dam. Studies showed that dynamiting was not the cause of the damage, so work was resumed after the dam had been repaired.

Tracy

Modifications under way at Tracy thermal power station to improve air quality and plant reliability were completed in 1981. This work included building chimneys, replacing burners, adding ventilators, and making modifications to the boiler pressure control systems. Start-up tests should be completed in 1982.

Nuclear generating stations

Gentilly 2

Gentilly 2 nuclear power station, which will be commissioned in early 1983, is a CANDU plant with a capacity of 685 megawatts, and is located on the south shore of the St. Lawrence River between Montreal and Trois-Rivières. In the summer of 1981, the discovery of a damaged steam generator and the subsequent repairs postponed the date that the reactor will go critical to the middle of 1982.

The year 1981 saw the carrying out of evaluation tests on the equipment and main systems: airtightness tests on the reactor, evaluation tests on the heat-exchange and safety systems, and the placing in service of the new closed-circuit cooling-water system. Engineering work to be completed includes the property protection plan and the safety studies necessary to obtain an operating permit. The construction work remaining comprises landscaping of the site and building of the protection station, as well as some modifications to equipment and installations.

Manic 5, where construction of an additional plant will increase installed capacity by 988 megawatts.

Completion of the first phase of the environmental-monitoring program established present river conditions which will serve as a reference in the environmental follow-up.

Gentilly 1

Gentilly 1 nuclear power station is a 266-megawatt prototype (CANDU-BLW system) built by Hydro-Québec under an agreement with Atomic Energy of Canada Limited (AECL). The contract, signed in 1966, gave Hydro-Québec the option of buying the plant from AECL under certain conditions. However, in 1981, as the plant was not deemed to be a reliable producer of electrical energy, Hydro-Québec decided not to acquire it.

Gentilly 3

It was decided in 1981 to suspend preliminary studies on Gentilly 3 nuclear power station, because electricity requirements in Québec do not warrant the 1992 commissioning of this 850-megawatt plant. However, the utility is investigating ways of keeping abreast of nuclear technology and developments.

Major studies

One of Hydro-Québec's major tasks is to annually forecast electricity demand over a 15 to 20-year period. This demand forecast serves as a guideline in the planning and selection of installations to be built to meet future electricity needs. It takes into account such factors as population growth, economic growth and developments in the energy situation and is revised each year to permit rapid adaptation to changes.

Hydro-Québec's development plan is similarly revised each year in the light of new findings and changes in the energy or economic situations. At present, hydroelectricity remains the main thrust of the utility in the planning of its generation facilities. Québec's large rivers still offer a considerable economically viable potential, estimated to be about 16,000 megawatts in 1985, which is equivalent to three times the installed capacity of LG 2. In the longer term, part of the potential of the smaller rivers, theoretically about 10,000 megawatts, could be developed, particularly in remote centres presently supplied by thermal generating units.

Site of a future large hydro-electric development, the territory of the Grande Baleine complex is 1,100 kilometres from Montreal and 200 kilometres north of the La Grande complex. It is in the transitional zone between the taiga and tundra.

Studies on future installations examine such factors as technical feasibility, economic viability and impact on the environment. They are accompanied by a systematic program of communications with government departments and groups representing the general population. Five of the main on-going studies on generating facilities made considerable progress in 1981.

La Grande complex — Phase II

Plans for phase II of the La Grande complex include five hydroelectric generating stations to be built inside the drainage basin of the La Grande River. These stations could be commissioned in the early 1990s to provide a total installed capacity of about 3,000 megawatts. During the year, SEBJ carried out studies and preliminary work on an overall evaluation of the proposed Laforge 1, Laforge 2 and Brisay generating stations, including a construction schedule and a detailed cost estimate. Design work started on the 315-kilovolt transmission lines from these three stations, and studies were carried out for the access routes to the future Laforge 1 site.

Grande Baleine complex

The Grande Baleine complex will essentially comprise three underground generating stations (GB 1, GB 2 and GB 3) on the Great Whale River, which is located 200 kilometres north of the La Grande complex, and diversion of the waters of the basin of the Little Whale River into the forebay of GB 1 generating station. There will also be three reservoirs, three spillways and a regulating structure. The installed capacity of the complex will total nearly 3,000 megawatts, at a utilization factor of 60%.

So far, the technical studies have dealt mainly with the overall plan for hydroelectric development, the access routes to the complex, and the drinking-water supply for the town of Great Whale. The impact of the power development on the social and physical environments was analyzed and corrective measures proposed. And finally, in accordance with its policy of interaction with all sectors of the public affected by power-station, transmission-line and substation projects in Québec, the utility initiated dialogue with the parties and organizations concerned: namely the native Cree and Inuit populations of Great Whale and their representatives, the regional administrations, and the relevant government bodies and departments.

NBR complex

This complex would be created by harnessing the drainage basins of the Nottaway, Broadback and Rupert rivers, located in the southern part of the James Bay region. The power development would contain 11 generating stations with a total capacity of 7,435 megawatts, to be placed in service during the 1990s. Studies carried out by Hydro-Québec and SEBJ during the year resulted in a development plan that would involve the construction of the generating stations on the lower part of the Broadback River rather than on the lower Rupert. Studies are now under way to determine the utilization factor and the dimensions of the reservoirs.

Projects in New Québec and the Lower North Shore

Work continued on other preliminary studies of the environment and potential of rivers in New Québec and the Lower North Shore. The studies on the Chamouchouane and Romaine rivers are of particular interest.

Archipel project

In 1981 Hydro-Québec collaborated in the provincial government's studies on control of the waters around the Montreal archipelago. For this project, Hydro-Québec concentrated on creating a hydraulic model for tests related to four development alternatives for the Lachine rapids and on studying the main parameters of the biological environment that would be affected by the proposed development work.

Transmission Facilities

Lines and substations

In 1981 Hydro-Québec added 1,055 circuit-kilometres of line rated 69 kilovolts or more, including 805 kilometres of 735-kilovolt line. At year-end the transmission system comprised a total of 29,545 circuit-kilometres in service, including 7,310 kilometres rated 735 kilovolts.

With regard to the construction of transmission lines, 45 projects were completed during the year while work progressed on another 15. The following are especially noteworthy:

☐ *The 103-kilometre Lebel line in Abitibi was completed and placed in service in June.*

☐ *The line connecting Viger substation to Atwater and Hertel substations in Montreal was placed in service. Tubular steel towers were used for the section crossing the St. Lawrence River.*

☐ *Work on the third line of the James Bay transmission system continued and cable was strung over the section that crosses the St. Lawrence River between Lanoraie and Tracy. The river-crossing towers are the tallest in Québec (175 metres).*

☐ *Work on the fourth and fifth James Bay lines involved tree-clearing of the section between Chibougamau and Le Moyne, the start of construction on the fourth line, and the opening of a 460-kilometre access road between Chibougamau and Le Moyne substations.*

During the year, 15 new transmission substations and 14 new subtransmission substations were placed in service. Moreover, additions were made to 35 substations, with nearly 60% of this work consisting of increases to transformer capacity. The system's total transformer capacity grew by about 6,500 megavolt-amperes in 1981. On the James Bay transmission system, the LG 2, Némiscau, Abitibi and La Vérendrye substations were placed in service. Outside the James Bay system, the commissioning of Viger substation was a noteworthy event which took place at the end of May, on schedule. This substation supplies the rising demand of downtown Montreal.

Telecommunications and automation

There were a number of notable achievements in the area of telecommunications and transmission-system automation. Hydro-Québec's telecommunications system is vital to the operation of the generating stations and transmission facilities. It contains microwave links for remote control and protection, mobile-radio networks for communications between vehicles, and carrier-current links for line protection. During the year, several new microwave links were either commissioned or almost completed, work continued on two mobile-radio networks, static compensators were added at a substation, and progress was made on a project for carrier-current links.

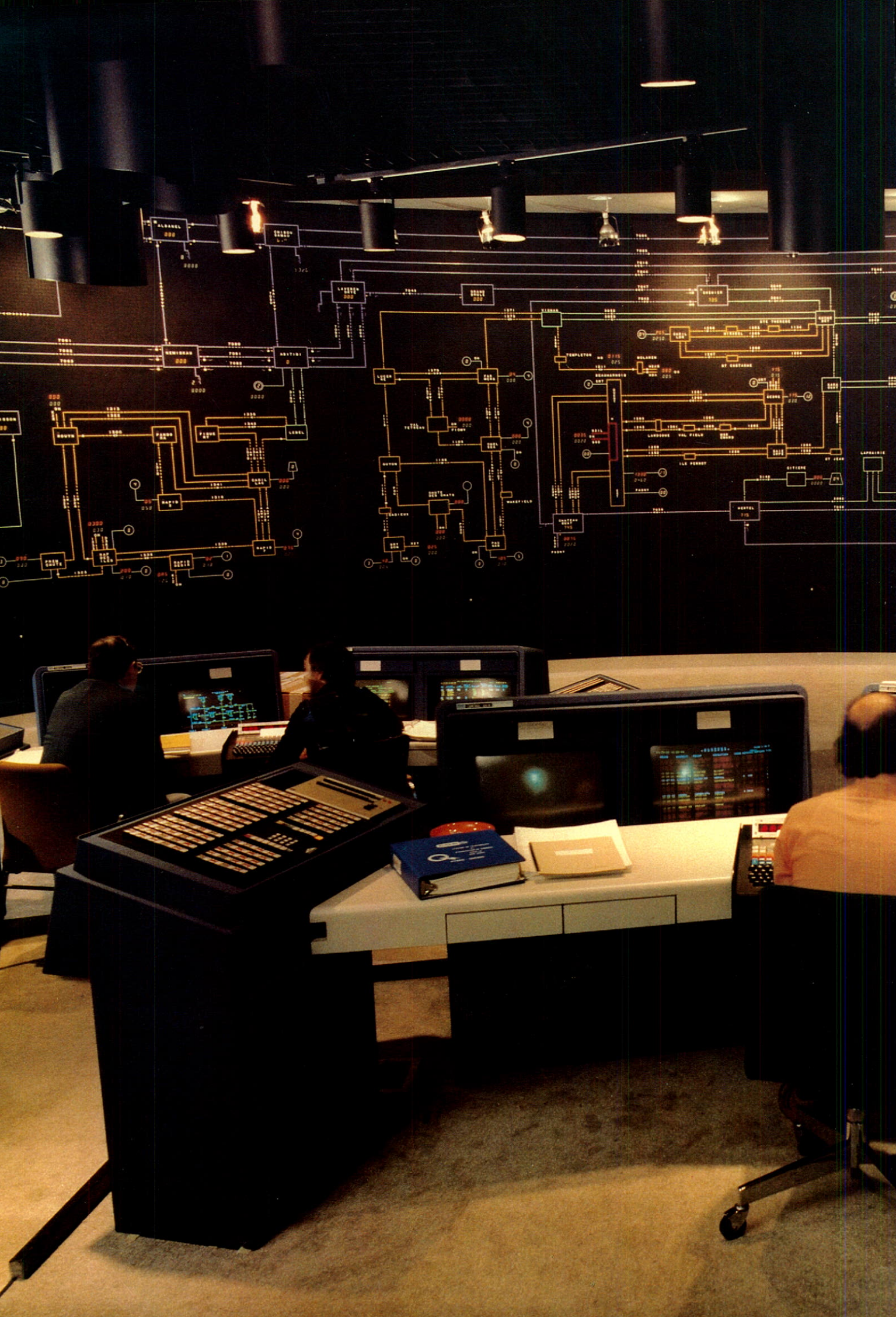
The program for automating the transmission system advanced during the year, with the installation of a computerized data-acquisition and processing system at the System Control Centre. This new system will go into operation in the summer of 1982 and will ensure computerized on-line control of Hydro-Québec's entire transmission system. In December 1981 the master plan for nine new regional operating centres was approved. These centres will be created during the next six years. The work will involve the connection of about 400 substations and generating stations at the rate of 70 a year. And finally, an automatic load-shedding system was placed in service to mitigate the consequences of any sudden loss of important generating facilities.

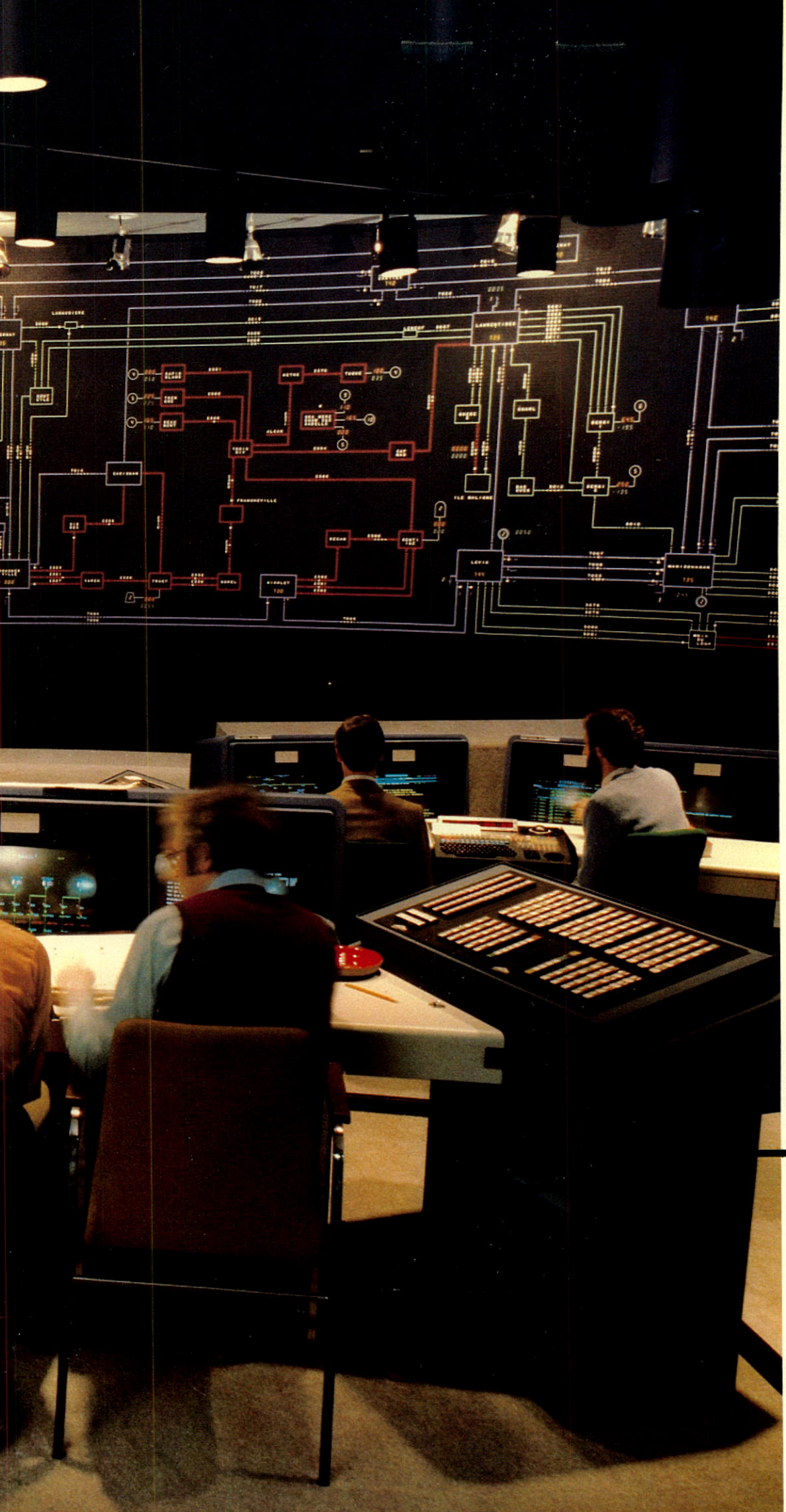
Relay station at Chissibi substation, linking LG 2, LG 3 and Le Moyne substation.

Distribution Facilities

Hydro-Québec built 1,170 kilometres of distribution circuits in 1981, bringing the total length of the distribution system to 86,290 kilometres at year-end.

In order to improve the quality of service to customers and the reliability of installations, a variety of repairs and improvements were made to the distribution facilities during the year. The program for replacing system insulators along major expressways was stepped up so as to remedy the damage caused by salt pollution. Repair work on the 4-kilovolt system in downtown Montreal was also accelerated, and a large quantity of small conductors were replaced throughout the province. Finally, the capacity of many





Electronic data processing provides major support for efficient, rapid management of Hydro-Québec's immense electrical system. The system's new control centre, which will be inaugurated in the summer of 1982, forms the core of system operations.

distribution transformers was raised to avoid outages caused by overloads during periods of heavy demand.

During the year Hydro-Québec and Bell Canada renewed an agreement governing the joint use of wood poles for electrical-distribution lines and telephone lines. This agreement, which is for a minimum period of five years and renewable annually thereafter, lowers each party's costs and reduces the number of poles needed. It also improves the environment by reducing visual congestion.

Automation of the distribution system continued during the year. Two main projects are involved: computerization of the distribution centres for which the hardware is now being procured and remote control of feeder switching points, which will permit rapid detection of power failures and faster restoration of service.

The quality of service was maintained at a fairly high level in 1981. However, certain difficulties were observed when power was being restored after outages. The difficulties resulted from overloading caused by the growing number of electric-heating installations.

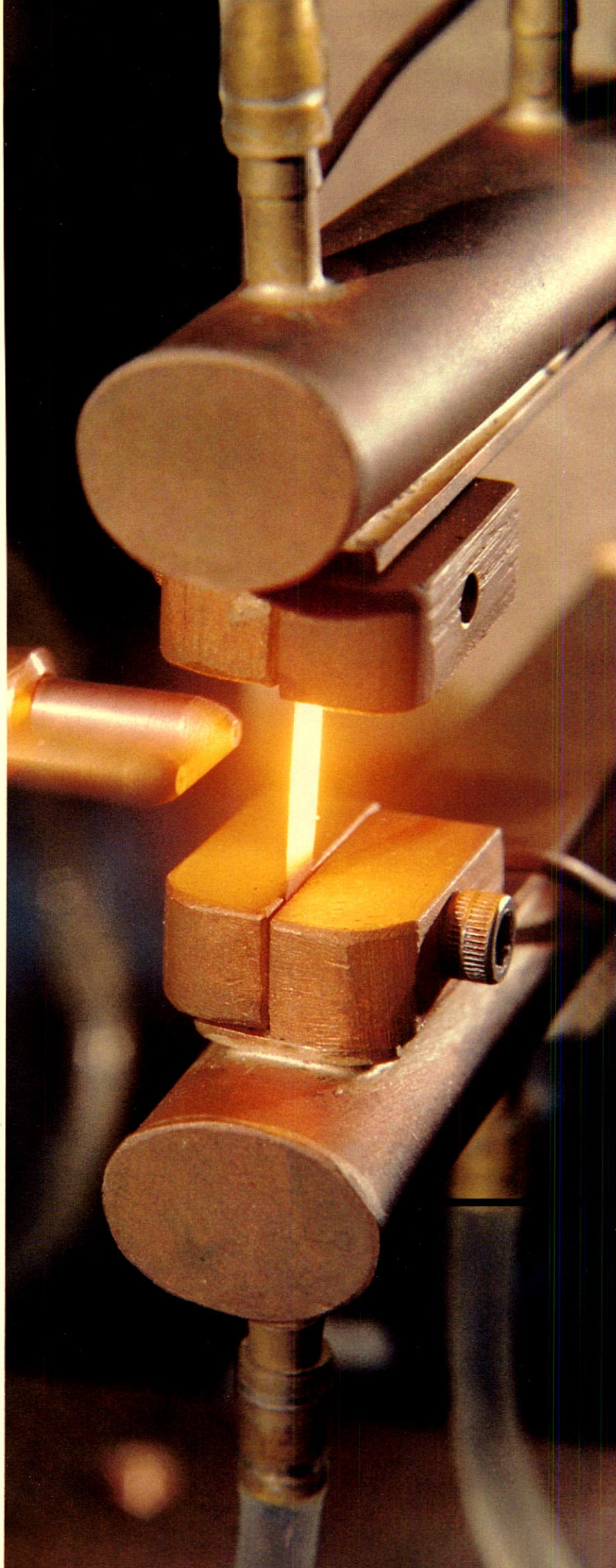
Total capital expenditures for distribution equipment amounted to $317,843,000, compared with $259,648,000 in 1980.

Energy Conservation

Hydro-Québec plays an important role in the field of energy conservation, as demonstrated by the following activities: administration of various programs to improve energy efficiency; follow-up on cost-effectiveness studies; collaboration with other organizations in a number of projects, and participation in public information stands.

Énergain Québec

Énergain Québec was launched in October 1981. This new program, designed to improve the energy efficiency of Québec homes, offers technical and financial assistance to homeowners and tenants. The program will last eight years. Its ultimate objective is to improve the energy efficiency of one million Québec homes and thereby reduce their energy consumption by an average of 32%.



In 1981 a total of $4,908,000 was spent on the formulation and implementation of Énergain Québec. The Québec government assumed half of this cost.

Other programs

Hydro-Québec started several other energy conservation programs dealing with the following areas: increased energy efficiency on the Magdalen Islands, computerized energy analyses of homes, lighting on public roads, and consumption by industrial and commercial customers.

In addition, Hydro-Québec administers a number of other programs in Québec, for example the Canada Oil Substitution Program and the Canadian Electrical Association's energy efficiency program.

Hydro-Québec International

This Hydro-Québec subsidiary was created in 1978 to export the parent company's technical know-how. Since then it has participated in 24 projects in 16 countries. At the end of 1981 it had service-contract orders totaling $6,000,000 for 1982 and additional orders totaling nearly $10,000,000 for subsequent years.

To develop markets, Hydro-Québec International promotes the utility's expertise in the operation of a large power system. Technical assistance has been given in the following areas: planning, management and engineering for electrical generation, transmission and distribution. Hydro-Québec International has concluded service agreements of this type with a number of foreign companies, for example Comisión Nacional de Energia Atómica (CNEA) and Nuclar S.A. in Argentina, Empresas Públicas de Medellin (EPM) in Columbia, Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE) in Uruguay, and Comisión Federal de Electricidad de Mexico (CFE).

Hydro-Québec International also favors the formation of associations with Québec consulting-engineering firms, helping them to enlarge their share of the market and carry out large contracts. For example it joined with Québec engineering firms for the conclusion of service contracts with companies such as Électricité d'Haïti, Hidroeléctrica Norpatagónica S.A. (HIDRONOR) in Argentina, and CVG Electrificación del Caroni C.A. (EDELCA) and Otecarsa C.A. in Venezuela.

Hydro-Québec's Research Institute

Hydro-Québec continually strives to improve its existing generation, transmission and distribution facilities, and also conducts research on other energy sources and the processes related to their development.

Induction furnace enables continuous casting in the manufacture of new superconducting alloys.

A large part of the work to prepare for the future is done at the Institut de recherche d'Hydro-Québec (IREQ), where the utility has brought together specialists in all fields of research related to electrical energy. In addition to high-voltage and high-power laboratories that are among the best equipped in North America, IREQ has laboratories for research into basic sciences, mechanics, metallurgy, electronics, power-system simulation, chemistry, electrochemistry and thermodynamics.

Optical fibres are used in research to improve welding techniques.

In these laboratories, research programs as well as development, demonstration and testing projects are carried out either for Hydro-Québec or for outside clients such as other electrical utilities, electrical equipment manufacturers in Québec, Canada or other countries, and government agencies around the world.

In 1981 the researchers, engineers and technicians at IREQ worked in a multitude of fields, notably nuclear fusion and wind energy. The design and construction of a small tokamak reactor, which will eventually become the core of a national centre for fusion research, were commenced under an agreement with National Research Council Canada (NRC). IREQ's physicists and engineers are also benefiting from the cooperation of university researchers and the private sector. Hydro-Québec and NRC will each allocate $18,700,000 for the tokamak, scheduled for start-up in 1984.

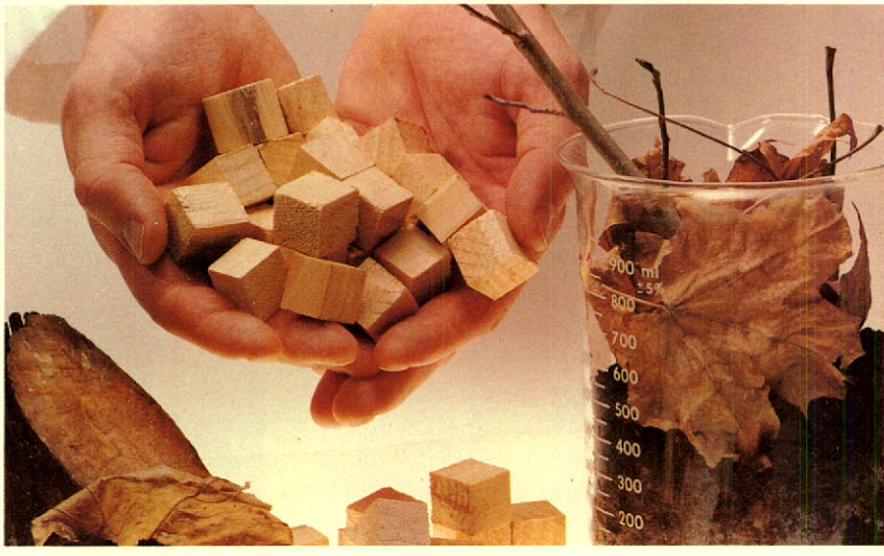
In the area of wind energy, Hydro-Québec collaborated with NRC on studies for the construction and testing of a vertical-axis wind turbine with a height of 110 metres and a generating capacity of about four megawatts. The cost of the project is estimated at $35,000,000 and will be shared equally by the two organizations. Private industry will also have a hand in the construction of the windmill, which should begin operating early in 1985.

One of the principal activities of 1981 was a performance evaluation of several spacer-damper systems, used to control vibration and oscillation in four-conductor bundles. There was also development work to improve the manufacturing technology for new current-limiting fuses, which serve to protect distribution transformers. Still in the area of transmission and distribution, 1981 saw the marketing of a line-fault locator that was developed at IREQ. A pilot project for automation of feeders was conceived jointly with the distribution department. This equipment, which will be tested on the system in 1982, will make it possible to reduce the outage time of faulty feeders.

Construction of a 1.2-megawatt experimental plant for water electrolysis began in 1981 following an agreement between Hydro-Québec and two other partners. The electrolysis unit will become operational in 1982 and will be used to check new generations of electrolyzers designed for the manufacture of hydrogen. It will also be an important tool for studying applications of hydrogen as an energy carrier or a raw material.

Finally, two IREQ researchers were awarded a prize by the American publication Industrial Research: their analyzer for hydrogen dissolved in transformer oil was included among the 100 most useful technical innovations in 1981.

Biomass energy, like wind energy and other alternative production methods, is one of the new avenues being explored by IREQ scientists.



Revenue from contracts carried out by IREQ was $6,300,000 in 1981. Research and development work accounted for two-thirds of this amount, while testing in the high-voltage and high-power laboratories brought in about $2,000,000.

Heat pumps offer interesting possibilities for saving energy in residential heating and other uses. Greenhouses could be heated this way, for example.

The collective agreement with the security officers' union was signed and at year-end negotiations were still under way with the LG 3 site and office workers' union to settle an on-going strike. During the year also, a group of 400 secretaries joined the office workers' union.

As a follow-up to letters of agreement in current contracts, Hydro-Québec and the trades employees' union re-examined in depth the management of operating activities in the generation, transmission and distribution systems, and agreed on new work schemes for the operators. In addition, an arbitrator heard the respective positions of Hydro-Québec and the office workers' union regarding a new evaluation plan for this group of employees.

A major effort was made in 1981 to improve the settlement of grievances through arbitration. For example, Hydro-Québec proposed a program to the office workers', trades employees' and technicians' unions whereby grievances would be heard within 28 days after their submission to arbitration. This program almost quadrupled the average annual number of grievances submitted to arbitration in 1981 compared with the annual average of the last 10 years.

The year 1982 will be important for labor relations because the firm will renegotiate the collective agreements covering most of its unionized employees. These negotiations will take place at the same time as those of Québec's public service employees and in a difficult economic period. They have been the subject of detailed planning designed to make the discussions as effective as possible and encourage greater participation by management and employees.

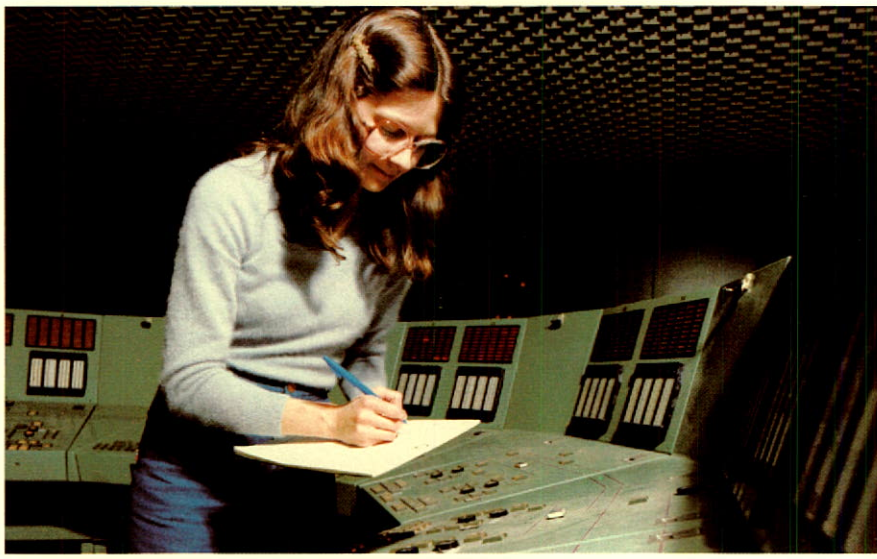
Health and safety

The year 1981 was marked by intensified effort begun in 1979, when the Occupational Health and Safety Act was adopted and Hydro-Québec formulated a plan of action regarding safety.

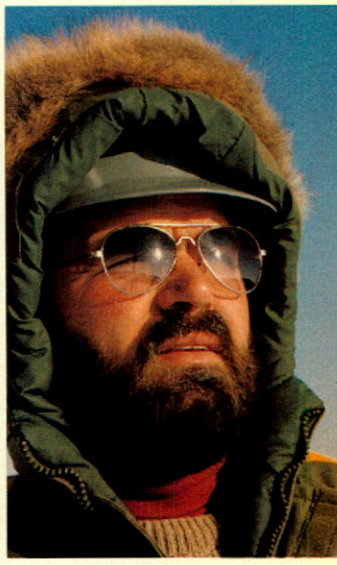
The sustained activity of the provincial, regional and local safety committees largely contributed to the firm's work force and management intensifying their efforts with regard to safety in the workplace.

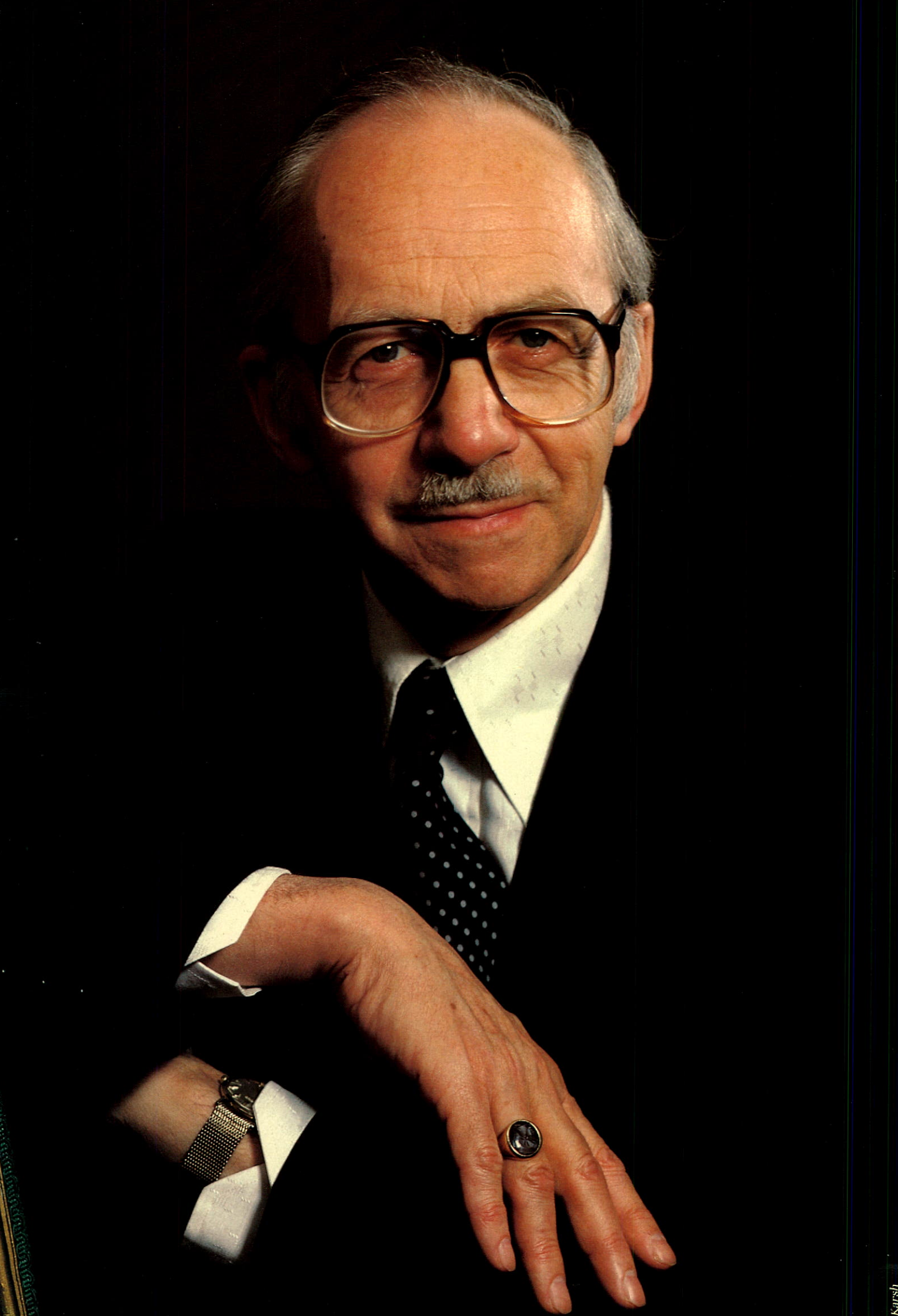
In fact, 1981 saw a decline in the severity of accidents, which resulted in 747 lost days per million hours worked, compared with 1,330 the previous year. In 1981 there was only one fatal accident and it occurred on February 10. One year later there had been no fatal accident, a record since 1963. The accident frequency rate, however, increased slightly in 1981, rising to 28.06 accidents per million hours worked from 27.18 the previous year, a reminder that vigilance cannot be allowed to slacken.

The health and safety department operates within the framework of an overall epidemiological approach, which aims at detecting and eliminating factors likely to affect the health, safety, general well-being and physical integrity of workers and the public. To this end, work continued during the year on analysis of certain detrimental elements linked to activities in the company, and several studies were carried out on subjects such as noise, lighting, visual-display screens, and work in a pressurized atmosphere. In addition to permanent programs in the regions and on the construction sites, new programs were undertaken to increase awareness about physical fitness and to control pathological stress and some kinds of drug addiction. Finally, in the area of radiation protection, much attention was given to training the operating staff of Gentilly 2 nuclear power station and creating ways to protect and monitor the health of workers and the general population.



Generating-station operator at LG 2.





A Tribute to Robert A. Boyd

On December 15, 1981, the president and chief executive officer of Hydro-Québec, Robert A. Boyd, resigned after a remarkable 37-year career devoted to the firm's expansion and development, and therefore to Québec. During those years he witnessed and most often participated in "all the stages of Hydro-Québec's grand and spectacular life-story" — to quote Québec Prime Minister René Lévesque.

Mr. Boyd joined Hydro-Québec in 1944, the year the utility was created. He acquired unique experience, which led to his appointment as chief engineer in 1962. During the 1960s, as general manager and later as a commissioner of Hydro-Québec, he was one of the leading figures in the period when the privately-owned electrical utilities were absorbed. The achievements of that decade also included the negotiation and signing of the Churchill Falls contract, the development of technology for the world's first 735,000-volt transmission system, the construction of the Manic-Outardes hydroelectric complex, and the creation of IREQ, Hydro-Québec's research institute.

In the period that followed, Mr. Boyd served as the guiding force behind the power developments in the James Bay region and contributed largely to the technical and financial success of that endeavor. It was a project full of difficulties, requiring tenacity, flexibility and imagination. He devoted unfailing effort to it.

In 1978, following a reorganization of the utility's administrative structure, he became president and chief executive officer of Hydro-Québec. This was the fitting climax to his career as a top executive.

Mr. Boyd remains an example and an inspiration to all Hydro-Québec employees.

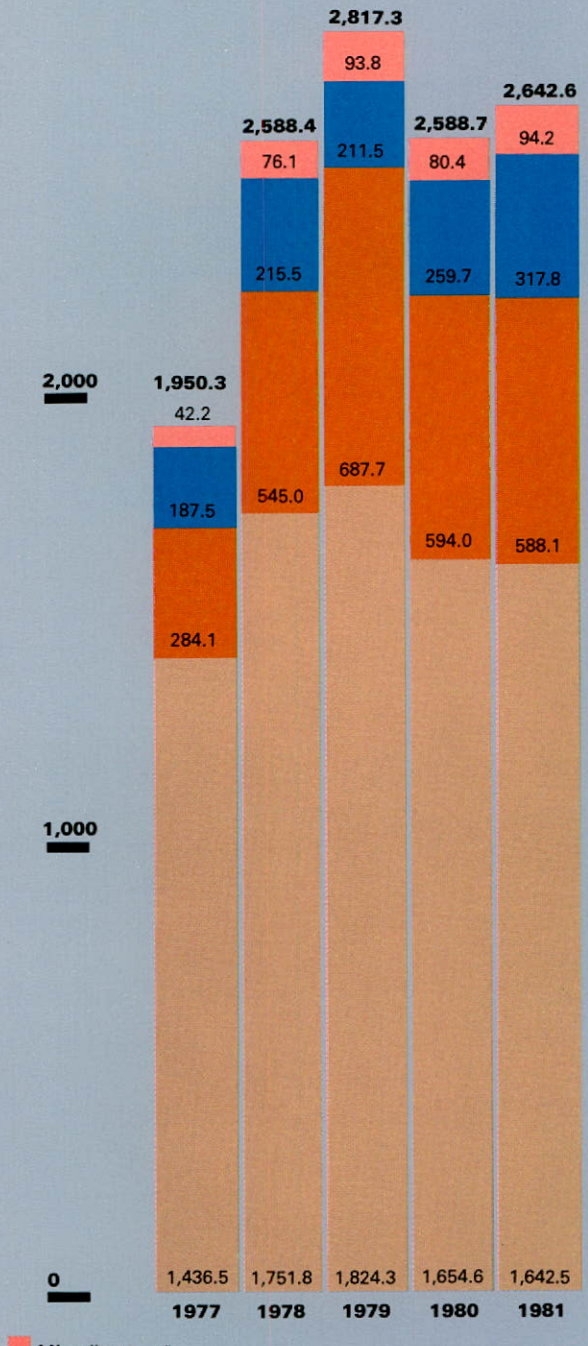
Graphs

Contents

Financial Results

Capital expenditures by major sector, 1977-1981
(in millions of dollars)

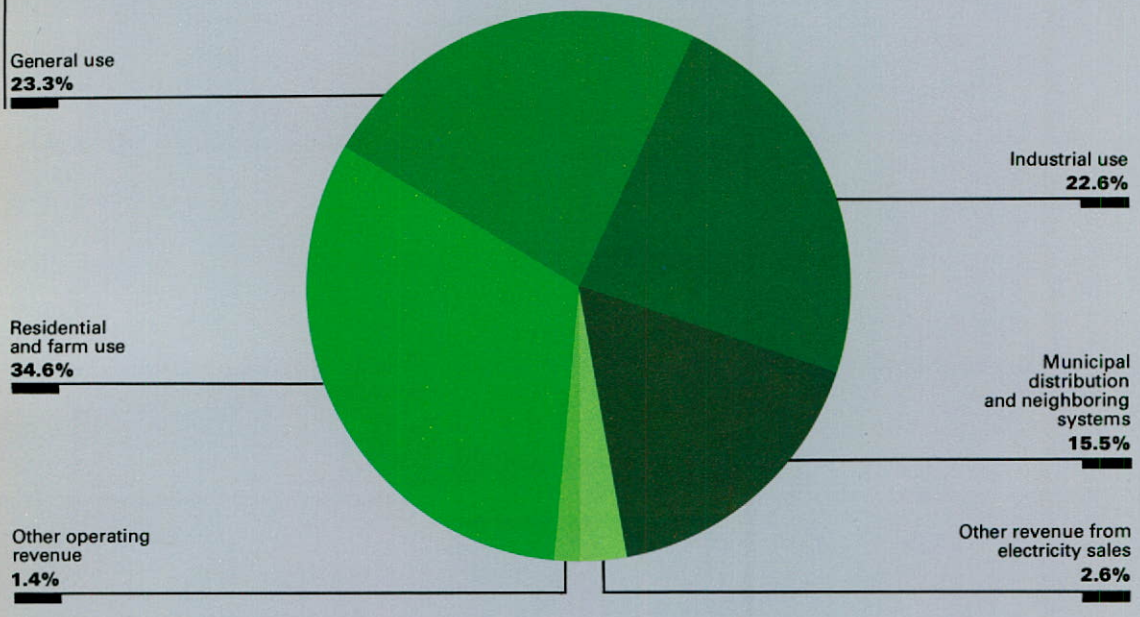
In 1981, Hydro-Québec's capital expenditures amounted to $2,642,636,000, or 19.2% of total estimated investments in Québec. These figures are virtually the same as those of 1980.



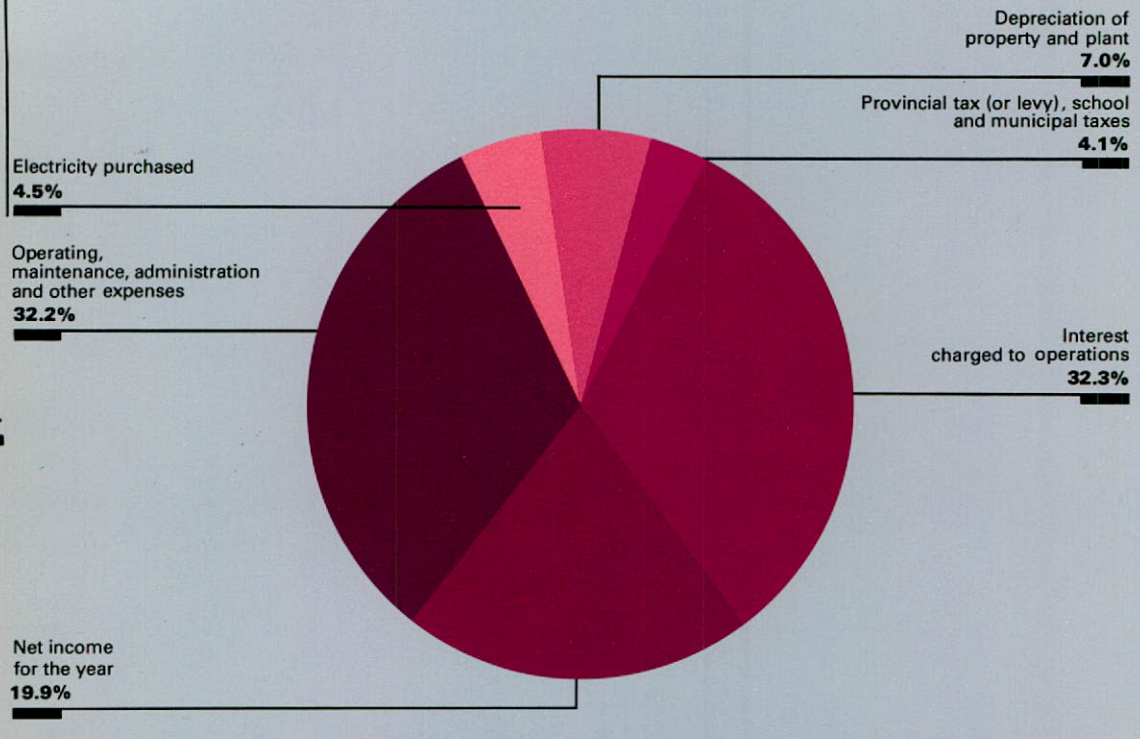
**Includes general property and construction, operating and research facilities.*

Source of revenue dollar in 1981

In 1981, total revenue amounted to $2,809,291,000.

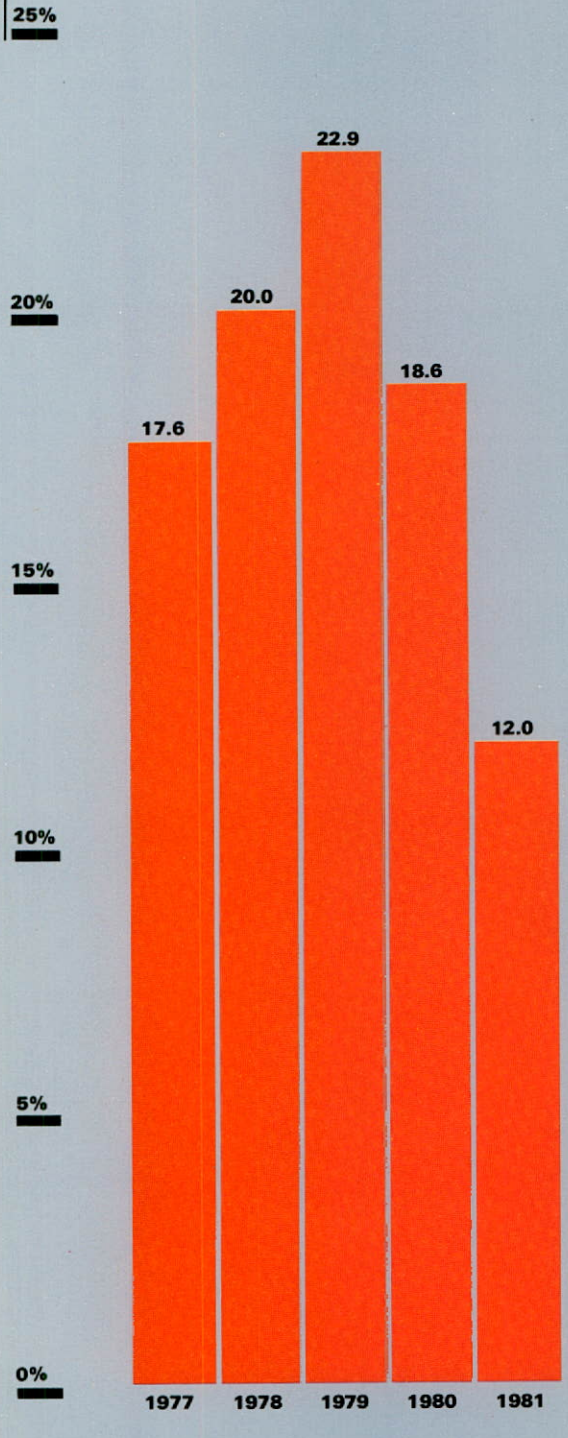


Application of revenue dollar in 1981



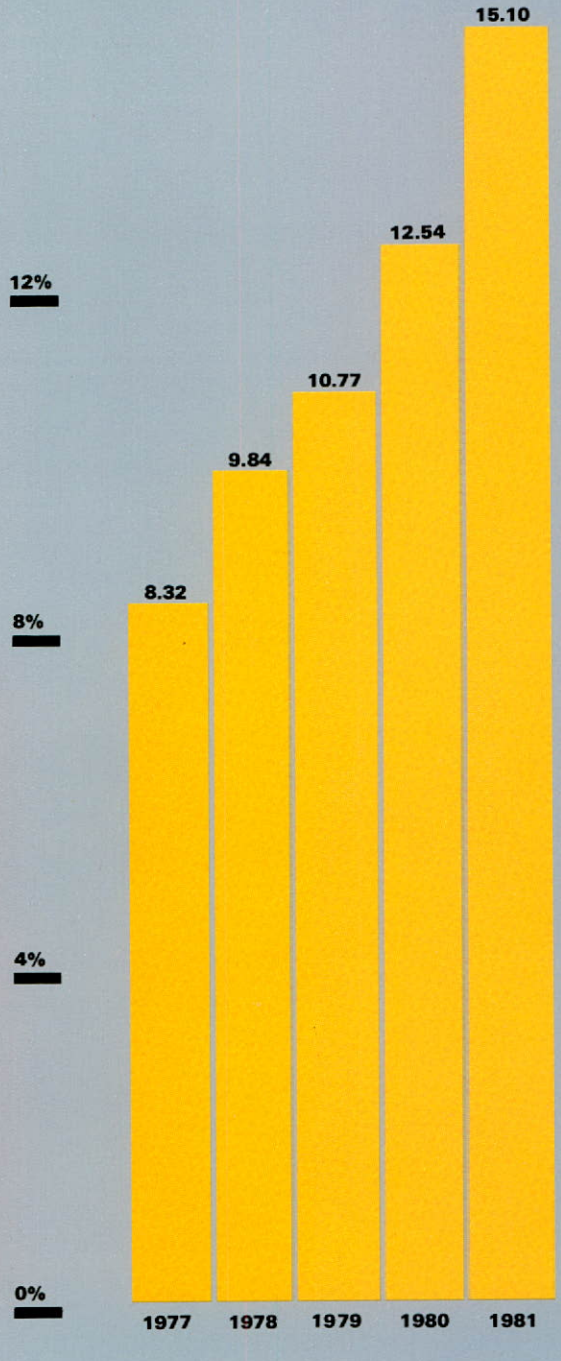
Return on net worth
1977-1981

Return on net worth is equal to the year's net income divided by the average of net worth at the beginning and end of each year.



Interest rates
1977-1981

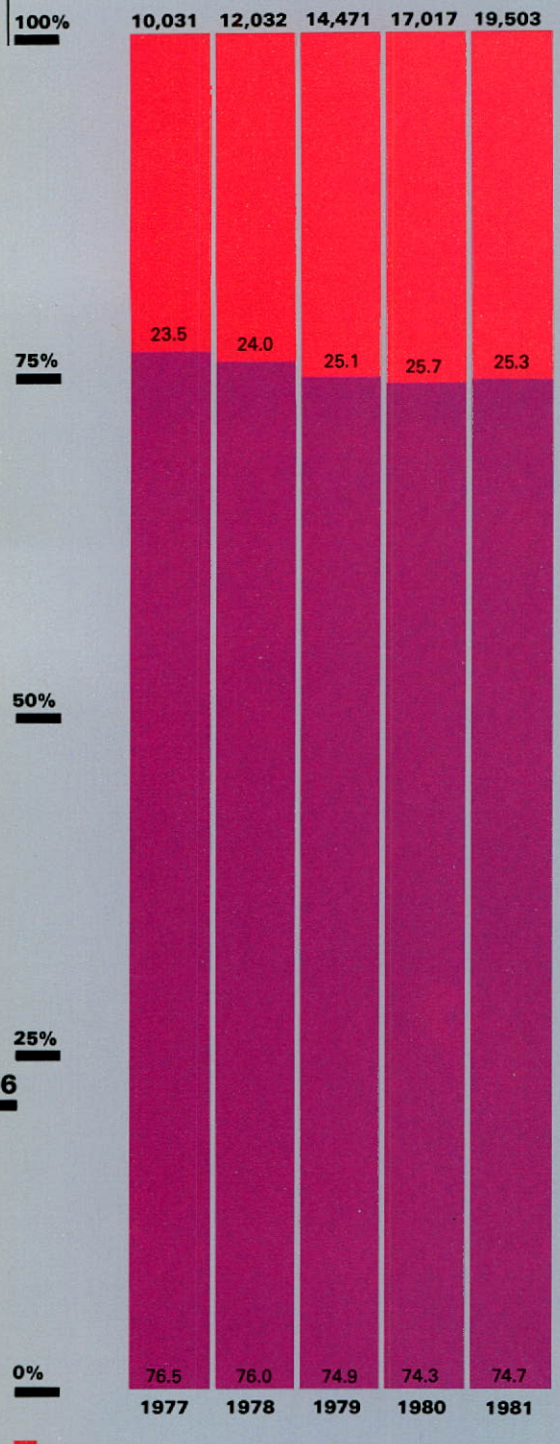
The average effective interest rate on long-term borrowings contracted in 1981 was 15.10%, compared with 12.54% in 1980.



Composition of capital 1977-1981

(in millions of dollars)

In 1981, net worth represented 25.3% of invested capital.

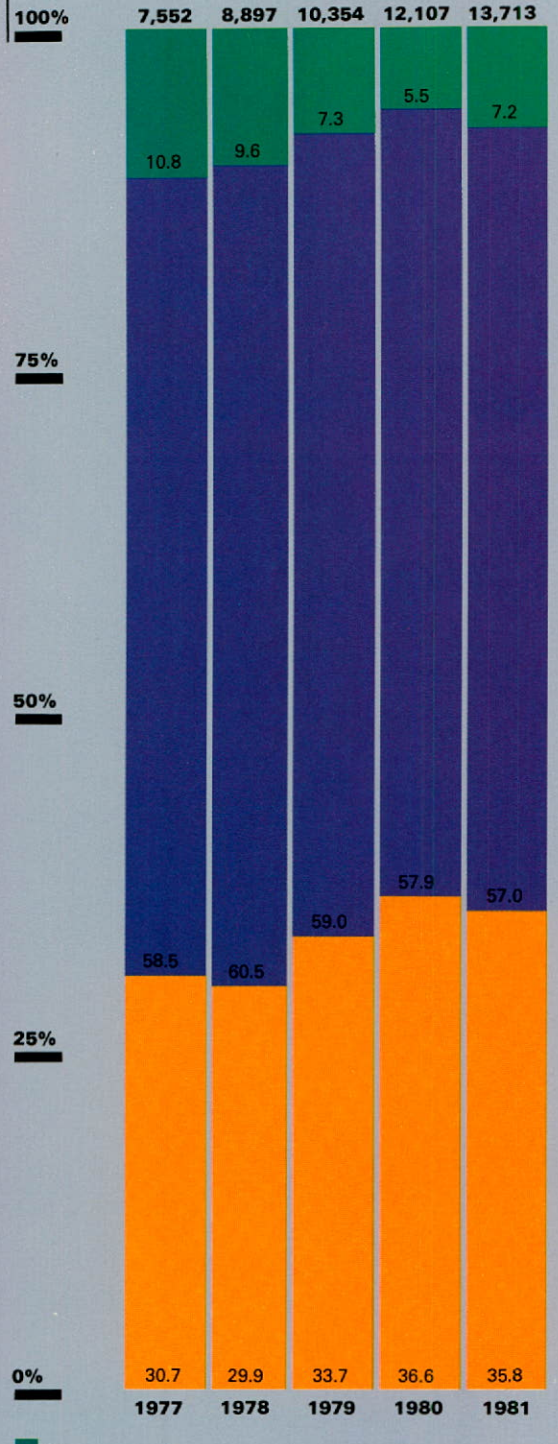


**Long-term debt, including amount payable within one year and notes payable.*

Composition of long-term debt 1977-1981

(in millions of dollars)

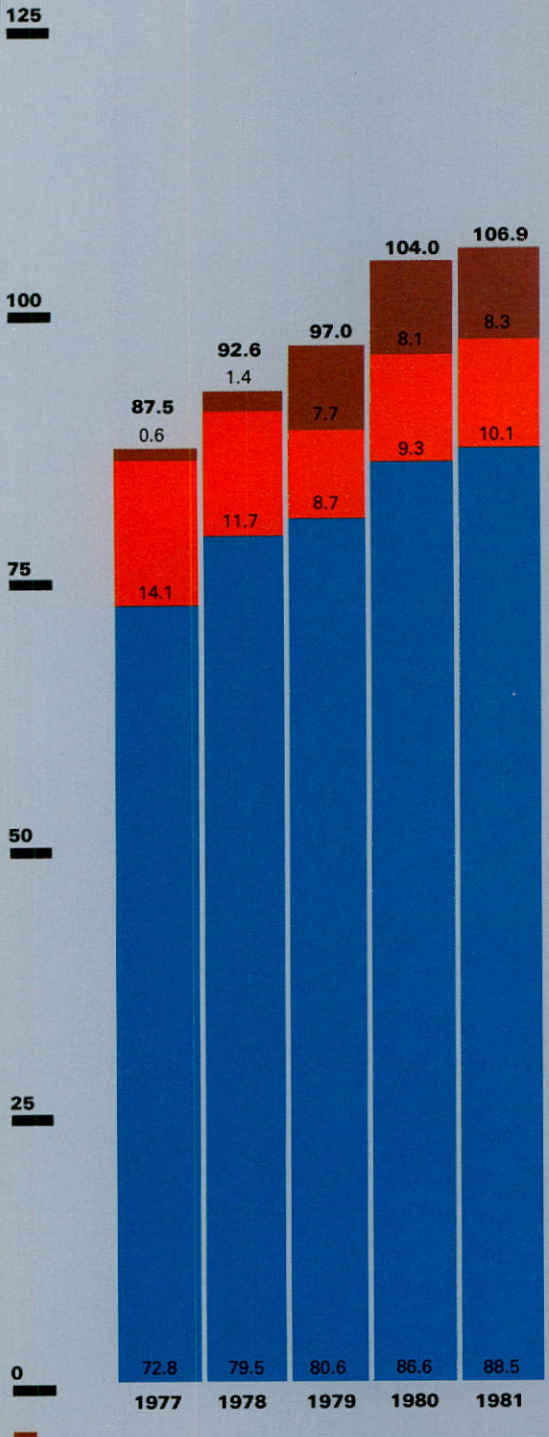
In addition to borrowings made in Canadian and American dollars, Hydro-Québec negotiated loans in Swiss francs, Deutsche marks, pounds sterling, yen and Common Market ECU.



Sales

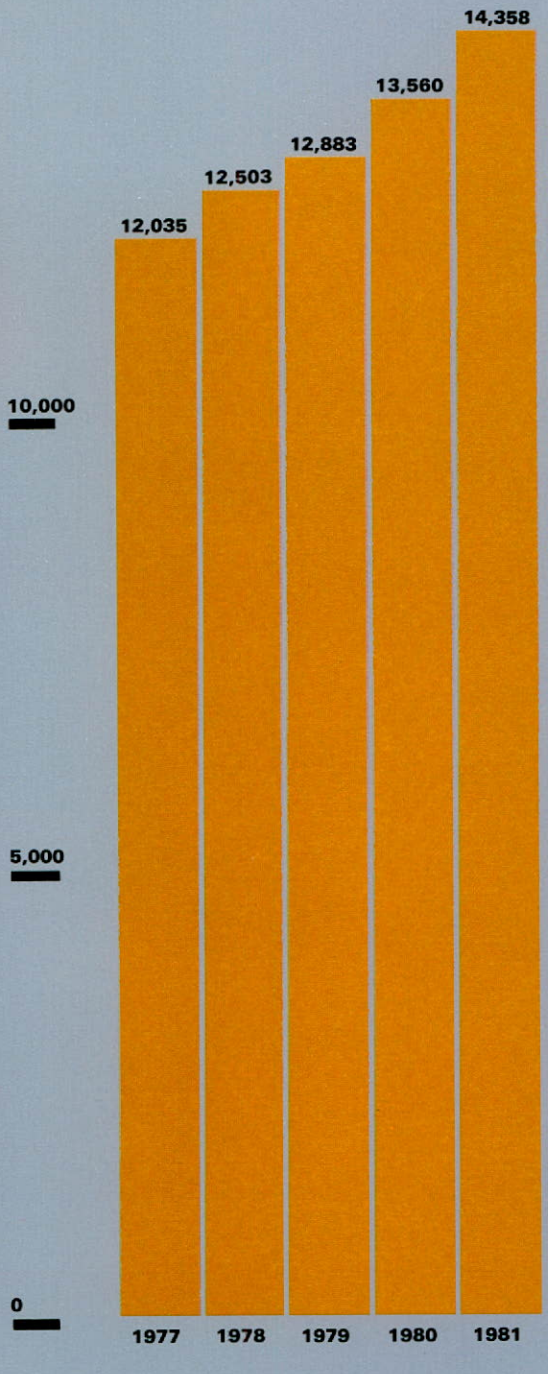
Breakdown of total electricity sales inside and outside Québec 1977-1981
(in billions of kilowatthours)

In 1981, Hydro-Québec sold a total of 106.9 billion kilowatthours.

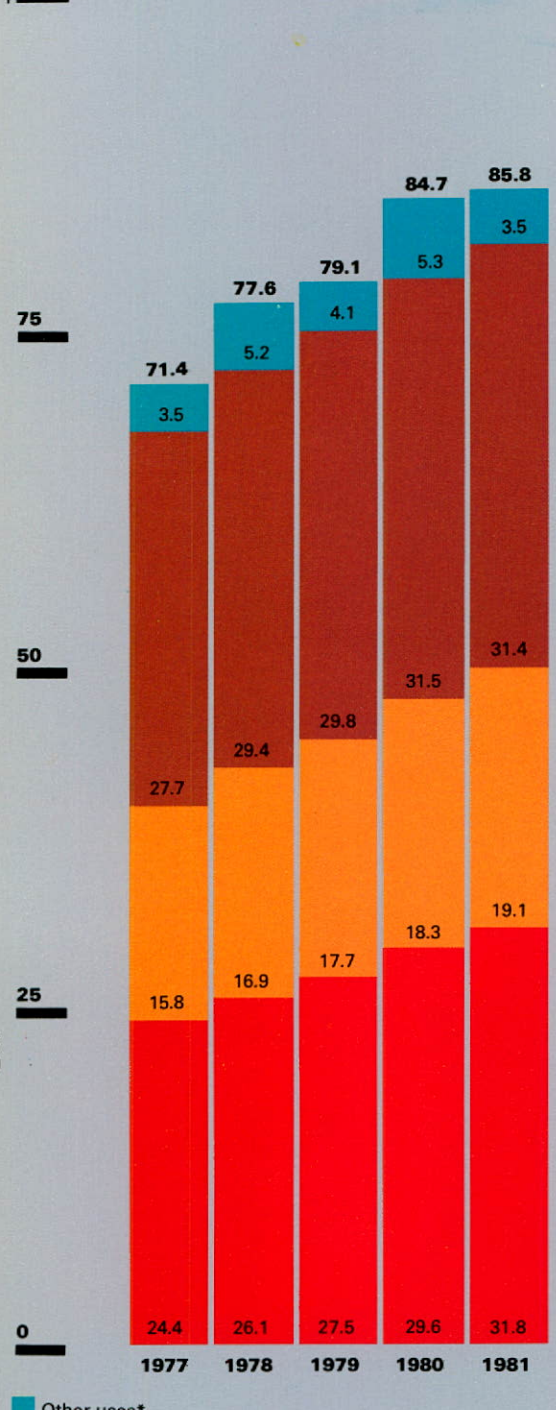


Average annual consumption per residential account 1977-1981
(in kilowatthours)

In 1981, the average annual consumption per residential customer account was 14,358 kilowatthours, or 5.9% more than in 1980.

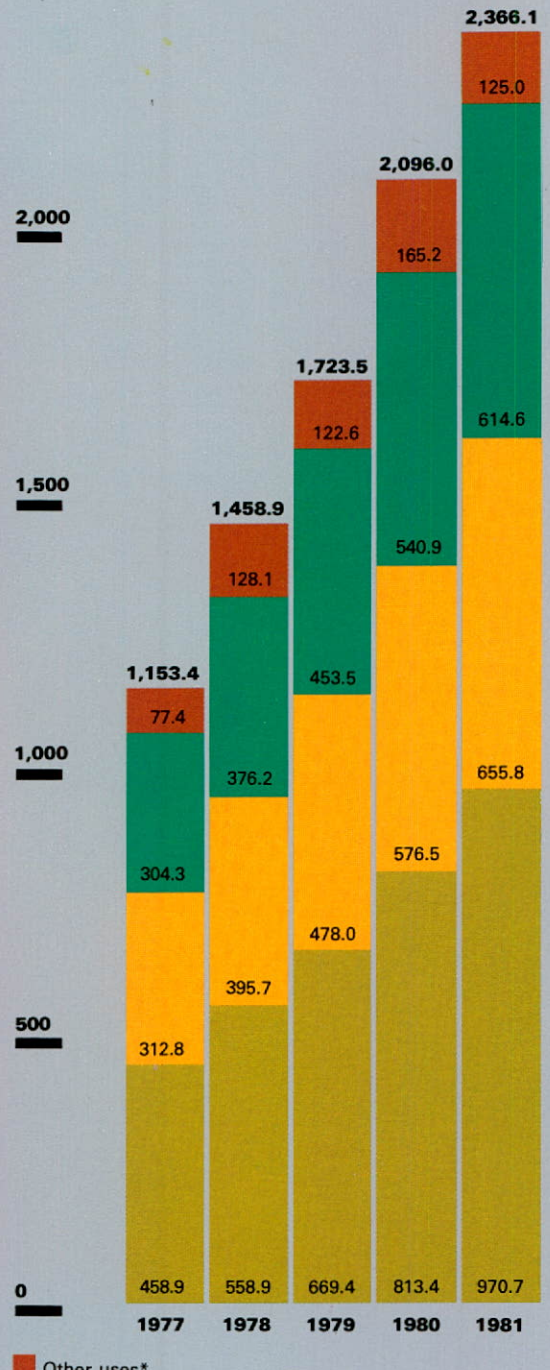


Breakdown of firm electricity sales in Québec by category of use, 1977-1981
(in billions of kilowatthours)



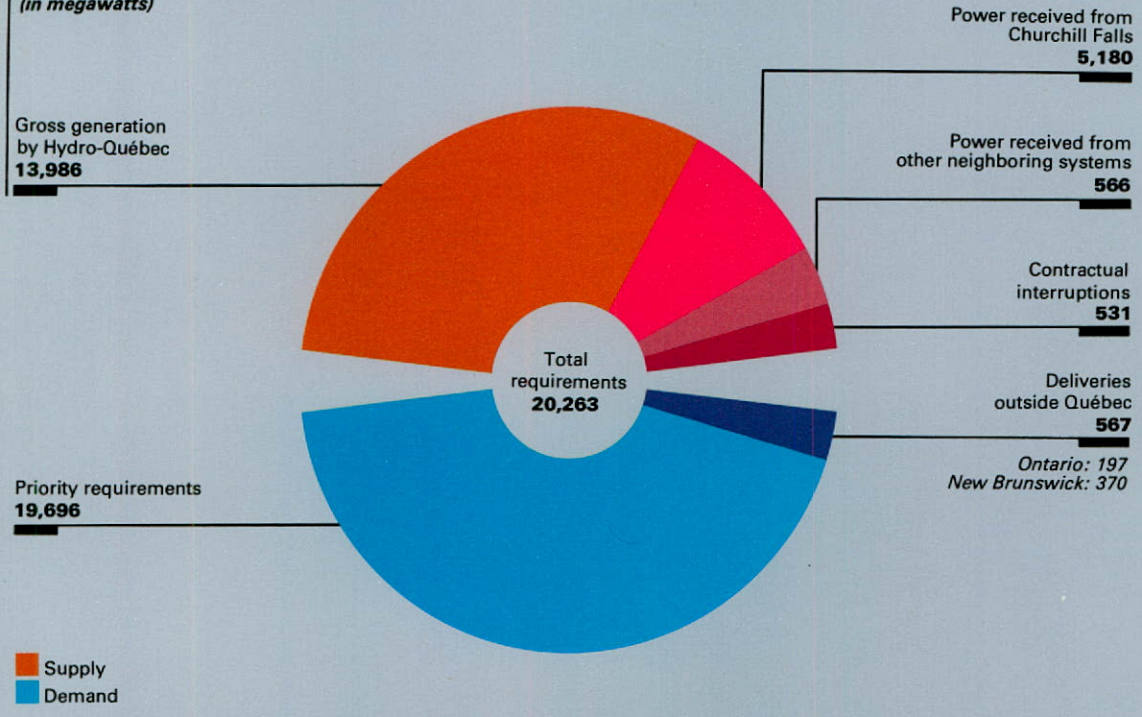
*Includes sales to municipal distribution systems and neighboring Québec systems, increase in unbilled sales, and other.

Breakdown of revenue from firm electricity sales in Québec by category of use, 1977-1981
(in millions of dollars)

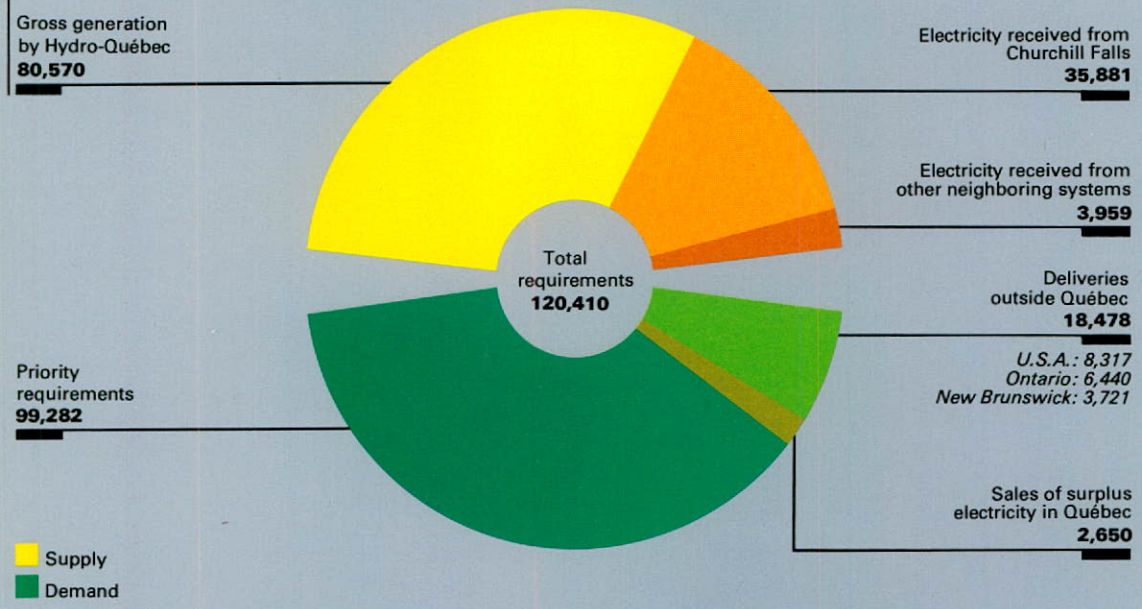


*Includes revenue from sales to municipal distribution systems and neighboring systems in Québec, increase in unbilled revenue, and other.

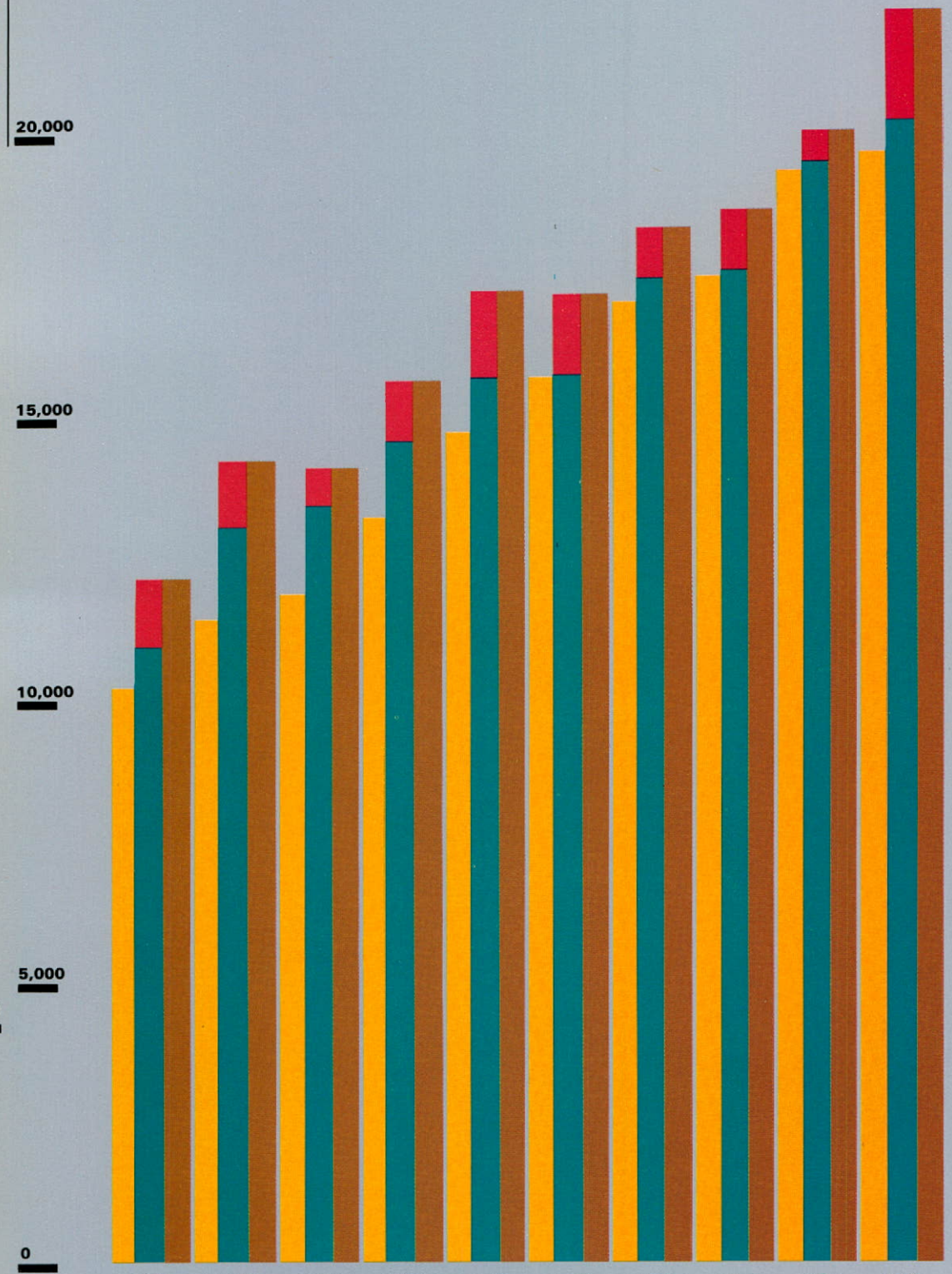
Power supply and demand at time of 1981-1982 winter peak, on Monday, January 18, 1982, at 5:30 p.m.
(in megawatts)



Energy supply and demand in 1981
(in millions of kilowatthours)



Available capacity and power requirements at time of system peak demand, in the winter period beginning December of each year, 1972-1981
(in megawatts)



	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	10,244	11,446	11,932	13,337	14,783	15,785	17,059	17,582	19,385	19,696
	10,956	13,181	13,508	14,668	15,806	15,887	17,488	17,698	19,508	20,263
	12,178	14,319	14,146	15,691	17,290	17,195	18,428	18,696	20,085	22,178
	1,222	1,138	638	1,023	1,484	1,308	940	998	577	1,915

Priority requirements

Electricity which Hydro-Québec must provide under its mandate. It includes losses but not sales of surplus electricity or sales outside Québec.

Total requirements

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

Available capacity at time of peak

Takes into account restrictions on generation and transmission.

Reserve

NOTE: These figures include respectively 236, 138, 190, 318, 445 and 531 megawatts of contractual interruptions for the years 1975, 1976, 1977, 1978, 1980 and 1981.

Hydro-Québec
Annual Report 1981

Financial Statements and Statistics

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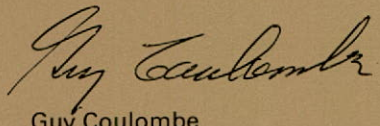
Hydro-Québec Employees' Retirement Fund

Management's Report

Hydro-Québec's annual report and the accompanying consolidated financial statements have been prepared by management and approved by the board of directors. The financial statements have been drawn up in accordance with generally accepted accounting principles and, in management's opinion, they have been prepared within reasonable limits of materiality, in light of all the information available up to March 15, 1982.



Guy Coulombe
President and Chief Executive Officer

Auditors' Report

We have examined the consolidated balance sheet of Hydro-Québec as at December 31, 1981 and the consolidated statements of operations, retained earnings 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, 1981 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 applied on a basis consistent with that of the preceding year.

Samson, Bélair + Associés — Chartered Accountants

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

Montréal, Canada,
March 15, 1982.

Consolidated Statement of Operations

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

		1981	1980
Revenue	Sales of electricity:		
	Firm	**$2,434,920**	$2,171,236
	Surplus	**335,188**	241,625
		2,770,108	2,412,861
	Other operating income	**39,183**	30,725
		2,809,291	2,443,586
Expenditure	Operating, maintenance, administration and other	**904,525**	704,787
	Electricity purchased	**126,487**	130,741
	Depreciation of property and plant	**197,619**	161,324
	Provincial levy (Note 2)	**106,421**	51,188
	School and municipal taxes	**8,469**	6,343
		1,343,521	1,054,383
Net operating income		**1,465,770**	1,389,203
	Interest (Note 3)	**906,942**	643,120
Net income for the year		**$ 558,828**	$ 746,083

See accompanying notes

Consolidated Balance Sheet

(in thousands of dollars) as at December 31

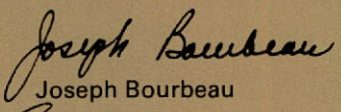
	Assets	1981	1980
Fixed assets	Property and plant (Note 4):		
	In service	**$14,742,054**	$12,385,160
	Accumulated depreciation	**1,790,758**	1,625,649
		12,951,296	10,759,511
	Construction work in progress	**6,074,928**	5,878,303
		19,026,224	16,637,814
	Construction, operating and research equipment, at cost less accumulated depreciation	**147,708**	124,812
		19,173,932	16,762,626
Current assets	Cash and short-term investments	**448,407**	244,176
	Accounts receivable and unbilled revenue	**629,409**	541,232
	Materials, fuel and supplies	**156,821**	159,590
		1,234,637	944,998
Other assets	Investments (Note 5)	**128,807**	129,900
	Unamortized debenture discount and expenses	**159,508**	141,178
	Unamortized deferred cost on purchase of electricity	**32,792**	33,757
		321,107	304,835
		$20,729,676	$18,012,459

(in thousands of dollars)
as at December 31

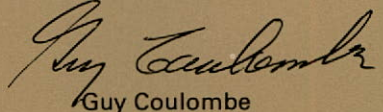
	Liabilities and shareholder's equity	1981	1980
Long-term debt	Debentures, bonds and other long-term debt (Note 6)	**$13,713,262**	$12,107,078
Notes payable	Notes payable within one year	**256,876**	150,610
Current liabilities	Bank indebtedness	**30,117**	3,398
	Accounts payable and accrued liabilities	**600,468**	508,763
	Accrued interest	**589,262**	483,687
	Long-term debt payable within one year	**606,754**	384,814
	Dividends payable	**6,900**	—
		1,833,501	1,380,662
Shareholder's equity	Capital stock (Note 7a)		
	Authorized		
	50,000,000 shares, par value of $100 each		
	Issued and paid		
	43,741,090 shares	**4,374,109**	—
	Retained earnings (Note 7b)	**551,928**	4,374,109
		4,926,037	4,374,109
		$20,729,676	$18,012,459

See accompanying notes

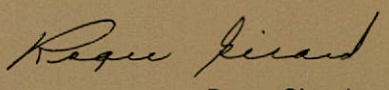
On behalf of Hydro-Québec:



Joseph Bourbeau



Guy Coulombe



Roger Girard
General Manager
Control and Accounting

Montréal, Canada,
March 24, 1982.

Consolidated Statement of Retained Earnings

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

	1981	1980
Balance at beginning of year (Note 7b)	**$4,374,109**	$3,628,026
Less:		
Amount allocated to full payment of 43,741,090 shares (Note 7a)	**4,374,109**	—
	—	3,628,026
Plus:		
Net income for the year	**558,828**	746,083
	558,828	4,374,109
Less:		
Dividends (Note 8)	**6,900**	—
Balance at end of year	**$ 551,928**	$4,374,109

See accompanying notes

Consolidated Statement of Changes in Financial Position

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

		1981	1980
Source of financial resources	Net income for the year	**$ 558,828**	$ 746,083
	Depreciation of property and plant	**197,619**	161,324
	Depreciation of operating and research equipment	**23,463**	19,211
	Amortization of debenture discount and expenses	**13,469**	12,601
	Other amortization and depreciation	**6,637**	6,484
	Total financial resources provided by operations	**800,016**	945,703
	Issue of debentures and other long-term debt less discount and expenses	**2,226,492**	2,155,635
	Increase (decrease) in notes payable	**106,266**	(4,846)
	Decrease (increase) in materials, fuel and supplies	**2,769**	(23,470)
	Increase (decrease) in accounts payable and accrued liabilities, accrued interest and dividends payable	**204,180**	(21,738)
	Other	**7,727**	8,449
		$3,347,450	$3,059,733
Application of financial resources	Investments in fixed assets	**$2,642,636**	$2,588,661
	Redemption of debentures, bonds and other long-term debt	**432,225**	372,793
	Increase in cash and short-term investments less bank indebtedness	**177,512**	58,855
	Increase in accounts receivable and unbilled revenue	**88,177**	39,424
	Dividends	**6,900**	—
		$3,347,450	$3,059,733

See accompanying notes

Notes to Consolidated Financial Statements

December 31, 1981

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

Under the provisions of its Act, the object of Hydro-Québec is to supply power in the Province de Québec at rates and conditions consistent with sound financial administration. More specifically, the Hydro-Québec Act provides that the rates should be maintained at a level sufficient to defray at least all operating expenditures, interest on debt and depreciation of fixed assets over a maximum of fifty years. Rates are fixed by Hydro-Québec and are subject to the approval of the Gouvernement du Québec.

c) Revenue from sales of electricity

Revenues are recorded on the basis of cyclical billings. They are also accrued in respect of electricity delivered but not yet billed.

d) Property and plant (see Note 4)

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

The costs of generating facilities, up to an amount equal to the accumulated cost at date of transfer, 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 on the basis of the present value of the total estimated cost. The costs of transmission, distribution and other facilities are transferred to Property and plant in service when these facilities are completed and in commercial operation.

e) Depreciation

Hydro-Québec uses a sinking fund method of providing for depreciation of its property and plant. This method is based on an interest rate of 3% and the following expected service lives:

Hydraulic powerhouses, dams and reservoirs, transmission towers (steel) and conductors	50 years
Hydraulic turbines, generators and distribution conductors	40 years
Distribution poles	25 years

f) Interest charged to Construction work in progress

Interest is added to the cost of construction work in progress at a rate equivalent to the weighted average of the effective interest rates on Hydro-Québec's debentures issued to finance such construction. This rate was 11.76% in 1981 and 10.46% in 1980, and includes foreign exchange fluctuations on interest payments made in foreign currencies.

g) Foreign currency translation (see Note 6)

Consolidated long-term debt payable in foreign currencies is shown on the balance sheet at the Canadian dollar equivalent at date of borrowing. Current assets and liabilities denominated in foreign currencies, including long-term debt payable within one year, 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 in the consolidated statement of operations (see Note 3). Revenues and expenses resulting from transactions in foreign currencies are accounted for according to the rates of exchange at the date of the transactions.

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

h) Unamortized deferred cost on purchase of electricity

In accordance with the terms of a contract with Churchill Falls (Labrador) Corporation Limited (CFLCo) (see Note 10), 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 electricity purchased. Annual payments which Hydro-Québec has to make under this agreement are also charged to the cost of electricity purchased.

i) Research and development

Preliminary engineering, investigation 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 included with operating expenditure. Hydro-Québec also charges to operations the cost of research and development not related to a specific project or related to alternative energy sources.

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) 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.

l) Investments

All short-term and long-term investments are shown at cost. The cost of short-term investments approximates market value.

m) Redemption of debentures and bonds

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 (see Note 3). Debentures or bonds of an issue purchased for the sinking fund of that issue are cancelled.

n) Dividends

The amount of dividends declared by the Gouvernement du Québec (see Note 8) is deducted from retained earnings of the year for which they have been declared.

o) Retirement plan

The costs of the retirement plan are determined periodically by independent actuaries. Current service costs are charged annually to operations, as is the amortization of past service obligations and of experience deficiencies over a period of 15 years.

Note 2

Provincial levy

Besides an annual 3% tax on sales of electricity to Québec customers effective January 1, 1980, recent amendments to taxation law and to the Hydro-Québec Act subject Hydro-Québec to capital tax as of July 1, 1981. This tax amounts to $43,418,000 in 1981.

Note 3

Interest

	1981 *(in thousands of dollars)*	1980 *(in thousands of dollars)*
Interest on long-term debt	$ 1,466,420	$ 1,191,249
Interest on bank indebtedness and notes payable	49,094	39,736
Amortization of debenture discount and expenses	13,469	12,601
Foreign exchange loss on redemption of debentures and translation of current assets and liabilities	118,766	106,708
	1,647,749	1,350,294
Less:		
Interest charged to Construction work in progress	628,262	614,817
Net investment income	72,459	72,191
Net profit on repurchase of debentures	40,086	20,166
	740,807	707,174
	$ 906,942	$ 643,120

Note 4

Property and plant

Investments in property and plant by function

	1981			1980		
	Property and plant in service	Accumulated depreciation	Construction work in progress	Property and plant in service	Accumulated depreciation	Construction work in progress
		(in thousands of dollars)			*(in thousands of dollars)*	
Generation						
Hydraulic	$ 7,932,273	$ 760,683	$3,974,718	$ 6,436,987	$ 675,250	$4,056,881
Nuclear	—	—	1,060,682	—	—	858,431
Other	261,806	61,077	41,311	259,792	53,196	21,133
	8,194,079	**821,760**	**5,076,711**	6,696,779	728,446	4,936,445
Transmission						
Substations	1,252,223	150,033	345,118	1,073,458	131,329	262,809
Lines	2,518,399	239,246	427,413	2,137,668	208,848	482,343
	3,770,622	**389,279**	**772,531**	3,211,126	340,177	745,152
Distribution						
Substations	578,473	95,318	112,061	474,646	88,033	115,993
Lines	1,632,153	272,704	61,024	1,452,066	258,016	57,216
	2,210,626	**368,022**	**173,085**	1,926,712	346,049	173,209
Miscellaneous						
Administrative buildings	191,011	23,085	19,398	186,756	21,381	7,880
Other	375,716	188,612	33,203	363,787	189,596	15,617
	566,727	**211,697**	**52,601**	550,543	210,977	23,497
Total	**$14,742,054**	**$1,790,758**	**$6,074,928**	$12,385,160	$1,625,649	$5,878,303

Note 5

Investments

	1981 *(in thousands of dollars)*	1980 *(in thousands of dollars)*
Churchill Falls (Labrador) Corporation Limited (CFLCo) (see Note 10)		
General Mortgage Bonds, 7½%, due 1982 through 2010 (par value $96,040,000 and $98,000,000, respectively)	$ 86,916	$ 88,690
Common shares	34,333	34,333
	121,249	123,023
Gelco Enterprises Ltd., 4% unsecured note, due 1991	5,790	5,984
Sundry investments	1,768	893
	$128,807	$129,900

The capital stock of CFLCo is held 65.8% by Newfoundland and Labrador Hydro-Electric Corporation (a crown corporation of the Province of Newfoundland), and 34.2% by Hydro-Québec. Hydro-Québec's share of the earnings, dividends and retained earnings of CFLCo at December 31, 1981 is as follows:

	Earnings *(in thousands of dollars)*	Dividends *(in thousands of dollars)*	Retained earnings *(in thousands of dollars)*
Share of retained earnings at January 1, 1980			$45,515
1980	$12,390	$ 9,583	2,807
1981	13,019	10,391	2,628
Share of retained earnings at December 31, 1981			**$50,950**

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

Note 6

Debentures and bonds and other long-term debt

Hydro-Québec's long-term debt is guaranteed by the Province de Québec except for lease obligations.

Consolidated long-term debt maturities and sinking fund requirements, translated into Canadian currency at rates of exchange at date of borrowing are as follows:

	1981		1980	
Years of maturity	*(in thousands of dollars)*	Weighted average interest rate	*(in thousands) of dollars)*	Weighted average interest rate
1981	—		$ 384,814	
1982	$ 606,754		612,703	
1983	325,992		322,002	
1984	915,819		431,133	
1985	761,819		755,528	
1986	1,150,374			
1 - 5 years	3,760,758	10.94%	2,506,180	8.82%
6 - 10 years	4,107,197	12.45%	3,355,454	11.65%
11 - 15 years	1,581,948	8.75%	1,553,940	8.57%
16 - 20 years	1,441,344	9.39%	1,564,354	9.34%
21 - 25 years	2,636,825	10.32%	2,675,288	10.37%
26 - 30 years	791,944	11.29%	836,676	10.35%
	14,320,016*		12,491,892	
Less:				
Portion payable within one year	606,754		384,814	
	$13,713,262		$12,107,078	

**Includes $70,288,000 ($68,792,000 in 1980) which represents the present value of lease obligations for regional offices and service facilities, for a 25 year period ending in 2005, capitalized at the interest rates charged to Construction work in progress (see Note 1f).*

Repayments in foreign currencies and their Canadian dollar equivalent at date of borrowing are as follows:

				1981	1980
				Total *(in thousands of dollars)*	Total *(in thousands of dollars)*
	(in thousands)				
	1982 to 1986	1987 to 2011	Total	1982 to 2011	1981 to 2010
Canadian dollars	1,457,159	3,641,510	5,098,669	$ 5,098,669	$ 4,511,144
United States dollars	1,830,462	5,584,756	7,415,218	8,079,802	7,164,649
Deutsche marks	273,340	426,000	699,340	300,919	240,918
Swiss francs	546,000	627,000	1,173,000	615,160	494,681
Japanese yen	—	20,000,000	20,000,000	80,500	80,500
Pounds sterling	—	40,000	40,000	94,537	—
ECU	—	40,000	40,000	50,429	—
				$14,320,016	$12,491,892

Note 6 — Debentures and bonds and other long-term debt (cont'd)

If the long-term debt payable in various currencies were translated into Canadian dollars at the rates of exchange prevailing at year-end, the principal amount would be increased by $848,457,000 ($1,090,681,000 in 1980).

Hydro-Québec has two undrawn revolving standby lines of credit for U.S. $500,000,000 and Cdn. $500,000,000. The first line of credit, which expires in 1990, bears interest at a rate equivalent to ½% over the London Interbank Offered Rate (LIBOR). The second line of credit is convertible in 1984 into an additional six-year term loan at variable interest rates based on fluctuations in the Canadian chartered banks' prime lending rate.

Subsequent to December 31, 1981, Hydro-Québec issued or agreed to issue the following debentures:

Currency	Rate	Year of maturity	Debentures
United States dollars	16 ⅞%	1987	5,000,000
United States dollars	16 ⅝%	1992	200,000,000
Canadian dollars	16 ⅛%	1987	100,000,000
Swiss francs	6 ¾%	1992	100,000,000
United States dollars	16 ¼%	1988	100,000,000
Deutsche marks	10 ½%	1992	150,000,000
Canadian dollars	16 ½%	1989	50,000,000

Note 7

Capital stock and retained earnings

a) According to amendments to the Hydro-Québec Act, as of December 19, 1981, Hydro-Québec shall continue to exist as a joint stock company with authorized capital of 50,000,000 shares of a par value of $100 each. The total of the reserves as of December 31, 1980, in the amount of $4,374,109,000, is allocated to the full payment of 43,741,090 shares which are part of the public domain of Québec.

b) Up to December 31, 1980, Hydro-Québec's accumulated net income was allocated to reserves for amortization of capital invested, contingencies and rate stabilization.

Note 8

Restrictions on dividends

The dividends to be paid by Hydro-Québec are declared once each year by the Gouvernement du Québec which also determines the terms and conditions of payment. They cannot exceed, for a particular financial period, the distributable surplus as hereinafter established. This surplus is equal to 75% of the total of consolidated net operating income of Hydro-Québec and of its net investment income for the same period, less the interest on long-term debt, interest on bank indebtedness and notes payable and amortization of debenture discount and expenses.

However, no dividend may be declared in respect of a financial period if the payment thereof would result in a reduction of the rate of capitalization of Hydro-Québec to less than 25% at the end of that period. This rate is defined as the ratio between the total amount of the paid-up capital of Hydro-Québec and its retained earnings, less the dividend declared for the year, and the total amount of its long-term debt including notes payable, its paid-up capital and its retained earnings, less the dividend declared for the same year.

The government declares the dividends for a given year within 30 days after the transmission by Hydro-Québec to the government of the financial data relative to the distributable surplus. On the expiry of the time prescribed any distributable surplus or part thereof which has not been declared as a dividend is no longer distributable to the shareholder as a dividend.

Note 9

Retirement plan

The Hydro-Québec employees' retirement plan is a contributory, benefit-based plan, under which the benefits payable are guaranteed by Hydro-Québec. At December 31, 1981, 19,600 employees were contributing to the plan.

The costs of the plan, which amount to $120,000,000 in 1981 ($110,000,000 in 1980), represent current service costs and amortization of past service obligations and experience deficiencies.

Based on an independent actuarial valuation carried out in 1981, the unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $481,000,000 as at December 31, 1980.

Note 10

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.

In December 1980 the Legislature of Newfoundland enacted the Upper Churchill Water Rights Reversion Act (the "Act") which, if brought into force, would repeal The Churchill Falls (Labrador) Corporation Limited (Lease) Act, 1961, which authorized the granting of exclusive water rights to CFLCo over the Upper Churchill River watershed, so that all rights of CFLCo thereunder would cease and CFLCo's hydroelectric works, as defined in the Act, would revert to Newfoundland. CFLCo would thereby become unable to fulfill its obligations to Hydro-Québec under the power contract. The Act requires the question of the competence of the Legislature of Newfoundland to enact such a statute to be referred to the Court of Appeal of Newfoundland. It also stipulates that it will come into force on a day to be fixed by proclamation, such day to be no earlier than the day on which all rights of appeal relating to such reference have been exhausted or have expired. The Attorney General of Québec and Hydro-Québec as well as other interested parties have contested the validity of this Act before the Court of Appeal of Newfoundland which has since rendered the unanimous judgment that the Act is "intra vires" of the rights of the Province of Newfoundland. Hydro-Québec intends to appeal this judgment before the Supreme Court of Canada.

Hydro-Québec intends to take all other necessary steps to protect its rights under the terms of this power contract.

Note 10 — Commitments, contingencies and projected capital expenditures (cont'd)

La Grande Project

Phase 1 of the La Grande project consists of three generating plants, with an installed capacity of 10,269,000 kilowatts, estimated at approximately $14,600,000,000. 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, 1981, $10,360,000,000 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 Cree, the Inuit of Québec and the Naskapi of Québec. These agreements provide for, among other things, the extinguishment of all respective claims of the Cree, the Inuit and Naskapi in and to certain territories in the Province de 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, without interest, $174,300,000: $57,600,000 has already been paid, $5,200,000 will be paid in 1982 and $111,500,000 from 1983 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 gave notice of its decision to postpone the construction of the La Prade plant and, since then, the construction has been stopped.

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 1982 amount to $2,778,911,000.

Note 11

Presentation of consolidated financial statements and reclassification

The presentation of the consolidated financial statements was modified in 1981 to reflect changes during the year to Hydro-Québec's equity due to amendments to the Hydro-Québec Act. Certain of the figures for 1980 have been reclassified to conform to the new presentation adopted.

Summary of Consolidated Operations 1977 to 1981

(in thousands of dollars)

		1981	1980	1979	1978	1977
Revenue	Sales of electricity:					
	Firm	**$2,434,920**	$2,171,236	$1,783,860	$1,499,458	$1,172,081
	Surplus	**335,188**	241,625	172,531	100,043	90,986
		2,770,108	2,412,861	1,956,391	1,599,501	1,263,067
	Other operating income	**39,183**	30,725	21,167	22,113	22,183
		2,809,291	2,443,586	1,977,558	1,621,614	1,285,250
Expenditure	Operating, maintenance, administration and other	**904,525**	704,787	557,662	448,740	379,759
	Electricity purchased	**126,487**	130,741	128,973	125,593	122,171
	Depreciation of property and plant	**197,619**	161,324	138,436	107,970	97,797
	Provincial levy	**106,421**	51,188	5,000	20,000	20,000
	School and municipal taxes	**8,469**	6,343	20,249	20,388	20,217
		1,343,521	1,054,383	850,320	722,691	639,944
Net operating income		**1,465,770**	1,389,203	1,127,238	898,923	645,306
Interest	Interest on long-term debt	**1,466,420**	1,191,249	971,503	785,411	620,860
	Interest on bank indebtedness and notes payable	**49,094**	39,736	12,972	5,299	4,397
	Amortization of debenture discount and expenses	**13,469**	12,601	10,979	9,037	6,738
	Foreign exchange loss on redemption of debentures and translation of current assets and liabilities	**118,766**	106,708	107,265	61,311	10,181
	Interest charged to Construction work in progress	**(628,262)**	(614,817)	(651,374)	(414,841)	(282,047)
	Net investment income	**(72,459)**	(72,191)	(59,770)	(64,096)	(90,592)
	Net profit on repurchase of debentures	**(40,086)**	(20,166)	(10,548)	(6,141)	(5,745)
		906,942	643,120	381,027	375,980	263,792
Net income for the year		**$ 558,828**	$ 746,083	$ 746,211	$ 522,943	$ 381,514

Consolidated Sales and Revenue 1977 to 1981

		1981	1980	1979	1978	1977	Average annual increase (%) 1981/1976
Electricity sales (in millions of kWh)	Firm:						
	residential and farm	**31,831**	29,579	27,519	26,083	24,391	8.1
	general	**19,130**	18,344	17,722	16,926	15,812	5.4
	industrial	**31,370**	31,509	29,765	29,401	27,695	3.0
	municipal distribution systems	**2,302**	2,533	2,577	2,613	2,402	1.1
	neighboring systems	**5,902**	6,760	6,360	4,134	3,673	(11.9)
	other	**1,111**	1,063	915	928	885	5.3
	increase in unbilled sales	**(113)**	1,496	378	1,425	159	—
		91,533	91,284	85,236	81,510	75,017	3.1
	Surplus:						
	industrial	**1,782**	1,559	1,303	1,433	1,020	(0.4)
	neighboring systems	**13,615**	11,162	10,476	9,663	11,444	23.8
		15,397	12,721	11,779	11,096	12,464	18.8
	Total sales	**106,930**	104,005	97,015	92,606	87,481	4.6
Revenue from electricity sales (in thousands of dollars)	Firm:						
	residential and farm	**$ 970,713**	$ 813,415	$ 669,428	$ 558,929	$ 458,930	20.8
	general	**655,779**	576,450	477,935	395,644	312,761	20.2
	industrial	**614,609**	540,935	453,524	376,211	304,332	18.7
	municipal distribution systems	**49,991**	48,011	42,303	37,510	28,470	16.1
	neighboring systems	**71,609**	78,123	62,900	42,638	19,377	5.7
	other	**56,880**	51,997	44,456	38,817	29,860	16.9
	increase in unbilled revenue	**15,339**	62,305	33,314	49,709	18,351	(9.3)
		2,434,920	2,171,236	1,783,860	1,499,458	1,172,081	18.8
	Surplus:						
	industrial	**20,998**	14,393	9,888	9,042	5,747	20.8
	neighboring systems	**314,190**	227,232	162,643	91,001	85,239	54.7
		335,188	241,625	172,531	100,043	90,986	50.4
	Total revenue	**$2,770,108**	$2,412,861	$1,956,391	$1,599,501	$1,263,067	20.9
Average revenue per kWh	Firm electricity:						
	residential and farm	**3.050¢**	2.750¢	2.433¢	2.143¢	1.882¢	11.8
	general	**3.428¢**	3.142¢	2.697¢	2.337¢	1.978¢	14.0
	industrial	**1.959¢**	1.717¢	1.524¢	1.280¢	1.099¢	15.2
	municipal distribution systems	**2.172¢**	1.895¢	1.642¢	1.436¢	1.185¢	14.8
	neighboring systems	**1.213¢**	1.156¢	0.989¢	1.031¢	0.528¢	20.1
	other	**5.120¢**	4.892¢	4.859¢	4.183¢	3.374¢	11.1
	Subtotal (including increase in unbilled electricity)	**2.660¢**	2.379¢	2.093¢	1.840¢	1.562¢	15.3
	Surplus electricity:						
	industrial	**1.178¢**	0.923¢	0.759¢	0.631¢	0.563¢	21.2
	neighboring systems	**2.308¢**	2.036¢	1.553¢	0.942¢	0.745¢	25.0
		2.177¢	1.899¢	1.465¢	0.902¢	0.730¢	26.5
	Total	**2.591¢**	2.320¢	2.017¢	1.727¢	1.444¢	15.6
Number of customer accounts (year-end)	residential and farm	**2,181,333**	2,145,864	2,107,942	2,059,581	2,011,403	2.4
	general	**255,910**	250,112	243,587	237,066	230,331	2.9
	industrial: firm electricity[1]	**11,624**	11,398	11,257	10,897	10,920	1.7
	other	**8,351**	8,793	9,495	10,436	12,567	(9.4)
	Total	**2,457,218**	2,416,167	2,372,281	2,317,980	2,265,221	2.3

(1) Industrial customer accounts were reclassified in 1978.

Energy Requirements of Hydro-Québec System 1977 to 1981

(in millions of kilowatthours)

		1981	1980	1979	1978	1977	Average annual increase (%) 1981/1976
Total requirements	Generated (gross)	**80,570**	76,573	70,542	63,524	61,306	5.7
	Received:						
	Purchased	**37,099**	39,140	36,630	38,650	35,255	1.5
	Received as per agreement	**2,741**	2,663	2,377	2,677	2,564	7.4
		39,840	41,803	39,007	41,327	37,819	1.9
	Total requirements	**120,410**	118,376	109,549	104,851	99,125	4.3
Québec requirements	Firm sales in Québec	**85,807**	84,736	79,100	77,587	71,438	4.9
	Deliveries in Québec as per agreement	**3,816**	4,087	3,332	3,561	3,099	8.8
	Total — Priority consumption	**89,623**	88,823	82,432	81,148	74,537	5.0
	Generating station service	**325**	383	303	302	266	0.1
	Losses and other	**9,334**	9,885	8,820	8,232	8,010	0.3
	Total — Priority requirements	**99,282**	99,091	91,555	89,682	82,813	4.5
	Surplus sales in Québec	**2,650**	1,825	1,521	1,882	1,348	5.7
	Total Québec requirements	**101,932**	100,916	93,076	91,564	84,161	4.5
Deliveries outside Québec	Firm sales	**5,726**	6,548	6,136	3,923	3,579	(12.4)
	Surplus sales	**12,747**	10,896	10,258	9,214	11,116	23.3
	Deliveries as per agreement	**5**	16	79	150	269	(53.8)
	Total deliveries outside Québec	**18,478**	17,460	16,473	13,287	14,964	3.1
Total requirements		**120,410**	118,376	109,549	104,851	99,125	4.3

Power Requirements of Hydro-Québec System for the Winter Beginning in December(1)

(in thousands of kilowatts)

	1981	1980	1979	1978	1977	Average annual increase (%) 1981/1976
Total requirements	**20,263**	19,508	17,698	17,488	15,887	5.1
Priority requirements	**19,696**	19,385	17,582	17,059	15,785	5.9

(1) The power requirements of 1981, 1980, 1978, 1977 and 1976 include respectively 531 MW, 445 MW, 318 MW, 190 MW and 138 MW which were withheld through application of interruptible-power clauses in certain contracts.

Hydro-Québec Employees' Retirement Fund
Auditors' Report

We have examined the statement of assets of the Hydro-Québec Employees' Retirement Fund as at December 31, 1981 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, 1981 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.

Samson, Bélair + Associés
Chartered Accountants

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

Montréal, Canada,
March 15, 1982.

Hydro-Québec Employees' Retirement Fund

Statement of Assets

(in thousands of dollars) as at December 31

		1981	1980
Investments	Debentures of Hydro-Québec and bonds of its subsidiaries, guaranteed by the Province de Québec	**$343,694**	$282,636
	Bonds of, or guaranteed by the Province de Québec	**181,013**	154,541
	Bonds of other provinces — guaranteed	**4,489**	—
	Municipal, School Commission, Cegep, Hospital and University bonds	**110,760**	80,694
	Government of Canada bonds	**102,966**	80,420
	Corporate bonds	**26,942**	21,496
	Convertible corporate bonds	**3,000**	—
	(Par value $793,816,000, market value $590,428,000)	**772,864**	619,787
	Common stock (market value $2,658,000)	**1,594**	1,594
	Cash and short-term investments	**98,430**	36,676
		872,888	658,057
Accrued interest on investments		**22,983**	16,523
Past service contributions receivable from employees		**40**	78
Amount receivable from Hydro-Québec		**8,038**	16,727
		$903,949	$691,385

See accompanying notes

On behalf of Hydro-Québec:

Joseph Bourbeau

Joseph Bourbeau

Guy Coulombe

Guy Coulombe

Montréal, Canada,
March 24, 1982.

Roger Girard

Roger Girard
General Manager
Control and Accounting

Hydro-Québec Employees' Retirement Fund
Statement of Changes in Assets

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

		1981	1980
Assets, beginning of year		**$691,385**	$515,844
Increase for the year	Current contributions		
	Employees	**28,528**	24,567
	Hydro-Québec	**54,902**	47,317
		83,430	71,884
	Contributions by Hydro-Québec (Note 2)	**58,571**	57,539
	Additional past service contributions less cancellations	**15**	131
	Revenue from investments	**86,660**	59,535
		228,676	189,089
		920,061	704,933
Decrease for the year	Pensions paid	**15,592**	12,965
	Refunds to employees on termination of employment	**520**	583
		16,112	13,548
Assets, end of year		**$903,949**	$691,385

See accompanying notes

Hydro-Québec Employees' Retirement Fund
Notes to Financial Statements

December 31, 1981

Note 1

Accounting policies

a) These statements show only the assets of the Hydro-Québec Employees' Retirement Fund, and 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.

b) Investments are shown at cost, except for debentures and bonds which, since January 1, 1981 are shown at unamortized cost. This modification has a negligible effect with regard to 1981 and should not have a major effect in future years.

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

Note 2

Unfunded liabilities

Based on an independent actuarial valuation carried out in 1981, the unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $481,000,000 as at December 31, 1980. Hydro-Québec amortizes these unfunded liabilities over a period of 15 years.

Ce rapport est également
publié en langue française.

Vice-présidence Information
Hydro-Québec, 19th floor
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Montréal, Québec H2Z 1A4

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Grande Baleine Complex
Québec
La Grande Complex
La Grande River
LG 2
LG 3
LG 4
Radisson
Chissibi
Le Moyne
Tilly
James Bay
Némiscau
Albanel
Manic 5
Manic 5 A.P.
Arnaud
Chibougamau
Abitibi
Outardes 4
Micoua
Manic 3
Outardes 3
Manic 2
Manicouagan
Bersimis 1
Bersimis 2
120 kV
Chamouchouane
Saguenay
La Vérendrye
230 kV
Laurentides
Jacques-Cartier
120 kV
Lévis
Grand-Brûlé
Gentilly 2
New Brunsw
120 kV
230 kV
120 kV
Tracy
Nicolet
Duvernay
Carignan
Chénier
120 kV
Carillon
Boucherville
Beauharnois
Hertel
230 kV
Ontario
U.S.A.
Châteauguay
120 kV
765 kV

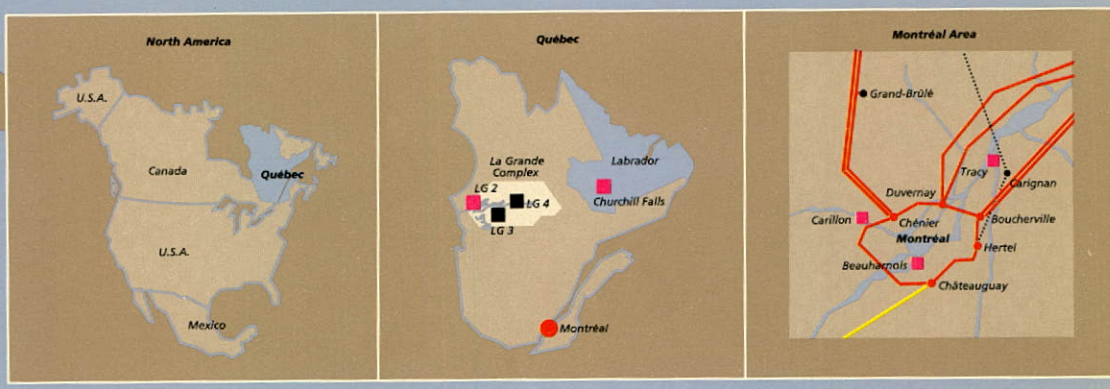
Main features of Hydro-Québec system 1981

Legend

- Generating station rated 500 MW or more
- Generating station under construction (500 MW or more)
- 735-kV substation
- Future 735-kV substation
- Interconnection
- 735-kV line
- Future 735-kV line
- 735-kV line operating temporarily at 120 kV or at 161 kV
- 765-kV line

To Churchill Falls (5,225 MW)

Montagnais



Prince Edward Island

Nova Scotia

Hydro-Québec generating stations

In service or under construction at December 31, 1981

Generating stations in service[1]	kilowatts
Hydroelectric	
LG 2	5,328,000
Beauharnois	1,583,710
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
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
Bryson	61,000
Rapide 7	57,000
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-Arnaud	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[2]	266,400
Gas-turbine	
La Citière	200,880
Cadillac	162,000
Diesel[3]	
Îles de la Madeleine	59,339
Blanc Sablon	6,200
La Tabatière	4,400
Saint-Augustin	3,000
Kuujjuaq	2,650
La Baleine	2,400
Parent	2,350
Île d'Entrée	1,740
La Romaine	1,600
Inukjuak	1,250
Povungnituk	1,250
Quaqtaq	800
Kangiqsualujjuaq	625
Kangirsuk	600
Île aux Grues	600
Salluit	500
Akulivik	440
Tasiujaq	440
Kangiqsujuaq	420
Aupaluk	400
Ivujivik	360

	kilowatts
Total installed capacity	
Hydroelectric generating stations (51)	**17,498,166**
Thermal generating stations (24)	**1,054,244**
Total capacity of generating stations (75) in service at December 31, 1981[4]	**18,552,410**

Generating stations under construction	Service date	kilowatts
Hydroelectric		
LG 3	1982-1984	2,304,000
LG 4	1984-1985	2,637,000
Manic 5 *(additional plant)*	1986	988,000
Thermal		
Nuclear		
Gentilly 2	1983	685,000

(1) A 230-kW wind-powered generator is connected to the Magdalen Islands' system. Another wind turbine is in operation at IREQ. As these are experimental installations they are not included in this list.

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

(3) In 1981 Hydro-Québec took possession of several isolated systems located in the far north of the province. These systems were formerly operated by the governments of Canada and Québec.

(4) In 1981 the total installed capacity of generating stations increased by 1,689,985 kilowatts. Some 1,665,000 kilowatts of the new capacity was accounted for by the last five generating units placed in operation at LG 2.

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