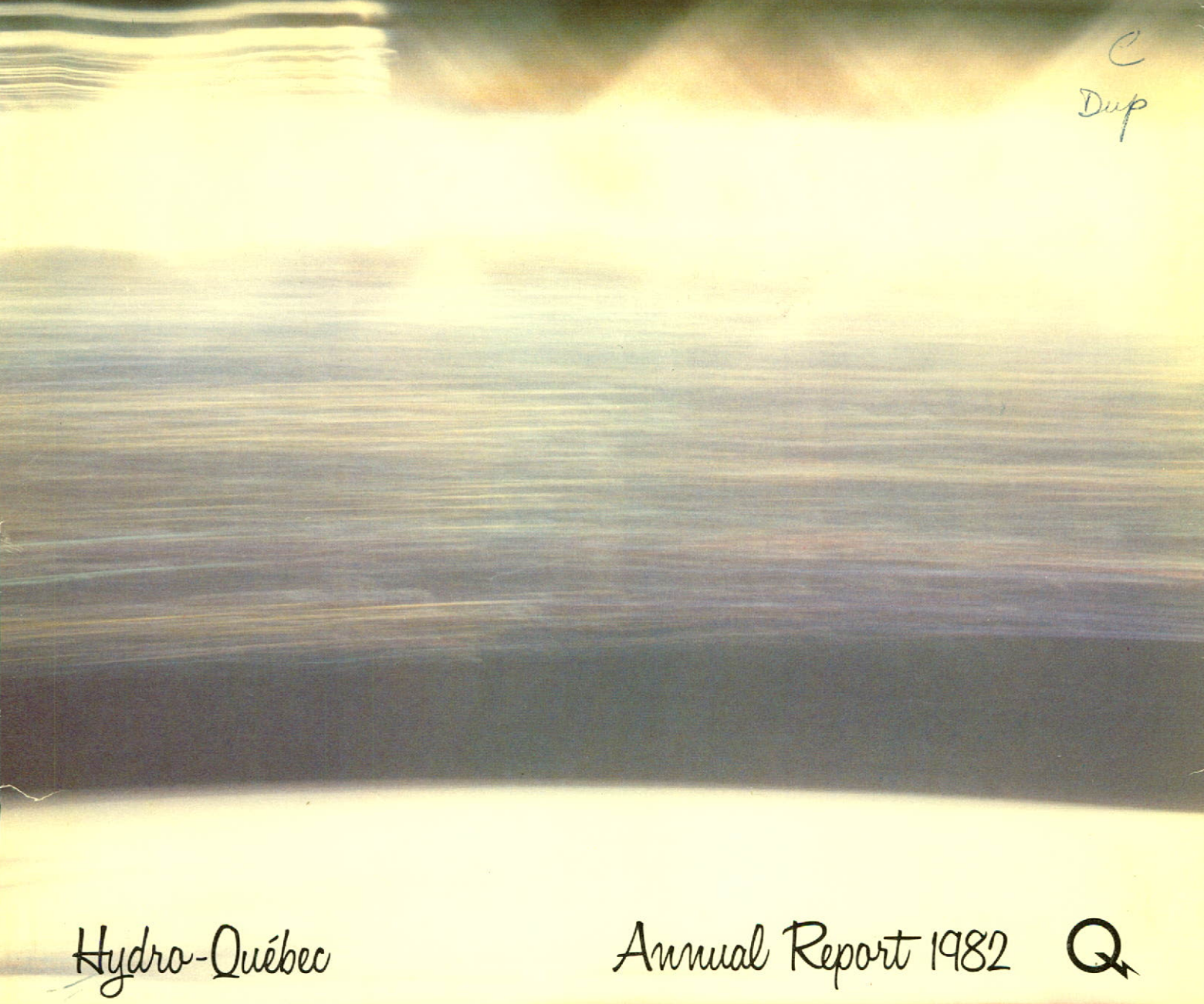

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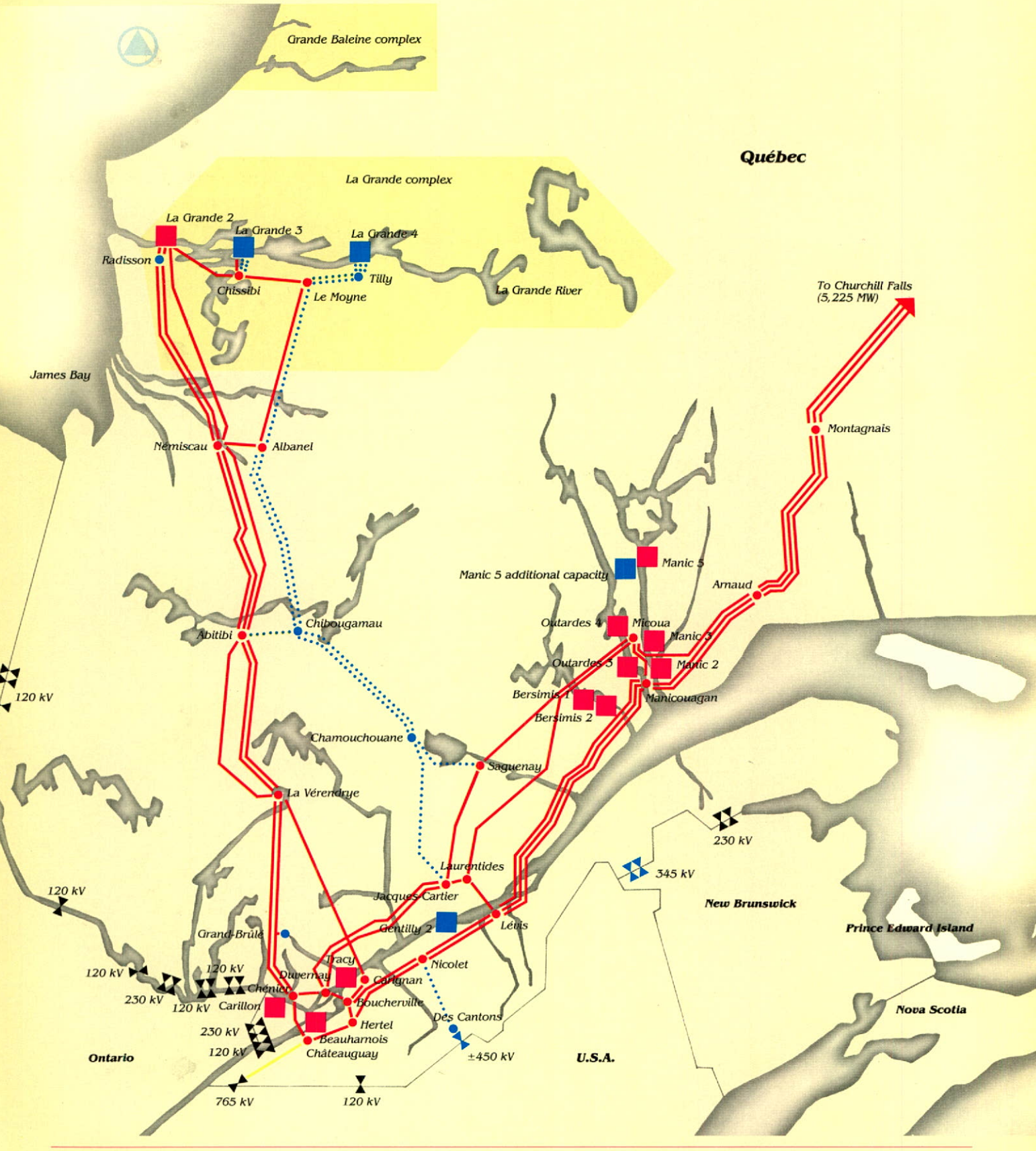
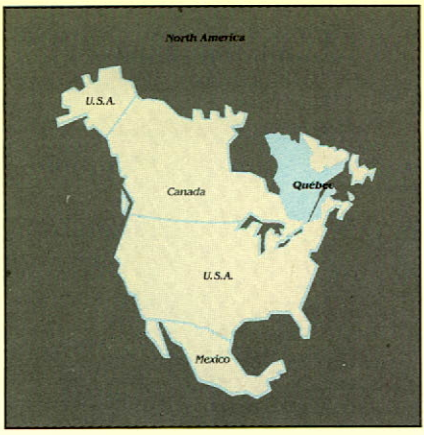
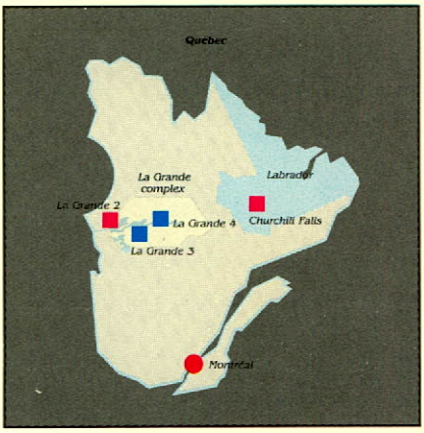
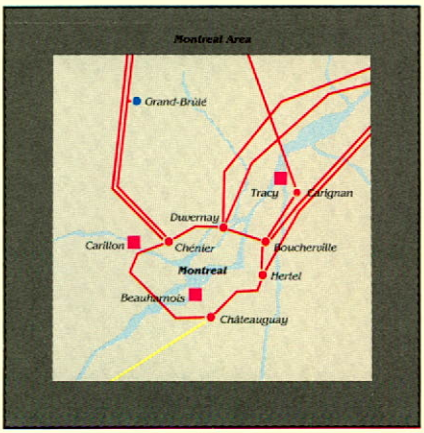
Hydro-Québec Annual Report 1982

SYSTEM'S MAIN FEATURES 1982









Legend

Generating station rated 500 MW or more

Generating station under construction (500 MW or more)

735-kV substation

Future 735-kV substation

Interconnection

Future Interconnection

735-kV line

Future 735-kV line

735-kV line operating temporarily at 120 kV or at 161 kV

765-kV line

C

Hydro-Québec Annual Report 1982

Hydro-Québec
75 Dorchester Boulevard West
Montreal, Québec, Canada
H2Z 1A4
Tel.: (514) 289-2211
Telex: 05561047

Société d'énergie de la Baie James
800 de Maisonneuve Boulevard East
Montreal, Québec, Canada
H2L 4M8
Tel.: (514) 844-3741
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870 de Maisonneuve Boulevard East
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Ce rapport est également
publié en langue française.

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75 Dorchester Boulevard West
Montreal, Québec H2Z 1A4

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

Québec City, April 5, 1983

Mr. Richard Guay
President of the National Assembly
Québec City

Dear Sir,

I have the honor of presenting to you the annual report of Hydro-Québec for the year ended December 31, 1982.

Yours respectfully,

Yves Duhaime
Minister of Energy and Resources

(Translation)

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

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Minister of Energy and Resources

(Translation)

FACTS IN FIGURES
1973-1982

Financial Indicators*
(in millions of dollars)

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973
Total assets	**23,169**	20,730	18,012	15,505	12,886	10,649	9,133	7,068	5,814	5,088
Long-term debt	**15,628**	13,713	12,107	10,354	8,897	7,552	6,566	4,910	3,912	3,360
Shareholder's equity	**5,719**	4,926	4,374	3,628	2,882	2,359	1,977	1,667	1,437	1,260
Annual investments in fixed assets	**2,542**	2,643	2,589	2,817	2,588	1,950	1,267	1,142	616	551
Revenue from sales of electricity	**3,257**	2,770	2,413	1,956	1,600	1,263	1,071	904	783	662
Net income for the year	**800**	559	746	746	523	382	311	230	177	121

Operating Statistics

Installed capacity** (in megawatts)	**19,142**	18,552	16,862	14,475	12,979	12,523	12,409	11,356	11,123	11,148
Sales of electricity (in billions of kilowatthours)	**103.6**	106.9	104.0	97.0	92.6	87.5	85.2	77.5	77.9	69.2
Total number of customer accounts (in thousands)	**2,487**	2,457	2,416	2,372	2,318	2,265	2,188	2,136	2,081	2,017

**These indicators are taken from the Consolidated Financial Statements which contain the financial statements of Hydro-Québec and its subsidiaries, including the Société d'énergie de la Baie James.*

***In addition to its own installed capacity Hydro-Québec has access to most of the generation of the Churchill Falls power plant, which has a nominal capacity of 5,225 megawatts.*

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Map of System's Main Features and List of Generating Stations	Inside loose cover

Hydro-Québec's System Control Centre.
The cover illustration evokes the energy flows directed and controlled from this centre.

BOARDS OF DIRECTORS OF HYDRO-QUÉBEC AND SOCIÉTÉ D'ÉNERGIE DE LA BAIE JAMES

Chairman
Joseph Bourbeau

Directors

Gérald Aubin*
Partner in the law firm of Aubin, Fillion, Brisson et Associés, Chicoutimi

Guy Coulombe
President and Chief Executive Officer, Hydro-Québec

Nicolle Forget
Lawyer, Chairman of the Board of Directors of Nouveler Inc.

Pierre Goyette
President and Chief Operating Officer, Montreal City and District Savings Bank

Hervé Hébert
President of the Fiducie du Québec

Guy Joron
President of the Société de la Place des Arts

Pierre Laferrière
Management Consultant

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

Pierre Leblanc*
Partner in the firm of Dessureault, Leblanc, Lefebvre, chartered accountants, Trois-Rivières

Jeanne d'Arc Vaillant**
Assistant Deputy Minister, Québec Department of Social Affairs

**Pierre Leblanc and Gérald Aubin were appointed during 1982 to replace Claude Roquet and Georges Gauvreau, respectively.*

***Mme Vaillant relinquished her duties at the end of 1982.*

BOARD OF DIRECTORS OF HYDRO-QUÉBEC INTERNATIONAL*

Chairman
Lionel Boulet
Executive Vice-President, Technology and International Affairs, Hydro-Québec

Directors

Guy Coulombe
President and Chief Executive Officer, Hydro-Québec

Pierre Godin
Executive Vice-President, Operations, Hydro-Québec

Pierre Laferrière
Director of Hydro-Québec and Société d'énergie de la Baie James

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

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

**Appointed December 22, 1982.*

MESSAGE FROM THE CHAIRMAN OF THE BOARD

The dominant feature of the year 1982 was undoubtedly the 3.1% drop in the demand for electricity experienced by the utility. The difficult economic context in which we have been living since 1981 largely explains this decrease in sales, which was particularly marked in the industrial sector. In addition, electricity is beginning to feel the effects of the competitive prices offered on the various markets by oil and natural gas and of energy-saving measures taking hold in all sectors.

The gloomier economic prospects and expected changes in the energy situation have led the utility to redirect the thrust of its long-term goals and to reorganize its resources. For example, during 1982 the electricity-demand forecast was cut back considerably. It appears certain that the main reasons for the expected long-term slowdown in consumption are structural in nature and that the traditional growth rate of sales has been altered. However, the proportion of electricity in the province's overall energy consumption may well attain the level anticipated in the Québec government's long-term objectives.

The decline in the growth of electricity demand places Hydro-Québec in the position of having surplus generating capacity. In the short run, the volume of electricity sales outside the province will be limited by the capacity of our interconnecting transmission lines, and so the utility must look to domestic markets to dispose of its surpluses. It must therefore take more account of the relationship between the price of electricity and that of the various competitive energy sources, and redirect its strategic activities by stressing the marketing of its product rather than the expansion of its means of production.

In 1982 the utility responded to the new situation on several fronts. It reduced operating expenses. The Board of Directors approved a number of changes to the program for the sale of surplus energy in Québec and examined ways of increasing sales outside Québec. And within the framework of Hydro-Québec's Development Plan, the Board approved a revision of capital spending slated for the next three years.

The uncertainty resulting from the rapid evolution of the context in which the utility must function is further complicated by the question of the power contract with Churchill Falls (Labrador) Corporation Limited. The Supreme Court of Canada will render judgment on the constitutional jurisdiction of the Newfoundland Legislature to expropriate the Churchill Falls power station by means of an exceptional law, without compensating Hydro-Québec for the loss of energy purchased under its contract. The utility has made it known, however, that it is still more than willing to seek a negotiated solution to the problem.

The year 1982 was also marked by the arrival of a new President and Chief Executive Officer, Guy Coulombe, who took office on January 15. An administrator of considerable experience, Mr. Coulombe rapidly familiarized himself with the various activities of the firm and quickly acquired the confidence of his colleagues on the Board by the quality of his presentations and the value of his proposals for guidelines, as well as by his openness to discussion and the attention he gives to the advice of the Board.

During the year also, Georges Gauvreau left the seat he had occupied on the Board since its creation in 1978. Appointed a commissioner in 1961, Mr. Gauvreau participated in the administration of Hydro-Québec for 21 years and his contributions earned him our respect and esteem. Claude Roquet, a director since 1978, and Jeanne D'Arc Vaillant, a director since 1980, also left the Board. My fellow Directors and I wish to express our gratitude for the competence they placed at our disposal during their term of office. They were replaced by Pierre Leblanc and Gérald Aubin.

After a year which called on so many qualities of adaptation and determination on the part of the entire personnel, I wish to pay special tribute to all employees for their contribution to the general effort.

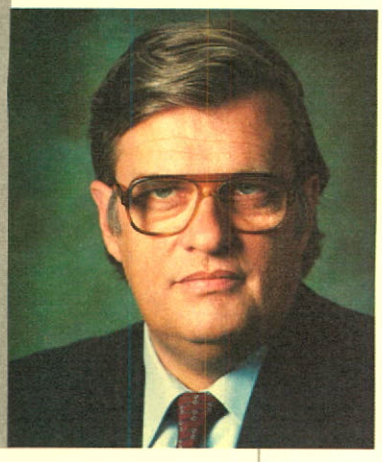
Joseph Bourbeau

Chairman of the Board

March 31, 1983

SENIOR OFFICERS

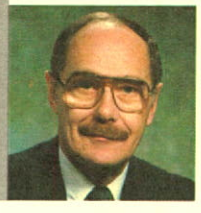
Guy Coulombe
President and Chief Executive Officer



Jean Houde
Vice-President responsible for Organization

Marcel Couture
Vice-President, Information

Jean Bernier
General Secretary



General Auditor
René Amyotte
Réal A. Couture
(interim)

Laurent Hamel
Executive Vice-President, Installations

Pierre Godin
Executive Vice-President, Operations

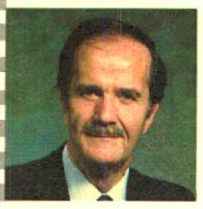
Michel Caron
Executive Vice-President, Finance and Resources

Georges Lafond
Executive Vice-President, Marketing

Lionel Boulet
Executive Vice-President, Technology and International Affairs

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

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



MESSAGE FROM THE PRESIDENT AND CHIEF EXECUTIVE OFFICER

For Hydro-Québec 1982 was a year of transition and change which obliged the utility to re-examine its objectives and operating activities. Certainly the financial results for the year are the best in our history. Revenue from sales of electricity totaled $3,257 million and net income rose to $800 million. However, this unequalled performance is largely the result of the 16.3% rate increase that went into effect at the beginning of the year, and the significant reduction in the rate of increase in operating costs.

The fact remains that there was a significant slowdown in the overall demand for electricity, which dropped by 3.1%. This downturn, noticeable already in 1981 and which could persist for some time, marks a sharp break in the development of the utility.

It was against this backdrop that Hydro-Québec, in October 1982, presented its Development Plan 1983-1985, Horizon 1992, to the Québec government. Basically the plan, which lays out the utility's objectives, constraints and strategies for the next few years, calls for stepped-up sales within Québec, and outside Québec, a reduction in the rate of increase in operating costs, an adjustment to the capital-spending program and an internal organization better suited to the new reality.

Given the anticipated decline in the growth of demand, and the availability of electricity surpluses, greater emphasis will be placed on Hydro-Québec's marketing activities and the selling of its product. The utility must improve its knowledge of the various markets for electricity, with particular attention to industrial uses. It must also improve its sales techniques and programs, both within Québec and outside the province, and take better advantage of the competitive position it occupies on the energy markets.

In the light of these factors, government approval was obtained for the introduction of rate increases of 7.3% for 1983. These increases should provide sufficient revenue to maintain critical financial ratios, such as interest coverage. Hydro-Québec is however restricted by the need to keep the price of electricity competitive with the price of oil and natural gas, and to respect the anti-inflationary guidelines laid out by the federal and Québec governments.

The utility succeeded in lowering the increase in its operating costs to 11.2% in 1982, a notable improvement over the average increase of 24% during the last four years.

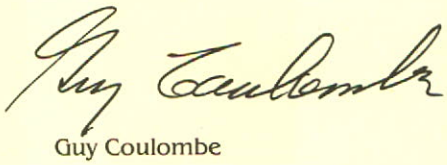
With construction work continuing at its large sites, Hydro-Québec in 1982 remained one of the prime driving forces behind economic activity in Québec. Capital expenditures during the year totaled $2.5 billion and represented almost 20% of total capital spending in the province. Half of this amount went into construction of phase I of the La Grande complex in the James Bay region, which will be completed in 1985 on schedule and within budget estimates. The utility will maintain capital expenditures for 1983 at the same level, with $2.7 billion allocated for the construction of projects provided for in the budget.

The transition that characterized Hydro-Québec's activities in 1982 was also reflected within the corporation, where a process of overall reorganization was initiated to strengthen our ability to meet the new challenges. By year-end the top two levels of management had been restructured and the appointments made. The restructuring process will continue throughout the organization.

With regard to the utility's human resources, one of the priority objectives for 1983 is the signing, as early as possible, of collective agreements affecting 16,000 employees.

What does 1983 hold in store for us? Hydro-Québec intends to continue acting upon the factors it can control and adapting as rapidly as possible to the uncertainties of the external situation. For example, changes in the price of oil or greater market penetration by natural gas may cause large fluctuations in the demand for electricity, both inside and outside the province.

During the current transitionary period, Hydro-Québec must maintain its financial equilibrium and find ways of reacting flexibly to restrictive and unforeseeable situations in both the economy and the energy market. Management is confident that Hydro-Québec's new orientations, sustained by our employees' productivity, responsibility and imagination, will successfully launch the utility in a new stage of its development.



Guy Coulombe

President and Chief Executive Officer

March 31, 1983

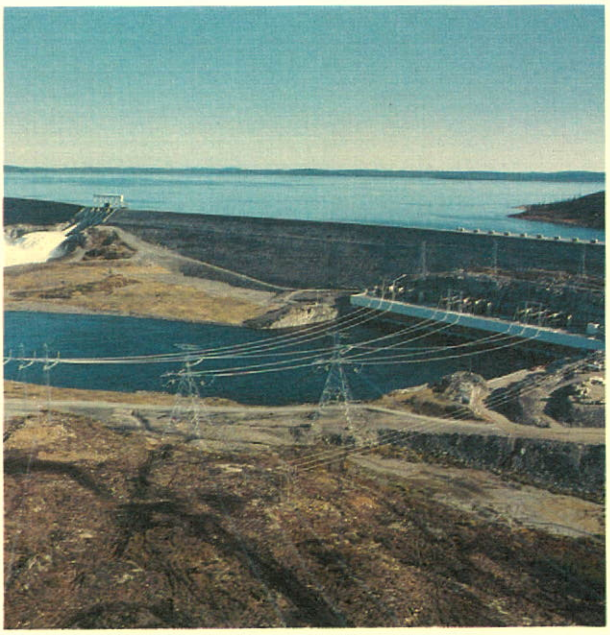
Financing: Hydro-Québec ranks among the world's largest borrowers. Financial officers in discussion with the managers of Hydro-Québec's U.S. underwriting group at the offices of The First Boston Corporation.

FINANCIAL RESULTS

Economic activity in North America showed a marked decline in 1982. Gross national product dropped by 1.8% in the United States and by 4.8% in Canada, compared with increases in 1981 of 1.9% and 3.1% respectively.

The Québec economy was similarly affected by the recession, showing a decline expected to be about 6% in real terms for 1982, compared with an increase of 0.6% in 1981. This largely explains the 3.1% drop in Hydro-Québec's total volume of electricity sales for the year, compared with a 2.8% increase in 1981.

However, *net income for the year** stood at $800 million, an increase of 43.1% over the 1981 figure, which was 25.1% lower than that of 1980. This improvement is the result of the increase in the average unit prices of electricity sold both in Québec and outside the province, and the significant decline in the rate of increase in operating costs.



REVENUE

Hydro-Québec's gross revenue in 1982 totaled $3,310 million, almost all ($3,257 million) of which came from sales of electricity, which increased by $487 million, or 17.6% over 1981.

Revenue from sales of electricity in Québec accounted for 85.4% of total revenue from sales and reached $2,783 million, or 16.2% more than in 1981, when the corresponding increase was 13.3%. Revenue from sales outside the province, which accounted for 14.6% of total sales revenue, stood at $474 million, an increase of 26.4% over the preceding year.

EXPENDITURE

Expenditure amounted to $1,539 million in 1982, an increase of 14.6% over 1981 when this item totaled $1,343 million, an increase of 27.4% over 1980.

Operation, maintenance, administration and other costs were $1,006 million, up 11.2% over 1981 when these costs totaled $905 million, or 28.4% more than in 1980. This slowdown in the rise in operating costs is largely attributable to the cost-cutting measures implemented by the utility in 1982.

Depreciation of property and plant rose by $23 million, from $198 million in 1981 to $221 million in 1982, primarily as a result of commissioning of units at La Grande 2 and La Grande 3 generating stations.

Taxes totaled $185 million, as against $114 million in 1981. This increase is attributable primarily to the fact that this was the first full year for which the utility was subject to the capital tax which became effective on July 1, 1981.

Italics in this section indicate terms used in the Financial Statements and Statistics.

INTEREST

Gross *interest* (see Note 3 of the Consolidated Financial Statements) amounted to $1,898 million, compared with $1,648 million in 1981. This 15.2% increase is the result of the growth of the debt, coupled with high interest rates on new borrowings and the weakening of the Canadian dollar against the U.S. dollar.

The *interest* charged to operations listed in the Consolidated Statement of Operations amounted to $971 million, an increase of 7.1% over 1981, when this expenditure totaled $907 million, 41.1% more than in 1980. The reduction in the growth of the *interest* expenditure was due to the fact that there were fewer plant commissionings in phase I of the La Grande complex than in the two previous year.

CAPITAL EXPENDITURES

Capital expenditures in 1982 amounted to $2,542 million or almost 20% of estimated total capital spending in Québec, compared with the 1981 figures of $2,643 million and 18.6% respectively. Construction of phase I of the La Grande complex and of the transmission lines required to carry electricity from the James Bay region to consumption centres accounted for $1,278 million of this year's total.

After a lengthy expansionary phase, Hydro-Québec is now experiencing a period of relative stability in its construction activities, but is maintaining its substantial contribution to private and public capital investment in Québec.

FINANCING

Hydro-Québec in 1982 carried out a borrowing program which, like those of the two preceding years, exceeded $2 billion. Net yield from the *issue of debentures and other long-term debt* was $2,302 million, compared with $2,226 million in 1981.

The average effective interest rate on new long-term borrowings was 13.45%, as against 15.10% in 1981 and 12.54% in 1980. Long-term borrowings in Canadian dollars amounted to $725 million, and represented 31.7% of the 1982 issues. Long-term borrowings issued in U.S. dollars and European currencies accounted for 37.9% and 30.4%, respectively, of the total.

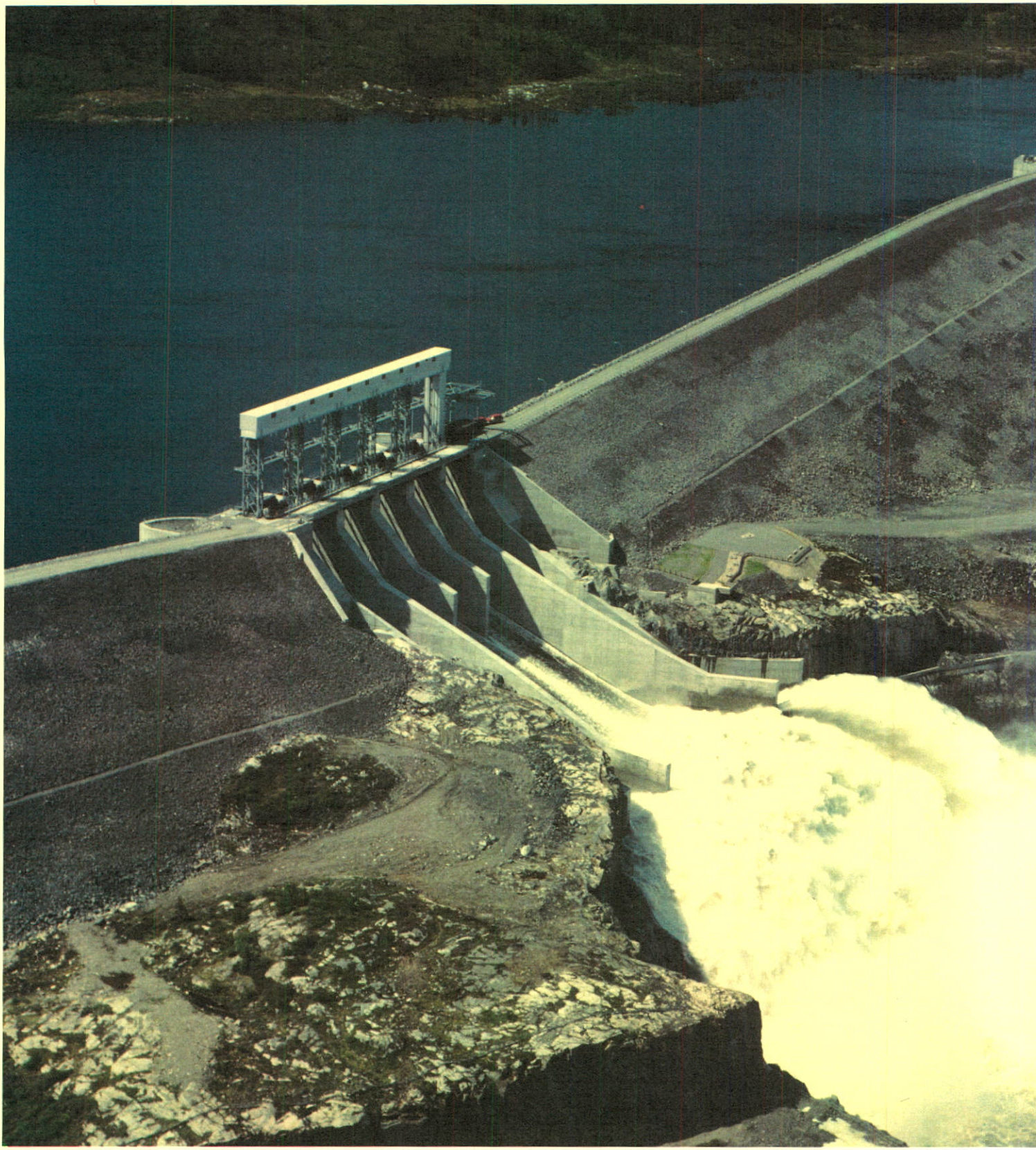
FINANCIAL POSITION

The cash position at December 31, 1982, comprising *cash and short-term investments* ($521 million) less *bank indebtedness* ($7 million), stood at $514 million

compared with $418 million in 1981. Hydro-Québec also has rotating standby credit of $500 million in U.S. funds and $500 million in Canadian funds. In addition, Hydro-Québec holds credit margins of $250 million with Canadian chartered banks.

The *total financial resources provided by operations,* as shown in the *Consolidated Statement of Changes in Financial Position,* amounted to $1,073 million, an increase of 34.1% over 1981.

La Grande 3 hydroelectric development: with its vertical lines, the five-gate spillway dominates the dam, which is the longest in Québec.



FINANCIAL CRITERIA

Hydro-Québec, in its financial management, considers certain ratios which measure the financial strength of the utility. The method of calculating three of the principal ratios is outlined here:

Self-financing

$$\frac{\text{Total financial resources provided by operations} - \text{Declared dividends}}{\text{Investments in fixed assets} + \text{Redemption of debentures and other long-term debt}}$$

Interest coverage
(before dividends)

$$\frac{\text{Net operating income} + \text{Net investment income}}{\text{Interest on long-term debt} + \text{Interest on bank indebtedness and notes payable} + \text{Amortization of debenture discount and expenses}}$$

Capitalization ratio
(% of shareholder's equity)

$$\frac{\text{Shareholder's equity}}{\text{Shareholder's equity} + \text{Long-term debt} + \text{Notes payable} + \text{Long-term debt payable within one year including unrealized exchange losses}}$$

In 1982 the percentage of self-financing was 33.4, as against 25.8 in 1981. Interest coverage was 1.01, the same as in 1981. The capitalization ratio at December 31, 1982 stood at 26.0%, compared with 25.1% at December 31, 1981. Hydro-Québec's long-term objective is to maintain an interest coverage of at least 1.0 and a capitalization ratio of 25%.

DIVIDENDS AND SHAREHOLDER'S EQUITY

Dividends declared for 1982 were $7 million, the same as in 1981. Consequently, *shareholder's equity*, which comprises *capital stock issued and fully paid* and *retained earnings* after deduction of declared *dividends*, amounted to $5,719 million, an increase of 16.1% over the $4,926 million recorded at the end of the preceding year.

SALES AND MARKETING

SALES

Revenue from total sales of electricity amounted to $3,257 million, an increase of 17.6% over 1981, primarily as a result of an average rate increase of 16.3% which became effective on January 1, 1982, and of the increased price of electricity sold outside Québec.

The decline in sales volume, however, reflected the economic difficulties of 1982, and, to a lesser extent, the energy-saving measures which are taking hold in all sectors. Total volume of sales in 1982 stood at 103.6 billion kilowatthours, a reduction of 3.1% on the 1981 total of 106.9 billion kilowatthours.

In Québec, sales of firm electricity* dropped by 2.6% and sales of surplus electricity* by 18.6%; Québec sales accounted for slightly over 80% of all sales, and totaled 85.7 billion kilowatthours; sales outside Québec totaled 17.9 billion kilowatthours and remained fairly steady.

Sales in Québec

Residential sector

Growth of sales to residential customers, which had registered between 7 and 8% a year over the last 10 years, slowed abruptly in 1982 to 1.6%, primarily as a result of the low number of housing starts and the impact of energy-conservation measures. However there continued to be a marked preference for electric space heating in new homes, although conversions to electric heating in existing dwellings slowed in comparison with 1981: conversions in 1982 totaled 39,922 compared with 47,106 one year before.

Revenue from sales in the residential sector in 1982 totaled $1,083 million, compared with $918 million the previous year, an increase of 18.0%.

Commercial sector

Customers in this category, which is designated general-use, comprise commercial establishments, office buildings, schools, hospitals and hotels and some apartment buildings. The volume of sales to these customers rose by 1.5%, compared with 4.3% in 1981. This modest increase is explained by the decline in the occupancy rate of buildings, and the slowdown in commercial activity in 1982, although penetration of electric space heating in new buildings was on the rise. Energy-conservation measures also had an impact on electricity consumption.

Revenue from sales in this sector totaled $773 million, compared with $656 million in 1981, an increase of 17.8%.

Industrial sector

Large-power customers (more than 5,000 kilowatts) accounted for 84.1% of sales registered in this category. Most of these large industrial customers experienced a marked slowdown in their activities, with corresponding decreases in electricity consumption. Particularly affected were the iron-ore mining, steel and smelting and refining sectors, with mines closing and large reductions in production. Only the chemical, pulp-and-paper and miscellaneous manufacturing industries experienced a slight increase over their 1981 levels of consumption

Overall sales of firm electricity to industrial customers, which had stabilized in 1981, fell by 7.7% in 1982 to 29 billion kilowatthours. This figure represents a return to a level of sales lower than that recorded in 1978. Revenue from 1982 sales totaled $690 million, compared with $614 million in 1981, an increase of 12.4%.

Sales outside Québec

Sales outside Québec to utilities in neighboring Canadian provinces and the U.S. fell by 3.2% in 1982 to a total of 17.9 billion kilowatthours, compared with 18.5 billion in 1981. These sales were evenly divided between Canada and the U.S., and they accounted for 17.3% of Hydro-Québec's total volume of sales.

However, revenue from these sales, which totaled $474 million and accounted for 14.6% of total revenues from sales, was 26.4% more than in 1981, as a result of the revision in the price of electricity sold outside the province.

SPECIAL PROGRAMS

The utility intensified its efforts in 1982 to sell electricity surpluses to both existing and potential customers. Two new programs implemented during the year were designed to increase sales within Québec and encourage oil substitution. The first involved the promotion of electrical boilers for use in small and medium-size industries, and the second was a hybrid-energy heating program for single-family dwellings.

The utility continued to promote energy savings, which is still one of the primary objectives of the Québec government's energy policy.

Conversion programs

In the industrial and commercial sectors, a surplus-electricity sales program introduced in 1981 for large-power customers was extended in 1982 to small and

**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.*

medium-size companies (industries, businesses and services). This program seeks to triple the number of electrical boilers in use by the awarding of grants towards purchase of the equipment.

The Bi-énergie home-heating program was launched at the end of 1982. It grants subsidies, under certain conditions, for the installation of hybrid-energy heating systems in single-family dwellings, and stipulates that electricity must be the principal source of heat, with oil as standby source when the outside temperature drops to −12°C or −15°C, depending on the region.

Hydro-Québec has received 50,000 requests for information about the program to date and is currently examining the possibility of remote control and a preferential electricity rate for this type of heating. Beyond the current surplus situation, this program could become a long-term measure for limiting peak demand, with corresponding reduction of investments in peaking plant.

Energy-saving programs

In 1982 Hydro-Québec continued to administer the energy-saving program Énergain Québec, created in conjunction with the Bureau des économies d'énergie du Québec. The objective of this program is to improve the energy efficiency of one million homes and to reduce their overall energy consumption by an average of 32% between now and the end of the decade. More than 45,000 energy audits were carried out during the year at the request of consumers. Hydro-Québec also continued to administer the Canada Oil Substitution Program in Québec and processed about 50,000 requests for subsidies during the year.

The utility is also assisting in the implementation of energy-saving programs in new homes. It is collaborating with the Canadian Electrical Association in its Energy-Efficient program which provides information and technical assistance to contractors and consumers for the implementation of energy-saving concepts in building construction. Hydro-Québec therefore assisted the Association professionnelle des constructeurs d'habitations du Québec in the construction of model homes that were open to the public in 1982.

There is also a significant potential for energy savings in the commercial and industrial sectors, and several programs have been designed for these customer categories. Hydro-Québec has introduced programs to improve the power factor, and to prepare inventories of energy-saving potential so as to encourage the improved use of energy in industry. Public lighting will also be improved gradually by the introduction of more efficient lighting sources.

IMPORTANT 1982 CONTRACTS

New agreements for sales within Québec included a contract with Pechiney Ugine Kuhlmann to supply electricity to the electrolysis plant which this French aluminum company is planning to build in Québec starting in 1983. Hydro-Québec will supply Pechiney with about 600 megawatts in three stages between 1986 and 1993. An agreement was also reached with Canadian Reynolds Metals Company Limited which has started expansion work on its aluminum plant at Baie Comeau. As of 1985, Hydro-Québec will deliver an additional 170 megawatts for 25 years. Both companies have until June 1984 to confirm their respective agreements.

INTERCONNECTION AGREEMENTS

In addition to providing electricity to customers within its own system, Hydro-Québec has supply agreements with neighboring systems in Québec (companies producing electricity for their own use, and municipalities); with utilities in the provinces of Ontario and New Brunswick; and with U.S. utilities in New York State and New England. These commercial agreements are of two types: sales contracts for the delivery of firm quantities of power or energy, and interconnection agreements that provide a framework for the conclusion of transactions according to availability and customer requirements.

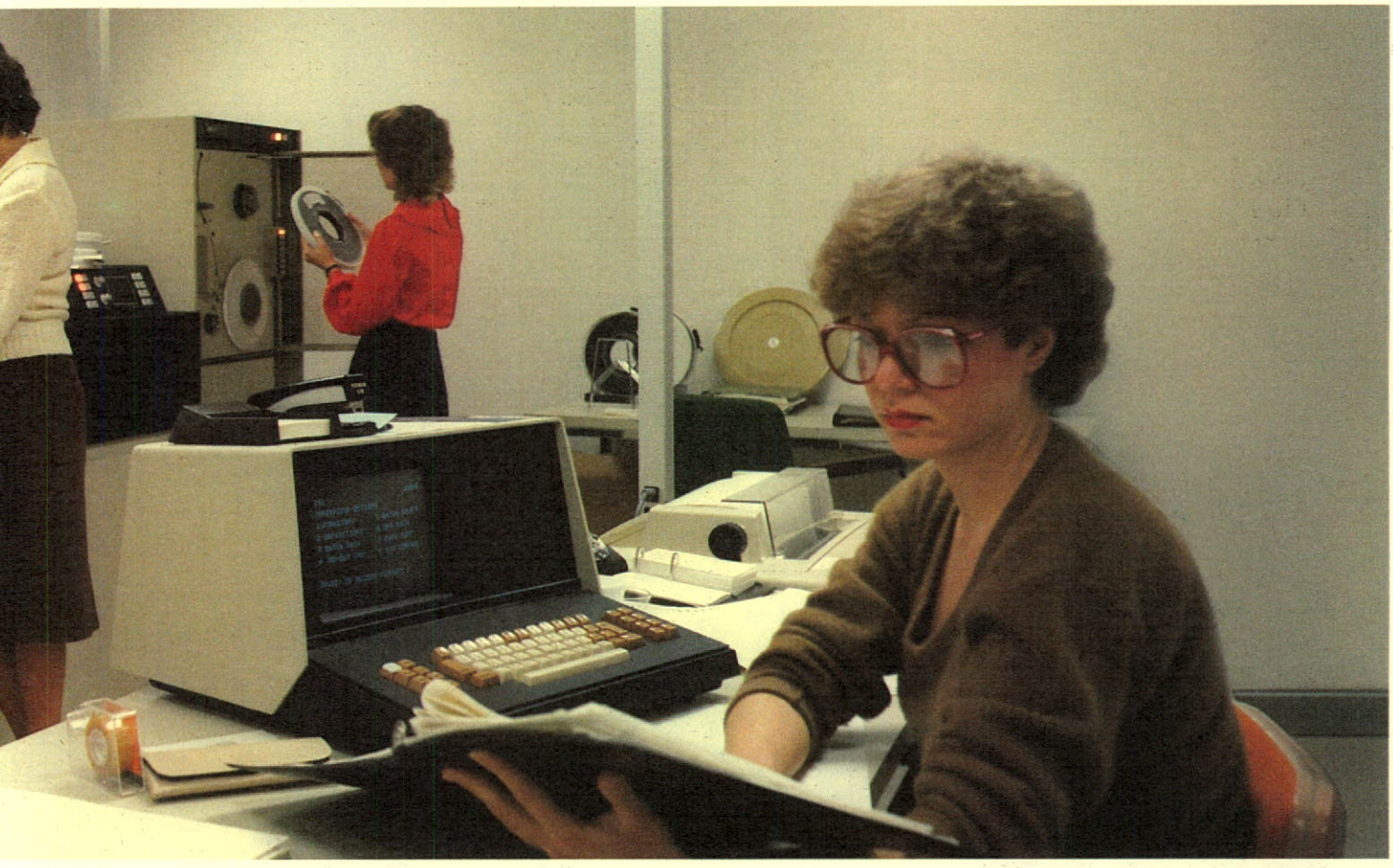
Given that generating output fluctuates with hydraulic conditions (as the system is almost entirely hydroelectric) and that there is a considerable difference between winter peak demand and average demand, Hydro-Québec regularly has power surpluses. These may be increased temporarily by the commissioning of large generating units for the future needs of the system or by a slowdown in the growth of domestic demand. Seasonal variation in peak demand between Hydro-Québec and neighboring systems makes the purchase of electricity from Hydro-Québec more economic for these neighboring systems than generation from their own thermal power plants. These purchase transactions also ensure greater system reliability because of the mutual assistance they make possible.

During 1982 Hydro-Québec negotiated a number of new sales contracts and interconnection agreements. It concluded, subject to approval from the National Energy Board, a contract with the Power Authority of the State of New York (PASNY) for the sale of 111 billion kilowatthours over a 13-year period starting in 1984. These sales should bring in an annual average gross revenue of $400 million (in 1984 dollars).

Three agreements were reached with the New England Power Pool (NEPOOL). The first, a 15-year agreement, provides for the construction and commissioning in 1986

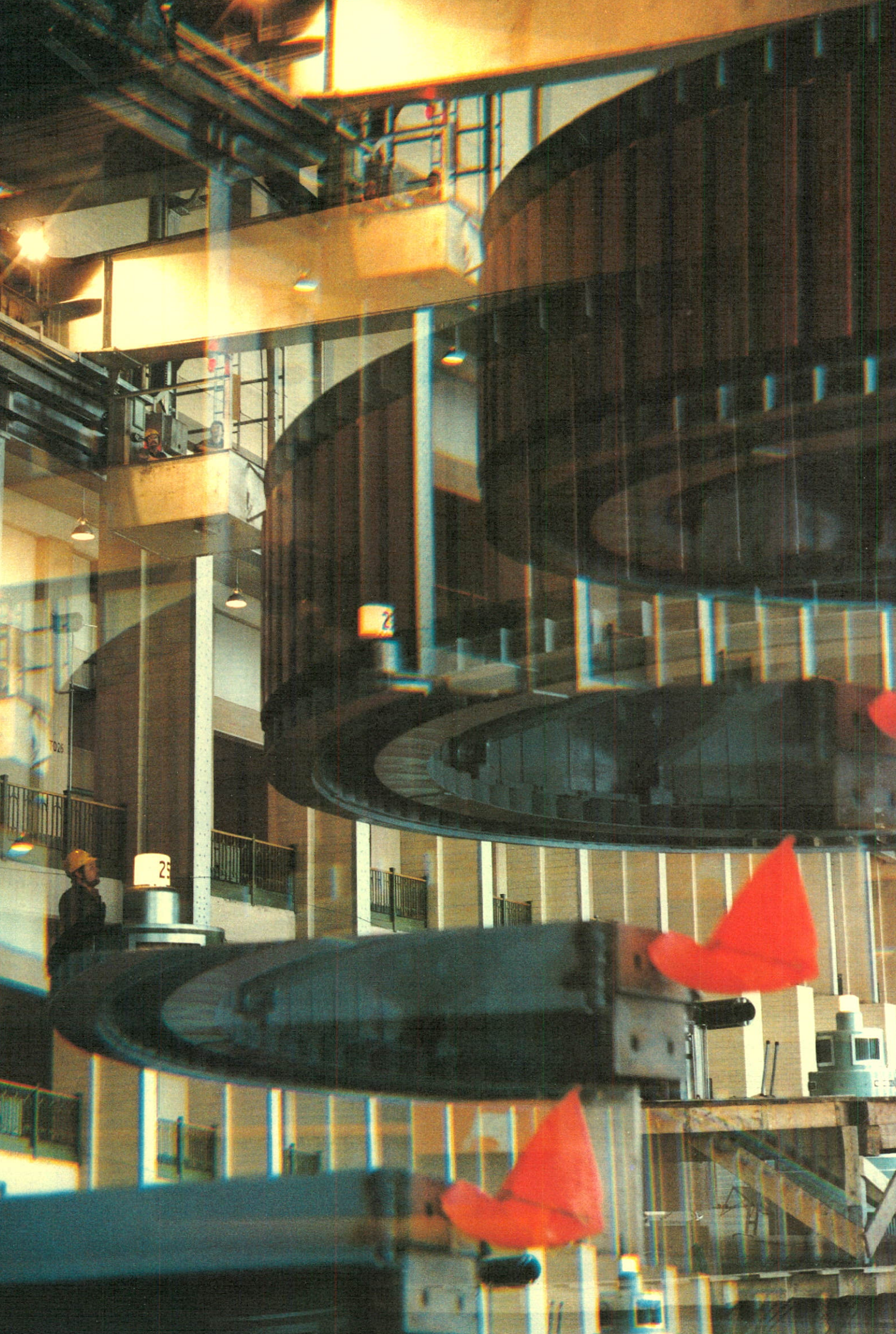
of an interconnection with a transmission capacity of 690 megawatts (which could eventually be increased to 2,000 megawatts) and for the banking of energy in Hydro-Québec reservoirs for the use of NEPOOL. The second contract calls for the sale to NEPOOL of 33 billion kilowatt-hours over an 11-year period. And the third, an interconnection agreement, will enable both parties to obtain maximum benefit from the new interconnection. All these contracts are subject to the approval of the Québec government and the National Energy Board.

Computerized customer-accounts management, while facilitating the updating of customer records, enables processing about 16 million bills and reminder notices a year.



Hydro-Québec has also agreed with the New Brunswick Electric Power Commission to build a 500-megawatt interconnection between the two systems. Construction will proceed in stages between now and 1985, with first deliveries scheduled for 1983 by means of a temporary interconnection.

Hydro-Québec is currently re-examining its marketing policy with regard to the sale of electricity outside the province. Until now the utility's policy has essentially been to sell surpluses on a temporary basis. But given the slowdown in the growth of demand within Québec, and the evolution of energy markets, Hydro-Québec is trying to find ways of maximizing its sales of surplus electricity over the next few years, and of reaching agreements for sales of firm electricity outside Québec on a longer-term basis.



SYSTEM OPERATIONS AND DEVELOPMENT

Work carried out at Beauharnois generating station in 1982 increased the plant's installed capacity to 1,593 megawatts. Beauharnois is the second largest generating station on the Hydro-Québec system.

OPERATIONS

Increase in installed capacity

Installed capacity of Hydro-Québec's generating stations increased by 576 megawatts in 1982 with the commissioning of the first three units of La Grande 3. Adding the effect of power and energy-output improvements carried out at Beauharnois and Trenche generating stations and the start-up of diesel generating units at five other existing plants, the overall increase in installed capacity was 590 megawatts. Total installed capacity of the system at year-end was 19,142 megawatts.

System peak demand

The peak demand for the winter of 1982-1983 occurred on Tuesday, January 4, 1983, at 5 p.m., when system requirements totaled 18,379 megawatts compared with the previous winter's peak of 19,696 megawatts. This decrease of 6.7% is explained by both the less severe winter temperatures and the economic situation.

Generation

During the year the gross generation of Hydro-Québec's power stations was 78.8 billion kilowatthours, compared with 80.6 billion kilowatthours in 1981, a decrease of 2.2%, attributable mainly to the reduction in Québec consumption.

Once again almost all (99.7%) of the utility's total generation was from hydroelectric power plants. The remaining generation came primarily from diesel units in the Magdalen Islands and isolated communities. La Grande 2 remained the largest of Hydro-Québec's generating stations, producing 22.4% of total generation for the year.

Unfavorable runoff

Runoff, which had been excellent in 1981, was poor in 1982. The main river basins, with the exception of the St. Lawrence River, experienced runoff that was markedly lower than in 1981, and below the 10-year average.

Reservoirs 75 per cent full

On January 1, 1983, the energy equivalent of the water stored in Hydro-Québec's reservoirs was 53.8 billion kilowatthours, or 14.2 billion kilowatthours more than at the same date one year before. As the combined maximum capacity of Hydro-Québec's reservoirs is 71.6 billion kilowatthours (including the usable reserve of La Grande 3), the system's reservoirs were 75.1% full.

Operating incident

On December 14, 1982, a transformer failure and damage to Lévis substation, in the Québec City region, led to an unusual province-wide power failure which left a large number of customers without electricity for several hours. Studies are presently examining the causes of this breakdown and the difficulties encountered in restoring electricity service.

INSTALLATIONS

During the year $2,542 million was spent on the construction program.

The three commissioning highlights of 1982 were La Grande 3, where the first generating units came on stream, the energizing of the third James Bay transmission line and the inauguration of the new System Control Centre, designed to improve system operation. The start-up of the reactor at Gentilly 2 nuclear power station took place in September. And the utility also speeded up studies and engineering work on interconnections with neighboring systems outside Québec.

However, as the forecast of electricity demand was revised sharply downward during the year, there has now been a complete re-examination of construction projects and studies on future developments.

Generating facilities completed or under construction

James Bay: La Grande complex, Phase I
(10,269 megawatts)

Construction of phase I of the La Grande complex in the James Bay region is carried out by Hydro-Québec's subsidiary, SEBJ, and the schedule for this phase of the complex is not modified in any way by the utility's new Development Plan: the last two generating stations will be completed as originally planned. Work on phase I has been in progress for more than 10 years, and at year-end was 79.4% complete. Capital expenditures to date (including transmission costs) total $11.6 billion, on an overall budget of $14.6 billion.

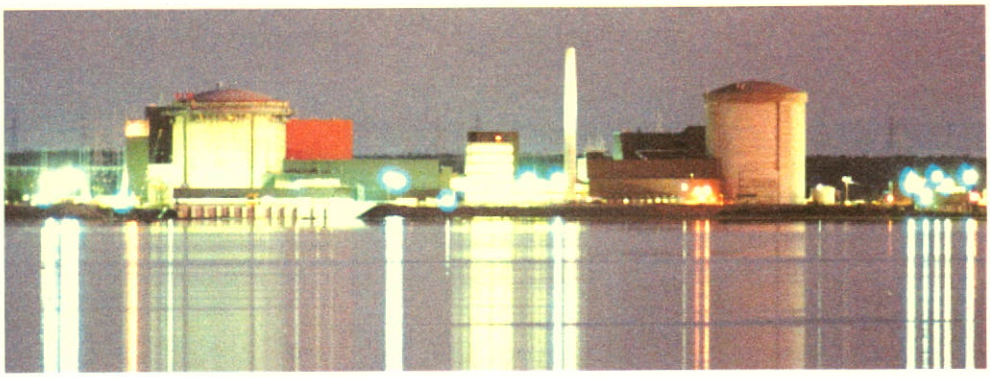
At the La Grande 3 construction site, the highlight of the year was the commissioning of the first of this ground-level power station's 12 generating units. By year-end, three generating units were in service. When the plant is completed in 1984, it will have an installed capacity of 2,304 megawatts and an annual output of 12.3 billion kilowatthours.

The busiest of the La Grande construction sites in 1982 was La Grande 4 where work on the spillway, intake and dikes was completed to allow for impounding of the reservoir at the beginning of 1983. Assembly of the nine generating units in the ground-level powerhouse com-

menced during the year. La Grande 4, on completion, will have an installed capacity of 2,637 megawatts.

Construction at the Caniapiscau site involves only the building of structures to increase the hydroelectric potential of the La Grande River. The focus of the work was moved westward and progress was made on installations to bring the waters of the Caniapiscau reservoir to the three generating stations of the La Grande complex. This reservoir when fully impounded will become the largest lake in Québec. It is now being filled, and at year-end contained 20% of its enormous usable reserve of 40 billion cubic metres.

Construction work under way at Manic 5 power development (additional capacity).



Gentilly 2 nuclear power station, on the shore of the St. Lawrence River.

Manic 5 — additional capacity
(988 megawatts)

Commissioning of additional capacity at Manic 5, which had already been postponed for one year in 1981, was further rescheduled from 1986 to 1989. Construction work will continue in 1983 but at a much slower pace. The final commissioning schedule could be revised again in the light of new energy, economic and financial indicators.

Work on excavation for the tailrace, the machine hall and the transformer room was completed by year-end. The intake structures are for the most part finished; the only work remaining is the intake itself and the sloping part of the intake tunnel. The penstocks have been concreted, and concreting of the distributor is under way. Work proceeded on preparatory tests for the dynamiting of the intake plug, one of the critical stages in the project.

Gentilly 2 nuclear power station
(685 megawatts)

1982 saw the completion at Gentilly 2 of construction work and other activities required to obtain the necessary licences from the Atomic Energy Control Board. Fuel-loading operations were carried out in March, and the reactor start-up took place in September. Gentilly 2 was linked to the Hydro-Québec grid in December and by early 1983 was delivering about 540 megawatts, or 75% of its full capacity. The commissioning should be completed on schedule, in the fall of 1983.

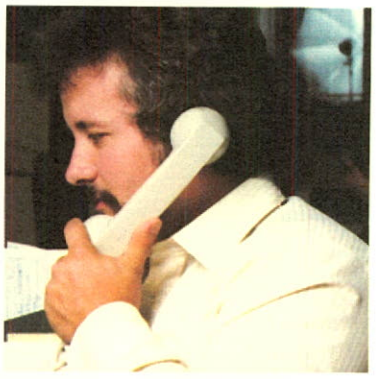
Studies on future construction projects

Although the utility's new Development Plan has little effect on current construction work, with the exception of additional capacity at Manic 5, it considerably modifies the proposals for future construction projects. These projects, designed to meet a long-term growth in demand of about 6% annually, were revised in the light of much slower growth in demand, now forecast at between 2.6 and 4.7%.

Studies were therefore carried out during the year to revise construction and commissioning plans for the following hydroelectric complexes: La Grande phase II, Grande Baleine, Nottaway-Broadback-Rupert and La Romaine. It was also necessary to examine scheduling for the main peaking-plant projects, namely Delaney pumped storage, additional capacity at La Grande 2 and La Grande 1, and the La Citière gas-turbine power station, all of which were to have been commissioned in the late 1980s or during the 1990s. Now they have been postponed and re-evaluated in terms of their feasibility and cost-effectiveness, against a scenario of slower growth.

By year-end, studies on these complexes and generating stations were largely completed or well advanced, thus providing the utility with a bank of projects for maximum flexibility and adaptability if changes in the economic situation and the energy picture bring about significant shifts in the demand for electricity.

Other studies, begun in 1982, could lead to changes in the basic nature of the construction program, which until now has relied on hydroelectric megaprojects to keep pace with the rapid growth in demand. These new studies examine different types of installation, more cost-effective in the short term and better suited to the slowdown in electricity consumption.

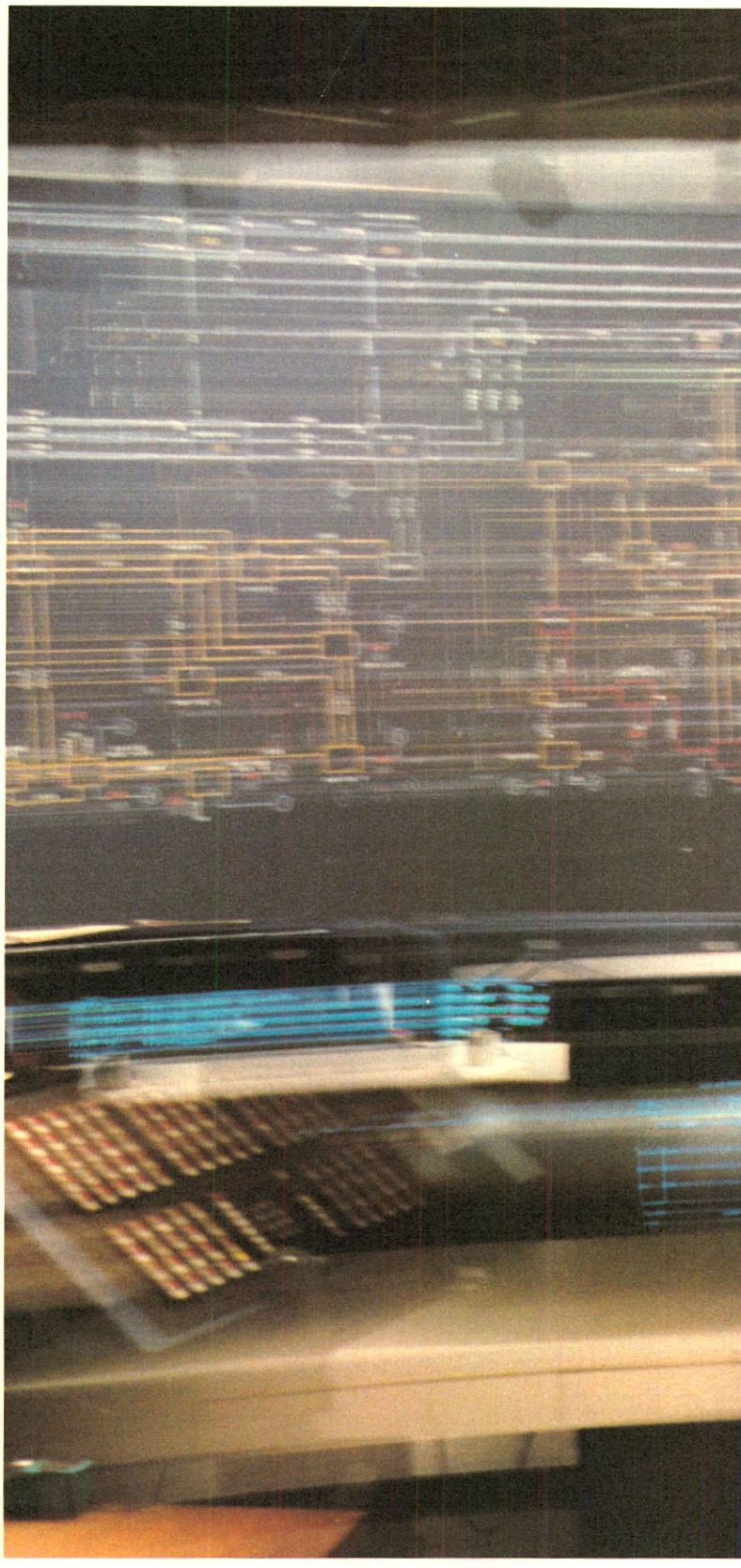


Studies were stepped up in 1982 on the division of major projects like Grande Baleine and Nottaway-Broadback-Rupert into smaller segments, and the feasibility of building small plants near existing dams. Studies on medium-size projects examined the possibilities for adding generating capacity to existing installations, notably at the Manic-Outardes complex, and increasing generating capacity at Beauharnois, Bryson and Rivière-des-Prairies power stations.

The System Control Centre

The highlight of the year in system management was undoubtedly the inauguration in the fall of the new System Control Centre. The Centre, which is located in Montreal, is one of the most modern in the world. Functions carried out there include operation of the transmission system and real-time generation management. The rapid, efficient information system enables the operators to carry out direct and continuous supervision of the main system components, and establish the most rational and economic programs for system operation.

The opening of the System Control Centre was the first step in a process of system automation that will see the creation of nine regional operating centres (CER) over a five-year period beginning in 1982. The Montmorency region's operating centre was completed during the year, construction of four other centres commenced, and procedures were initiated for acquiring the computer systems and hardware.

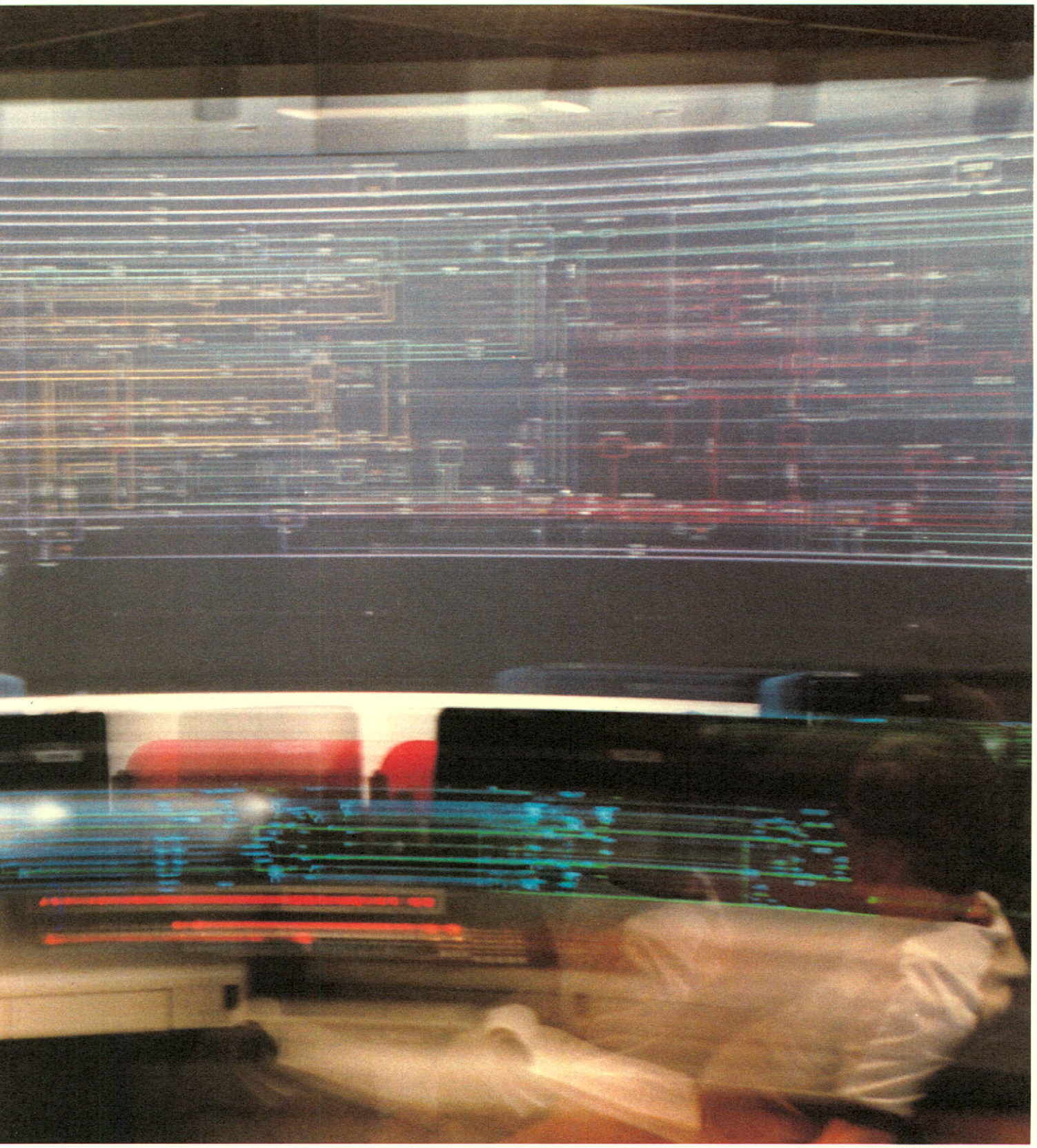


Transmission

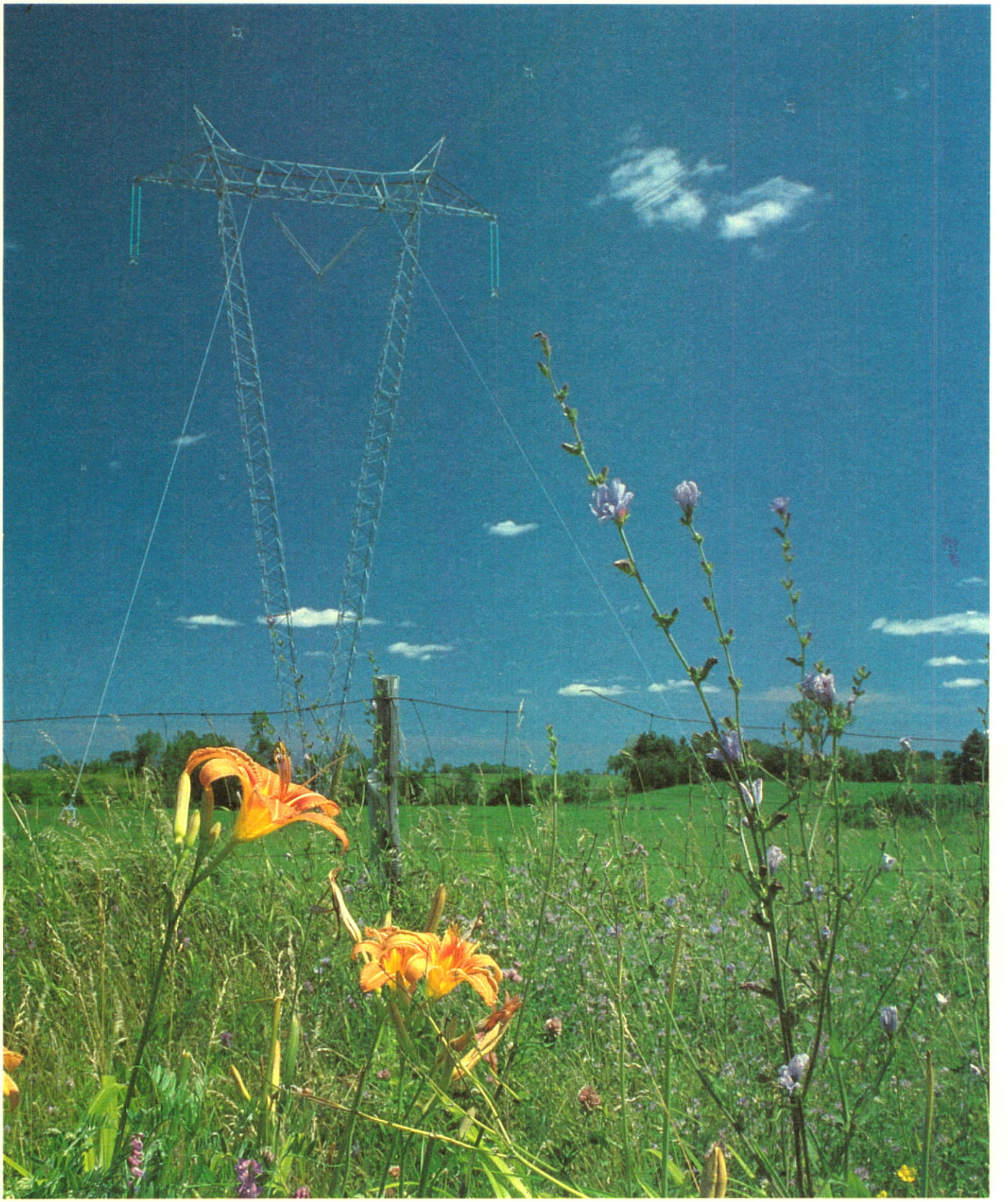
The total length of Hydro-Québec's transmission system, which is one of the most extensive in North America, now exceeds 30,000 circuit-kilometres, with 27% of this total operating at 735 kilovolts.

The principal construction work this year was on the 735-kilovolt James Bay grid where the complete commissioning of the third of the five lines took place in June. Two sections of the fourth line, which will link La Grande 3 to the Laurentides region, went into operation, and land-clearing and engineering work for the fourth and fifth lines went ahead.

During the year seven new transmission substations and 22 new subtransmission substations were placed in service. And modifications were carried out on 30 existing substations, mostly to increase transformer capacity. The system's total transformer capacity grew by about 12,000 megavoltamperes during the year, almost double the amount added in 1981.



V-shaped tower on the 735-kilovolt loop connecting the Montreal system to the high-voltage lines from Manic-Outardes, Churchill Falls and the James Bay region.



Work on interconnections

Work on lines and substations for three new interconnections with systems in Ontario and New York State, New Brunswick and New England advanced during the year, as follows:

- Work started on a back-to-back DC converter at Châteauguay substation, which will add 1,000 megawatts to transmission capacity to Ontario and New York State. The Châteauguay-De Léry line and the connections to De Léry substation are already in service, thus increasing transmission capacity from Beauharnois generating station to systems outside Québec.
- The contract for construction of the temporary 138-kilovolt line from Dégelis to New Brunswick was awarded in December, following engineering work and the obtaining of the construction permit. Hydro-Québec's request for permits for the permanent interconnection from Madawaska is currently before the Québec government.
- Studies with a view towards the obtaining of permits for the New England interconnection were carried out for the line from Des Cantons to New England, the line from Des Cantons to Nicolet, and the Des Cantons substation. Design criteria for a ±450-kilovolt DC line were also determined.

The distribution system

Continuing efforts were made to improve the quality of service provided by distribution installations, principally in three areas: construction of new circuits, rebuilding of facilities and gradual automation of the system. Total capital expenditures for the distribution system amounted to $319 million, compared with $318 million in 1981, and represented 12.5% of Hydro-Québec's total capital expenditures for the year.

About 1,300 kilometres of distribution circuit were built during the year, bringing the system's total length to 87,600 kilometres. In the area of reconstruction, the various programs under way advanced satisfactorily and power failures due to overloading were thereby reduced.

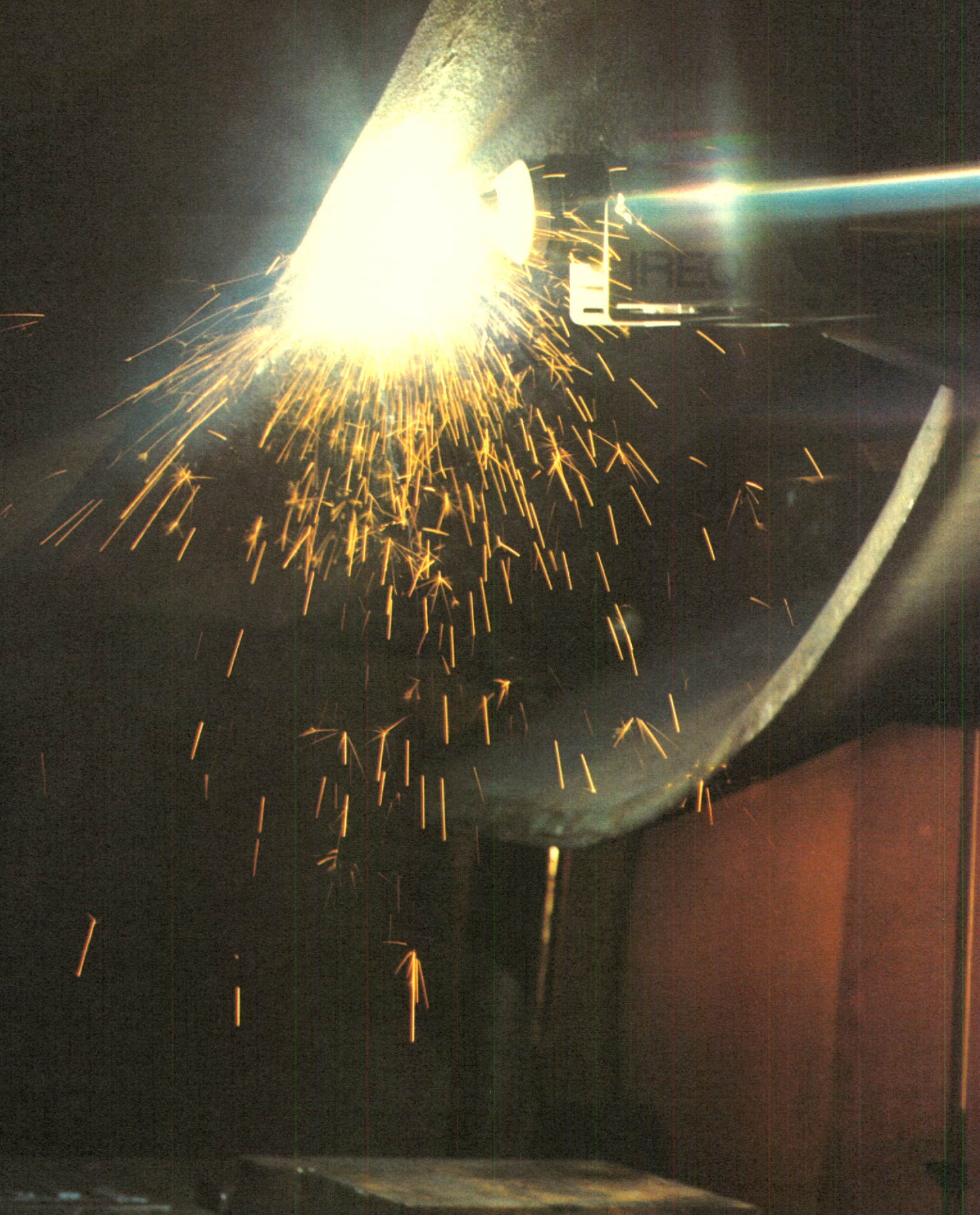
Work progressed on schedule on the two main projects for automation of the distribution system: computerization of the distribution centres and remote control of feeder sectioning points, which reached the stage of operational testing. When completed, these projects will result in speedier fault location and shorter repair time.

Interconnections with neighboring systems outside Québec
(excluding the Churchill Falls lines)

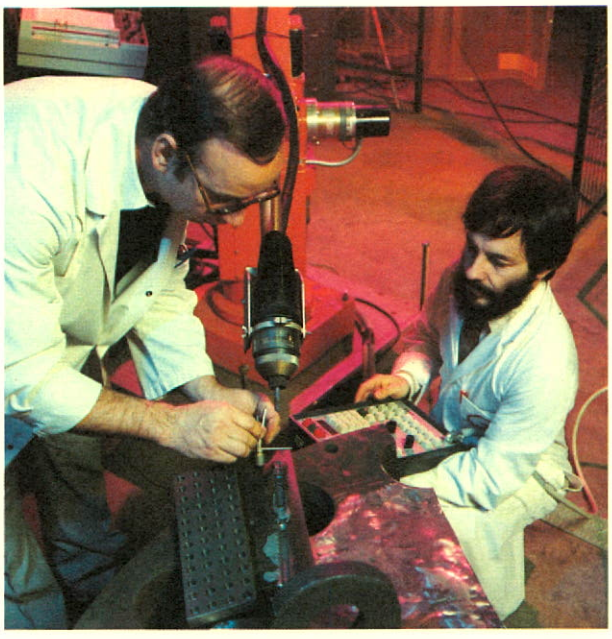
Existing interconnections	Carrying capacity	Number of lines in operation	Voltage
Ontario	3,500 MW, of which 2,600 MW can be delivered simultaneously	13	120 kV and 230 kV
New Brunswick		2	230 kV
New York State		3	120 kV and 765 kV
Vermont		1	120 kV

Interconnections under construction or planned	Carrying capacity	Planned in-service date
New Brunswick:		
temporary line	75 MW	1983
permanent lines	500 MW	1985
New England (NEPOOL)	690 MW	1986
Ontario and New York State*	1,000 MW	1984

**Installation of a back-to-back converter which will increase the simultaneous carrying capacity by 1,000 megawatts.*



TECHNOLOGICAL RESEARCH AND INTERNATIONAL ACTIVITIES



Grugeot, the robot acquired by IREQ in 1982. The arm is equipped with an ultra lightweight torch that works steel and serves in the investigation of welding techniques such as used in repairing turbines.

TECHNOLOGICAL RESEARCH

Hydro-Québec's research institute IREQ continued its research, development and demonstration work to improve the means of generating transmitting and distributing electricity. The institute adapted its activities to the utility's current preoccupations in the face of the present economic situation, stressing the promotion of new efficient and cost-effective uses of electricity and increased economic viability and marketing of expertise. In 1982, IREQ devoted a total of $43.9 million to research and development and derived $9.4 million in revenues from research and testing.

In the area of industrial applications, a pilot plant for the production of hydrogen, developed in collaboration with another Québec firm, was inaugurated at IREQ. In addition to serving in testing of electrolyzers, the plant will make it possible to study various applications of hydrogen, especially in fuel cells. Discussions continued on the possibility of building a plant with a capacity of between 40 and 100 megawatts. IREQ also conducted work on the storage of hydrogen.

Other work was geared to the industrial applications of electricity, notably plasma technology (gases raised to high temperatures) for possible use in the chemical and metallurgical industries, such as in the smelting and reduction of metals. Research was also conducted on high-energy-density batteries in collaboration with French associates. The work carried out in 1982 in this area will lead to the predevelopment phase for products of interest to the utility from the viewpoint of industrial application.

IREQ also did considerable work during the year in areas of immediate interest to Hydro-Québec, notably on direct-current and interconnection technologies. Interconnection studies were carried out with IREQ simulators, and direct-current studies and testing were conducted on materials. A study of the future 450-kilovolt Des Cantons line, which will link Québec to New England, was undertaken during the year with the aid of IREQ's experimental line. Finally, intensive courses on direct-current technology were given to personnel of Hydro-Québec and foreign firms.

In the area of automation and optimal power-system management, various devices were developed, including a digital system simulator that uses microcomputers, a prototype reclosing circuit breaker and an ultrasonic detector of the blade position of disconnecting switches. In addition, IREQ acquired an industrial robot for studying methods of repairing steel turbine blades.

Research continued on alternative energy sources, with IREQ giving priority to the Éole and Tokamak projects that are being carried out in collaboration with the National Research Council. In 1982, preliminary design and siting studies for the Éole's 4-megawatt vertical-axis wind turbine were completed. Investigative work on nuclear fusion by means of magnetic confinement was concentrated on the design of a new vacuum chamber, the electrical supply systems and the data acquisition systems.

In order to increase the economic and technical spinoff of its projects, IREQ also intensified its marketing activities. These efforts were reflected in the signing of new manufacturing agreements, in market penetration of products manufactured by commercial associates of IREQ (such as a current-limiting fuse and a device for simultaneous measurement of partial discharges and radio influence voltage), and in more frequent participation in technical exhibitions around the world. IREQ scientists saw two of their products win awards in the annual competition organized by Industrial Research, an American publication: a current-limiting fuse already on the market and a voltage phase-angle measurement system used in the analysis of power-system behavior.

As in the past, IREQ also conducted research and testing for clients in Québec, elsewhere in Canada, and in other countries, including Australia, Brazil and Argentina.

INTERNATIONAL ACTIVITIES

Hydro-Québec International

In 1978, Hydro-Québec assigned the task of exporting its know-how to a subsidiary, Hydro-Québec International. Since the beginning of the 1980s, the changes in the world economic situation have rendered the international engineering and technical-assistance markets very competitive. Thus the value of the contracts obtained by Hydro-Québec International in 1982 — about $16 million — attests to the subsidiary's viable expansion effort.

In addition to its general consulting work, Hydro-Québec International in 1982 signed important contracts in Saudi Arabia, Guinea Conakry, and India.

In the first quarter Hydro-Québec International signed a $6-million contract with the Saudi Consolidated Electric Company for technical assistance. Within the framework of a project financed by the World Bank, another $6-million contract was concluded with the Société nationale électrique of Guinea Conakry under which technical assistance will be provided to the utility for the planning and operation of its power system. Finally, in the last quarter, the international subsidiary (backed by a Québec associate) signed a contract worth more than half a million dollars with the Government of India Central Electricity

International activities: personnel sent abroad by Hydro-Québec International must familiarize themselves with the needs, culture and mentality of the host countries.

Authority for technical assistance on electrical system planning and the transfer of computer software.

Hydro-Québec International also continued to execute some 15 other contracts and conducted promotional work in a large number of countries, often in collaboration with Québec or other associates. In the Middle East, it is interested in the supervision of electrification work as well as the construction of hydraulic works and transmission lines. In Africa, it is exploring the possibilities for technical assistance and construction of power stations and distribution lines. In South America, marketing efforts are being concentrated on transmission-line work and participation in studies for a nuclear power station. In Asia, the subsidiary is concentrating on India and negotiations are under way for a number of projects, including a study worth several million dollars on the construction of a transmission line. By the end of 1982, Hydro-Québec International had carried out promotional activity on five continents.

International cooperation: Hydro-Québec's Chairman of the Board during a trip to five West African countries.

Cooperation

Hydro-Québec's cooperation activities are another form of external activity. Their objective is the exchange of know-how between Hydro-Québec and utilities in technically advanced nations and cooperation with developing nations.

Technical exchanges between Hydro-Québec specialists and their fellow North-American and European counterparts continued to be very fruitful in 1982, as evidenced by the quality of the technical missions and trainees coming from these areas.

Cooperation with the developing regions was conducted through some 30 firms located in 20 countries with which Québec has technical, economic and cultural affinities. For example, Hydro-Québec cooperated with the Société nationale d'électricité du Cameroun, with HIDRONOR in Argentina, with the Communauté électrique du Bénin and with JIRAMA of Madagascar. Hydro-Québec specialists have found immense technical interest in this collaboration with companies which have considerable know-how of their own.

THE UTILITY IN 1982

ORGANIZATION AND HUMAN RESOURCES

Reorganization and management philosophy

A major reorganization of the utility began in 1982 following the adoption of a new Development Plan. The main feature of the new structure is the realignment of activities under five executive vice-presidents: Marketing, Operations, Technology and International Affairs, Installations, and Finance and Resources. Four other officers also report directly to the President and Chief Executive Officer: the Vice-President Information, the Vice-President responsible for Organization, the General Secretary, and the General Auditor. By the end of 1982, the two top management levels had been restructured and the appointments made.

Within the framework of the Development Plan, the utility also outlined its management philosophy based on high-quality customer service, optimum economic viability, development of employees, active contribution to the social and economic development of the community and high-quality technical innovation and development. Management, which participated in the definition of these guiding principles, will incorporate them in the running of their own administrative units.

Personnel and recruitment

At year-end, Hydro-Québec had a total of 21,661 employees, 0.8% more than one year earlier. The proportion of female staff increased by 3.3% (mainly general office employees and nonsupervisory management) to reach 19.3% of total personnel.

The slowdown in the growth rate of sales and electricity generation resulted in a decrease in the volume of work in certain areas. In response, the utility devised a program for the reassignment of available employees. In the last six months of the year, 302 employees deemed available were reassigned in various sectors of the firm.

With regard to subsidiary companies, the number of employees working on the James Bay projects (construction sites and head office) during the annual July peak totaled 7,075. In line with commitments made in 1981, SEBJ in 1982 recruited nearly 300 Cree and Inuit for the La Grande complex. Hydro-Québec International, for its part, had 73 permanent employees at the end of 1982.

Remuneration and fringe benefits

During the year Hydro-Québec paid $782 million in gross salaries to its employees. The Hydro-Québec Retirement Fund paid a total of $18 million in benefits during 1982. At December 31, a total of 3,384 pensions were being serviced, comprising 2,066 pensions to retired employees and 1,318 pensions to spouses.

A new Hydro-Québec Retirement Plan, approved early in 1982, provides for early retirement from age 60, a half-pension for spouses and annual indexation of up to 2% for pensions and half-pensions. A program of preparation for retirement was launched during the year.

Labor relations

At the end of 1982, Hydro-Québec's unionized permanent and temporary personnel, representing 73% of the firm's total work force, were in four main groups: office workers, trades employees, technicians and engineers.

Negotiations were conducted throughout the year between Hydro-Québec and the Canadian Union of Public Employees and the Syndicat professionnel des ingénieurs d'Hydro-Québec in order to renew 10 collective agreements covering 16,000 employees before the expiry date of the contracts at year-end. However, at December 31, 1982, agreement had not yet been reached.

There were no labor disputes on SEBJ's construction sites in 1982, a year which saw renewal of the decree governing the construction industry.

Health and safety

The sustained efforts of Hydro-Québec in the area of safety, with the participation of its entire personnel, produced significant results in 1982. Both the severity and frequency rates of work accidents declined. There were 529 lost days per million hours worked in 1982, compared with 747 days in 1981, an improvement of 29%, and the frequency rate declined 3%, from 28.06 to 27.22 injuries per million hours worked. SEBJ's accident frequency rate also declined. During the year, Hydro-Québec made a study of compensation systems for accidents, in order to rationalize its contribution rate.

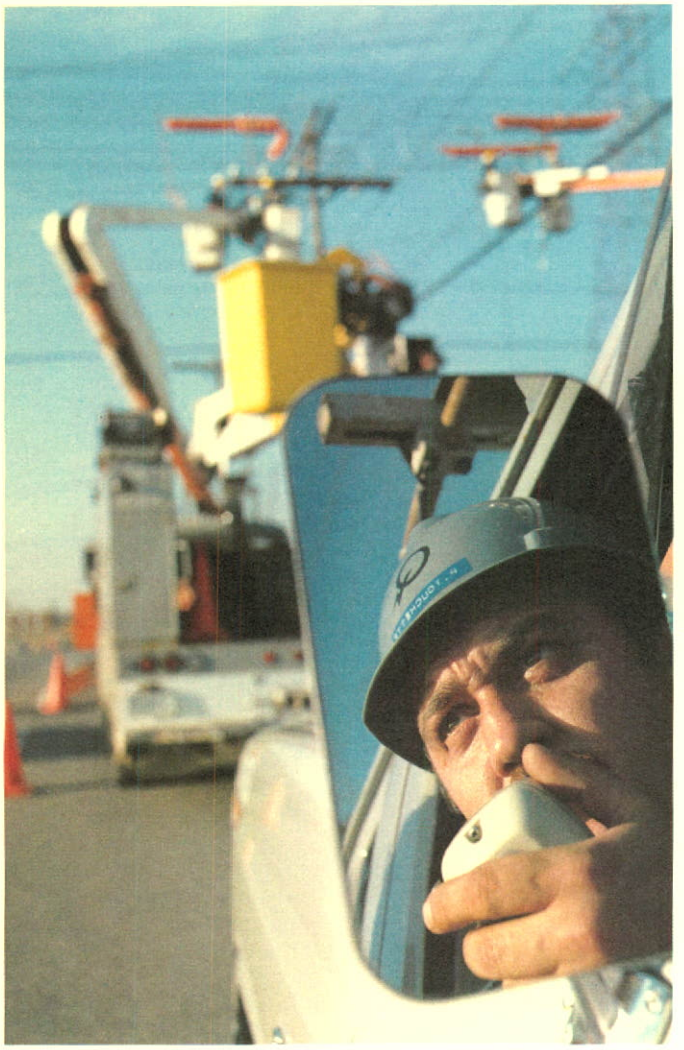
Studies were also carried out to improve the quality of life in remote regions, and programs on nutrition, physical fitness and personal habits were implemented.

Finally, the start-up of Gentilly 2 nuclear power station made it possible to verify the effectiveness of radiation protection systems designed for the public and workers at the plant.

THE UTILITY AND THE COMMUNITY

Customer relations

Serving its customers, Hydro-Québec's prime concern, consists first of all in linking an immense system of generating stations, power lines and substations to two



and a half million customers spread across the vast territory of Québec. It also consists in seeking to improve relations with this diversified clientele in order to satisfy ever-changing needs.

In 1982, customer-service offices in the regions and at head office dealt with more than two million inquiries. And the utility sought to improve customer relations through a permanent training program for employees assigned to customer services.

Work also proceeded on improving the management of customer accounts and accelerating the follow-up of customer requests through the use of computers. Computers were also used for the energy-saving, oil-substitution and hybrid-energy programs as well as for the processing of moving notices.

With a view to adapting its commercial practices to the needs of customers in financial difficulties, the utility established more flexible conditions for the settling of outstanding accounts. It also tested a device for limiting the supply of electricity, instead of interrupting it entirely, in cases of nonpayment of bills. These measures, as well as the information contained in various publications, are all indications of Hydro-Québec's constant endeavor to improve its business practices and relations with its customers.

Communications with internal and external publics

In addition to keeping its customers informed, Hydro-Québec has always maintained the type of relations with its employees and the public at large that are expected of a firm of its size. In 1982, the information transmitted bore principally on Hydro-Québec's new Development Plan, which was discussed in parliamentary committee and afterwards presented to the entire personnel; the Québec-Newfoundland dispute over the electricity from Churchill Falls; the commissioning of Gentilly 2, La Grande 3 and the new System Control Centre; the contracts with PASNY, Reynolds, Pechiney and NEPOOL, and the renegotiation of collective agreements and reorganization of the firm.

For a number of years now, under the influence of legislation and changes in social values, the utility's projects have been debated in the public forum.

Information and consultation programs are prepared for each project, and those affected — governments and the public — have the opportunity to state their position. Hydro-Québec then re-examines its plans, makes certain desirable corrections and sometimes even cancels projects. In 1982, the proposed sites for two substations were reviewed; transmission-line routes were modified at the request of citizens, groups or organizations, and suggested corrective or preventive measures were taken.

Among the notable communications programs undertaken in 1982 were those for the proposed interconnections with New Brunswick and New England.

Concern for the environment

At Hydro-Québec, concern for the environment is expressed in administrative activities such as requests for government authorization, and above all in environmental studies related to construction projects and operating and maintenance practices. These studies serve in the consultative process that forms part of the communications program.

During 1982, Hydro-Québec obtained government authorizations for about 40 major projects. It also made a contribution to legislative changes affecting environmental protection and wildlife preservation, as well as to environmental directives for the James Bay territory.

In its environmental studies, Hydro-Québec evaluates the effect of its entire construction program and of each of its projects on the natural and human milieus concerned, and then determines the corrective measures to be taken. In 1982, this type of study was carried out on several proposed power developments: Grande Baleine, La Romaine, Chamouchouane, Delaney, Archipel and on small power stations in general, as well as on the interconnections with New England and New Brunswick.

As an operating company, Hydro-Québec cooperates with local groups on plans for multipurpose use of its installations. In 1982 it also continued studies on development of the natural milieu and on the chemical substances it employs. SEBJ, for its part, observed the behavior of the estuaries, reservoirs and small-flow rivers in the La Grande complex. Site restoration work, plant seedings and wildlife surveillance were also carried out in the area.

Hydro-Québec informed its personnel about amendments to the Act to preserve agricultural land and the Act respecting land use planning and development and issued its environmental code, which is a collection of environmental-protection and development measures applied by the utility.

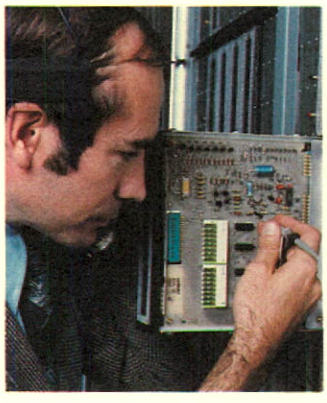
Hydro-Québec's role in the economy

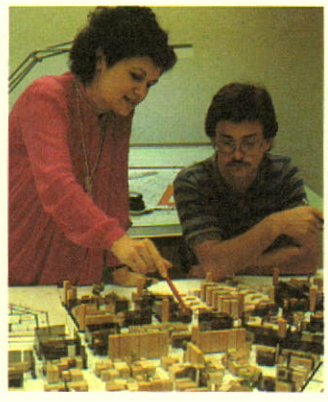
Hydro-Québec's economic role is reflected in its considerable capital expenditures, its purchasing power, the direct and indirect jobs it provides, the projects it subcontracts, and its policy of buying in Québec.

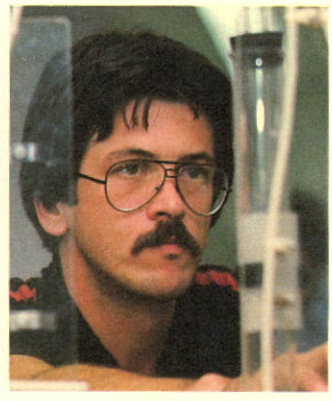
In 1982, Hydro-Québec's capital expenditures totaled $2.5 billion, which constituted a major contribution to the Québec economy, with some $898 million being spent on purchases in Québec. The utility plans to inject another $7 billion in the economy in the next three years, including a large amount on distribution facilities, and to continue its policy of encouraging Québec suppliers.

Of course, if the slowdown in the growth of electricity demand continues, Hydro-Québec's spending program will be more modest and its impetus to industrial activity consequently more restrained. Hydro-Québec is aware of this fact. Thus its Development Plan provides that in 1983 it will collaborate with representatives of both government and industry to develop strategic industrial sectors, notably those involved in research, development and design, and support those suppliers of essential goods and services who might be in difficulty.

Other action is also planned: assistance for technological transfers, concern for overall economic repercussions in the awarding of contracts, efforts to find ways of increasing the Québec content of job-creating products, and support and encouragement of technologically advanced products that are marketable outside Québec.







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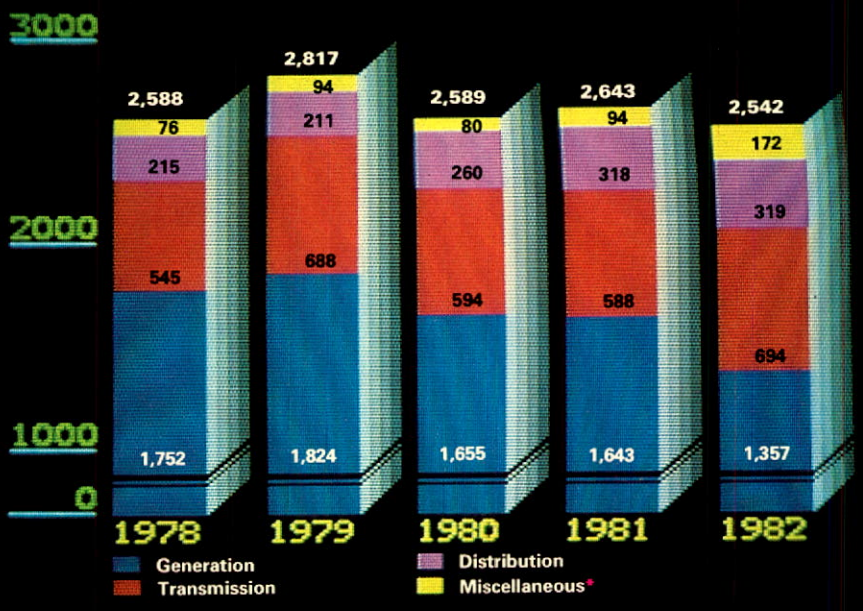
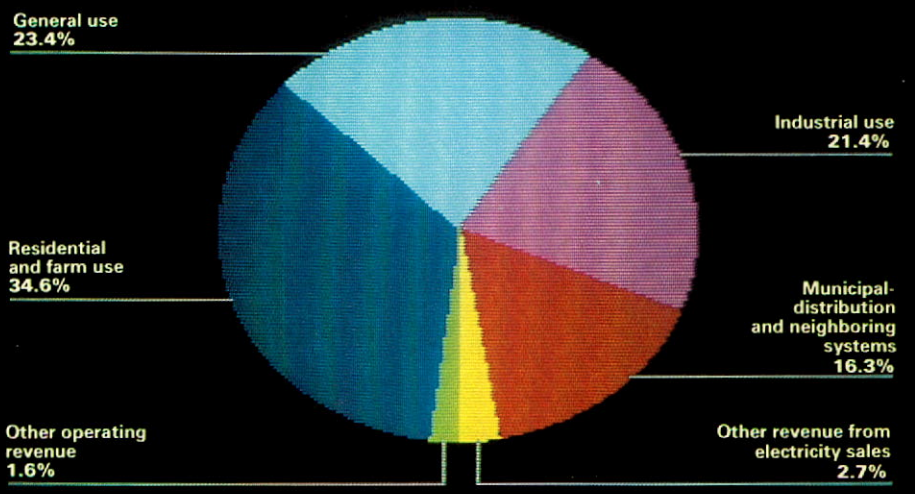
FINANCIAL RESULTS

Capital expenditures by major sector, 1978-1982
(in millions of dollars)

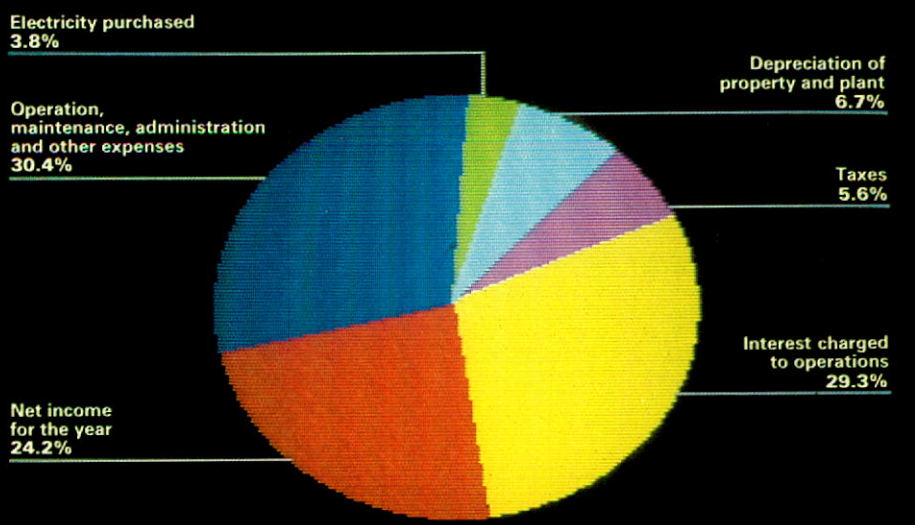


*Includes general property and construction, operating and research equipment.

Source of revenue dollar in 1982

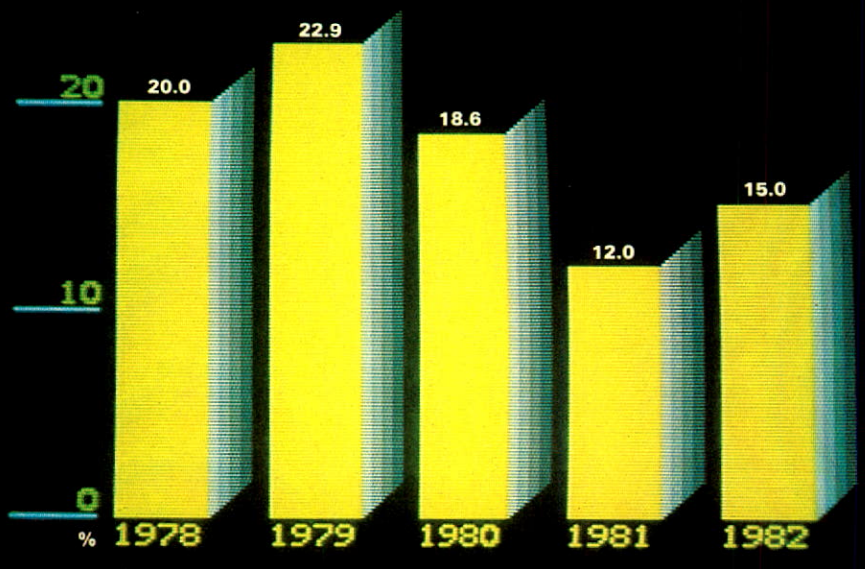


Application of revenue dollar in 1982



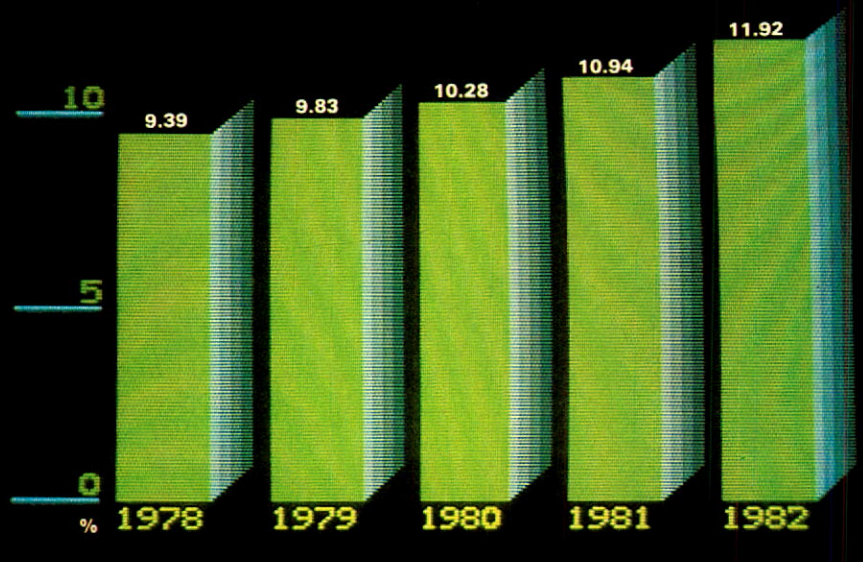
Return on shareholder's equity, 1978-1982

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

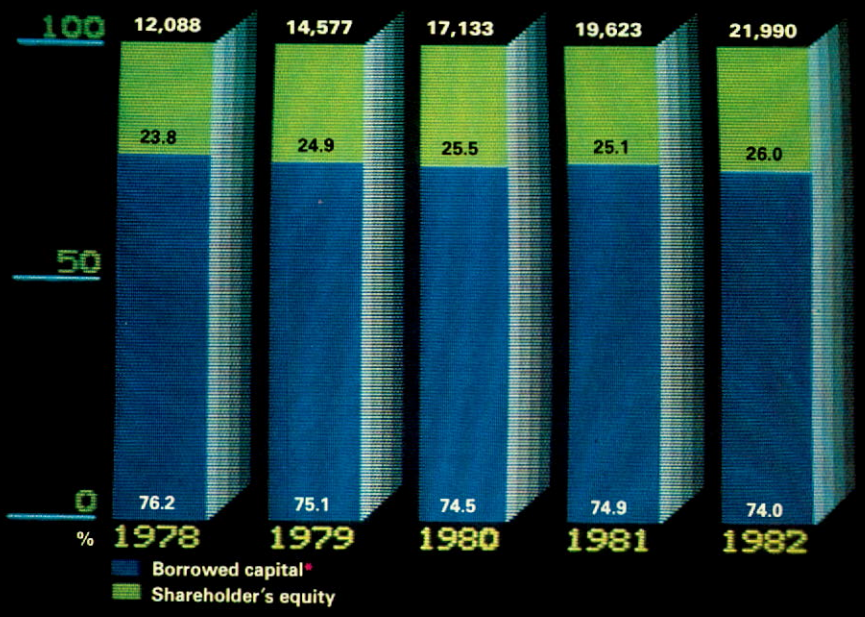


Average interest rate on long-term debt, 1978-1982

The average interest rate on long-term debt is equal to the interest on the long-term debt divided by the average long-term debt during the year.



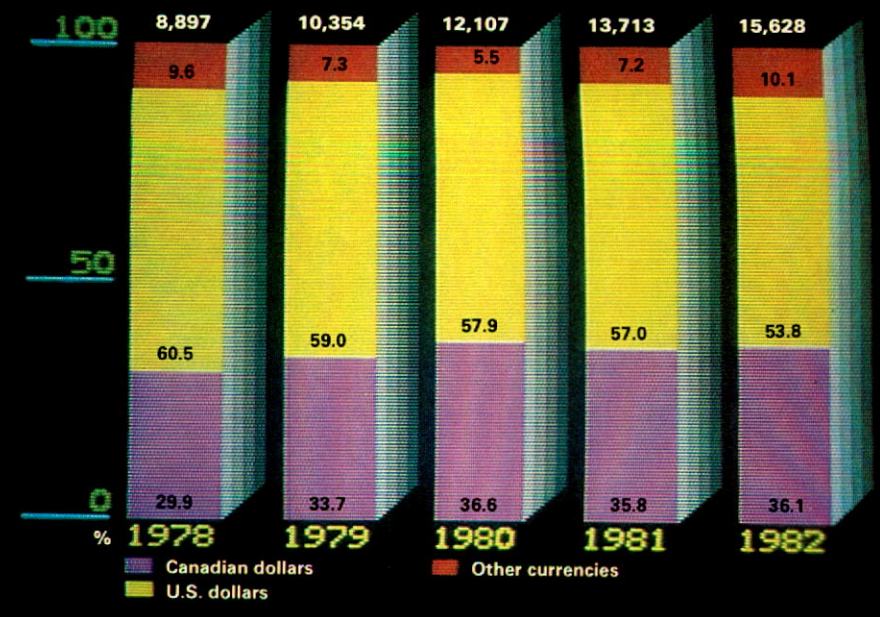
Composition of capital, 1978-1982
(in millions of dollars)



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

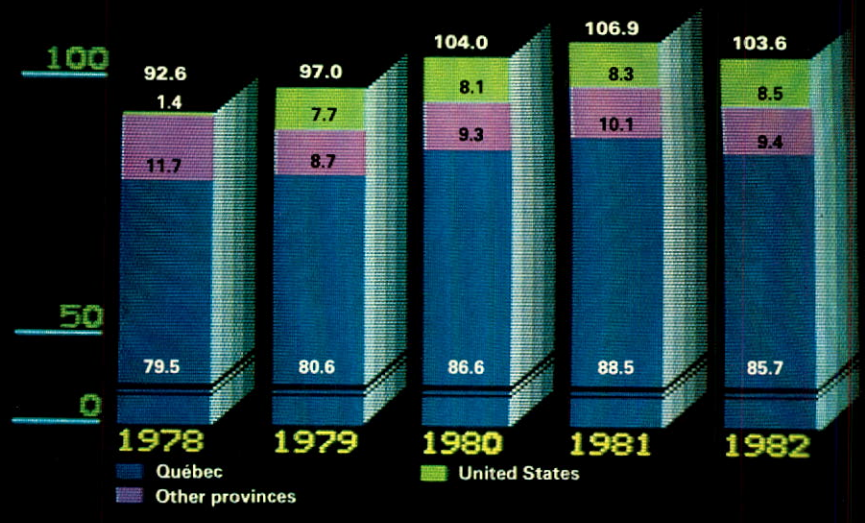
Composition of long-term debt, 1978-1982
(in millions of dollars)

In 1982, long-term borrowings were contracted in Canadian and American dollars, Swiss francs, Deutsche marks, pounds sterling, yen, Common Market ECUs, and guilders.

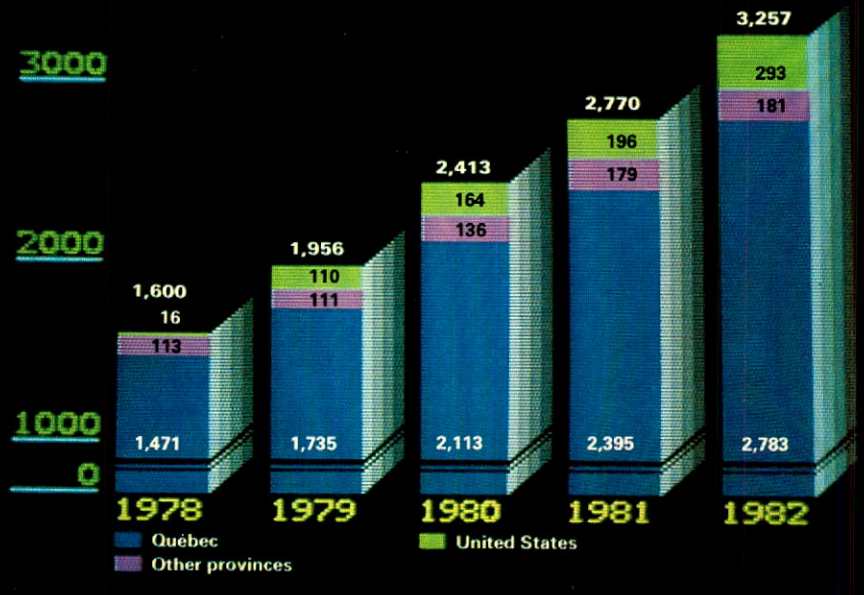


SALES AND MARKETING

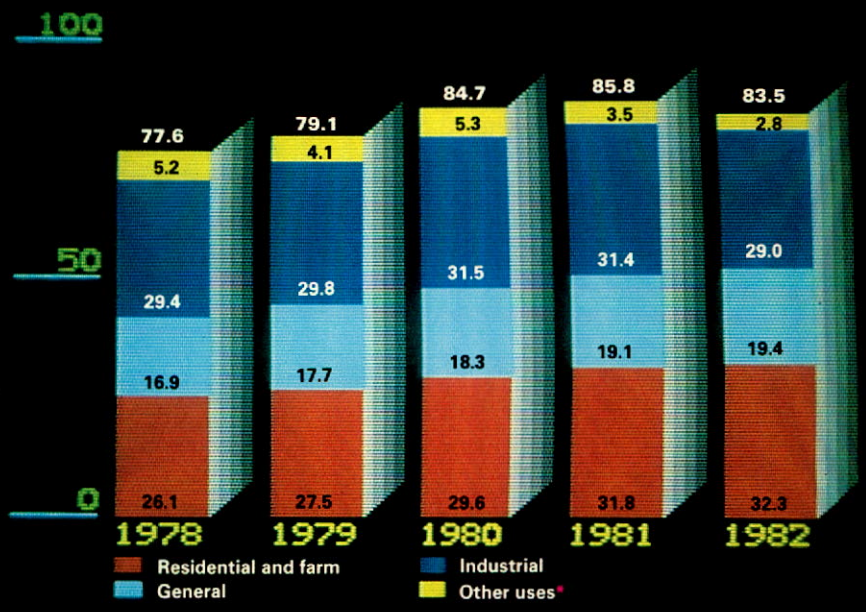
Electricity sales inside and outside Québec, 1978-1982
(in billions of kilowatthours)



Revenue from electricity sales inside and outside Québec, 1978-1982
(in millions of dollars)

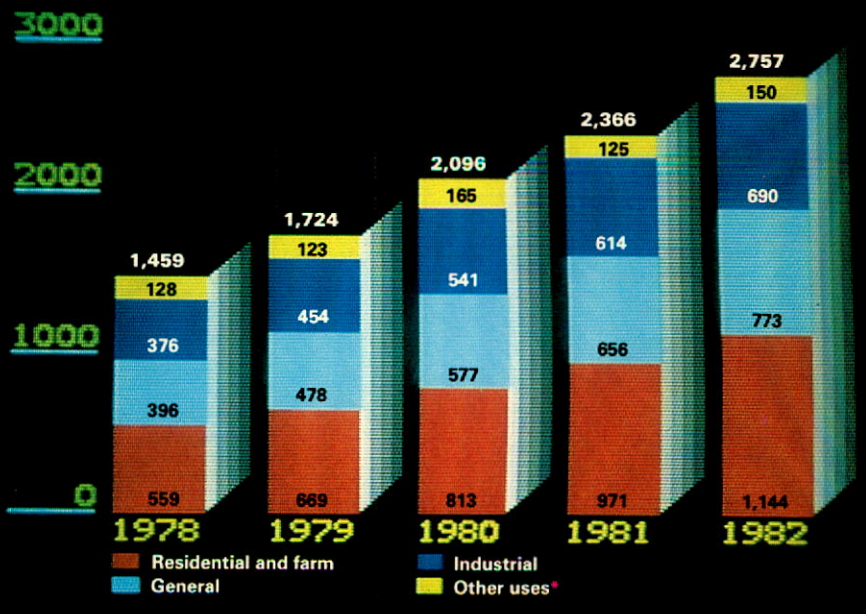


Firm electricity sales in Québec by category of use, 1978-1982
(in billions of kilowatthours)



**Includes sales to municipal-distribution systems and neighboring Québec systems, increase in sales not yet billed, and other.*

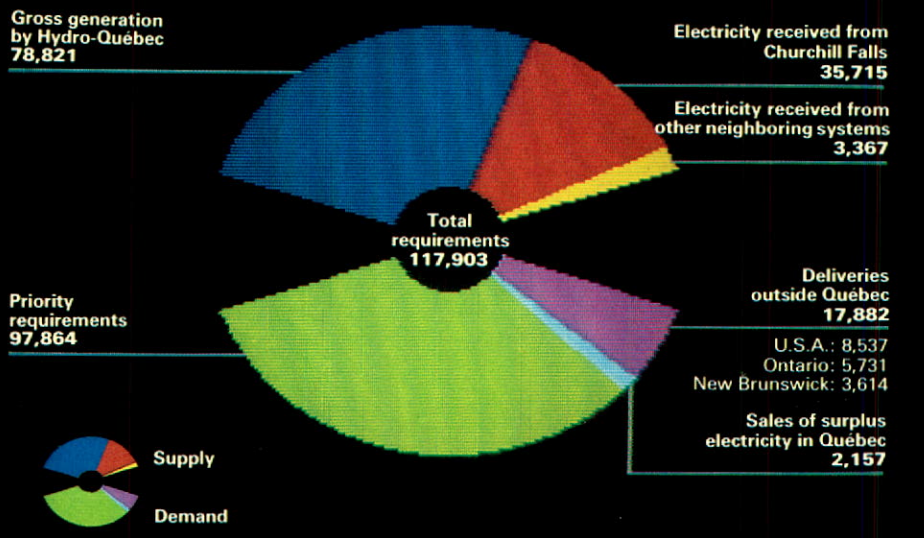
Revenue from firm electricity sales in Québec by category of use, 1978-1982
(in millions of dollars)



**Includes sales to municipal-distribution systems and neighboring Québec systems, increase in revenue not yet billed, and other.*

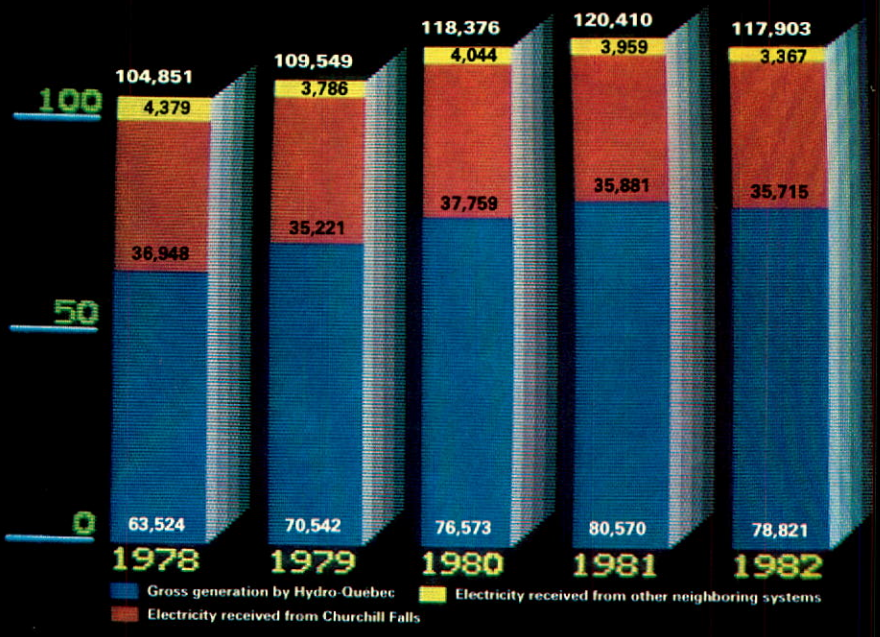
Energy supply and demand in 1982

(in millions of kilowatthours)



Total energy available, 1978-1982

(in millions of kilowatthours)



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MANAGEMENT REPORT

Hydro-Québec's consolidated financial statements were prepared by management in accordance with generally accepted accounting principles and approved by the Board of Directors. In the opinion of management, they were properly prepared, within reasonable limits of materiality, so as to incorporate all important elements and data available at February 15, 1983. The financial results contained in the Annual Report are based on the financial statements.

Guy Coulombe
President and Chief Executive Officer

AUDITORS' REPORT

We have examined the consolidated balance sheet of Hydro-Québec as at December 31, 1982 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, 1982 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
Chartered Accountants

Caron, Bélanger, Dallaire, Gagnon & Associés
affiliated with Clarkson Gordon
Chartered Accountants

Montreal, Canada
February 15, 1983

CONSOLIDATED STATEMENT OF OPERATIONS

		(in millions of dollars) for the year ended December 31	
		1982	1981
Revenue	Sales of electricity	**$3,257**	$2,770
	Other operating income	**53**	39
		3,310	2,809
Expenditure	Operation, maintenance, administration and other	**1,006**	905
	Electricity purchased	**127**	126
	Depreciation of property and plant	**221**	198
	Taxes (Note 2)	**185**	114
		1,539	1,343
Net operating income		**1,771**	1,466
	Interest (Note 3)	**971**	907
Net income for the year		**$ 800**	$ 559

See accompanying notes

CONSOLIDATED BALANCE SHEET

		(in millions of dollars) as at December 31	
	Assets	**1982**	1981
Fixed assets	Property and plant (Note 4)		
	In service	**$16,776**	$14,742
	Accumulated depreciation	**1,979**	1,791
		14,797	12,951
	Construction in progress	**6,508**	6,075
		21,305	19,026
	Construction, operating and research equipment, at cost, less accumulated depreciation	**172**	148
		21,477	19,174
Current assets	Cash and short-term investments	**521**	448
	Accounts receivable and revenue not yet billed	**658**	630
	Materials, fuel and supplies	**184**	157
		1,363	1,235
Other assets	Investments (Note 5)	**127**	129
	Unamortized debenture discount and expenses	**170**	159
	Unamortized deferred cost on purchase of electricity	**32**	33
		329	321
		$23,169	$20,730

		(in millions of dollars) as at December 31	
	Liabilities and shareholder's equity	**1982**	1981
Long-term debt	Debentures and other long-term debt (Note 6)	**$15,628**	$13,713
Notes payable	Notes payable within one year	**222**	257
Current liabilities	Bank indebtedness	**7**	30
	Accounts payable and accrued liabilities	**586**	601
	Accrued interest	**623**	589
	Long-term debt payable within one year	**377**	607
	Dividends payable	**7**	7
		1,600	1,834
Shareholder's equity	Capital stock (Note 7a)		
	Authorized		
	50,000,000 shares, par value of $100 each		
	Issued and fully paid		
	43,741,090 shares	**4,374**	4,374
	Retained earnings	**1,345**	552
		5,719	4,926
		$23,169	$20,730

See accompanying notes

On behalf of the Board:

Joseph Bourbeau

Guy Coulombe

Montreal, Canada
March 23, 1983

CONSOLIDATED STATEMENT OF RETAINED EARNINGS

	(in millions of dollars) for the year ended December 31	
	1982	1981
Balance at beginning of year (Note 7b)	**$ 552**	$4,374
Less:		
Amount allocated to full payment of 43,741,090 shares (Note 7a)	**—**	4,374
	552	—
Plus:		
Net income for the year	**800**	559
	1,352	559
Less:		
Dividends (Note 8)	**7**	7
Balance at end of year	**$1,345**	$ 552

See accompanying notes

CONSOLIDATED STATEMENT OF CHANGES IN FINANCIAL POSITION

		(in millions of dollars) for the year ended December 31	
		1982	1981
Source of financial resources	Net income for the year	**$ 800**	$ 559
	Depreciation of property and plant	**221**	198
	Depreciation of operating and research equipment	**28**	23
	Amortization of debenture discount and expenses	**17**	13
	Other amortization and depreciation	**7**	7
	Total financial resources provided by operations	**1,073**	800
	Issue of debentures and other long-term debt, less discount and expenses	**2,302**	2,226
	Increase in accounts payable and accrued liabilities, accrued interest and dividends payable	**19**	204
		$3,394	$3,230
Application of financial resources	Investments in fixed assets	**$2,542**	$2,643
	Redemption of debentures and other long-term debt	**647**	432
	Decrease (increase) in notes payable	**35**	(106)
	Increase in cash and short-term investments, less bank indebtedness	**96**	177
	Increase in accounts receivable and revenue not yet billed	**28**	88
	Increase (decrease) in materials, fuel and supplies	**27**	(3)
	Other	**12**	(8)
	Dividends	**7**	7
		$3,394	$3,230

See accompanying notes

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 1982

Note 1

Summary of significant accounting policies

a) Consolidation

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

b) Rates

Under the provisions of its Act, Hydro-Québec has the object to supply power in the Province de Québec at rates and conditions consistent with sound financial administration. The Hydro-Québec Act provides that the rates must 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 50 years. The rates are established 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 material, direct labor as well as engineering and administration overhead costs applicable to the construction program. The cost also includes interest charged to Construction 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 in progress

Interest is added to the cost of construction 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 13.07% in 1982 and 11.76% in 1981, and includes foreign exchange fluctuations on interest payments made in foreign currencies.

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

g) Foreign currency translation (see Note 6)

Consolidated long-term debt payable in foreign currencies is shown on the consolidated 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; 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 entered according to the rates of exchange at the date of the transactions.

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 on CFLCo's First Mortgage Bonds in excess of 5½% and on other CFLCo indebtedness in excess of 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 annual 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 in progress and no interest is charged on these costs until such authorization. If a project is abandoned, its costs are included with operating expenditure. The cost of research and development related to alternative energy sources, or not related to a specific project, is also charged to operations.

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 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

Hydro-Québec invests virtually all its sinking funds in its debentures 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 discount and other expenses, is included with Interest (see Note 3). Debentures 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 the 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

Taxes

	1982 *(in millions of dollars)*	1981 *(in millions of dollars)*
Capital tax	$ 98	$ 43
Tax on gross revenue as municipal real estate tax on certain immovables	71	63
Real estate taxes	16	8
	$185	$114

Hydro-Québec is subject to capital tax since July 1, 1981.

Note 3

Interest

	1982 *(in millions of dollars)*	1981 *(in millions of dollars)*
Interest on long-term debt	$1,807	$1,467
Interest on bank indebtedness and notes payable	37	49
Amortization of debenture discount and expenses	17	13
Foreign exchange loss on redemption of debentures and translation of current assets and liabilities	37	119
	1,898	1,648
Less:		
Interest charged to Construction in progress	790	628
Net investment income	99	73
Net profit on repurchase of debentures	38	40
	927	741
	$ 971	$ 907

Note 4

Property and plant

	(in millions of dollars)		1982	(in millions of dollars)		1981
	Property and plant in service	Accumulated depreciation	Construction in progress	Property and plant in service	Accumulated depreciation	Construction in progress
Generation						
Hydraulic	$ 8,757	$ 852	$4,283	$ 7,932	$ 761	$3,975
Nuclear	—	—	1,262	—	—	1,061
Other	316	75	3	262	61	41
	9,073	**927**	**5,548**	8,194	822	5,077
Transmission						
Substations	1,590	171	335	1,252	150	345
Lines	2,917	267	395	2,518	239	428
	4,507	**438**	**730**	3,770	389	773
Distribution						
Substations	684	104	71	579	95	112
Lines	1,850	299	82	1,632	273	61
	2,534	**403**	**153**	2,211	368	173
Other installations						
Administrative buildings	253	27	21	191	23	19
Sundry	409	184	56	376	189	33
	662	**211**	**77**	567	212	52
Total	**$16,776**	**$1,979**	**$6,508**	$14,742	$1,791	$6,075

Note 5

Investments

	1982 *(in millions of dollars)*	1981 *(in millions of dollars)*
Churchill Falls (Labrador) Corporation Limited (CFLCo) (see Note 10)		
General Mortgage Bonds, 7½%, due 1983 through 2010 (par value $94 million and $96 million, respectively)	$ 85	$ 87
Common shares	34	34
	119	121
Gelco Enterprises Ltd., 4% unsecured note, due 1991	6	6
Sundry investments	2	2
	$127	$129

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, 1982 is as follows:

	Earnings *(in millions of dollars)*	Dividends *(in millions of dollars)*	Retained earnings *(in millions of dollars)*
Share of retained earnings at January 1, 1981			$48
1981	$13	$10	3
1982	10	8	2
Share of retained earnings at December 31, 1982			**$53**

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

Note 6

Debentures and other long-term debt

Hydro-Québec's long-term debt is guaranteed by the Province de Québec, with the exception of lease obligations.

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

	1982		1981	
Years of maturity	*(in millions of dollars)*	Weighted average interest rate	*(in millions of dollars)*	Weighted average interest rate
1982	—		$ 607	
1983	$ 377		326	
1984	985		916	
1985	839		762	
1986	1,185		1,150	
1987	1,672			
1 – 5 years	5,058	11.90%	3,761	10.94%
6 – 10 years	4,725	12.12%	4,107	12.45%
11 – 15 years	1,654	9.46%	1,582	8.75%
16 – 20 years	1,215	9.60%	1,441	9.39%
21 – 25 years	2,555	10.40%	2,637	10.32%
26 – 30 years	771	11.31%	792	11.29%
31 – 35 years	27	12.75%	—	—
	16,005*		14,320	
Less:				
Portion payable within one year	377		607	
	$15,628		$13,713	

**Includes $116 million ($70 million in 1981) which represents the present value of lease obligations for regional offices and service facilities, for a 25 year period ending in 2007, capitalized at the interest rates charged to Construction in progress (see Note 1f).*

Repayments to be made in Canadian dollars and in foreign currencies, along with their Canadian dollar equivalent at date of issue, are as follows:

				1982	1981
				Total *(in millions of dollars)*	Total *(in millions of dollars)*
	(in millions of units)				
	1983 to 1987	1988 to 2015	Total	1983 to 2015	1982 to 2011
Canadian dollars	1,778	3,902	5,680	$ 5,680	$ 5,099
United States dollars	2,483	5,348	7,831	8,649	8,080
Deutsche marks	500	585	1,085	510	301
Swiss francs	591	769	1,360	780	615
Yen	—	20,000	20,000	80	80
Pounds sterling	—	53	53	121	95
ECUs	—	90	90	114	50
Guilders	—	150	150	71	—
				$16,005	$14,320

Note 6 — Debentures 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 $1,043 million ($848 million in 1981).

In addition, Hydro-Québec has two undrawn revolving standby lines of credit for U.S. $500 million and Cdn. $500 million. 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, which is convertible in 1984 into an additional six-year term loan, has a variable interest rate based on fluctuations in the Canadian chartered banks' prime lending rate.

Subsequent to December 31, 1982, Hydro-Québec issued or agreed to issue the following debentures:

Currency	Rate	Year of maturity	Debentures (in millions of units)
Pounds sterling	12.75%	2015	38
Canadian dollars	12.00%	1993	98
Canadian dollars	13.00%	2003	67
Deutsche marks	8.00%	1993	200
United States dollars	11.75%	1989	175
United States dollars	13.37%	2013	100

In addition, Hydro-Québec issued U.S. $25 million in medium-term notes.

Note 7

Capital stock and retained earnings

a) As a result of amendments to the Hydro-Québec Act, effective December 19, 1981, Hydro-Québec became a joint stock company with an authorized capital stock of 50 million shares having a par value of $100 each. The total of Hydro-Québec's reserves as of December 31, 1980, in the amount of $4,374 million, was allocated in 1981 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 a year by the Gouvernement du Québec, which also determines the terms and conditions of payment. For a given financial period, they cannot exceed the distributable surplus, which is established as follows: 75% of Hydro-Québec's net operating income and net investment income for the period, less the interest on long-term debt, bank indebtedness and notes payable, and less amortization of debenture discount and expenses. This figure is calculated on the basis of the consolidated financial statements.

However, in respect of a financial period no dividend may be declared in an amount that would have the effect of reducing Hydro-Québec's rate of capitalization to less than 25% at the end of that period. This rate corresponds to the ratio between the total amount of Hydro-Québec's issued and fully paid capital stock and retained earnings, less the dividend declared for the year, and the total amount of its long-term debt including notes payable, its issued and fully paid capital stock 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 expiry of the time prescribed, any distributable surplus or part thereof which has not been subject to a dividend declaration may no longer be distributed 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, 1982, 20,100 employees were contributing to the plan.

The costs of the plan, which amount to $134 million in 1982 ($120 million in 1981), represent current service costs and amortization of past service obligations and experience deficiencies.

Based on an independent actuarial valuation made in 1981, the unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $481 million 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.

In 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 megawatts 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.

Having been advised by its counsel that the validity of its long-term power purchase contract with CFLCo 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 that would affect the existing rights of Hydro-Québec under the power contract, was unfounded, Hydro-Québec defended the action in the Newfoundland Supreme Court. The trial came to a close in July 1982 and judgment has not yet been rendered.

In 1977, Hydro-Québec commenced proceedings before the Superior Court of the District of Montreal 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 "Reversion 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 Reversion Act, would revert to Newfoundland. CFLCo would thereby become unable to fulfil its obligations to Hydro-Québec under the power contract. The Reversion Act requires that the question of the competence of the Legislature

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

of Newfoundland to enact such a statute be referred to the Court of Appeal of Newfoundland. The Reversion Act 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 the Reversion Act before the Court of Appeal of Newfoundland which has rendered the unanimous judgment that the Reversion Act is within the rights of the Province of Newfoundland. Hydro-Québec appealed this judgment to the Supreme Court of Canada which heard the appeal during the last week of September 1982 and a judgment has not yet been rendered.

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

La Grande Project

Phase1 of the La Grande project consists of three generating plants, with an installed capacity of 10,269,000 kilowatts, at a cost estimated at $14,600 million. The first generating units were placed in commercial operation at the end of 1979, and completion of phase1 is expected in 1985. At December 31, 1982, $11,638 million 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 million: $63 million has already been paid, $22 million will be paid in 1983 and $89 million from 1984 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 until 1990 of acquiring the La Prade plant and the right of first refusal should AECL contemplate sale of the plant.

In 1978, AECL gave notice of its decision to postpone construction of the La Prade plant and construction has since been stopped.

Projected capital expenditures

Hydro-Québec carries on a continuous construction program in anticipation of future demand for electrical power in Québec. Capital expenditures planned for the 1983 calendar year amount to $2,662 million.

Note 11

Reclassification

Some of the 1981 comparative figures were reclassified to conform to the presentation adopted in 1982.

SUMMARY OF CONSOLIDATED OPERATIONS: 1978 TO 1982

(in millions of dollars)

		1982	1981	1980	1979	1978
Revenue	Sales of electricity					
	Firm	**$2,921**	$2,435	$2,171	$1,784	$1,500
	Surplus	**336**	335	242	172	100
		3,257	2,770	2,413	1,956	1,600
	Other operating income	**53**	39	30	21	22
		3,310	2,809	2,443	1,977	1,622
Expenditure	Operation, maintenance, administration and other	**1,006**	905	705	558	449
	Electricity purchased	**127**	126	131	129	126
	Depreciation of property and plant	**221**	198	161	138	108
	Taxes	**185**	114	57	25	40
		1,539	1,343	1,054	850	723
Net operating income		**1,771**	1,466	1,389	1,127	899
Interest	Interest on long-term debt	**1,807**	1,467	1,191	972	786
	Interest on bank indebtedness and notes payable	**37**	49	40	13	5
	Amortization of debenture discount and expenses	**17**	13	13	11	9
	Foreign exchange loss on redemption of debentures and translation of current assets and liabilities	**37**	119	106	107	61
	Interest charged to Construction in progress	**(790)**	(628)	(615)	(651)	(415)
	Net investment income	**(99)**	(73)	(72)	(60)	(64)
	Net profit on repurchase of debentures	**(38)**	(40)	(20)	(11)	(6)
		971	907	643	381	376
Net income for the year		**$ 800**	$ 559	$ 746	$ 746	$ 523

CONSOLIDATED SALES AND REVENUE: 1978 TO 1982

		1982	1981	1980	1979	1978	Average annual increase (%) 1982/1977
Electricity sales (in millions of kWh)	Firm:						
	residential and farm	**32,282**	31,831	29,579	27,519	26,083	5.8
	general	**19,425**	19,130	18,344	17,722	16,926	4.2
	industrial	**28,965**	31,370	31,509	29,765	29,401	0.9
	municipal–distribution systems	**2,408**	2,302	2,533	2,577	2,613	—
	neighboring systems	**5,767**	5,902	6,760	6,360	4,134	9.4
	other	**1,130**	1,111	1,063	915	928	5.0
	increase in sales not yet billed	**(681)**	(113)	1,496	378	1,425	—
		89,296	91,533	91,284	85,236	81,510	3.5
	Surplus:						
	industrial	**1,602**	1,782	1,559	1,303	1,433	9.4
	neighboring systems	**12,680**	13,615	11,162	10,476	9,663	2.1
		14,282	15,397	12,721	11,779	11,096	2.8
	Total sales	**103,578**	106,930	104,005	97,015	92,606	3.4
Revenue from electricity sales (in millions of dollars)	Firm:						
	residential and farm	**$1,144**	$ 971	$ 813	$ 669	$ 559	20.0
	general	**773**	656	577	478	396	19.8
	industrial	**690**	614	541	454	376	17.8
	municipal–distribution systems	**61**	50	48	42	37	16.0
	neighboring systems	**164**	72	78	63	43	53.9
	other	**66**	57	52	45	39	17.1
	increase in revenue not yet billed	**23**	15	62	33	50	5.0
		2,921	2,435	2,171	1,784	1,500	20.0
	Surplus:						
	industrial	**20**	21	15	10	9	27.2
	neighboring systems	**316**	314	227	162	91	30.0
		336	335	242	172	100	29.9
	Total revenue	**$3,257**	$2,770	$2,413	$1,956	$1,600	20.9
Average revenue per kWh	Firm electricity:						
	residential and farm	**3.543¢**	3.050¢	2.750¢	2.433¢	2.143¢	13.5
	general	**3.981¢**	3.428¢	3.142¢	2.697¢	2.337¢	15.0
	industrial	**2.384¢**	1.959¢	1.717¢	1.524¢	1.280¢	16.8
	municipal–distribution systems	**2.552¢**	2.172¢	1.895¢	1.642¢	1.436¢	16.6
	neighboring systems	**2.837¢**	1.213¢	1.156¢	0.989¢	1.031¢	40.0
	other	**5.811¢**	5.120¢	4.892¢	4.859¢	4.183¢	11.5
	Subtotal (including increase in electricity not yet billed)	**3.271¢**	2.660¢	2.379¢	2.093¢	1.840¢	15.9
	Surplus electricity:						
	industrial	**1.250¢**	1.178¢	0.923¢	0.759¢	0.631¢	17.3
	neighboring systems	**2.494¢**	2.308¢	2.036¢	1.553¢	0.942¢	27.3
		2.354¢	2.177¢	1.899¢	1.465¢	0.902¢	26.4
	Total	**3.145¢**	2.591¢	2.320¢	2.017¢	1.727¢	16.8
Number of customer accounts (year-end)	residential and farm	**2,208,126**	2,181,333	2,145,864	2,107,942	2,059,581	1.9
	general	**259,612**	255,910	250,112	243,587	237,066	2.4
	industrial: firm electricity	**11,494**	11,624	11,398	11,257	10,897	1.0
	other	**7,644**	8,351	8,793	9,495	10,436	(9.5)
	Total	**2,486,876**	2,457,218	2,416,167	2,372,281	2,317,980	1.9

ENERGY REQUIREMENTS OF HYDRO-QUÉBEC SYSTEM: 1978 TO 1982

(in millions of kilowatthours)

		1982	1981	1980	1979	1978	Average annual increase (%) 1982/1977
Total requirements	Generated (gross)	**78,821**	80,570	76,573	70,542	63,524	5.2
	Received :						
	Purchased	**36,398**	37,099	39,140	36,630	38,650	0.6
	Received as per agreement	**2,684**	2,741	2,663	2,377	2,677	0.9
		39,082	39,840	41,803	39,007	41,327	0.7
	Total requirements	**117,903**	120,410	118,376	109,549	104,851	3.5
Québec requirements	Firm sales in Québec	**83,541**	85,807	84,736	79,100	77,587	3.2
	Deliveries in Québec as per agreement	**4,056**	3,816	4,087	3,332	3,561	5.5
	Total – Priority consumption	**87,597**	89,623	88,823	82,432	81,148	3.3
	Generating station service	**331**	325	383	303	302	4.5
	Losses and other	**9,936**	9,334	9,885	8,820	8,232	4.4
	Total – Priority requirements	**97,864**	99,282	99,091	91,555	89,682	3.4
	Surplus sales in Québec	**2,157**	2,650	1,825	1,521	1,882	9.9
	Total Québec requirements	**100,021**	101,932	100,916	93,076	91,564	3.5
Deliveries outside Québec	Firm sales	**5,755**	5,726	6,548	6,136	3,923	10.0
	Surplus sales	**12,125**	12,747	10,896	10,258	9,214	1.8
	Deliveries as per agreement	**2**	5	16	79	150	(62.5)
	Total deliveries outside Québec	**17,882**	18,478	17,460	16,473	13,287	3.6
Total requirements		**117,903**	120,410	118,376	109,549	104,851	3.5

POWER REQUIREMENTS OF HYDRO-QUÉBEC SYSTEM FOR THE WINTER BEGINNING IN DECEMBER*

(in thousands of kilowatts)

	1982	1981	1980	1979	1978	Average annual increase (%) 1982/1977
Total requirements	**20,189**	20,263	19,508	17,698	17,488	4.9
Priority requirements	**18,379**	19,696	19,385	17,582	17,059	3.1

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

AUDITORS' REPORT

We have examined the statement of assets of the Hydro-Québec Employees' Retirement Fund as at December 31, 1982 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, 1982 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
Chartered Accountants

Caron, Bélanger, Dallaire, Gagnon & Associés
affiliated with Clarkson Gordon
Chartered Accountants

Montreal, Canada
February 15, 1983

STATEMENT OF ASSETS

		(in millions of dollars) as at December 31	
		1982	1981
Investments	Debentures of Hydro-Québec and bonds of its subsidiaries, guaranteed by the Province de Québec	**$ 393**	$344
	Bonds issued or guaranteed by the Province de Québec	**227**	181
	Bonds issued or guaranteed by other provinces	**9**	4
	Municipal, school commission, Cegep, hospital and university bonds	**128**	111
	Government of Canada bonds	**95**	103
	Corporate bonds	**43**	30
	(Par value $914 million, market value $866 million)	**895**	773
	Common stock (market value $3 million)	**2**	2
	Cash and short-term investments	**232**	98
		1,129	873
Accrued interest on investments		**31**	23
Amount receivable from Hydro-Québec		**5**	8
		$1,165	$904

See accompanying notes

On behalf of Hydro-Québec:

Joseph Bourbeau

Guy Coulombe

Montreal, Canada
March 23, 1983

STATEMENT OF CHANGES IN ASSETS

		(in millions of dollars) for the year ended December 31	
		1982	1981
Assets, beginning of year		**$ 904**	$691
Increase	Current contributions		
	Employees	**34**	28
	Hydro-Québec	**64**	55
		98	83
	Contributions by Hydro-Québec (Note 2)	**58**	59
	Revenue from investments	**123**	87
		279	229
		1,183	920
Decrease	Pensions paid	**18**	16
Assets, end of year		**$1,165**	$904

See accompanying notes

NOTES TO FINANCIAL STATEMENTS

December 31, 1982

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 are shown at amortized cost.

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 made in 1981, the unfunded past service obligations and experience deficiencies are estimated, on a present value basis, at $481 million as at December 31, 1980. Hydro-Québec amortizes these unfunded liabilities annually over a period of 15 years.

Note 3

Reclassification

Some of the 1981 comparative figures were reclassified to conform to the presentation adopted in 1982.

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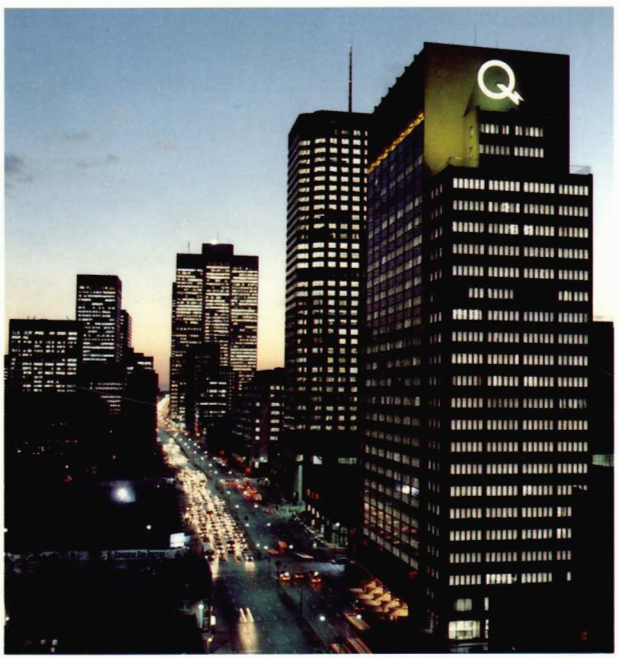
Hydro-Québec is a Québec-government-owned electrical utility operating one of Canada's largest electrical systems. Created in 1944, and transformed into a joint-stock company in 1981, it ensures the generation, transmission and distribution of almost all the electricity sold in Québec. With assets of $23.2 billion in 1982, it ranks among Canada's leading industrial and commercial enterprises.

Hydro-Québec has two wholly-owned, active subsidiaries: the Société d'énergie de la Baie James (SEBJ), which is carrying out the construction of phase I of the La Grande complex for Hydro-Québec, and Hydro-Québec International, which provides engineering and consulting services abroad for electrical-energy projects. Hydro-Québec is also a shareholder of Churchill Falls (Labrador) Corporation Limited, which operates the Churchill Falls power plant, and of Nouveler Inc.



HYDRO-QUÉBEC'S GENERATING STATIONS

In service or under construction at December 31, 1982

Generating Stations in Service *	Capacity (kilowatts)
Hydroelectric	
La Grande 2	5,328,000
Beauharnois	1,593,160
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
La Grande 3**	576,000
Outardes 2	453,900
Trenche	288,500
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
Anse Saint-Jean	400

	Capacity (kilowatts)
Thermal	
Conventional thermal	
Tracy	600,000
Gas-turbine	
La Citière	200,880
Cadillac	162,000
Diesel	
Îles de la Madeleine	59,339
Blanc Sablon	6,200
La Tabatière	4,700
Saint-Augustin	3,000
Kuujjuaq	2,650
La Baleine	2,400
La Romaine	2,400
Parent	2,350
Île aux Grues	2,050
Île d'Entrée	1,740
Inukjuak	1,250
Povungnituk	1,250
Salluit	900
Kangiqsujuaq	820
Quaqtaq	800
Kangiqsualujjuaq	630
Kangirsuk	600
Akulivik	440
Tasiujaq	440
Aupaluk	400
Ivujivik	360

	(kilowatts)
Total installed capacity	
Hydroelectric generating stations (50)	**18,084,736**
Thermal generating stations (24)	**1,057,599**
Total capacity of the 74 generating stations in service at December 31, 1982	**19,142,335**

Generating Stations under Construction	In-service date	Capacity (kilowatts)
Hydroelectric		
La Grande 3 **	1983-1984	1,728,000
La Grande 4	1984-1985	2,637,000
Manic 5 *(additional capacity)*	1989	988,000
Thermal nuclear		
Gentilly 2	1983	685,000

* *A 230-kilowatt wind-powered generator connected to the Magdalen Islands' system and another wind turbine operated at IREQ are not included in this list since they are experimental.*

** *At December 31, 1982, three of the eventual 12 generating units at La Grande 3 were in service. When completed in 1984, this generating station will have a total installed capacity of 2,304 megawatts.*