Taking Our Customers

To Heart

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Hydro Québec

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Units of measurement

$M: millions of dollars
MW: megawatt, or 1 million watts
GW: gigawatt, or 1 million kilowatts
GWh: gigawatthour, or 1 million kilowatthours
TWh: terawatthour, or 1 billion kilowatthours

Corporate Profile

Hydro-Québec ranks among North America's largest electric utilities in terms of assets and volume of sales. It generates, transmits and distributes most of the electricity consumed in Québec, and also sells and purchases both power and energy under agreement with neighboring systems in Canada and the United States.

Hydro-Québec's activities extend to energy-related research and promotion, energy transformation and conservation, and other areas connected with energy. In many cases, the utility works with outside partners.

Hydro-Québec is a publicly owned electric utility constituted by an act of the Québec legislature in April 1944. In 1981, Hydro-Québec became a joint-stock company with a single shareholder: the Québec government.

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Note: The financial information on the Hydro-Québec Retirement Fund is not included in the annual report. A separate document is published each year for participants in the Hydro-Québec Retirement Plan.

Gouvernement
du Québec

Minister of Natural Resources

Québec City, March 8, 1994

Mr. Jean-Pierre Saintonge
President of the National Assembly of Québec
Québec City

Dear Sir,

I have the honor of submitting to you the annual report of Hydro-Québec for the year ended December 31, 1993.

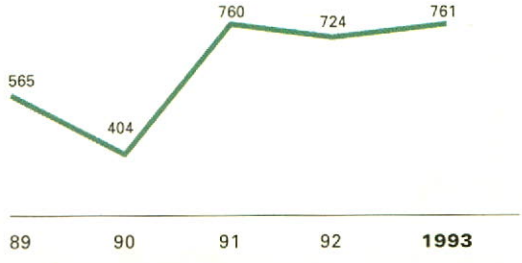
Yours respectfully,

FINANCIAL DATA

OPERATIONS IN BRIEF *(in $M)*	**1993**	1992	Variation *(in %)*
Revenue	**7,036**	6,807	3.4 △
Expenditure	**3,761**	3,629	3.6 △
Interest and exchange loss	**2,514**	2,454	2.4 △
Net income	**761**	724	5.1 △

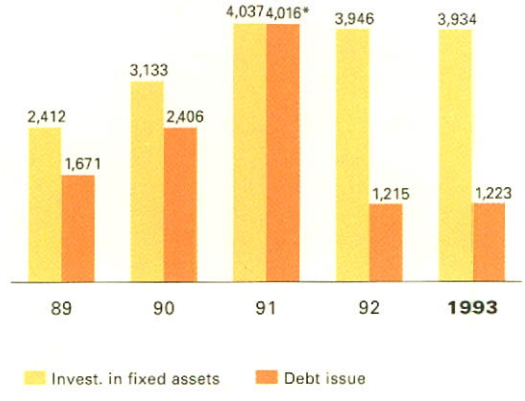
BALANCE SHEET IN BRIEF *(in $M)*	**1993**	1992	Variation *(in %)*
Total assets	**47,879**	44,864	6.7 △
Long-term debt	**33,204**	31,174	6.5 △
Shareholder's equity	**10,882**	10,121	7.5 △

NET INCOME *(in $M)*

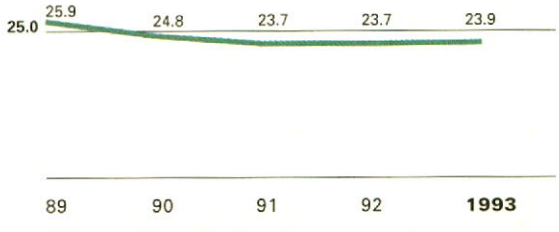


Return on Revenue *(in %)*				
10.2	6.9	12.2	10.6	10.8

INVESTMENT IN FIXED ASSETS VS NET ISSUE OF DEBT *(in $M)*

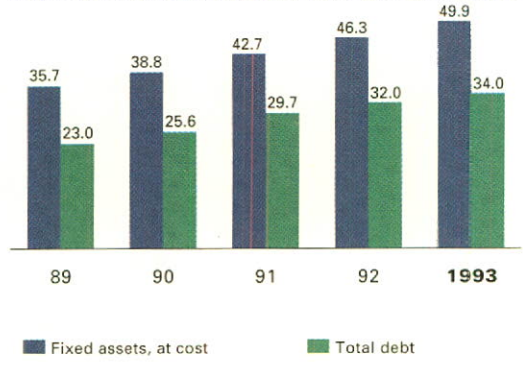


CAPITALIZATION *(in %)*

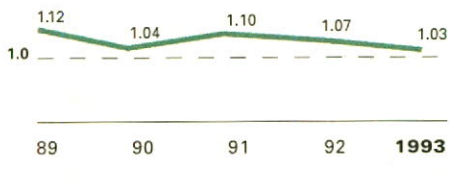


Dividends *(in $M)*				
182	–	–	–	–

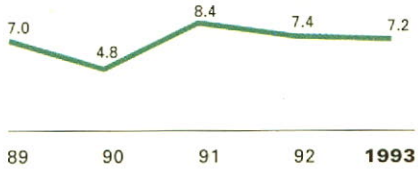
FIXED ASSETS VS DEBT *(in $ billion)*



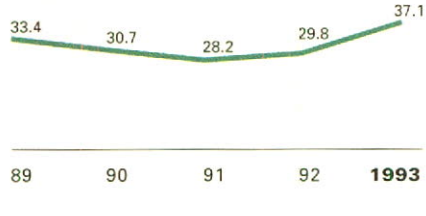
INTEREST COVERAGE



RETURN ON EQUITY *(in %)*



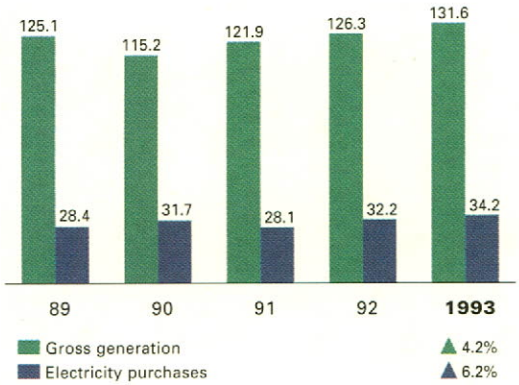
SELF-FINANCING *(in %)*



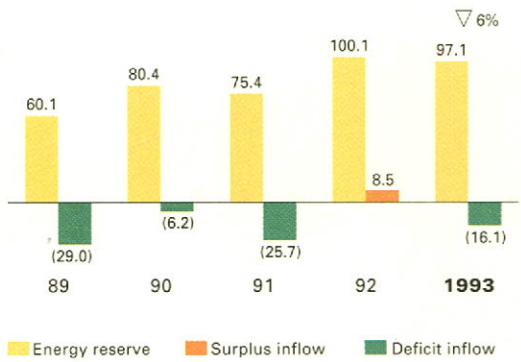
Operating Data

Main Performance Indicators	1993	1992	Variation *(in %)*
Rate of public satisfaction with Hydro-Québec**	**93%**	87%	6 △
Rate of response to customer telephone calls	**93%**	93%	
Percentage of customers connected on time	**91%**	87%	4 △
Average annual interruption time per customer (standardized)***	**4.4 hrs**	4.4 hrs	

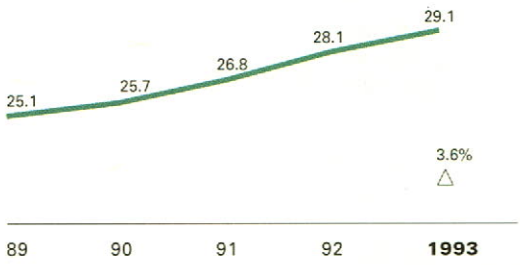
Gross Generation and Electricity Purchases *(in TWh)*



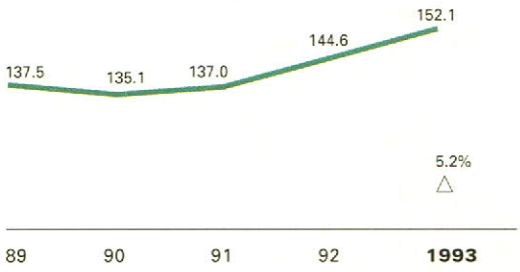
Energy Reserve at December 31 and Surplus (Deficit) in Annual Hydraulic Inflows *(in TWh)*



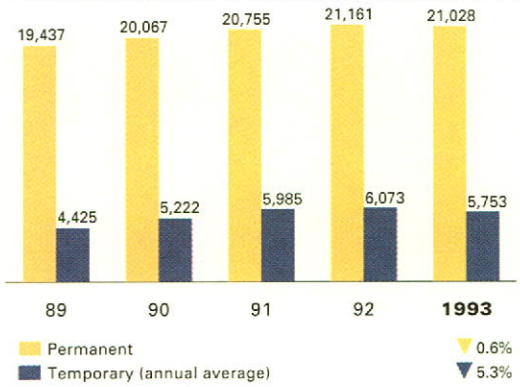
Installed Capacity**** *(in GW)*



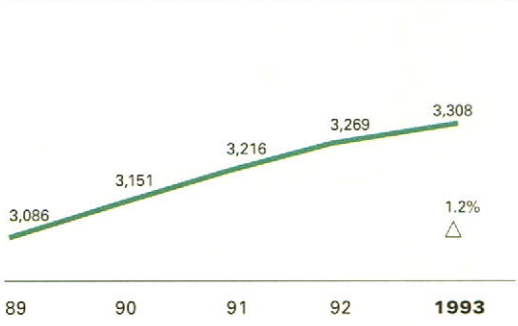
Total Sales *(in TWh)*



Personnel



Total Customer Accounts *(in thousands)*



Notes

*Includes $2,062 million in prefinancing for 1992 and 1993. **Annual average. ***Excludes interruptions due to exceptional events. ****Hydro-Québec also has access to most of CF(L)Co's 5.4-GW generation.

Richard Drouin, Chairman of the Board and Chief Executive Officer and
Armand Couture, President and Chief Operating Officer

Between now and the year 2000, Hydro-Québec wants to become recognized by its customers as the foremost electric utility in Canada for the quality of its services.

Hydro-Québec also wants Quebecers to recognize it as a major partner in the sustainable development of Québec.

To achieve these objectives, the utility will make the most of its employees' know-how and Québec's hydroelectric resources.

1993 was a good year for Hydro-Québec. More than ever, customer satisfaction lay at the heart of our concerns and was the focus of our energies. The reliability and quality of our service combined to propel average public satisfaction ratings to 93%. And despite a slow economic recovery, our financial results were satisfactory.

Improving financial results

Overall sales volume exceeded 1992 levels by more than 5%, while net income attained $761 million. We exerted rigorous control over operating expenses, and boosted our efforts to reduce the cost of the debt. At the same time, we were able to maintain our financial ratios at satisfactory levels. The self-financing ratio, in fact, surpassed the 30% threshold for the first time since 1990.

Satisfied customers

We continue to monitor the evolving needs of our customers with the closest attention. In 1993, as in 1992, we surveyed customers to ascertain their expectations. The response was unequivocal: they expect courteous, personalized service, prompt action, and guaranteed service reliability.

Our efforts to fulfill these needs have been productive. We responded promptly to 93% of all telephone calls, and the number of customers receiving bills based on their real electricity consumption rose to 95%.

Further bolstering satisfaction, we created more ways for customers to manage their own electricity consumption. A broad range of programs is in operation under our Energy Efficiency Project. The first phase of the Project, initiated in 1990, stimulated energy-saving awareness. With Phase II, we plan to launch one program per year in each customer category. From 1994 to 1997, for example, Hydro-Québec representatives will be addressing the entire residential market, providing energy-efficiency counselling and free installation of energy-saving devices. By the year 2000, we anticipate our customers will be saving 9.3 TWh annually.

A utility in transition

Our team embarks upon 1994 with renewed vitality and cohesion. In 1993, reorganization of our major activities — customer service, production, transmission, distribution and telecommunications — was completed. We are also reorganizing such key support activities as procurement, computer services, accounting and human resources: a process involving more than 20,000 employees, which will continue in 1994. At every step, however, we kept our objective of improved customer service firmly in view.

Moreover, our *Défi performance* or "performance challenge" project, designed to apply the principles of total quality management, is now solidly in place. Almost 400 improvement teams, involving more than 3,000 employees, have been set up. Pilot experiments in work process management have been successful; implementation of this management mode throughout the utility should begin in 1994.

Turning to relations with our unions, the parties have, for the first time, adopted an approach known as "problem-solving negotiation." They have agreed to combine their efforts to resolve outstanding issues while meeting the requirements of the Act respecting the conditions of employment in the public sector and the municipal sector. As a result, expenditures — notably wages and fringe benefits — will be reduced by 1%.

It is equally essential, however, that we increase productivity. To achieve this goal, we plan to reduce our workforce by 2,000 people by the end of 1995. At year-end 1993, we had 133 fewer permanent employees than in 1992, and the average annual number of temporary employees had dropped by 320. Finally, we intend to pursue our overall efforts to cut costs.

Diversified sources of revenue

Sales volume outside Québec rose to 15 TWh, up 20% from the previous year, with the strongest increase being registered in the United States. The U.S. markets with which we are interconnected are in a state of transition. Their present needs are mainly short term, representing an attractive opportunity for us to make sales that generate additional revenues without requiring construction of new production facilities. They also help maintain rates for Québec customers at attractive levels.

The year witnessed striking developments in the marketing of technology. Our wholly owned subsidiary, Nouveler, was given a new mission. Nouveler is responsible for marketing the technologies developed by Hydro-Québec, or related to its mission, as well as for developing and managing the firms in which the utility has invested. Several Nouveler subsidiaries — among them M3i and Ultra-Optec — have achieved spectacular results.

We affirmed our presence on international markets as we signed major licensing agreements, including one with Taiwan-based Taysung for the manufacture of dyes for the textile industry. We also joined forces with Ontario Hydro and Power Corporation to set up the Asia Power Group, with a view to energy projects in China. Finally, we obtained a research contract from the United States Advanced Batteries Consortium to perfect lithium-polymer batteries for use in automobiles.

Balancing supply and demand

Our energy reserves have remained at close to normal levels for the past year, and are sufficient to meet our customers' needs without resort to special measures. Moreover, rehabilitation of existing installations, particularly Beauharnois, Shawinigan and La Gabelle power stations, is expected to enhance the operating efficiency and extend the useful life of these facilities.

We inaugurated Brisay power station and commissioned two of the six generating units at the Laforge-1 power station, as well as the northern section of the 12th transmission line from the La Grande complex. Three new power stations are under construction: La Grande-1, Laforge-2 and Lac Robertson.

Highlighting the summer of 1993 was the submission of our feasibility study for the Grande-Baleine complex to the five commissions and committees charged with its examination. An agreement in principle regarding the project was concluded with the Inuit, who, along with the Naskapis, have agreed to participate in the consultations on the project's impacts. An agreement with the Crees, dealing with the terms of the consultations, should be confirmed in early 1994.

Earlier, in January 1993, we signed the Opimiscow-La Grande (1992) Agreement, which will pave the way for construction of part of the La Grande complex. In exchange, a financial compensation package has been put at the disposal of the communities involved, with a view to their economic, social and cultural development.

To respond to customer needs between 1996 and 2000, and to diversify our sources of supply, we shall be calling upon generating facilities built and operated by private producers. Such electricity will be produced by small hydroelectric power stations, as well as by biomass incinerators, wind farms and natural-gas cogeneration units.

Hydro-Québec staff: taking change to heart

The point cannot be made strongly enough: the performance of Hydro-Québec's employees throughout 1993 was remarkable. Responsibility, motivation and sensitivity to customer needs were but a few of the qualities they displayed throughout the year. We also saw, at every level of our organization, the emergence of new values of quality and mutual respect. We are convinced that the desire to excel can only grow stronger. Our sincerest thanks to each and every member of our staff for their commitment, and for their many achievements.

Fifty years of energy in the service of Quebecers

The strength demonstrated by the women and men of Hydro-Québec is anything but recent. In this, our 50th anniversary year, we pay tribute to all those who have served the utility so well since 1944. 1994 marks, for us, an important milestone. More confident than ever in the future, we are committed to transforming our Vision into reality. We shall continue to improve our performance, while exploiting to the utmost our own unique capabilities and resources.

In closing, we salute Mme Lise Bacon, Deputy Prime Minister and Minister of Energy and Resources in the Québec government who, in December 1993, announced her retirement from politics. As head of Energy and Resources, and thus responsible for Hydro-Québec since 1989, Mme Bacon has made a powerful contribution to the advancement of the utility. We offer her our sincerest thanks for her support throughout her term of office, and for her determination to see Hydro-Québec achieve its objectives.

We also wish to thank Jean A. D'Argensio, Serge Ménard and Charles-Albert Poissant, outgoing members of the Board of Directors, for their contribution. At the same time, we would like to welcome Henri Audet, Chairman of the Board and Chief Executive Officer, COGECO, Pierre Desjardins, President and Chief Executive Officer, Domtar, Raymond C. Setlakwe, President, A. Setlakwe, and Louise Sicard, Vice President, Residential Sales and Service, Bell Canada.

Richard Drouin, QC
Chairman of the Board and Chief Executive Officer

Armand Couture
President and Chief Operating Officer

ATTENTIVE TO OUR CUSTOMERS' NEEDS

We offer courteous and efficient service, assistance in reducing electricity bills, and ways of improving energy performance.

Every day, Hydro-Québec responds better to the needs of the public. In 1993, overall satisfaction ratings reached 93%, compared to 87% the previous year. But we do not consider that to be enough: we are redoubling our efforts to be recognized by our customers as the foremost Canadian electric utility for the quality of our services. We have even overhauled the structure of our business activities to give more weight to the front-line units — the sectors — that respond directly to customer needs. In 1993, we attended to those needs through a new round of information-gathering discussion groups and telephone surveys.

COURTEOUS, EFFICIENT SERVICE

The employees who provide customer services have made our corporate improvement targets their own; as a result, we exceeded a number of our objectives in 1993. A restructuring of these services, and our customer-information management systems, also contributed to this success.

Increasingly high expectations about customer communications are leading us to devote even greater care and attention to the services we offer. Already, some 200,000 residential customers have obtained copies of our *Hydro-Guide*, a brochure published in 1993 that discusses billing, tree trimming, energy conservation, new connections, and other subjects which affect customers directly.

At the same time, we are paying close attention to the specific needs of our commercial customers and cultural communities. Brochures in 13 languages explain the utility's practices, and we are testing a guide to help meter readers request entry to customers' premises to read the meters. Furthermore, starting in 1994 we expect to play a greater advisory role and have more personal contact with commercial, institutional and industrial customers, as well as municipal systems.

We are working hard to notify customers in advance of service interruptions of more than one hour caused by maintenance or repairs. In 1993, we focused on managing these tasks better, as well as on measuring how successful we were in carrying them out.

In addition, a number of actions should enable us to lower the number of complaints taken to appeal. We plan to improve some of our commercial practices and act directly on the main sources of complaints.

A customer service representative hard at work in Saint-Laurent region, western sector.

PROMPT ACTION

During 1993, we grouped our reception, customer account management and collection activities together into 25 customer service offices. Each of these service points now has the human resources needed to ensure efficient service, and will receive greater technical support.

Despite the accelerated rate of change which ensued, we maintained 1992's excellent telephone call response rate by answering 93% of calls. The average connection time, both in areas which are already developed and those where the grid must be extended, shows that our results are improving and compare favorably to the better performing utilities.

Customers expect the same efficiency from us when they submit a complaint. They were answered promptly in 93% of cases, compared to 86% in 1992. Effective follow-up of complaints also had beneficial effects on the average processing time.

ACCURATE AND UNDERSTANDABLE BILLS

The proportion of customers billed for their actual electricity consumption rose from 89% to 95%. To determine the exact consumption of customers who are regularly away from home or whose meters are inaccessible, we have so far installed no fewer than 60,000 remote-reading units. Major productivity gains are also expected from a computer redesign of our meter reader routes.

Another step toward better meeting our customers' needs is to offer our Equal Payments Plan, which allows customers to spread the electricity costs of the winter throughout the year. The number of participants rose in 1993 due to our continuing promotional efforts, especially at moving time.

PUBLIC SAFETY AND RESPECT FOR RESIDENTIAL AREAS

In addition to tightening control over access to our facilities, we urge our customers — particularly construction workers, do-it-yourselfers and young people — to be especially careful around power lines. Our televised safety messages were effective, and were remembered by nearly two out of three Quebecers.

The number of claims for property damage dropped noticeably in 1993, mainly because we reached prior agreements with customers and took greater precautions while working. We are continuing to make our employees and contractors more aware of the importance of courteous, high-quality service, and will systematically notify customers of any potential damage before work begins.

In 1993 we also devised a standardized method for assessing the impact of distribution projects, to be implemented next year. We will then be better able to integrate new distribution lines in residential communities and to moderate the environmental impacts.

Installing a sodium luminaire in Greenfield Park, near Montréal.

Assistance in Reducing Electricity Bills

In recent years, we have sought to make Quebecers aware of the effects of their daily choices on their electricity bills. At the same time, we have progressively introduced marketing programs which offer financial assistance.

Hydro-Québec now intends to build on the success of this first awareness-raising phase. We are implementing new approaches which target the largest conservation potential and involve major work on customer facilities. Each year from 1993 to 1995, a new framework program will be started with residential, commercial and industrial customers, for a total of nine new programs in three years. We expect to obtain most of the savings from our Energy Efficiency Project by the year 2000 from these measures.

It is important to keep in mind that the price of electricity in Québec is among the lowest in North America. Hydro-Québec also offers flexible and diversified rates that give customers better control over their electricity bills while helping the economy to recover. We have begun a pilot project with time-differentiated rates for residential customers. In the industrial market, we propose five rate options that are better adapted to the diversity of industrial operating modes.

The Residential Market

Between 1991 and 1993, Quebecers showed themselves to be highly receptive to finding out about their energy profile, as provided by the household energy consumption analysis program known as Écokilo. Nearly 1.5 million households reviewed their main areas of consumption, twice as many as expected.

It has also been shown that, when home installation is included, large-scale promotion of efficient products can generate substantial energy savings. From 1994 to 1997, representatives of the Direct Installation Program — a new framework program — will cover the whole residential market, offering energy efficiency advice and installing at no charge such energy-conserving items as thermostats for heating systems and pool filter timers.

Price of Electricity in Major North American Cities*

For the same consumption, a residential customer pays:

Montréal	Toronto	Winnipeg	Chicago	Boston	Detroit	New York City
$100	$164	$94	$204	$239	$223	$320

* Based on a comparative index at May 1993, excluding taxes.

In 1993, average public satisfaction ratings reached 93%.

Improving Energy Performance

Commercial, institutional and industrial markets

Numerous registrations were received for the Building Energy Analysis Program in 1993. Specialists responsible for closely examining building energy uses and making appropriate recommendations prepared some 3,600 detailed audits, substantially more than forecast. We set the example by scrutinizing the energy aspects of our own buildings. We are now implementing the modifications proposed in past audits, and began appropriate action in another 19 buildings.

The Public Lighting Conversion Program seeks to introduce more efficient sodium vapor lighting to Québec municipalities. In industry, stores and service establishments, another Energy Efficient Lighting Program promotes high performance products. This two-pronged approach will soon be complemented by a lighting initiatives program, a new framework program designed to expand the range of products eligible for financial assistance and to encourage projects for improving lighting systems.

Since the High-Efficiency Electric Motor Rebate Program was implemented in 1991, we have aided in the purchase or replacement of more than 10,000 units and thereby contributed to an average 4% drop in their operating expenses. A hundred models of different ratings, whose efficiency has been confirmed by our tests, are available on the market today.

With respect to pumping, ventilation and compression systems, the Energy Efficiency User-Initiative Program is intended for companies and pumping and water treatment stations interested in modifying or upgrading their equipment. The Energy Efficiency Audit Program offers financial and technical support for studies of the energy efficiency of such systems. A new framework program focuses on the energy efficiency of auxiliary systems, such as the distribution of compressed air and electric power or the treatment of industrial and municipal effluent.

Hydro-Québec also offers assistance to major industrial companies seeking to reduce the energy consumed in their production processes. Energy efficiency experts can provide help when the processes are being assessed, during studies in advance of decision making and when the appropriate modifications are being made.

Our customers can count on a reliable electricity supply, not only at the distribution level but also in transmission and generation.

Hydro-Québec is pursuing its efforts to ensure continuity of service for its three million customers. We continued to improve power system reliability, tightened control over installation downtime, and restored equipment to service more quickly. However, violent electric storms in some regions during the summer, together with ice in December, increased the number of service interruptions. Nonetheless, our goal for 1995 remains the same: reduce the average annual interruption time per customer to four hours.

Reliable Power

Various events associated with the operation of the Hydro-Québec power system and the use of customer installations can cause power supply disturbances. These fluctuations go unnoticed by most customers unless their equipment is vulnerable to voltage and frequency variations.

In 1993, production losses reported by large-power industrial customers were relatively high, mainly due to bad weather. We are already working on the elements over which we have full control. We have added remote-control equipment, upgraded certain substations and strengthened our maintenance programs. Meanwhile, our customers have increased the protection of their equipment, redistributed the load on their transformers and modified their automatic transfer systems.

In 1993 we also began a program of case studies to define possible solutions as well as technical support needed by customers. New measurement instruments designed in our research laboratories will also be available for use as soon as they have satisfied testing requirements.

Also important is our participation in the first drafts of a protocol for measuring power quality and a standardization guide. These initiatives are being conducted with the Canadian Electrical Association and in close association with the international energy community.

Working on the distribution system to improve service quality.

Average Annual Interruption Time Per Customer* (in hours)

Activity	1992	1993
Distribution	3.7	3.9
Transmission and subtransmission	0.8	1.3
Total	4.5	5.2

* Includes interruptions caused by extreme weather conditions or exceptional events.

An emergency crew hurries to repair damage caused by one of 1993's many summer storms.

Electricity Distribution

Hydro-Québec is continuing the accelerated replacement of power system components as they become outdated or show signs of wear. Using a selective intervention matrix, the Service Quality Enhancement Program keeps a host of mechanical and electrical parts in good condition.

In the summer of 1993, our distribution circuits were severely affected by electric storms. This meant an increase in the average length of interruptions. The surge arrester installation program, which will continue for several years, will make it possible to reduce the effects of bad weather in future.

Programs under way to control vegetation should reduce the problems caused by large trees near distribution lines. Moreover, various products, such as the booklet "The Right Tree in the Right Place," provide useful assistance to customers in choosing the right type and site for planting. Improvements have also been made in methods for managing distribution system operations and outages, and we are upgrading the design of the underground power system to facilitate its operation and maintenance.

A new remote-operation system now being tested will allow line workers to do more hot-line work safely, even in severe cold or bad weather. In 1993, we tested various regular tasks, such as the transfer of conductors and their support structures from one pole to another on an energized system. Once the remote-operation prototype has been adapted to our needs, the production stage can begin.

Subtransmission, Transmission and Generation

A good balance of preventive and corrective actions has brought us closer to achieving full operation of our installations in several regions. The number of equipment failures has dropped, although, when combined with the problems caused by lightning and icing, customers continue to feel their effects.

In addition to controlling the number of power failures in generating stations, Hydro-Québec must quickly correct incidents that do occur, while reducing the duration of scheduled downtime for major maintenance. The forced downtime rate for generating units was 1.4% in 1993, compared to 2% a year earlier, due to better planning of work and our employees' support for the quality approach. We also count on help from powerful and effective computer systems, like the SUPER system installed on units of 100 MW or more, to better detect needs for major maintenance. Similarly, the 10 most powerful generating stations are now under automatic load-frequency control, which assures better stability for the power system.

The purpose of the Reliability Enhancement Program for the transmission system is to increase its stability and capacity, mainly through series compensation. With the modifications to Saguenay, Arnaud and Montagnais substations, the reinforcement of the northeast system, from Churchill Falls generating station, is now concluded. For the northwest system, from James Bay, we have begun preparations for reinforcement work and have commissioned the northern section of the 12th line, as well as the corresponding installations in Chissibi, Albanel and Chibougamau substations.

The new system control centre, planned for 1996, will be among the most efficient in all North America. An upgraded computer system will expand its processing capacity to meet the growth in operating needs. The new centre will move into the Laval science and technology park just north of Montréal; construction of the building will begin in 1994.

Various automatic controls for operations are being tested. For example, we expect to supply the regional control centre operators with our LANGAGE expert system for the analysis and management of real-time alarms. This system allows operators to locate outages more quickly, accelerate load restoration and prevent expensive equipment from being damaged or destroyed. Likewise, we have designed a load restoration plan to deal with total or partial transmission or generation failures.

The Hydro-Québec power system makes constant exchanges with neighboring Canadian provinces, New York State and certain New England states. Based on the results of surveys conducted in 1992 and 1993, several task forces are looking at ways of increasing exchanges with our neighbors. We are continuing to improve our Radisson-Nicolet-des Cantons-Sandy Pond direct-current multiterminal link and to conduct studies and tests to increase our export capacity to the New York power system.

Building the 12th transmission line, near Chibougamau in northern Québec.

The new mobile radiocommunications system means better coordination of operations and enhanced job safety.

The integration of the output of independent power producers is another real challenge. We have defined technical requirements and drafted standard contracts in order to guard against disturbances when a private producer is connected to the grid.

Among other technological improvements, we have developed a system to monitor high-voltage circuit breakers and completed the acceptance testing of temporary grounding devices. We have also installed prototypes of the LOCADEF system, which locates short circuits in series-compensated high-voltage lines. Tests of 800-kV alternating-current cables proved positive, and a new line for mechanical testing has been installed.

TELECOMMUNICATIONS

Our program to modernize our telecommunications network is now in full operation. Using microwave and fibre-optic links, it will provide better quality transmission of information essential for the protection and operation of all installations. The telecommunications network is usually expanded during the construction or renovation of transmission lines. We have also made modifications to respond to new operating criteria for the transmission system, which will come into force in 1997.

After the contract for the supply of the new mobile radiocommunications system was awarded in 1992, we reviewed the design and engineering with the supplier. This system will ensure effective contact between the crews in the field and the control centres.

CONCERNED WITH

THE ENERGY-ENVIRONMENT EQUILIBRIUM

We focus on energy efficiency, wisely manage our current resources, commission new facilities, and prepare for the future.

To meet the future needs of our customers, we intend to choose the least expensive alternatives that do the least damage to the environment. First among these options are improvements to our power system and energy efficiency. After a period of focusing on consumer awareness, our large-scale Energy Efficiency Project has moved into a phase where technical and financial assistance programs cover increasingly numerous and diversified uses of electricity.

However, to be able to satisfy the demand of future years, we must also continue to install new facilities. Today, as in the past, we prefer hydroelectricity, a renewable and abundant resource which is competitively priced compared to other sources of generation. We are also very sensitive to the need for sustainable development of our resources, in cooperation with local communities.

FOCUSING ON ENERGY EFFICIENCY

Hydro-Québec's Energy Efficiency Project has finished its fourth year. Launched in 1990 with a focus on sustainable development and least-cost planning of the supply-demand balance, this project today includes three aspects: energy conservation, consumption management, and specific approaches for the electrotechnologies market and off-grid power systems.

ENERGY CONSERVATION

Hydro-Québec has confirmed its energy conservation objective of 9.3 TWh by the year 2000. The first phase, which focused on raising public awareness, is now completed. In 1993, we began the second phase, which involves the expansion and in-depth implementation of technical and financial assistance programs. This is the pivotal phase of the conservation portion of the Energy Efficiency Project. Three framework programs, one per market, were announced in December; this pattern will be repeated in each of the next two years. These new marketing activities are described on pages 10 and 11.

CONSUMPTION MANAGEMENT

In 1993, 3,060 MW of peak shaving was available to us. In December we ended our New Dual Energy Program, after having reached our target number of grants. This program, available to the residential sector, will be replaced by activities more oriented to new construction. However, Phase II of the Dual Energy Plus Program has been temporarily extended.

On commercial and industrial markets, we aim to provide greater satisfaction for customers while more efficiently managing peak demand. We began to install remote control systems as a way of controlling loads and applying peak and off-peak rates. Since early October, our dual energy customers in these markets have enjoyed a 10% discount on their off-peak electricity consumption; this discount will last one year.

In industry, some 40 large-power customers who participated in the Interruptible Power Program provided a margin of over 1,670 MW of peak power.

SPECIFIC APPROACHES

Intended to promote energy efficiency and contribute to Québec's industrial development, the Electrotechnology Implementation Assistance Program — Phase III is designed mainly for Québec industries interested in improving their competitiveness. Launched early in 1993, this new phase is intended specifically for small and medium-sized companies and will continue through 1995.

In order to supply our customers on off-grid power systems at the best cost while avoiding the construction of expensive thermal facilities, we continued to offer heating and insulation assistance programs to remote communities.

RESEARCH AND DEVELOPMENT

Research and development efforts were geared to the specific needs of the major framework programs already announced. LTEE, Hydro-Québec's electrochemistry and electrotechnology laboratories, has contributed to carrying out several of these projects.

A study on saving heating energy by equipping baseboard electric heaters with precision thermostats was conducted in laboratories and occupied and unoccupied homes. The results enabled us to include the installation of this type of device as part of the Direct Installation Program.

We have also developed a test bench for verifying the performance of residential, commercial and industrial lighting products and accessories. This new facility can simulate electrical disturbances on the power system and evaluate their effects on the performance of these products. We also assessed the performance of a hundred electric motors of different ratings (from 5 hp to 500 hp).

Wise Management of Current Resources

In 1993, in spite of the slower-than-anticipated economic recovery, total Hydro-Québec sales rose to 152 TWh, an increase of 5.2% over 1992. We are witnessing a gradual recovery from the effects of the recession, suggesting a more encouraging future. In Québec, sales of firm electricity should increase moderately in 1994 in view of our energy efficiency efforts.

With respect to neighboring systems, we have reviewed with the New York Power Authority (NYPA) the terms of our 800-MW seasonal sales contract, in order to adjust it to the new energy and economic context. To increase our short-term sales, we are adapting our strategy to meet the new realities of the North American market. Notably, we replied to a series of calls for tenders for a total of more than 1,500 MW. This energy is intended to replace the output of neighboring systems' facilities which are undergoing maintenance or whose operating expenses are high.

These short-term transactions generated net revenues of more than $138 million in 1993. For 1994 we expect to increase these revenues to $213 million. We have revised our operating and maintenance methods to make the required generating and transmission facilities available to satisfy the needs of this market.

Having fun on the job: upgrading generating units at Carillon power station.

ENERGY RESERVE

Runoff was 9% lower in 1993 than the historical average. At the start of winter 1993, our energy reserve corresponded to output of 108.2 TWh. Although slightly less than at the same point in 1992 (112.2 TWh), the reserve was nevertheless 1.5 times higher than during the 1989-1990 winter. Hydro-Québec now enjoys a balanced energy situation in which it can meet its customers' needs without applying compensating measures to maintain its reserves.

OUR GENERATING FACILITIES

We are beginning an overall review of our generating station design criteria. In order to better document our practices, we will produce a methodology guide in 1994, designed to optimize hydroelectric projects, to be used in all preliminary and draft-design studies.

REHABILITATION OF OUR EXISTING FACILITIES

To ensure that our generating facilities remain up to date and increase their energy performance, we continued our generating station rehabilitation program in 1993.

After consulting regional organizations and local residents, we announced our decision to proceed with a major rehabilitation of La Gabelle generating station (137 MW) on the Saint-Maurice, at a cost of $210 million.

In the same region, an eight-year upgrading began at the Shawinigan complex: we are modernizing Shawinigan-2 (192 MW) and Shawinigan-3 (172 MW) and building Leman substation. The total cost is estimated at $450 million.

We are continuing to modernize the turbines at Beauharnois, the generating station with the fifth-largest installed capacity (1,648 MW) in the system, located on the St. Lawrence River near Montréal. When work is completed, the generating station will have gained some 112 MW in capacity, equivalent to an average-size facility. The replacement of the turbine runners at Manic-5 will allow an increase of 132 MW of peak power by the end of 1994.

After a seven-year hiatus, Mitis-1 generating station in the Matapédia region was recommissioned in late May. This modest 6.4-MW facility has been modernized while preserving its historical and architectural character. Guidelines were defined for upgrading Bryson generating station and the spillway of Rapides-des-Quinze generating station on the Ottawa River.

Commissioning New Installations

Phase II of the La Grande complex is progressing well. Near the end of 1993, two of the six units at Laforge-1 were commissioned, as well as both units at Brisay generating station. Installed capacity of the power system was increased by 726 MW. Commissioning of the first generating unit of La Grande-1 generating station will take place in early 1994.

The last two gas-fired generating units at Bécancour generating station were commissioned in March 1993. The facility's four units, which will operate only during the winter peak, add about 430 MW of installed capacity to the power system.

The addition of series compensation continued as part of the program to enhance the reliability of the transmission system. The northeast system, from Churchill Falls, is now entirely reinforced with series compensation.

The commissioning of the installations for the northern part of the 12th (735-kV) transmission line took place as planned in 1993. These include the Chissibi-Albanel and Albanel-Chibougamau (north) sections. Work on the southern portion is well under way. Tree clearing is completed and construction of both the line and installations at Chibougamau (south), Chamouchouane, and Jacques-Cartier substations has begun.

Preparing for the Future

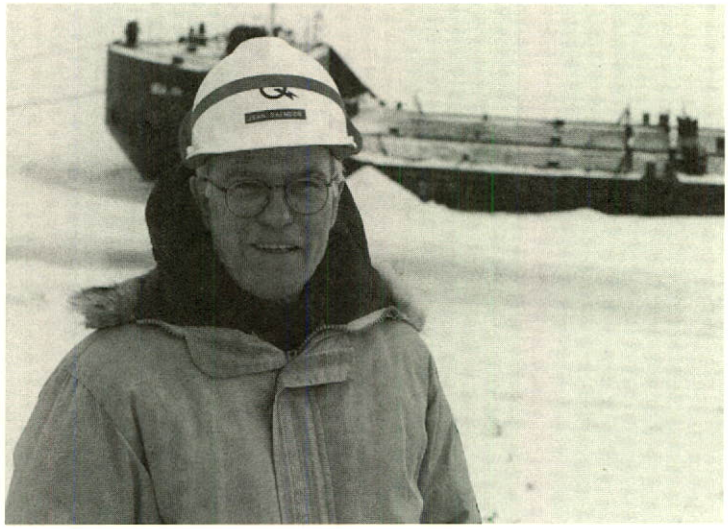
Independent Power Production

Between now and the year 2000, we must make use of other types of generation besides hydropower to satisfy customer demand. We are counting on purchases from independent power producers — mainly from renewable and natural gas cogeneration energy projects.

The renewable energy projects fall into four major categories: small hydropower, wind power, forest biomass incinerators, and industrial and municipal waste incinerators. Besides promoting employment, local expertise and industrial competitiveness, these projects all offer substantial flexibility in relation to our traditional generating methods.

The potential for renewable generation is more than 600 MW. For example, a research program we have conducted has demonstrated the full wind power potential of the Gaspé peninsula, in eastern Québec. We therefore signed an agreement in 1993 for the possible construction of two 20-MW wind farms. A decision will be made in light of the results of the promoter's feasibility study.

For natural gas cogeneration projects, one generating station is already in operation and contracts were signed for a total of nearly 1,300 MW. Only some of these projects will be completed, however.



Lac Robertson generating station: the site manager, and, in the background, a tanker used to store fuel.

CONSTRUCTION IN PROGRESS

At Lac Robertson, on the Lower North Shore, work continued at the 21-MW generating station to be commissioned in early 1995. Clearing has begun for the 69-kV line to supply the seven villages located between La Tabatière and Blanc-Sablon.

Work on the La Grande complex went ahead as scheduled, so that Laforge-1 will be in full operation in 1994 and Laforge-2 in 1996, while the units at La Grande-1 will be commissioned progressively in 1994 and 1995.

With respect to the Radisson-Nicolet-des Cantons direct-current multiterminal link, the installation of two banks of capacitors at La Grande-1 substation completed the corrective measures made necessary by the operation of the grounding electrode at Radisson substation.

In October, after completion of a satisfactory working-in period for the Grondines-Lotbinière line crossing under the St. Lawrence River, the Board of Directors approved the dismantling of the line over the river.

Finally, the Appalaches substation and des Cantons-Lévis 735-kV line project were discussed at public hearings in the spring. The report by the public environmental hearings agency, BAPE, was released in August and we are waiting for the government authorization for this work. This project is intended to reinforce the power supply of des Cantons and Nicolet substations.

FUTURE PROSPECTS

On August 31, Hydro-Québec submitted its feasibility study on the Grande-Baleine project to the federal and provincial administrators of the James Bay and Northern Québec Agreement and to the chairman of the Federal Environmental Assessment Review Office.

The Grande-Baleine project will enable us to meet the electricity needs projected for the first decade of the next century. The commissions and committees responsible for the environmental review of the project must first decide if the report complies with the guidelines. They will then hold public hearings to review the project itself.

The draft-design studies for the generating stations on the Haut Saint-Maurice have entered their second phase. We have also completed the phase I draft-design studies for the hydroelectric development of the Ashuapmushuan, in the Lac Saint-Jean region. In September, the Québec government announced the formation of a committee to study the integrated development of the rivers of this region. The Ashuapmushuan draft-design studies will resume only after this committee has submitted its conclusions.

The Sainte-Marguerite development project, on the North Shore, was the subject of public hearings early in 1993. The BAPE report was tabled in June and we are waiting for the government authorizations.

We evaluate our environmental performance, involve the public in our projects, and closely monitor the impacts of our presence.

For close to 25 years, Hydro-Québec has made environmental protection and enhancement an integral part of its day-to-day actions. For example, we evaluate the impacts of each new installations project and propose mitigative measures. In addition, extensive research is conducted with specialized firms and universities on a number of environment-related issues, such as wildlife resources and habitats, land-use planning and regional development, and environmental health.

Evaluating Our Environmental Performance

In 1993, we completed the feasibility study on the best ways to implement our program for evaluating the utility's environmental performance. The program is designed to better gauge the quality and relevance of our environmental activities.

We evaluated a number of indicators over the year, in such areas as environmental protection and the effectiveness of our research. We also tested the concept of environmental audits on hazardous waste storage and transit sites. These auditing processes will be extended to other activities in 1994.

Involving the Public in our Projects

We are studying ways to make environmental considerations a greater part of planning our generating facilities. For example, the costs and benefits associated with certain socioeconomic and environmental impacts of projected facilities could be quantified.

After identifying the projects of greatest technoeconomic interest, we carry out environmental studies based on the characteristics of the installations, requirements of the laws and regulations in force, and concerns expressed by the public. The information gathered aids our decisions and helps to substantiate our applications to the competent authorities. Fulfilling these obligations contributes to integrating new facilities harmoniously into their environments, although it makes implementation schedules more uncertain.

A highlight of the summer of 1993 was the tabling of the most exhaustive and demanding impact-assessment study ever carried out for a major project. The environmental studies pertaining to the Grande-Baleine complex entailed 11 years of work and cost over $70 million. They have, among other things, led the utility to make a number of changes in the original scheme.

Public Consultation

From the preliminary-study phase, the design teams for new facilities call in communications specialists to determine which issues the affected communities consider the most important. We make sure the communities are informed of the various aspects of our projects, and take their opinions into consideration at each stage in the draft design. These discussions with the public are kept up throughout the construction period and well beyond, wherever impact management is concerned.

In 1993, Hydro-Québec held the consultations required by the guidelines governing the

Signing of the Opimiscow-La Grande (1992) Agreement between the Crees and Hydro-Québec, on January 8, 1993, in Montréal.

impact-assessment study for the Grande-Baleine project. These consultations included the Crees, Inuit and Naskapis affected by the project, in addition to interested organizations and government departments, and covered various aspects of life in these Aboriginal communities. After discussions on the terms of the consultation process, the Québec Inuit and Naskapis agreed to take part. An agreement was negotiated with the Crees and should be confirmed early in 1994.

In the Trois-Rivières region, Hydro-Québec made three proposals to interested groups and individuals: totally refurbish La Gabelle generating station, simply carry out a minor upgrade, or build a new power plant upstream at Rapide des Forges. Further studies conducted in 1993 following local representations indicate that a major rehabilitation of the generating station is the most advantageous solution, both economically and environmentally.

We also presented to the public the project for dismantling the temporary overhead crossing over the St. Lawrence River, on the route of the Radisson-Nicolet-des Cantons direct-current line.

RELATIONS WITH ABORIGINAL PEOPLES

Since the bulk of untapped hydroelectric potential in Québec is located in regions inhabited or used by Aboriginal peoples, the province's energy future depends on maintaining harmonious relations with them. That was the message delivered by Hydro-Québec to the Royal Commission on Aboriginal Peoples, which held hearings across Canada. The utility emphasized the need to reach detailed social contracts, following the example of the James Bay and Northern Québec Agreement (JBNQA) signed in 1975, which are acceptable and mutually beneficial to both Aboriginal peoples and Quebecers as a whole.

The efforts toward a reconciliation on certain projects in Phase II of the La Grande complex gave rise to a new special agreement — the Opimiscow-La Grande (1992) Agreement — together with a supplementary agreement to the JBNQA. Financial compensation, remedial action and other measures are called for to promote traditional Aboriginal activities and facilitate the projects. A corporation made up of representatives of the Crees and Hydro-Québec has been formed to manage some of the remedial work, and a fund of $8 million has been set up to promote fishing and hunting activities.

With respect to the current construction program, negotiations were held with a number of Aboriginal peoples: the Montagnais, regarding the Sainte-Marguerite-3 project on the North Shore of the St. Lawrence River and the project for the 12th transmission line, in the Lac-Saint-Jean region; the Atikamekw, regarding the development of the Haut Saint-Maurice; and the Crees, regarding the Eastmain-1 project, part of Phase II of the La Grande complex. An agreement in principle on the Grande-Baleine complex was also negotiated with the Québec Inuit.

Hydroelectricity is an inexhaustible form of energy.

CLOSELY MONITORING THE IMPACTS OF OUR PRESENCE

ENVIRONMENTAL MONITORING

Once its projects are authorized, Hydro-Québec implements programs for monitoring the work and, subsequently, for environmental follow-up. This follow-up measures the actual impacts of new facilities in order to compare them with those anticipated and to evaluate the effectiveness of mitigative measures applied, with a view to guiding future impact-assessment studies.

We learn new lessons every day from the environmental follow-up of Phase I of the La Grande complex, built between 1973 and 1985 in the James Bay region. The knowledge acquired over the past 20 years gives us unique competence on the effects of hydroelectric developments in a northern environment. In cooperation with the organizations concerned, we are currently endeavoring to integrate the follow-up programs for the Laforge-1, Laforge-2 and Brisay projects, while at La Grande-2-A generating station, the follow-up has been revised to take into account the addition of those new generating facilities and the new overall operating method they involve.

In addition, environmental monitoring on the Radisson-Nicolet-des Cantons line, completed in 1993, shows that most of the potential impacts on the natural environment discussed in the draft design have not materialized. Experts observe that it is actually factors external to line construction that have the greatest effect on the natural environment. We therefore favor a more integrated management of environmental issues.

We are examining the effects of new roads on the harvesting of wildlife resources in the James Bay region in order to determine suitable management methods, in consultation with Québec's *ministère de l'Environnement et de la Faune.*

MANAGEMENT OF CONTAMINANTS

Hydro-Québec uses chemicals, called phytocides, to control vegetation in the rights-of-way of some of its transmission and subtransmission lines. In addition to complying with laws and regulations governing their application, the utility is careful to choose the control method best suited to each area crossed by a line. The goal is the introduction and maintenance of low-growing vegetation compatible with system operation. In certain remote, hilly, hard-to-reach areas, amounting to less than 7% of the total surface area of our rights-of-way, aerial spraying of phytocides has proven more advantageous. In this regard, the maintenance program planned for the Manicouagan region was the focus of public hearings there in the fall of 1993, and we are awaiting the government authorizations.

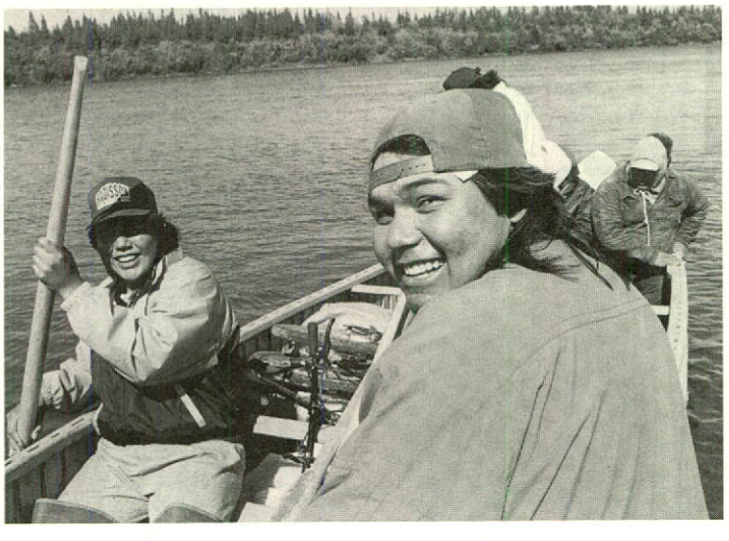
Since 1985, the utility has followed an action plan intended to eliminate polychlorinated biphenyls (PCBs) from its system by 1995. We expect to reach our objective, as we have already removed more than 95% of the transformers and more than 90% of the capacitors that contain PCBs. The storage of this equipment, along with the contaminated waste, strictly adheres to existing regulations.

Hydro-Québec owns about 1.5 million poles treated with pentachlorophenol (PCP), a substance that extends their life to more than 30 years. Since this additive can eventually contaminate the soil and water, research is under way on substitute products and a process for treating wood scrap. Recent studies have helped to establish the physico-chemical behavior of PCP at various temperatures. We also have devised new standards for the temporary storage of treated wood, which are to come into effect in 1994.

Chlorofluorocarbons and halons used in some fire-protection systems have a destructive effect on the ozone layer. We have drawn up an inventory of the quantities employed by the utility, and will soon be able to introduce management rules designed to limit the use of those gases.

We are now completing the restoration of a highly contaminated site, that of the gas-turbine power plant on Rue Verdun in Québec City, which we acquired when Québec's private electric utilities were nationalized in the early 1960s. The decontamination work, spread over two years, entails investments of over $10 million. Under the municipal bylaws, the new use of the site is to be divided between industry and housing.

The annual gathering of James Bay Crees, at Chisasibi.



In the fall, the utility presented a draft-design report on the dry storage of irradiated nuclear fuel from Gentilly-2 generating station. The projected facilities comply with the safety and security principles laid down by the Atomic Energy Control Board.

MERCURY

When reservoirs are created, the submerged soils and plants decompose, leading to the release of methylmercury in the water. Since mercury cannot be quickly eliminated by living organisms, it passes from link to link in the food chain, and ultimately contaminates the flesh of certain fish species consumed by human beings. This is not a permanent phenomenon, however, as mercury concentrations return to their original level after 20 to 30 years.

This situation has been monitored closely since 1979. In the region of the La Grande complex, the James Bay Mercury Committee, made up of representatives of the Crees, Hydro-Québec and the Québec government, is responsible for the monitoring program. The latest results confirm that changes in mercury levels in the La Grande-4 reservoir are following the same pattern as was observed in reservoirs in the western part of the complex. Observations there indicate that levels in lake whitefish peaked in 1987 — four years after reservoir filling began — and have been falling ever since. In standard-length northern pike, concentrations continue to rise eight years after impounding, while in smaller specimens, they have been declining since 1989.

Cree children bicycle on île de Fort George, near Chisasibi.

In another health-related area, the Cree Board of Health and Social Services of James Bay has continued to pursue the orientation laid out in its program for monitoring the population considered at risk, a program in which Hydro-Québec is also a partner. Methylmercury rates among women of child-bearing age have remained below the indicators set, while levels in the hair of adults over age 40 seem to be stabilizing.

In addition, the James Bay Mercury Committee has joined together with several Canadian research centres to gain a better understanding of the processes linked to mercury methylation. Hydro-Québec is also working to develop a highly sensitive device for detecting and analyzing methylmercury and heavy metals in reservoir waters.

ELECTRIC AND MAGNETIC FIELDS

Our action plan on the effects of electric and magnetic fields, adopted in 1986, is proceeding as expected. Annual expenditures of $1.75 million are budgeted for three main objectives: setting up a research and communications program, increasing our contribution to the scientific effort, and disseminating the information acquired.

To ascertain any connections that may exist between prolonged exposure to these fields and cancer, Électricité de France, Ontario Hydro and Hydro-Québec have been involved in an extensive epidemiological study since 1989 in their respective working environments. The study's first results will be published in 1994.

Hydro-Québec recognizes the importance of making an active contribution to the advancement of scientific knowledge of electric and magnetic fields and, specifically, the effects of prolonged exposure. This research requires a high degree of national and international cooperation, which we are eager to maintain.

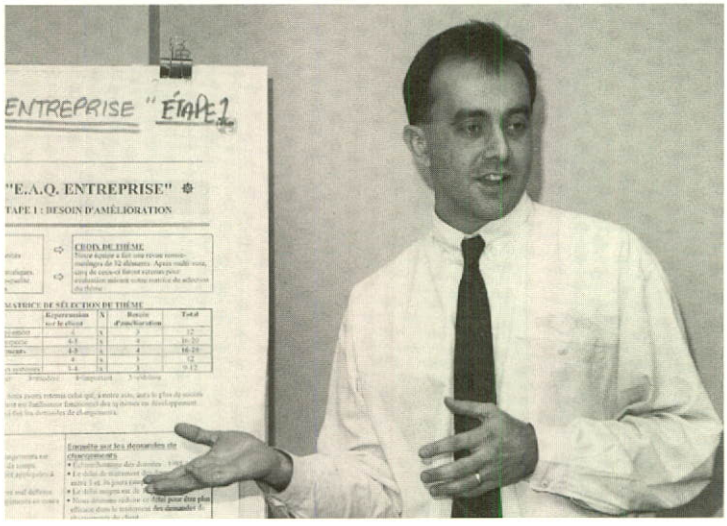
We count on their commitment to the quality approach, and on their knowledge and expertise. Together, we are improving our corporate structures, occupational safety, and the representation of women and minorities.

Two major corporate issues dominated 1993: *Défi performance* (performance challenge) and the reorganization. In working toward our objective of being recognized by our customers as Canada's foremost electric utility by the year 2000, we are gradually putting our new corporate structure in place.

Giving top priority to our customers is the goal we have once again undertaken in adopting, for a second year, the slogan: *Our Commitment Is To You.*

LOOKING TO OUR PERSONNEL TO IMPLEMENT THE QUALITY APPROACH

A survey of 5,000 employees, early in 1993, confirmed the progress being made by the quality culture within Hydro-Québec. Its results were compiled in such a way that they can be used as a basis for fine-tuning our strategy, if required.



Talking things over at an improvement team meeting during Quality Week.

We also organized a workshop on "management by walking around" and on recognition for employee efforts and accomplishments. These are fundamental activities for managers who wish to actively support the change in culture under way.

New continuous improvement teams are constantly being set up to solve work-related problems. Over the year, 151 teams were added to the 232 already existing, for a total of 383. Nine are task teams, each appointed by senior management to work on a specific problem.

LISTENING TO OUR PERSONNEL

As part of our commitment to being continuously attentive and open to our community, in 1993 we drafted a process for listening to our personnel. Its implementation is planned for 1994. Our approach is designed to systematically integrate employee expectations into our corporate planning.

LABOR RELATIONS

Following the reopening of the collective agreements between Hydro-Québec and most of its unions, agreements on bonuses and salaries were signed by the parties in March 1993. We also signed agreements in principle with certain unions for the renewal of collective agreements expiring at the end of 1993. The parties agreed to work together to apply solutions to certain problems, while respecting the objectives of the Act respecting the conditions of employ-

Looking at things in a fun way is part of our quality approach.

ment in the public sector and the municipal sector. They also adopted a problem-solving approach to negotiation which, unlike conventional styles, puts the emphasis on the search for common obstacles and the satisfaction of each party's interests. By solving problems and eliminating irritants, this approach seeks equitable, amicable settlements.

ASSUMPTION OF THE QUALITY APPROACH

We have carried out a review of the second year of *Défi performance*, which challenges every manager and every employee to take individual responsibility for implementing quality in his or her own unit. A new survey of our customers confirmed that their expectations had changed very little during the previous 12 months. They still expect, as a top priority, courteous, personalized service, fast action on our part and a reliable supply of power. *Défi performance* has already yielded results. We are on the point of attaining a number of improvement targets, and focus on customer is now part of our language. We may therefore say that quality management at Hydro-Québec has reached the point of no return. Moreover, some teams have completed all stages in the quality improvement story, and have thus solved a number of problems.

In September, senior management began the process of reviewing how well we are managing our improvement targets. This analysis showed whether the activities designed to ensure the attainment of certain targets were adequate, well planned, properly executed, and able to yield the desired results. Another product of this type of management review is substantially improved contact between employees and senior management.

A number of information tools respecting total quality were created and distributed over the year, including a series of newsletters to help supervisory personnel better apply the quality approach in their daily management activities, and an information and interactive communication kit which provides them with content for brief presentations. Two information videos were also produced for our personnel. In addition, the Hydro-Québec newspapers devoted a great deal of space to articles on quality.

COUNTING ON OUR KNOWLEDGE AND EXPERTISE

We have now laid the groundwork for obtaining a clear picture of our employees' expertise and for setting performance improvement targets.

In the training field, we have developed a performance indicator that enables us to analyze the time and money we have devoted to training in the past and to compare the results with other utilities, so that we can adjust our actions as appropriate.

We have also set up a new, comprehensive, executive development centre, which provides pedagogical and logistical support for acquiring management skills and assimilating our corporate culture.

Meanwhile, at our Sakami centre near La Grande-3, our program for training and integrating Cree employees continued. Some 50 Crees are enrolled at this centre,

where they are being trained to fill permanent positions at the La Grande complex. To date, 25 Crees have completed the program; most now belong to our permanent or temporary workforce.

Working Together to Improve Corporate Structures

In 1993, we continued the reorganization begun last year in our top management and operations units. This entire restructuring is based on the criteria of *Défi performance*, which aims for customer satisfaction at the lowest possible cost. The new organization is designed to be wholly customer-driven. It encourages autonomy of the sectors and strives for maximum simplicity and efficiency. It respects the principle of exclusive responsibility and favors cross-functional integration by limiting to two the number of support levels: the local level in the administrative units, and the corporate level.

The reorganization of the quality and human resources function is now complete, while that of accounting and internal control, computer services, and procurement and services will take place gradually in 1994.

We have begun the process of reducing our workforce by halving our hiring of permanent employees, reassigning personnel affected by the reorganization, using fewer temporary staff, and offering incentives to employees who are close to retirement.

We also have developed a series of measures designed to facilitate the introduction of the new structures and manage the impact of the changes on our employees. A program to help people cope with the reorganization includes group sessions for managers and employees who are directly affected, as well as individual psychological assistance for those experiencing problems.

Following a pilot project carried out in late 1992 in the Mauricie region, we undertook the first revamping of an administrative process in the human resources management area. The new, computerized system for entering changes in job conditions, previously one of the most cumbersome clerical tasks in this function, was instituted utility-wide in June. This type of change adds a great deal of flexibility and efficiency to our administration of human resources.

Occupational Safety

Occupational safety remains one of our main performance improvement objectives. Our efforts since 1990 have borne fruit: in 1993, we were able to improve our performance by 10.5% over 1992. To achieve this, each sector in the utility analyzed its own situation, in cooperation with the local health and safety committee. Together, they then produced an action plan for attaining the objectives: inquiries and accident analyses, safety meetings and planned inspections were the principal means adopted. At the corporate level, the utility and its unions worked steadily to revise the occupational safety code and its application to Hydro-Québec installations.

To facilitate implementation of the Workplace Hazardous Materials Information System, we developed a computerized system and issued a rationalization directive, leading to an approximately 10% reduction in the range of products used. Some 600 first-level managers were trained in this activity.

Our first woman operator at a thermal plant.

Representation of Women and Minorities

Hydro-Québec is firmly committed to doing the necessary catch-up to ensure its workforce is representative of the overall labor market. This is all the more warranted since demographic trends show that the management of cultural diversity will be a central concern of public and private corporations in this decade.

In 1989, Hydro-Québec set an objective of increasing women's representation in its permanent workforce to 30% by 1999. However, in view of the extensive rationalization under way, the targeted growth for 1993 to 1995 was reduced from 3% to 1%. This would bring the rate of women's representation to 22.8% in 1995. In 1993, the proportion of women holding permanent positions rose to 22%, up 0.2% from the previous year. In its concern to meet this commitment, the utility set up an Equity task team in February to help improve the existing program.

We have drawn up a list of members of visible, ethnic and cultural minorities, Aboriginal peoples, and people with disabilities. This inventory shows that visible minorities represent the largest target group, at 386 members. Aboriginal peoples number 200, including 80 Métis; ethnic and cultural minorities account for 322 individuals; and 257 individuals described themselves as having disabilities.

Using these results, along with the analyses of worker availability which the utility is currently conducting with the support of the *Commission des droits de la personne du Québec*, we will issue policies in 1994 regarding members of ethnic, cultural and visible minorities. The program will be gradually extended to include Aboriginal peoples and people with disabilities.

Clearly it is essential to develop management attitudes and behaviors that value cultural diversity. A training session in the management of diversity has therefore been established for managers, to be offered in early 1994.

Permanent employees (at December 31)		
1993	21,028	
1992	21,161	
		– 0.6%

Temporary employees (annual average)		
1993	5,753	
1992	6,073	
		– 5.3%

Proportion of women in permanent workforce (at December 31)		
1993	22.0%	
1992	21.8%	
		+ 0.2%

AN ACTIVE PARTNER IN QUÉBEC'S DEVELOPMENT FOR 50 YEARS

We are a smart buyer and we are actively concerned with regional development, the spinoffs of our R&D activities, and the marketing of our technologies.

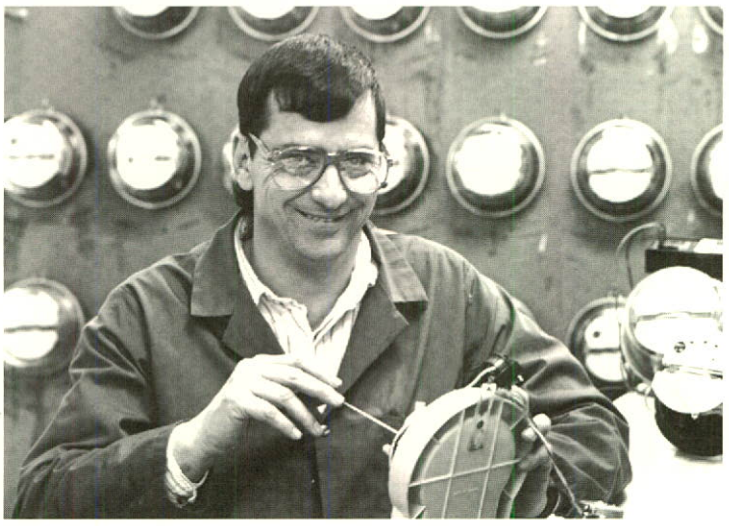
Hydro-Québec has many ways of supporting Québec's economic development. Our activities in electric power generation, transmission, distribution and uses have given us a leading role in Québec's electrical industry cluster, as a promoter of construction projects, a buyer of goods and services and an agent for research and development. Our joint ventures to market technological products which develop through our regular operations likewise represent a powerful economic lever. Our large-scale projects also allow us to act as an agent of regional development.

WELL-INFORMED PURCHASING

Hydro-Québec is a driving force in the development of Québec society, both economically and technologically. Among the issues examined by the enlarged standing committee responsible, to the National Assembly of Québec, for evaluating our 1993 development plan were regional economic development and the importance of research and development in Québec. The committee reacted positively to the plan.

In 1993, Hydro-Québec's annual operations and investment activities accounted, directly and indirectly, for about 5.5% of Québec's gross domestic product. This translated into 32,100 direct jobs and 26,000 indirect jobs, measured in person-years. Our investments accounted for more than 20% of the Québec total.

Meters being checked carefully at our Jarry shop in Montréal.



ACQUISITION OF GOODS AND SERVICES

Our purchases of goods and services (construction and other) totalled $1,500 million in 1993. Purchases of professional services represented an additional $400 million.

In making buying decisions, we apply strict qualification, approval and performance-measurement processes, to ensure that we acquire high-quality goods and services at the lowest possible cost. For several years now, we have taken various other steps to encourage Québec suppliers. We target markets that offer the greatest potential for economic spinoffs, taking account of such factors as R&D programs proposed, development prospects for high-quality subcontractors, possible markets outside Québec, and the creation or maintenance of production capacity in Québec.

Notable successes include the development, with CAE Electronics, of computer systems for our new system control centre and the current-transformer manufacturing agreement signed with Asea Brown Boveri.

IMPROVING THE QUALITY OF GOODS AND SERVICES PURCHASED

Over the year, we made changes to our Policy Governing the Purchasing of Goods and Services and our Policy for the Attribution and Management of Professional Services. The amended policies were both submitted to Québec's *ministère des Approvisionnements et Services.*

We favor competition between suppliers, encourage expertise, and support the development of new knowledge among providers of professional services. We also invite our suppliers to adopt increasingly stringent quality criteria. We have therefore set up a task force to propose quality assurance policies and requirements for our business partners.

PARTICIPATION IN INDUSTRIAL CLUSTERS

Québec's "industrial-cluster" strategy was proposed by the *ministère de l'Industrie, du Commerce et de la Technologie.* The Québec government's intention was to pool the efforts of the various players in a given sector and effect the transition from a mass-production economy to one based on added value. We are determined to support this strategy, and have formed a committee to coordinate our participation in three of the clusters.

Purchases connected with our traditional activities in the area of electrical generation, transmission and distribution have important structural effects on the Québec economy and make us a prime partner in the electricity-related cluster. Our expertise in hydroelectric generation and transmission over long distances is unique in the world; it has contributed to the international success of consulting engineering firms and manufacturers, in addition to the spread of our own influence.

Furthermore, our role as a major supplier of energy to industry and the research work conducted by our laboratories justify our participation in the metal and mineral processing industries cluster. As for habitat and construction (including home automation), we are active in this cluster through our energy efficiency programs.

Concern with Regional Development

Our 1993 capital expenditures injected more than $4 billion into the Québec economy. The northern parts of the province — the James Bay, Lower North Shore, Laurentian and Saguenay regions — were major beneficiaries.

Nearly all of Québec's Aboriginal nations — the Crees, Inuit, Atikamekw, Montagnais, Abénakis, Mohawks, Naskapis, Micmacs, and Algonquins — benefited, to varying degrees, from the economic spinoffs of the utility's construction and operation activities.

Hydro-Québec added two new facets to its environmental enhancement program, which makes funds available to regional county municipalities, municipalities and Aboriginal communities affected by projects that are subject to a regulated impact study. The first of these new aspects is designed to

Prototype of lithium-polymer batteries developed in our laboratories for use in electric vehicles.

support regional economic development projects, and the second, the development of Aboriginal communities.

Over the year, 47 programs were carried out and we made close to $29 million available to the affected communities for investments in environmental protection and enhancement. On the Îles de la Madeleine, for example, following construction of the thermal generating station, we spent $3.5 million on the establishment of a waste sorting, composting and incineration plant.

In constructing the 12th (735-kV) transmission line, we gave particular emphasis to optimizing regional economic spinoffs. As a result of splitting contracts and setting up local job-site offices, the different municipalities and Aboriginal communities have benefited from spinoffs of approximately $73 million since the summer of 1991. In the case of labor, for example, 40% of the workers come from the region.

Economic Spinoffs of Our R&D Activities

In 1993, Hydro-Québec maintained its ranking as sixth among all Canadian companies for the size of its research and development budget. We allocated 1.7% of our annual sales to R&D activities during the year. Our target is to increase this share to 2% by the year 2000. These activities sustained 864 direct jobs within the utility, and 879 indirect jobs with consultants, suppliers, universities and research centres. In return, the utility's R&D activities brought in revenue of $22.3 million.

INDUSTRIAL R&D NETWORKING

In addition to R&D projects directly connected with our system operations which were the subject of numerous partnership agreements with industrial concerns, we launched new networking activities with various companies that will have a considerable leverage effect, and carried on R&D projects in other areas.

The group consisting of Hydro-Québec, 3M of St. Paul, Minnesota, and Argonne National Laboratories signed a two-year agreement with the USABC consortium, made up of General Motors, Ford and Chrysler, for the development of lithium-polymer batteries. This contract, worth about U.S.$33 million, attests to the Big Three's confidence in the battery technology developed over a period of more than 10 years in our laboratories. High energy density and environmental performance are two significant advantages of these batteries.

A licensing agreement with a Taiwan firm being signed in Shawinigan on May 12, 1993.

We also entered into an association with Imago AMF Canada, a subsidiary of a French company, and with X-Per-X of Montréal, to set up an R&D consortium for shape-memory alloys. These materials are likely to find many applications in the electrical engineering field.

We signed an agreement with Taysung Canada for the use of a technology developed in our laboratories to synthesize a chemical compound involved in the manufacture of dyes for the textile industry.

In addition, we played an active part in the Euro-Québec intercontinental hydrogen transportation project intended to further develop hydrogen technologies for energy-related purposes.

An agreement was signed with the French company Jeumont-Schneider Transformateurs, of the Merlin Gerin group, covering research on discharge propagation mechanisms in insulating oil for 735-kV transformers.

We are also participants in developing a test facility for automating distribution-system maintenance. Moreover, we continued our involvement in the work of the *Centre canadien de fusion magnétique*; in the Interface project, whose members are working to design and institute advanced person-machine interfaces; and in CITEQ, the *Centre d'innovation sur le transport d'énergie du Québec*, toward the development of power apparatus.

UNIVERSITY RESEARCH

Hydro-Québec further pursued its contribution to university research by funding two new chairs, one in statistical hydrology at the *Institut national de la recherche scientifique* and one in greenhouse electrotechnologies and lighting at Université Laval. We currently help to fund eight chairs, for a total of $1.6 million.

We also awarded research projects worth close to $1.5 million to various Québec universities. Especially noteworthy is our contribution to the Université du Québec à Chicoutimi to fund research on the problems of flashover in ice-covered insulators.

Marketing Our Technologies

We have stepped up our marketing of technological products developed through our operations. In addition to constituting a powerful technological-development tool for both ourselves and our partners, these activities have major structural effects on the Québec economy.

The number of licenses awarded to subsidiaries of Nouveler or outside companies rose to 61. Sales of licensed products totalled $10 million and yielded royalties of $0.9 million.

We also continue to make a contribution on the social and international levels.

NOUVELER

In June 1993, we approved the new mission of Nouveler, one of our wholly owned subsidiaries. This company, which comprises 11 subsidiaries or affiliates of Hydro-Québec, is responsible for marketing technologies produced by, or related to the mission of, Hydro-Québec, as well as managing and developing the companies in which Nouveler invests. Its activities are designed to promote the emergence of innovative, competitive companies in high-tech fields, with a view to the sustainable development of Québec.

Cedars Rapids Transmission Company, which became a subsidiary of Nouveler during the year, operates a power transmission corridor through Ontario, from Les Cèdres generating station to New York State. This company generated 1993 sales of $17 million and income of $15 million.

Nouveler, as co-shareholder with Canadian Liquid Air, also became owner of three limited partnerships: HydrogenAL, HydrogenAL II and ArgonAL. These three companies specialize in the manufacture and marketing of hydrogen, nitrogen and argon, respectively.

In 1993, Nouveler affiliates, which employed 450 people, posted sales of $55 million. Highlights of the past year were:

- M3i Systems continued its rapid growth, opening offices in Europe and Asia and attaining sales of $15 million, 80% of which were realized outside the country. It provides jobs for more than 250 people. Its line of distribution management and graphic display products was expanded to include a range of software for police, ambulance and emergency services management.
- Ultra Optec won a $7-million contract from the U.S. Army to set up a laser-ultrasound inspection system for controlling the quality of parts and structures made of composites and used in aircraft construction.
- Automatisation Famic and Vibro-Meter both had excellent years, with sales of $7 million and $3.8 million, respectively.

Our Social and International Input

SOCIOCULTURAL AND HUMANITARIAN ORGANIZATIONS

As a public utility, we must ensure that our activities contribute directly to the development of our society's potential. In 1993, we gave more than $10 million in donations and sponsorships. Our contribution was especially strong for cultural organizations and groups with a socioeconomic or humanitarian mission. Over the course of the Centraide (United Way) campaign, Hydro-Québec employees and pensioners, together with the utility itself, made a total donation of nearly $2.8 million to this charity's 17 regional groups, an amount equal to that given in 1992.

HYDRO-QUÉBEC INTERNATIONAL

Hydro-Québec International (HQI) continues to export the know-how and products of Hydro-Québec and its subsidiaries, and to invest in the energy field on international markets. It won a number of research and employee training contracts in Africa and Asia, in addition to pursuing various technical-assistance contracts.

Its strategy of establishing subsidiaries and acquiring interests in foreign companies bore fruit. Through its subsidiary in Nigeria, HQI Africa, for example, it was awarded a rural-electrification contract worth $25 million, which is being carried out with a local company.

In addition, HQI reached an agreement with Power Corporation and Ontario Hydro for setting up the Asia Power Group. The purpose of this enterprise is to build and operate power-system structures, generating stations and transmission and distribution networks in Asia, where the needs are immense.

INTERNATIONAL DEVELOPMENT AID

The utility's commitment to sustainable development has naturally led it, through HQI, to support such development in countries with the greatest need. A number of technical-assistance contracts are under way around the world, in Burundi, Cameroon and Romania, among other places. In India, under the aegis of the World Bank, HQI is taking part in training personnel in charge of planning, engineering and building underground pumped-storage generating stations.

We aim for satisfied customers at the lowest possible cost.

The E7, which brings together the world's largest electric utilities, opened its offices in Montréal early in the year. Its members aim to promote projects that have the least environmental impact and to make their expertise available to developing countries. In its first year of existence, the E7 accepted various proposals made by the World Bank, the European Bank for Reconstruction and Development, and UNESCO. The members will thus be able to provide technical support for the development of clean, renewable energy sources, while increasing the recipient countries' awareness of environmental problems.

To ensure greater consistency in technical choices and more efficient use of international aid, Hydro-Québec and Électricité de France are moving gradually toward a joint policy on rural electrification in developing countries.

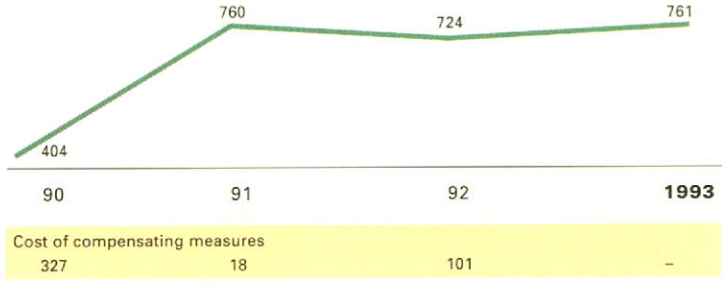
Finally, through our international grants program, we wish to interest university students in conducting doctoral studies in environment, engineering and technology, energy efficiency or northern studies. We also train interns from abroad, and are active in hosting, or dispatching, missions covering technical or environmental issues.

RESULTS THAT ATTEST TO OUR EFFORTS

For the year 1993, Hydro-Québec's net income was $761 million, up $37 million over 1992.

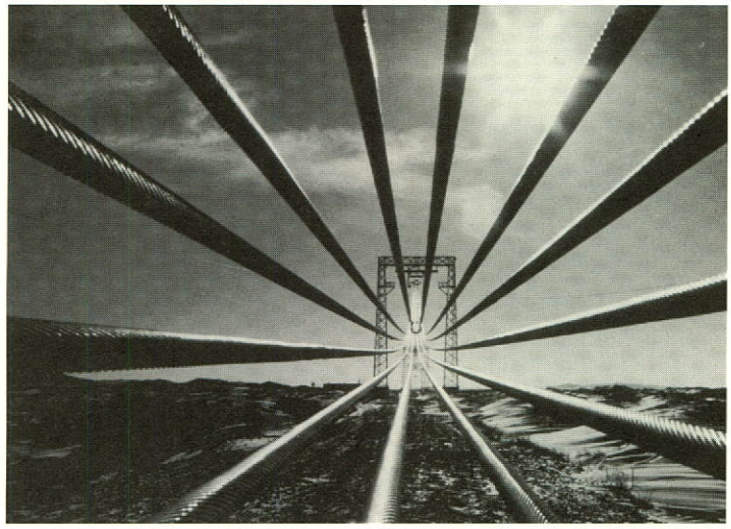
The balance in the utility's energy situation, which recovered last year after several years of low runoff, enabled us to avoid having to resort to compensating measures in 1993 and, consequently, contributed to the growth in net income.

EVOLUTION OF NET INCOME *(in $M)*



Firm electricity sales revenue in Québec registered a moderate gain of 2.7% in 1993, whereas volume grew by 3.8%. The sharp 9.6% rise in demand in the industrial sector resulted in an increase in revenue of only 1.3% due to rating particularities specific to this sector, while demand and revenue from the other sectors remained relatively unchanged.

Slower growth in sales revenue in Québec, coupled with the reduction in revenue from rate increases compared to 1992, impelled us to face numerous challenges, including the particularly important one of maintaining a sound financial position.



Optimum utilization of our power system generates attractive revenues.

We responded by taking advantage of the sufficiently high water levels in our reservoirs and opportunities in markets outside Québec to aggressively pursue short-term sales. These sales, most of which were concluded with the United States, provide for the day-to-day needs of our export customers and are designed to achieve optimum utilization of Hydro-Québec's power system.

In addition, by further streamlining our operations and cutting costs to curb the growth in operating expenses, we were able to partially offset the impact of the rise in expenses not related to our core activities, such as depreciation, amortization, decommissioning, and taxes.

We also took advantage of the favorable interest rates in the financial markets in 1993 to repay or renegotiate an unprecedented portion of debt that had not yet matured, in order to reduce not only interest expense for the year but also our financing costs for the coming years.

Our efforts proved successful: notably, we were able to maintain our return on revenue at a level comparable with 1992.

Finally, Hydro-Québec used $5,990 million to make investments of $4,030 million and to repay debt totalling $1,960 million, of which $1,104 million consisted of unmatured debt. Apart from the use of $790 million in cash existing at the beginning of the year, $2,017 million came from funds provided from operating activities and $3,183 million from the issuance of new debt.

TOTAL SALES

TOTAL ELECTRICITY SALES

	1993		1992		Variation 1993/1992			
	TWh	*$M*	*TWh*	*$M*	*TWh*	*%*	*$M*	*%*
In Québec	**137.0**	**6,552**	132.0	6,382	5.0	3.8	170	2.7
Outside Québec	**15.1**	**452**	12.6	382	2.5	19.8	70	18.3
TOTAL	**152.1**	**7,004**	144.6	6,764	7.5	5.2	240	3.5

The total volume of electricity sales at December 31, 1993 was 152.1 TWh, up 7.5 TWh, or 5.2%, over 1992, largely as a result of the rise in demand in the industrial sector and the increase in the volume of electricity sales to the United States.

Total sales revenue was up $240 million, or 3.5%, to $7,004 million.

SALES IN QUÉBEC

The volume of firm electricity sales in Québec grew to 137.0 TWh, up 5.0 TWh or 3.8%, reflecting the first phase of our efforts to make our customers more aware of the importance of conserving energy. The industrial sector alone accounted for an overall increase of 4.8 TWh.

Revenue from firm electricity sales in Québec increased by $170 million to $6,552 million. This growth is attributable to rate increases ($143 million) and the rise in demand as a result of temperature fluctuations ($29 million). Revenue from increased demand in the industrial sector merely offset the drop in revenue caused by the variation in demand in other sectors.

ELECTRICITY SALES IN QUÉBEC

	1993		1992		Variation 1993/1992			
SECTORS	*TWh*	*$M*	*TWh*	*$M*	*TWh*	*%*	*$M*	*%*
Residential and farm	**49.3**	**2,815**	49.2	2,744	0.1	0.2	71	2.6
General and institutional	**28.4**	**1,798**	28.2	1,741	0.2	0.7	57	3.3
Industrial	**54.6**	**1,706**	49.8	1,650	4.8	9.6	56	3.4
Other	**4.7**	**233**	4.8	247	(0.1)	(2.1)	(14)	(5.7)
TOTAL	**137.0**	**6,552**	132.0	6,382	5.0	3.8	170	2.7

VARIATION IN SALES BY SECTOR

	Total variation		Rate increases	Demand			
				Temperature		Other	
SECTORS	*TWh*	*$M*	*$M*	*TWh*	*$M*	*TWh*	*$M*
Residential and farm	**0.1**	**71**	65	0.2	11	(0.1)	(5)
General and institutional	**0.2**	**57**	39	0.3	17	(0.1)	1
Industrial	**4.8**	**56**	34	–	–	4.8	22
Other	**(0.1)**	**(14)**	5	–	1	(0.1)	(20)
TOTAL	**5.0**	**170**	**143**	**0.5**	**29**	**4.5**	**(2)**

RESIDENTIAL AND FARM *SECTOR*

Electricity sales to the residential and farm sector edged up 0.1 TWh over 1992 to 49.3 TWh.

The construction of nearly 35,000 new housing units and the conversion of heating systems in existing dwellings to all-electric or dual-energy systems resulted in an increase in demand estimated at 0.7 TWh, while the cold weather in 1993 pushed consumption up by another 0.2 TWh over 1992.

However, the slow pace of job creation, despite the upturn in the economy, combined with the effects of the various energy efficiency programs promoted by Hydro-Québec, explains the drop of approximately 0.6 TWh in basic electricity consumption by Québec households.

Sales revenue from the residential and farm sector stood at $2,815 million, up $71 million, or 2.6%, over 1992. Rate increases generated $65 million.

GENERAL AND INSTITUTIONAL *SECTOR*

Sales to the general and institutional sector rose 0.2 TWh to 28.4 TWh. Although slow, the improvement in the occupancy rates of commercial buildings, coupled with increased requirements for air conditioning brought on by warm summer temperatures, spurred a growth in demand of 0.7 TWh. This growth was mitigated, however, by a decline in commercial, institutional and industrial dual-energy sales due to the relative position of the price of electricity on the energy market. The drop in the number of commercial, institutional and industrial dual-energy users led to a decrease in electricity sales of 0.4 TWh.

Sales revenue from this sector stood at $1,798 million, up $57 million compared with 1992. Of this increase, $39 million derived from rate increases.

INDUSTRIAL *SECTOR*

Electricity sales to the industrial sector rose by 4.8 TWh, or 9.6%, to 54.6 TWh. The refining and smelting sector alone accounted for an increase in demand of 3.5 TWh, essentially due to the start-up of two aluminum smelters during the second half of 1992. The pulp and paper sector and, to a lesser degree, the steel industry, which slowly began to recover after being severely hit in 1992 by the recession, together registered an increase in demand of 1.2 TWh.

Sales revenue grew by $56 million, or 3.4%, to $1,706 million; rate increases accounted for $34 million of this rise. Despite the strong growth in demand, sales revenue posted only a 1.3% gain due to three main factors. First, a number of changes to the terms and conditions of contracts and non-recurring revenues realized under fixed contracts led to a drop of $35 million. Second, in view of Hydro-Québec's Interruptible Power Program, some customers agreed to suspend their consumption of electricity at peak periods in exchange for rate advantages which surpassed the previous year's level by approximately $11 million. Third, by restructuring production, certain industrial customers, in particular those in the pulp and paper sector, were able to reduce their unit energy costs, resulting in diminished growth in our sales revenue.

OTHER *SECTOR*

The volume of electricity sales in this sector amounted to 4.7 TWh, down 0.1 TWh compared with 1992.

Despite rate increases, which yielded $5 million, sales revenue fell by $14 million to $233 million. As more municipalities assumed ownership of lighting systems for public roads in 1993, the number of municipalities subscribing to full public lighting service fell accordingly which, in turn, led to a drop in average unit revenue in this sector.

SALES OUTSIDE QUÉBEC

	1993		1992		Variation 1993/1992			
	TWh	*$M*	*TWh*	*$M*	*TWh*	*%*	*$M*	*%*
Other provinces								
Firm sales	**1.1**	**46**	3.4	114	(2.3)	(67.6)	(68)	(59.6)
Short-term sales	**0.8**	**21**	0.1	3	0.7	–	18	–
	1.9	**67**	3.5	117	(1.6)	(45.7)	(50)	(42.7)
United States								
Firm sales	**8.8**	**268**	7.3	211	1.5	20.5	57	27.0
Short-term sales	**4.4**	**117**	1.8	54	2.6	–	63	–
	13.2	**385**	9.1	265	4.1	45.1	120	45.3
TOTAL	**15.1**	**452**	12.6	382	2.5	19.8	70	18.3

SALES OUTSIDE QUÉBEC

In 1993, the volume of electricity sales outside Québec grew by 2.5 TWh, or 19.8%, to 15.1 TWh. The rise is attributable to increased sales on the U.S. market, which accounted for 87% of our exports in 1993. Revenue from sales outside Québec rose by $70 million, or 18.3%, to $452 million.

The volume of sales to the United States jumped from 9.1 TWh in 1992 to 13.2 TWh in 1993, an increase of 4.1 TWh or 45.1%. Revenue from these sales was $385 million, or $120 million more than in 1992. The strongest gains were in short-term sales, consisting of additional sales and purchase-resale transactions, which grew by 2.6 TWh or 144.4%, for revenue of $117 million. Firm sales were up 1.5 TWh or 20.5%, primarily because of a firm energy contract with New England Utilities and a firm energy and power contract with Vermont Joint Owners, which together accounted for more than 80% of firm sales to the United States.

The gains in electricity sales to the United States significantly offset the large drop in sales to other Canadian provinces which fell from 3.5 TWh to 1.9 TWh, or 45.7%. This decline stems from a decrease of 2.3 TWh in firm sales, notably following the end of deliveries under our firm energy contract with New Brunswick. On the plus side, our marketing efforts in the other provinces enabled us to increase our short-term sales by 0.7 TWh in 1993 which, combined with similar efforts in the United States, resulted in additional revenue of $81 million in 1993.

EXPENDITURE

Expenditure for the year amounted to $3,761 million, up $132 million, or 3.6%, over 1992. The balance in our energy situation, which was achieved last year after several years of low runoff, enabled us to forego, for the first time since 1987, the use of measures to counteract low runoff. This resulted in savings of more than $100 million compared with 1992. Discounting the positive impact of these savings, expenditure was up by $233 million or 6.6%, of which more than 70% derived from expenses related to depreciation, amortization, decommissioning, and taxes.

OPERATING EXPENSES

Operating expenses totaled $1,800 million, compared with $1,770 million in 1992. To better reflect costs associated with the utility's core activities, certain expenses previously presented under "Operating Expenses" have been reclassified in 1993. These include fuel costs, amortization of certain deferred expenses, and write-off of preliminary projects, which are now recorded under other headings.

The moderate $30 million, or 1.7%, increase in operating expenses is attributable to greater emphasis on cost-cutting efforts. On the one hand, we exercised tighter control over various aspects of labor costs, which account for more than 65% of operating expenses. Our wage policy, staff reductions, and continued control of overtime slowed the growth in payroll expense despite a $34 million increase in 1993 in expense for employee benefits due to post-retirement benefits other than pension benefits. (See Note 1(p) to the financial statements.) On the other hand, a further 8% reduction in other operating expenses reflects our additional efforts to reduce costs, pursued at every level of the utility.

Our operating activities, including our various projects and programs, were carried out in light of a restructuring program aimed at improving our efficiency and performance.

This restructuring was begun last year and resulted in additional expenses of $33 million in 1993. By eliminating the costs of non-quality, we expect to recoup this expense many times over, as have most companies that implemented quality management programs. All our efforts, both with respect to the reorganization of our activities and the implementation of *Défi performance*, were focused in one direction: providing the best service at the lowest cost.

In the area of product reliability and quality, the amounts allocated to routine maintenance and service-quality enhancement represent more than 25% of operating expenses. At December 31, 1993, they stood at $474 million, compared with $493 million in 1992. Including the amounts allocated to investments, more than $865 million in 1993 and $899 million in 1992 were injected into these programs. Maintenance expenses were primarily incurred for generating and transmission equipment, while those related to service quality were notably for the maintenance and modernization of installations and technology.

MAINTENANCE AND SERVICE-QUALITY ENHANCEMENT PROGRAMS *(in $M)*

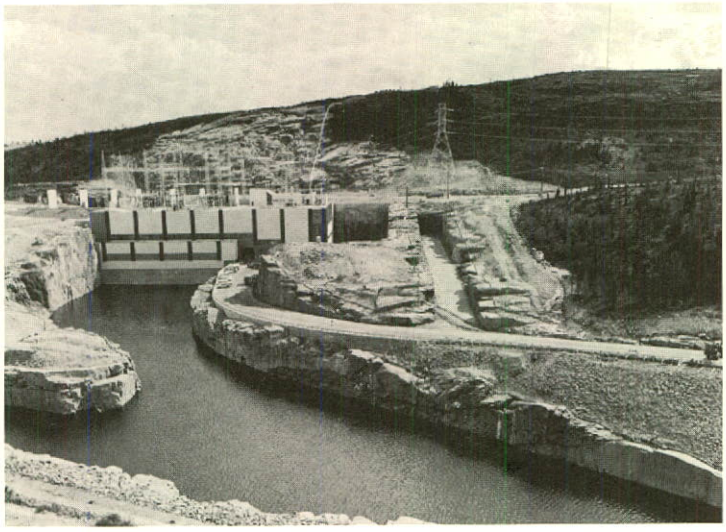
	1993			1992		
	Expenditure	Investment	Total	Expenditure	Investment	Total
Maintenance	**$338**	**$ –**	**$338**	$326	$ –	$326
Service quality						
Product quality	**89**	**373**	**462**	111	390	501
Customer service	**5**	**4**	**9**	8	3	11
Technology	**42**	**14**	**56**	48	13	61
	136	**391**	**527**	167	406	573
TOTAL	**$474**	**$391**	**$865**	$493	$406	$899

The utility also renewed its commitment to the Energy Efficiency Project, which marked its fourth year and entailed expenditures of $50 million, or roughly the same as in 1992. It should be noted that the amortization of investments related to this project, which are treated as deferred expenses, was moved from "Operating Expenses" to "Depreciation, Amortization and Decommissioning." The various programs implemented as part of the project focus on consumption management and energy conservation. Including the amounts invested in deferred expenses and fixed assets, the utility injected more than $169 million into its Energy Efficiency Project in 1993 and $179 million in 1992. (For further information, see page 16.)

Furthermore, Hydro-Québec allocated $48 million to its various training programs, compared with $55 million in 1992. In view of our commitment to provide our customers with quality service, more than 60% of this amount was spent to train personnel involved in system operations and customer service activities.

ENERGY EFFICIENCY PROJECT *(in $M)*

	1993	1992
Expenditures	**$ 50**	$ 51
Investment		
Deferred expenses	**105**	118
Fixed assets	**14**	10
TOTAL	**$169**	$179



The commissioning of Brisay generating station increased the storage capacity of our reservoirs.

Finally, customer bad debts were reduced to $51 million in 1993, compared with $65 million in 1992. While significant, this amount has nonetheless been declining for the past two years, despite persistently difficult economic conditions. This improvement attests to the efforts made by the utility in the area of accounts recovery and its commitment to reduce bad debts, which shrank from 0.9% in 1992 to 0.8% in 1993.

Electricity and Fuel Purchased

Electricity and fuel purchases in 1993 totalled $291 million, a drop of $67 million due to three key factors.

The most notable factor was the absence of compensating measures in 1993. While hydraulic inflows were below average, they did not significantly reduce energy reserves in 1993. Moreover, our energy situation was kept in balance partly by the addition of a new reservoir upstream from Laforge-1 generating station and the commissioning of its first two units plus Brisay generating station. Compared with 1992, the savings in electricity and fuel purchases totaled more than $100 million. Twenty percent of the savings came from reduced fuel oil consumption following stoppage of continuous operations at Tracy thermal generating station. The remaining savings resulted from the suspension of backup energy purchases which had cost more than $80 million in 1992.

Firm energy and power purchases increased by $22 million over 1992, with more than half of the increase coming from Alcan Aluminium. These purchases, which began in November 1992, continued throughout 1993.

Finally, because of our balanced energy situation and the storage capacity of our reservoirs, we were able to purchase electricity at attractive prices and then resell it for additional revenue. These purchases amounted to $42 million in 1993 and are part of short-term, purchase-resale strategies designed to optimize utilization of the system.

Depreciation, Amortization and Decommissioning

Expenses related to depreciation, amortization and decommissioning amounted to $1,020 million, an increase of $113 million over 1992. In addition to depreciation of fixed assets, these expenses include amounts previously presented in "Operating Expenses" and reclassified in 1993 and 1992, in particular amortization of marketing programs, decommissioning costs of Gentilly-2 nuclear generating station and write-off of preliminary projects (see Note 3 to the financial statements).

Depreciation of fixed assets stood at $909 million at December 31, 1993, up $113 million mainly due to the periodic review of the useful lives of our fixed assets and the commissioning of facilities and equipment in the second half of 1992 and during 1993. Among the main facilities and equipment commissioned in 1992 were the last three units at La Grande-2-A generating station, the under-river line crossing between Grondines and Lotbinière and, in 1993, certain facilities at the La Grande complex, together with the gas turbines at Bécancour.

In 1993, we wrote off additional preliminary projects. Given that deferred expenses related to the write-off of the Nottaway-Broadback-Rupert project, which were recorded and amortized for the first time in 1992, are amortized over three years, total expenses related to write-off of preliminary projects amounts to $42 million for 1993, compared with $51 million in 1992.

Finally, amortization of marketing programs rose from $50 million in 1992 to $56 million in 1993.

Taxes

Taxes were up $56 million, or 9.4%, over 1992 to $650 million. Half of this rise is attributable to the increase in capital tax resulting from higher paid-up capital. The other half is due to the increase in tax on gross revenue and in loan guarantee fees.

INTEREST

Total interest costs amounted to $3,204 million at December 31, 1993, compared with $3,114 million in 1992. Interest expense, which is defined as total interest costs less interest capitalized and net investment income, grew by $93 million over 1992 to $2,483 million.

The growth in interest expense in 1993 is due mainly to fluctuations in exchange rates, in particular the depreciation of the Canadian dollar against the U.S. dollar. Commissionings in 1993 and 1992 also contributed to the rise in interest expense, but to a lesser degree. It is worth noting that when a facility is commissioned, interest expense is no longer capitalized to Construction in progress; instead, interest expense is charged to operations.

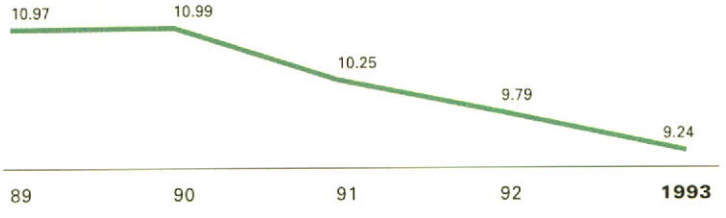
INTEREST *(in $M)*

	1993	1992
Total interest cost	**$3,204**	$3,114
Less		
Borrowing costs capitalized to Construction in progress	**640**	544
Net investment income	**81**	180
Interest expense	**$2,483**	$2,390

Had interest rates on the financial markets not dropped, the increase in interest expense would have been far greater. In addition to having a favorable effect on interest on debt issued during the year and on floating-rate debt, the drop in interest rates made it possible for us to renegotiate some of our current debt at lower interest rates and repay other debt before maturity. These refinancing activities will not only reduce the cost of our total debt for the coming years, but will also mitigate the risks associated with management of interest rate fluctuations.

The weighted average interest rate on our long-term debt declined from 9.79% at year-end 1992 to 9.24% at December 31, 1993. This is the lowest rate since 1989.

WEIGHTED AVERAGE INTEREST RATE ON LONG-TERM DEBT *(in %)*

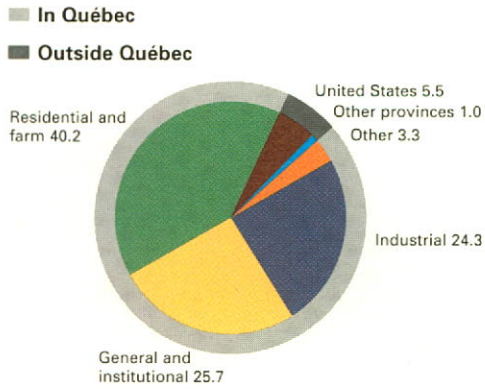


In 1993, lower interest rates allowed us to reduce the cost of the debt.

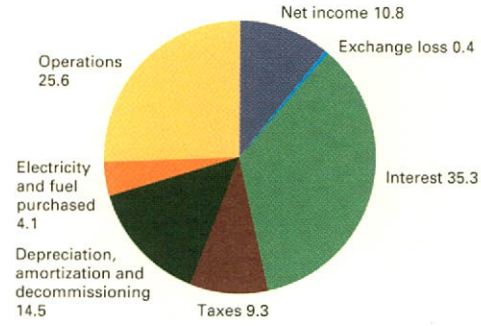
Exchange Loss

Exchange loss decreased from $64 million in 1992 to $31 million in 1993, or 51.6%. It should be noted that the exchange loss has been relatively low for the past three years. The $33 million drop in 1993, related to the translation of certain working capital items, is explained by the reduction in exchange loss with respect to notes payable in U.S. dollars, as the utility did not use this form of financing in 1993.

Source of Sales Revenue Dollar in 1993 *(in %)*



Allocation of 1993 Revenue Dollar *(in %)*



Total investment was $4,030 million in 1993 compared with $4,126 million in 1992. Investment in fixed assets totaled $3,934 million this year, an amount comparable to the $3,946 million of 1992.

With construction of a number of projects almost completed and the commissioning of generating stations already under way, investments in generating facilities declined in 1993. However, significantly greater investments were made this year at Laforge-2, Lac Robertson and Beauharnois generating stations.

Investments in the transmission system rose over those made in 1992 and were directed mainly to the 12th (735-kV) line, its associated substations, and overall subtransmission projects.

Investments in the distribution system and in the various service-quality enhancement programs, the key one being the program to improve reliability of the transmission system, were maintained at the previous year's level.

Of note is the sharp 29% rise in other investments, the majority of which were for administration buildings and telecommunications equipment.

INVESTMENT IN FIXED ASSETS *(in $M)*

	1993	1992
Generation	**$1,718**	$1,868
Transmission	**950**	899
Distribution	**463**	453
Service quality	**391**	406
Other	**412**	320
Total	**$3,934**	$3,946

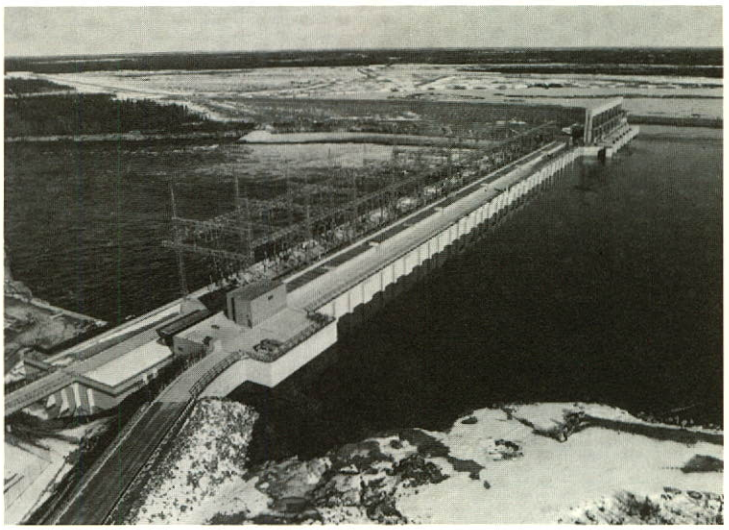
INVESTMENT IN FIXED ASSETS

As in 1992, work on Phase II of the La Grande complex absorbed the major portion of the investment in fixed assets allocated to generating facilities and the transmission system.

In 1993, the utility invested $1,088 million in construction of La Grande-1, Laforge-1, Laforge-2, and Brisay generating stations. To date, over $4,509 million of the $5,925 million slated for investment in these projects has been spent.

Furthermore, in 1993, we injected $323 million into constructing the 12th (735-kV) line linking Chissibi and Jacques-Cartier substations, and another $68 million into the La Grande complex collector system to ensure transmission of energy from the generating stations to the main power system. Our investment in subtransmission equipment exceeded $265 million in 1993.

We earmarked $463 million for our distribution system, of which $212 million was set aside for equipment purchase and renewal and $90 million for customer-supply work.



Phase II of the La Grande complex absorbed the major portion of investment in generating and transmission facilities. Opposite: Laforge-1.

We also invested $391 million in our various programs to improve service quality, $232 million of which was channeled into our program to enhance transmission system reliability.

Finally, as regards other investments, $160 million was allocated to administration and service buildings, notably to build a regional administration centre, prepare the new data processing centre, renovate the utility's head office and construct dwellings near La Grande-1, Laforge-1 and Brisay generating stations.

Commissioning of New Facilities

The year 1993 was witness to key commissionings of generating and transmission facilities valued at $3,473 million, with Brisay generating station, which will boost capacity by 446 MW, accounting for $855 million. Commissioning of two of the six units of Laforge-1 generating station represents $508 million and increases production capacity by 279 MW.

To ensure transmission of this additional energy to the main power system, we commissioned the northern section of the 12th (735-kV) line at a cost of $538 million, and the Brisay-Nikamo-Tilly line.

In addition to the commissionings for the La Grande complex, the last two gas turbines at Bécancour were also commissioned, increasing fixed assets in service by $76 million, while $553 million was allocated to the distribution system.

Investments in Marketing Programs

The utility forged ahead with its energy efficiency programs, investing $119 million in 1993, $52 million of which went toward the residential New Dual Energy Program, which ended in 1993.

FINANCING

Financing activities in 1993 generated a gross volume of debt issues of $4,582 million. We contracted new borrowings with a nominal value of $1,387 million and repaid $903 million of debt upon maturity. Moreover, favorable financial market conditions enabled us to repay $1,104 million of debt in advance and renegotiate $1,188 million of other debt.

The high volume of renegotiations and payments in advance, amounting to $2,292 million, highlighted our 1993 financing activities. These transactions contributed to reducing the weighted average interest rate on debt from 9.79% at year-end 1992 to 9.24% at the end of 1993.

In 1993, we continued to direct our attention to the five following objectives as part of our program to borrow at the best cost and effectively manage our debt.

DIVERSIFY SOURCES OF FINANCING

Hydro-Québec sustained its access to the European market with two borrowings: one in United States dollars, the other in pounds sterling. In addition, we finalized a new program for issuing medium-term, multi-currency notes on the European market and initiated the first reopening of a global issue, which is in Canadian dollars and matures in 2022.

Finally, we pursued our investor relations program in order to keep all our financial partners informed, and maintain or nurture a climate of confidence and permanent dialogue with investors to ensure a firm foothold for our securities in target markets.

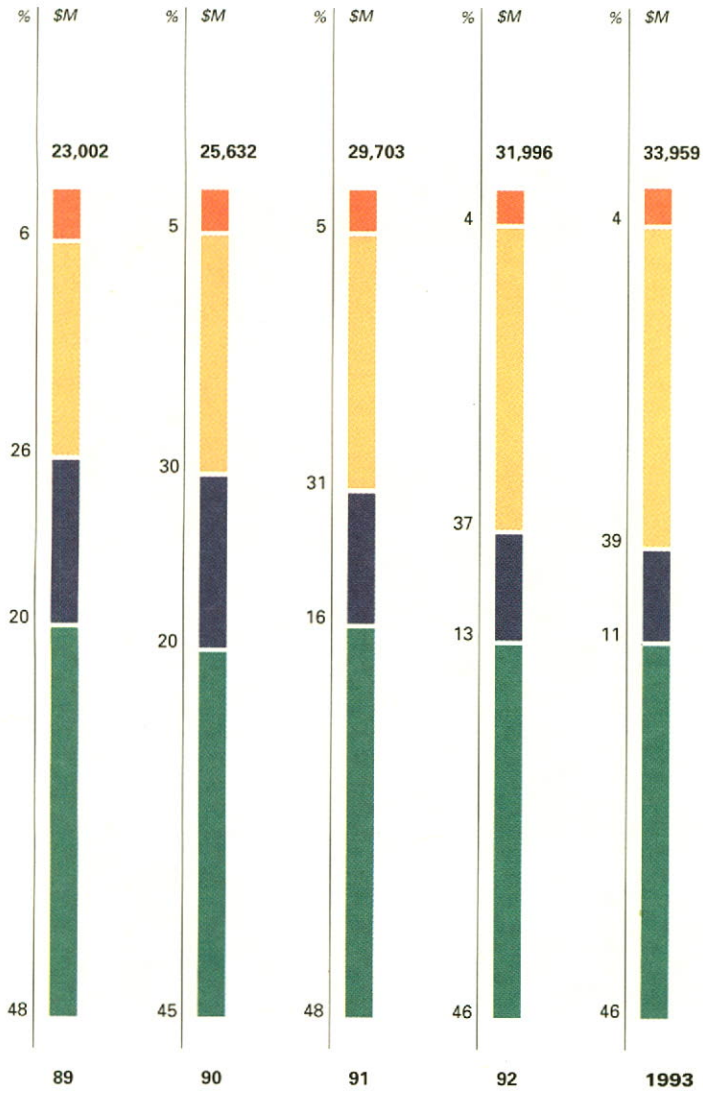
MINIMIZE FOREIGN EXCHANGE RISK

Excluding the renegotiations, which are undertaken in the original currencies, the utility realized 39% of its financing in Canadian dollars, which is partially due to the considerable volume of private financing. The portion of total debt denominated in Canadian dollars, including swaps, dipped from 59% at the end of 1992 to 57% at December 31, 1993.

Financing in U.S. dollars made up 49% of the difference in funding needs while financing in pounds sterling, which was hedged in U.S. dollars, accounted for 12%. Borrowings in U.S. dollars constitute a source of financing which we actively pursue, since some of our sales revenue is in this currency.

Of note is our U.S.$1,500 million issue on the U.S. market, which was the largest fixed-rate offering by a foreign issuer.

Breakdown of Total Debt by Currency*



*Excluding perpetual debt

Manage Current Debt Effectively

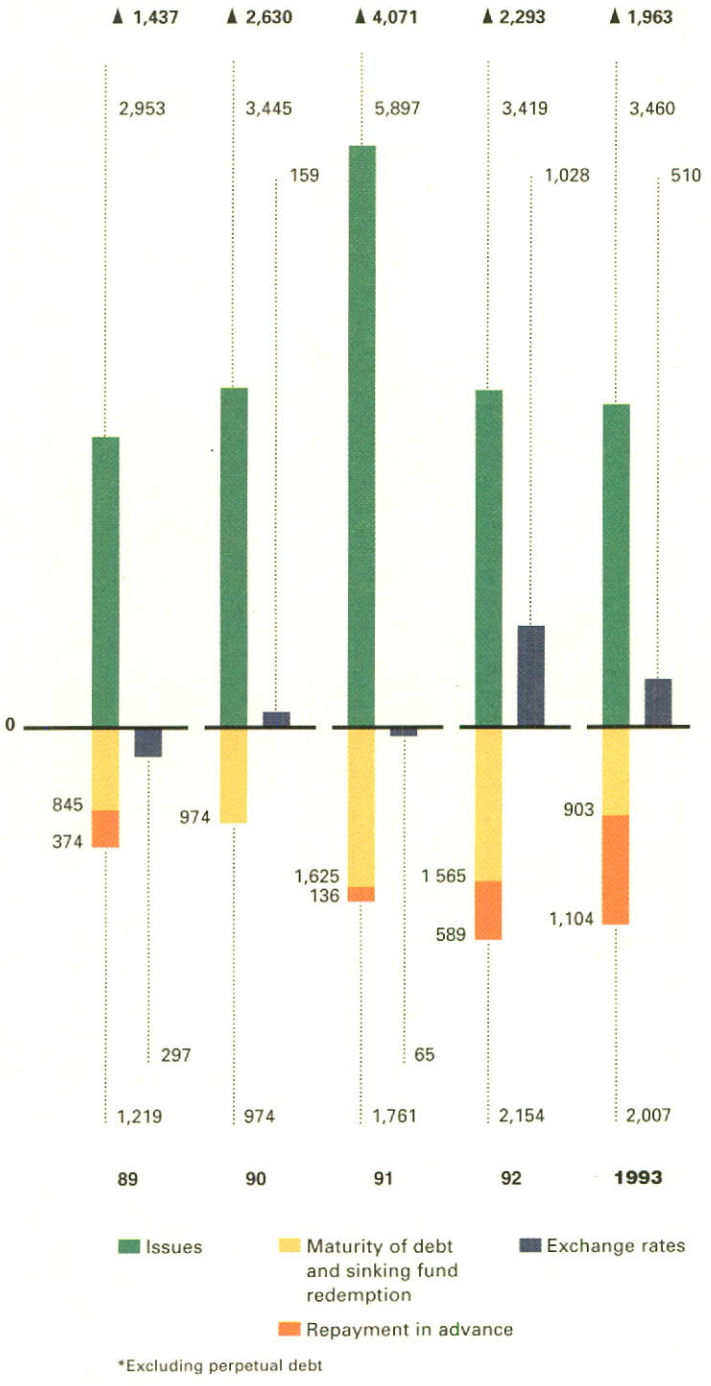
Given 1993's low interest rates, Hydro-Québec stepped up its efforts to replace current debt with new debt at reduced rates. Accordingly, we repaid in advance or renegotiated a total of $2,292 million of debt, which allowed us to reduce our financing costs. The key transaction this year remains the redemption of U.S.$600 million of bonds maturing at later dates. This somewhat exceptional transaction was completed by a public offering.

Also noteworthy is the U.S.$382 million of medium-term notes issued in the United States during 1993 which were used to renegotiate debt denominated in U.S. dollars. The total amount of notes outstanding at year-end 1993 was U.S.$1,388 million.

Seek an Optimum Interest Rate Structure

The utility maintains the percentage of variable-rate debt to total debt, including perpetual debt, at between 7% and 20% to minimize the impact of shifts in inflation on net income. As a result of financing activities this year, the percentage went from 16.2% at December 31, 1992, to 14.9%.

VARIATION IN TOTAL DEBT* *(in $M)*



*Excluding perpetual debt

STAGGER DEBT REFINANCING

All 1993 borrowings have terms of more than 10 years, with the exception of two issues, including the one in pounds sterling, and certain financing transactions undertaken to renegotiate shorter-term debt. Excluding renegotiations, the average term of borrowings made in 1993 is 19 years, and the average term of total debt at December 31, 1993 stands at 15.1 years, compared with 15.6 years at year-end 1992.

At the close of 1993, total debt rose $1,963 million to $33,959 million. (See Note 9 to the financial statements.) The depreciation of the Canadian dollar, especially against the U.S. dollar, accounted for an increase in debt of $510 million.

Finally, in keeping with its short-term financing plan, Hydro-Québec is authorized to issue up to U.S.$2,750 million of commercial paper, or its Canadian-dollar equivalent, on the Canadian and U.S. markets, and U.S.$250 million on the European market. In addition, we have bank credit facilities totaling approximately U.S.$2,100 million. The average amount of commercial paper outstanding for 1993 amounted to $48 million Canadian.

FINANCIAL RATIOS

We ended 1993 on a positive note. Our financial ratios remained on an equal footing with 1992 despite moderate growth in sales revenue in Québec and the rise in expenses not related to our core activities such as depreciation, amortization, decommissioning, and taxes. This sound financial position enables us to obtain advantageous terms on significant financial market borrowings in order to complete our investment program as planned.

Return on revenue and return on equity stand at 10.8% and 7.2% respectively at December 31, 1993, which compare with 10.6% and 7.4% in 1992. While the absence of compensating measures no doubt contributed to this achievement, our sustained sound financial position also bore witness to our efforts. Return on equity rose to its expected level whereas return on revenue exceeded the forecast 10.6% despite slower-than-anticipated growth in sales revenue.

The self-financing ratio topped the minimum 30% objective for the first time since 1990, reaching 37.1% at December 31, 1993, compared with 29.8% in 1992. The sharp rise is attributable to lower requirements for funds in 1993 to repay maturing long-term debt.

Interest coverage dipped from 1.07 in 1992 to 1.03 in 1993. Contributing to this decrease was the decline in investment income following the reduction in investment volume and, to a lesser degree, the drop in interest rates on financial markets. However, even though investment income suffered as a result of lower interest rates, we were nevertheless able to slow the growth in interest expense for the year and carry out refinancing activities, in particular to reduce our debt costs for the coming years.

Finally, the utility's capitalization ratio stood at 23.9% at December 31, 1993, compared with 23.7% in 1992. Shareholder's equity grew as a result of the net income of 1993 which, in turn, offset the rise in total debt and thus contributed to the improvement of the ratio. Moreover, had it not been for the increase in debt brought on by the depreciation of the Canadian dollar against the U.S. dollar, the capitalization ratio would have been 24.2% at December 31, 1993. The capitalization ratio being below the minimum threshold of 25% (see Note 12 of the financial statements), no dividend will be paid for 1993.

Consolidated Financial Statements and Five-Year Review

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Hydro-Québec's consolidated financial statements and all additional information contained in the Annual Report are the responsibility of Management and were approved by the Board of Directors. Management's responsibility also includes the selection of appropriate accounting practices in accordance with generally accepted accounting principles, and the preparation of reasonable estimates. Financial data contained elsewhere in the Annual Report are consistent with the financial statements.

Management, in keeping with its responsibilities, maintains an internal control system, designed among other things to provide reasonable assurance that the utility's assets are adequately safeguarded and that the accounting records form an appropriate basis for the preparation of reliable financial statements. An internal auditing process allows evaluation of the sufficiency and efficiency of these internal and management controls, as well as of the utility's policies and procedures. Recommendations ensuing from this process are submitted to Management and the Audit Committee.

Every year, the Board of Directors appoints an audit committee, composed solely of directors, excluding those holding a full-time position at Hydro-Québec or one of its subsidiaries. This committee is responsible for ensuring that the financial statements present fairly the utility's financial position, changes in financial position, and results of operations. The Audit Committee meets regularly with Management, the General Auditor and the external auditors to review the results of their audits and the reports on the utility's accounting methods and policies and internal control systems.

The utility has also established a code of ethics primarily to ensure the proper management of its resources and the orderly conduct of business.

The consolidated financial statements have been audited by Samson Bélair Deloitte & Touche, Chartered Accountants, in accordance with generally accepted auditing standards. Their responsibility consists in expressing their professional opinion on the fairness of the financial statements. The Auditors' Report, which appears overleaf, specifies the extent of their audit and gives their opinion on these financial statements.

In the opinion of Management, these financial statements incorporate, within reasonable limits, all important elements and data available at January 28, 1994.

Richard Drouin, QC
Chairman of the Board and
Chief Executive Officer

Armand Couture
President and
Chief Operating Officer

André Delisle
Chief Financial Officer and
Executive Vice President,
Corporate Planning

Montréal, Canada. January 28, 1994

To the Gouvernement du Québec,

We have audited the consolidated balance sheet of Hydro-Québec as at December 31, 1993 and the consolidated statements of operations, retained earnings and changes in financial position for the year then ended. These financial statements are the responsibility of Hydro-Québec's Management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by Management, as well as evaluating the overall financial statement presentation.

In our opinion, these consolidated financial statements present fairly, in all material respects, the financial position of Hydro-Québec as at December 31, 1993 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.

Samson Bélair
Deloitte & Touche

Montréal, Canada. January 28, 1994

Chartered Accountants

(in millions of dollars)	For the year ended December 31 1993	1992
Revenue		
Sales of electricity (Note 2)	**$7,004**	$6,764
Other operating revenue	**32**	43
	7,036	6,807
Expenditure		
Operations	**1,800**	1,770
Electricity and fuel purchased	**291**	358
Depreciation, amortization and decommissioning (Note 3)	**1,020**	907
Taxes (Note 4)	**650**	594
	3,761	3,629
Income before interest and exchange loss	**3,275**	3,178
Interest (Note 5)	**2,483**	2,390
Exchange loss	**31**	64
	2,514	2,454
Net income	**$ 761**	$ 724

ASSETS (in millions of dollars)	As at December 31 1993	1992
Fixed assets (Note 6)		
In service	$43,958	$39,926
Less accumulated depreciation	7,295	6,736
	36,663	33,190
Construction in progress	5,906	6,398
	42,569	39,588
Current assets		
Cash and temporary investments	639	1,329
Accounts receivable	1,335	1,329
Materials, fuel and supplies	269	291
	2,243	2,949
Other assets		
Investments (Note 7)	180	181
Deferred expenses (Note 8)	2,887	2,146
	3,067	2,327
	$47,879	$44,864

Jeannine Guillevin Wood
Chairperson of the Audit Committee

Richard Drouin, QC
Chairman of the Board and
Chief Executive Officer

Montréal, Canada. February 10, 1994

LIABILITIES AND SHAREHOLDER'S EQUITY (in millions of dollars)	As at December 31 1993	1992
Long-term debt (Note 9)	**$33,204**	$31,174
Current liabilities		
Notes payable	**119**	19
Accounts payable	**1,253**	1,101
Accrued interest	**1,086**	1,053
Current portion of long-term debt (Note 9)	**755**	822
	3,213	2,995
Other liability		
Decommissioning of nuclear generating station (Note 10)	**28**	22
Perpetual debt (Note 11)	**552**	552
Shareholder's equity		
Share capital		
Authorized 50,000,000 shares, par value of $100 each		
Issued and fully paid 43,741,090 shares	**4,374**	4,374
Retained earnings	**6,508**	5,747
	10,882	10,121
	$47,879	$44,864

Consolidated Statement of Retained Earnings

(in millions of dollars)	For the year ended December 31 1993	1992
Balance at beginning of year	**$5,747**	$5,023
Net income	**761**	724
Balance at end of year	**$6,508**	$5,747

(in millions of dollars)	For the year ended December 31 1993	1992
Operating activities		
Net income	$ 761	$ 724
Depreciation of fixed assets	909	796
Amortization of deferred expenses	174	159
Difference between pension expense and contributions	(25)	(20)
Other	(3)	30
	1,816	1,689
Net change in other current assets or current liabilities		
Accounts receivable	(6)	(4)
Materials, fuel and supplies	22	23
Accounts payable	152	(55)
Accrued interest	33	55
	201	19
	2,017	1,708
Financing activities		
Issue of long-term debt	3,183	3,351
Maturity of long-term debt and sinking fund redemption	(856)	(1,545)
Repayment in advance of long-term debt	(1,104)	(591)
	1,223	1,215
Investing activities		
Fixed assets	(3,934)	(3,946)
Marketing programs	(104)	(118)
Other	8	(62)
	(4,030)	(4,126)
Change in cash during year	(790)	(1,203)
Cash at beginning of year	1,310	2,513
Cash at end of year	$ 520	$ 1,310

Cash comprises Cash and temporary investments less Notes payable.

NOTE 1 DECEMBER 31, 1993

Significant accounting policies

a) **Hydro-Québec mandate and rates**

Under the provisions of its Act, Hydro-Québec's mandate is to supply power and to pursue endeavours in energy-related research and promotion, energy conversion and conservation, and any field connected with or related to power or energy. The rates and conditions under which power is supplied must be consistent with sound financial administration. The *Hydro-Québec Act* stipulates 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 period of 50 years. The rates are established by Hydro-Québec and are subject to the approval of the Gouvernement du Québec.

b) **Consolidation**

The consolidated financial statements include the financial statements of Hydro-Québec and its subsidiaries.

c) **Sales of electricity**

Revenue from sales of electricity is recorded on the basis of cyclical billings and also includes revenue accrued in respect of electricity delivered but as yet unbilled.

d) **Fixed assets**

Fixed assets include generating, transmission and distribution facilities and administration and service buildings, as well as construction, operating and research equipment. Fixed assets are carried at cost, which comprises material, direct and indirect labor, and an appropriate allocation of the administration overhead, and engineering and management expenses capitalized during construction. Cost also includes borrowing costs capitalized to Construction in progress as explained in (f) below.

Upon disposal of asset units, the cost of the units and the cost of their dismantlement, net of accumulated depreciation and salvage value, are charged to a separate account and amortized over 10 years according to the sinking fund method based on an interest rate of 3%. However, when the disposed asset units are replaced, the cost of dismantlement, less the salvage value, is added to the cost of the new units and then depreciated according to the method and useful life appropriate to the new asset.

The costs of generating facilities, up to an amount equal to the accumulated cost at date of transfer, are transferred to Fixed assets in service in instalments equal to the number of generating units completed and in service proportionate to the total number scheduled for the new facility, on the basis of the present value of the total estimated cost. The costs of transmission, distribution and other facilities are transferred to Fixed assets in service when these facilities are completed and in commercial operation.

e) **Depreciation of fixed assets**

Fixed assets (other than construction, operating and research equipment) are depreciated over their useful life according to the sinking fund method at an interest rate of 3%.

Construction, operating and research equipment is depreciated over its useful life according to the straight-line method.

NOTE 1

Significant accounting policies (continued)

The useful lives of Hydro-Québec's main classes of fixed assets are as follows:

Hydraulic generation	50 years
Nuclear generation	30 years
Thermal generation (other than nuclear)	15 to 30 years
Transmission	40 to 50 years
Distribution	30 to 40 years
Administration and service buildings	50 years

Hydro-Québec revises the useful lives of its fixed assets on a regular basis.

f) **Borrowing costs capitalized to Construction in progress**

Borrowing costs are 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 debt securities issued to finance such construction. This rate, which takes into account the exchange loss on the principal amount of these debt securities, was 10.37% in 1993 and 10.59% in 1992.

g) **Research and development**

Preliminary engineering, investigation and survey costs incurred on projects before authorization for their construction is obtained are charged to 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.

h) **Materials, fuel and supplies**

Inventories of materials, fuel and supplies are valued on an average cost basis.

i) **Temporary investments**

Temporary investments are shown at amortized cost, which approximates market value.

j) **Foreign currency translation**

Revenue and expenditure resulting from transactions in foreign currencies are translated into the Canadian dollar equivalent at exchange rates in effect at the transaction date. Monetary assets and liabilities are translated into Canadian dollars at exchange rates in effect at the balance sheet date, and non-monetary items are translated into Canadian dollars at exchange rates in effect at the transaction date. However, monetary items covered by monetary agreements against exchange risks are translated into Canadian dollars at the exchange rates established under the conditions of the relevant agreement.

The exchange gains or losses resulting from these translations are included in the Consolidated Statement of Operations; those pertaining to the capital of long-term debt are deferred and amortized on a straight-line basis over the remaining life of the debt securities, except when they relate to debt securities hedged by future revenue streams in United States dollars, in which case they are deferred until the date of repayment of such debt.

k) **Borrowing discount and expenses**

Borrowing discount and expenses are deferred and amortized on a straight-line basis over the life of the borrowings.

l) **Marketing programs**

Hydro-Québec has implemented a number of marketing programs aimed at consumption management, energy conservation and market optimization. The deferred expenses related to these programs are amortized on a straight-line basis over a period not exceeding five years after the year in which they are incurred.

NOTE 1

Significant accounting policies (continued)

m) **Nottaway-Broadback-Rupert project**

As construction of the Nottaway-Broadback-Rupert project is planned for the distant future, certain expenses incurred on that project have been transferred from Construction in progress to Deferred expenses. These expenses are amortized on a straight-line basis over three years.

n) **Sinking funds**

The sinking funds are created through the purchase of Hydro-Québec debentures, Government of Canada bonds, or bonds issued or guaranteed by the Gouvernement du Québec. These funds are deducted from long-term debt. Government issued or guaranteed bonds are carried at cost; Hydro-Québec debentures are carried at par, which may not be indicative of cost or current market value. The gain or loss resulting from the redemption of these debentures and bonds is included under Interest. The unamortized discount and expenses are written off when these debt securities are cancelled.

o) **Decommissioning of nuclear generating station**

The estimated future costs of decommissioning the Gentilly-2 nuclear generating station are charged to operations, and comprise the total of the following:

- The present value of the estimated cost of dismantlement, allocated on a straight-line basis over the remaining life of the generating station,
- The present value of the expected cost for final disposal of the irradiated fuel, allocated in proportion to the consumption of the fuel,
- Interest calculated on the amounts charged in preceding years, at the rate used to discount the above amounts.

These costs are revised periodically in accordance with the various assumptions and estimates underlying the calculations, and with any technological advances that may arise in the decommissioning of nuclear generating stations.

p) **Post-retirement benefits**

Pension plan

The costs of the Pension Plan are determined periodically by independent actuaries. Pension expense is charged to operations and comprises the total of the following:

- The cost of pension benefits provided in exchange for employees' services rendered during the year, calculated using the projected benefit method pro rated on services, and
- Amortization over the employees' expected average remaining service life, according to the straight-line method, of (i) adjustments arising from changes in the Plan or in assumptions, (ii) experience gains or losses, and (iii) the Plan surplus determined upon adoption of the 1986 recommendations of the Canadian Institute of Chartered Accountants.

The cumulative difference between pension expense and contributions made to the pension funds is reflected in Deferred expenses.

Other benefits

In addition to pension benefits, Hydro-Québec offers its current and retired employees group life-insurance, medical and hospitalization plans. Additional pension expense from these plans is charged to operations for the year in which the benefits are vested to the employees and includes amortization, under the straight-line method and over the employees' expected average remaining service life, of the initial estimate of liabilities upon adoption of this accounting policy in 1993. This change, applied prospectively, resulted in a reduction of $34 million in net income for the year.

NOTE 2

Sales of electricity

Sales of electricity include $385 million from sales to the United States ($265 million in 1992).

NOTE 3

Depreciation, amortization and decommissioning

(in millions of dollars)	1993	1992
Depreciation of fixed assets	$ 909	$796
Amortization of marketing programs	56	50
Amortization of Nottaway-Broadback-Rupert project	18	17
Write-off of preliminary projects	24	34
Decommissioning of nuclear generating station	6	5
Other	7	5
	$1,020	$907

NOTE 4

Taxes

(in millions of dollars)	1993	1992
Capital tax	$259	$231
Tax on gross revenue as municipal real estate tax on certain immovables	189	176
Loan guarantee fees	164	151
Real estate taxes	38	36
	$650	$594

NOTE 5

Interest

(in millions of dollars)	1993	1992
Interest on debt securities	$3,201	$3,098
Amortization of borrowing discount and expenses	43	31
Net gain on redemption of long-term debt	(40)	(15)
	3,204	3,114
Less Borrowing costs capitalized to Construction in progress	640	544
Net investment income	81	180
	721	724
	$2,483	$2,390

NOTE 6

Fixed assets

(in millions of dollars)	1993			1992		
	In service	Accumulated depreciation	Construction in progress	In service	Accumulated depreciation	Construction in progress
Generation						
Hydraulic	**$17,785**	**$2,731**	**$4,403**	$16,129	$2,513	$4,549
Nuclear	**1,526**	**355**	**15**	1,525	312	4
Thermal (other than nuclear)	**929**	**264**	**30**	796	203	82
	20,240	**3,350**	**4,448**	18,450	3,028	4,635
Transmission						
Substations	**7,503**	**1,044**	**727**	6,449	898	897
Lines	**6,153**	**844**	**330**	5,493	773	563
	13,656	**1,888**	**1,057**	11,942	1,671	1,460
Distribution						
Substations	**128**	**38**	**4**	115	28	3
Lines	**6,303**	**998**	**99**	5,905	914	103
	6,431	**1,036**	**103**	6,020	942	106
Other						
Administration and service buildings	**1,332**	**152**	**116**	1,247	151	63
Equipment	**1,270**	**682**	**78**	1,318	729	49
Sundry	**1,029**	**187**	**104**	949	215	85
	3,631	**1,021**	**298**	3,514	1,095	197
Total	**$43,958**	**$7,295**	**$5,906**	$39,926	$6,736	$6,398

NOTE 7

Investments

(in millions of dollars)	1993	1992
Investments at cost		
Churchill Falls (Labrador) Corporation (Note 14)		
General Mortgage Bonds, 7½%, due 1994 through 2010 (par value $76 million in 1993 and $77 million in 1992)	$ 68	$ 70
Common shares	34	34
	102	104
Other	29	29
Investments at equity	49	48
	$180	$181

NOTE 8

Deferred expenses

(in millions of dollars)	1993	1992
Unrealized exchange loss	$1,507	$1,036
Borrowing discount and expenses	644	416
Pension expense	365	340
Marketing programs	244	196
Nottaway-Broadback-Rupert project	17	35
Other	110	123
	$2,887	$2,146

NOTE 9

Long-term debt

Hydro-Québec's debentures are guaranteed by the Gouvernement du Québec. Other long-term debt, in the amount of $313 million ($276 million in 1992), is not guaranteed.

Debenture and other long-term debt maturities and sinking fund requirements, translated into Canadian dollars, are shown in the following table:

NOTE 9

Long-term debt (continued)

Years of maturity	1993 (in millions of dollars)	1993 Weighted average interest rate	1992 (in millions of dollars)	1992 Weighted average interest rate
1993	$ –		$ 822	
1994	755		1,029	
1995	1,071		1,101	
1996	1,638		1,627	
1997	986		677	
1998	1,295		–	
1 – 5 years	5,745	8.69%	5,256	10.08%
6 – 10 years	10,551	9.17%	9,394	9.50%
11 – 15 years	2,552	10.25%	3,789	10.51%
16 – 20 years	3,948*	9.60%	3,379	10.39%
21 – 25 years	799	7.46%	689	10.46%
26 – 30 years	7,036*	9.57%	6,417	9.59%
31 – 35 years	763	8.44%	848	8.45%
36 – 40 years	2,550	9.22%	2,224	9.05%
41 – 45 years	7	6.28%	–	–
46 – 50 years	8	6.28%	–	–
	33,959	**9.24%**	31,996	9.79%
Less Current portion	755		822	
	$33,204		$31,174	

* Includes $48 million and $109 million in zero-coupon bonds, shown at their discounted value at an interest rate calculated semi-annually of 10.95% and 10.67% respectively. Their par value will reach $282 million and $1,729 million in 2010 and 2020 respectively.

NOTE 9

Long-term debt (continued)

Repayments to be made in Canadian dollars and in foreign currencies, with their Canadian dollar equivalent, are shown in the following table:

	(in millions of units)			1993 **Total** (in millions of dollars)	1992 Total (in millions of dollars)
	1994 to 1998	1999 to 2042	Total	1994 to 2042	1993 to 2030
Canadian dollars	2,373	13,019	15,392	**$15,392**	$14,840
At rates established according to the terms of monetary agreements					
United States dollars	424	278	702	**860**	1,180
Deutsche marks	395	986	1,381	**960**	1,053
Swiss francs	382	609	991	**720**	752
Yen	45,450	8,000	53,450	**475**	475
Pounds sterling	75	100	175	**378**	378
ECUs	–	125	125	**157**	157
Guilders	60	–	60	**38**	47
French francs	–	1,000	1,000	**209**	209
				19,189	19,091
At rates in effect at balance sheet date					
United States dollars*	611	9,414	10,025	**13,251**	11,775
Deutsche marks	28	500	528	**386**	405
Swiss francs	35	94	129	**115**	113
Pounds sterling	200	300	500	**1,018**	612
				14,770	12,905
				$33,959	$31,996

* These repayments are fully hedged by future revenue streams in United States dollars.

Hydro-Québec has undrawn revolving standby credits totaling U.S.$1,750 million which expire between 1994 and 1998. Any borrowing under these lines of credit will bear interest at a rate based on the London Interbank Offered Rate (LIBOR).

In January 1994, Hydro-Québec issued CAN$1,000 million of debentures on the international market. These debentures bear interest at 7% and will mature in 2004.

NOTE 10

Decommissioning of nuclear generating station

(in millions of dollars)	1993	1992
Dismantlement of Gentilly-2 nuclear generating station	$ 7	$ 5
Final disposal of irradiated fuel	21	17
	$28	$22

NOTE 11

Perpetual debt

Perpetual notes in the amount of U.S.$400 million bear interest at a rate based on the London Interbank Offered Rate (LIBOR) established twice yearly. They are guaranteed by the Gouvernement du Québec and are redeemable at Hydro-Québec's option. These notes are translated into Canadian dollars at the exchange rate in effect at date of issue ($529 million at exchange rate in effect at balance sheet date).

NOTE 12

Restrictions on dividends

Under the *Hydro-Québec Act*, 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 year, they cannot exceed the distributable surplus, which is established as follows: 75% of income before interest and exchange loss and the year's net investment income, less interest on debt securities and amortization of borrowing discount and expenses. This calculation is made on the basis of the consolidated financial statements.

However, in respect of a given financial year no dividend may be declared in an amount that would have the effect of reducing the rate of capitalization to less than 25% at the end of the year. This rate corresponds to the ratio between shareholder's equity (less dividends declared for the year) and the total of long-term debt, notes payable, perpetual debt and shareholder's equity (less dividends declared for the 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.

Dividends declared are deducted from the retained earnings of the year for which they were declared.

NOTE 13

Pension plan

The Hydro-Québec Pension Plan is a contributory defined benefit pension plan based on final pay, under which benefits payable are guaranteed by Hydro-Québec. At December 31, 1993, 25,079 employees were contributing to the Plan. An actuarial valuation was made in 1993 in order to determine the present value of accrued benefits based on employees' expected basic salary until retirement. The assets of the pension funds are valued at market-related values.

At December 31, 1993, the date of the most recent valuation, the Pension Plan showed a surplus as follows:

	(in millions of dollars)
Assets of the pension funds	$4,700
Present value of accrued benefits	(4,600)
Surplus	**$ 100**

For the year ended December 31, 1993, pension expense amounted to $108 million ($107 million in 1992).

NOTE 14

Commitments and projected capital expenditures

Churchill Falls generating station

On May 12, 1969, Hydro-Québec signed a contract with Churchill Falls (Labrador) Corporation [CF(L)Co] whereby Hydro-Québec undertook to purchase virtually all the power generated at the Churchill Falls generating station for a period of 40 years from September 1, 1976, except for an amount not to exceed 300,000 kilowatts of such power which may be recaptured by CF(L)Co. This contract will be automatically renewed for a further period of 25 years upon already agreed terms.

Under the terms of this contract, Hydro-Québec agreed to make payment for energy whether or not taken, subject to certain limitations and compensations, and to pay CF(L)Co an amount equal to a portion of the interest charges on the debt incurred by CF(L)Co to finance the construction of the plant as well as an amount equal to a portion of the losses on foreign exchange incurred to service the debt issued in United States dollars. Hydro-Québec could 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 CF(L)Co and to cover its expenses if funds are not otherwise available.

Projected capital expenditures

Hydro-Québec plans call for capital expenditures of $3,865 million for 1994.

NOTE 15

Reclassification

Some of the figures for 1992 were reclassified in order to conform to the presentation adopted in 1993.

Consolidated Results and Financial Ratios

(in millions of dollars)	1993	1992	1991	1990	1989
Revenue					
Sales of electricity	$7,004	$6,764	$6,210	$5,821	$5,502
Other operating revenue	32	43	42	39	23
	7,036	6,807	6,252	5,860	5,525
Expenditure					
Operations*	1,800	1,770	1,723	1,524	1,385
Electricity and fuel purchased*	291	358	226	383	322
Depreciation, amortization and decommissioning*	1,020	907	810	754	694
Taxes	650	594	392	361	324
	3,761	3,629	3,151	3,022	2,725
Income before interest and exchange loss	3,275	3,178	3,101	2,838	2,800
Interest					
Interest on debt securities	3,201	3,098	3,011	2,790	2,536
Amortization of borrowing discount and expenses	43	31	28	23	22
(Net gain) net loss on redemption of long-term debt	(40)	(15)	(20)	(1)	6
Borrowing costs capitalized to Construction in progress	(640)	(544)	(480)	(385)	(323)
Net investment income	(81)	(180)	(245)	(88)	(76)
	2,483	2,390	2,294	2,339	2,165
Exchange loss	31	64	47	95	70
	2,514	2,454	2,341	2,434	2,235
Net income	$ 761	$ 724	$ 760	$ 404	$ 565
Declared dividends	–	–	–	–	$ 182
Contribution (taxes and dividends) to provincial and municipal government revenue	$ 650	$ 594	$ 392	$ 361	$ 506
Financial ratios					
Interest coverage	1.03	1.07	1.10	1.04	1.12
Capitalization *(in %)*	23.9	23.7	23.7	24.8	25.9
Self-financing *(in %)***	37.1	29.8	28.2	30.7	33.4
Return on equity *(in %)*	7.2	7.4	8.4	4.8	7.0
Return on revenue *(in %)*	10.8	10.6	12.2	6.9	10.2

$$\text{Interest coverage} = \frac{\text{Income before interest and exchange loss + Net investment income}}{\text{Gross interest charges}}$$

$$\text{Capitalization} = \frac{\text{Shareholder's equity}}{\text{Shareholder's equity + Long-term debt + Perpetual debt + Notes payable + Current portion of long-term debt}}$$

$$\text{Self-financing} = \frac{\text{Cash provided from operations – Declared dividends}}{\text{Investment + Maturity of long-term debt and sinking fund redemption}}$$

$$\text{Return on equity} = \frac{\text{Net income}}{\text{Shareholder's equity (year's average)}}$$

$$\text{Return on revenue} = \frac{\text{Net income}}{\text{Revenue}}$$

*To conform to the presentation adopted in 1993, some of the figures for the previous years were reclassified.

**In 1993, the calculation method was revised to exclude Repayment in advance. Were it not for this change, self-financing for 1993 would have been 30.3%.

Operating Statistics

(in millions of kilowatthours)	1993	1992	1991	1990	1989	Average annual increase *(in %)* 1993/1989
Electricity sales						
Firm in Québec:						
Residential and farm	49,282	49,221	46,250	46,993	47,607	0.9
General and institutional	28,358	28,176	28,264	28,314	28,750	(0.3)
Industrial	54,646	49,766	48,087	46,009	46,503	4.1
Other	4,692	4,799	4,630	4,644	4,627	0.3
	136,978	131,962	127,231	125,960	127,487	1.8
Surplus in Québec:						
General	–	–	–	–	24	–
Industrial	–	–	–	–	274	–
Neighboring systems	–	–	–	5	8	–
	–	–	–	5	306	–
Deliveries outside Québec:						
Firm electricity	9,865	10,691	9,423	8,752	8,830	2.8
Short-term sales	5,256	1,900	392	451	886	56.1
	15,121	12,591	9,815	9,203	9,716	11.7
Total sales	**152,099**	144,553	137,046	135,168	137,509	2.6
Revenue from electricity sales						
(in millions of dollars)						
Firm in Québec:						
Residential and farm	$2,815	$2,744	$2,468	$2,334	$2,215	6.2
General and institutional	1,798	1,741	1,655	1,568	1,414	6.2
Industrial	1,706	1,650	1,552	1,404	1,356	5.9
Other	233	247	231	215	206	3.1
	6,552	6,382	5,906	5,521	5,191	6.0
Surplus in Québec:						
General	–	–	–	–	–	–
Industrial	–	–	–	–	3	–
Neighboring systems	–	–	–	–	–	–
	–	–	–	–	3	–
Deliveries outside Québec:						
Firm electricity	314	325	290	286	279	3.0
Short-term sales	138	57	14	14	29	47.7
	452	382	304	300	308	10.1
Total revenue from sales	**$7,004**	$6,764	$6,210	$5,821	$5,502	6.2
Number of customer accounts at December 31						
Residential and farm	3,017,826	2,978,510	2,925,349	2,862,225	2,802,418	1.9
General and institutional	269,640	269,815	269,735	268,200	263,380	0.6
Industrial	13,369	13,639	13,481	12,961	13,210	0.3
Other	6,851	6,975	7,094	7,152	7,117	(0.9)
Total	**3,307,686**	3,268,939	3,215,659	3,150,538	3,086,125	1.7
Number of employees*						
Permanent at December 31:	21,028	21,161	20,755	20,067	19,437	2.0
Women	4,631	4,607	4,396	4,118	3,853	4.7
Temporary (year's average)	5,753	6,073	5,985	5,222	4,425	6.8

* These figures exclude employees on loan to subsidiaries.

Unit Revenue, Unit Expenditure, and Other Ratios

	1993	1992	1991	1990	1989
Unit revenue – electricity sales					
(in cents per kilowatthour)					
Firm in Québec:	4.78	4.84	4.64	4.38	4.07
Residential and farm	5.71	5.58	5.34	4.97	4.65
General and institutional	6.34	6.18	5.86	5.54	4.92
Industrial	3.12	3.32	3.23	3.05	2.92
Other	4.96	5.14	4.98	4.64	4.45
Surplus in Québec	–	–	–	–	1.09
Québec sales	4.78	4.84	4.64	4.38	4.06
Firm outside Québec	3.18	3.03	3.08	3.26	3.16
Short-term sales outside Québec	2.63	3.02	3.55	3.06	3.20
Sales outside Québec	2.99	3.03	3.10	3.25	3.17
Unit revenue – total sales	4.61	4.68	4.53	4.31	4.00
Unit expenditure					
(in cents per kilowatthour)					
Expenditure:					
Operations*	1.19	1.22	1.26	1.13	1.01
Electricity and fuel purchased*	0.19	0.25	0.16	0.28	0.23
Depreciation, amortization and decommissioning*	0.67	0.63	0.59	0.56	0.50
Taxes	0.43	0.41	0.29	0.27	0.24
	2.48	2.51	2.30	2.24	1.98
Interest and exchange loss:					
Interest	1.63	1.65	1.68	1.73	1.58
Exchange loss	0.02	0.05	0.03	0.07	0.05
	1.65	1.70	1.71	1.80	1.63
Total unit expenditure	**4.13**	4.21	4.01	4.04	3.61
Total assets at December 31					
(in dollars per customer account)	14,475	13,724	13,015	11,644	10,976
Long-term debt at December 31					
(in dollars per customer account)	10,038	9,536	8,742	7,641	7,115
Annual investment					
(in dollars per customer account)	1,218	1,262	1,267	1,009	799
Average annual consumption					
Residential and farm sector					
(in kilowatthours per customer account)	16,438	16,674	15,983	16,592	17,137
Average rate increase, May 1st					
All categories *(in %)*	1.5	3.5	6.9	7.4	4.3
Representation of women**					
Permanent employees at December 31 *(in %)*	22.0	21.8	21.2	20.5	19.8

* To conform to the presentation adopted in 1993, some of the figures for the previous years were reclassified.

** These figures exclude employees on loan to subsidiaries.

Energy and Power Requirements of System

ENERGY REQUIREMENTS

(in millions of kilowatthours)	1993	1992	1991	1990	1989	Average annual increase *(in %)* 1993/1989
Total requirements						
Generated (gross)	131,552	126,348	121,886	115,208	125,081	1.3
McCormick generation	2,289	2,217	1,913	1,691	2,013	3.3
Received:						
Purchased	34,235	32,181	28,137	31,679	28,389	4.8
Received as per agreement	2,930	3,001	5,402	4,314	3,505	(4.4)
	37,165	35,182	33,539	35,993	31,894	3.9
Total requirements	**171,006**	163,747	157,338	152,892	158,988	1.8
Québec requirements						
Firm electricity	136,978	131,962	127,231	125,960	127,487	1.8
Deliveries as per agreement	3,744	4,339	5,164	5,133	5,166	(7.7)
McCormick generation	2,289	2,217	1,913	1,691	2,013	3.3
Capitalized generating-station service	68	44	57	69	61	2.8
Total priority consumption	**143,079**	138,562	134,365	132,853	134,727	1.5
Generating-station service	616	606	570	668	688	(2.7)
Own use	399	396	376	359	355	3.0
Losses and other	10,969	10,942	11,145	9,129	12,585	(3.4)
Total priority requirements	**155,063**	150,506	146,456	143,009	148,355	1.1
Surplus electricity	–	–	–	5	306	–
Generating-station service	–	–	–	–	1	–
Losses and other	–	–	–	–	18	–
Total Québec requirements	**155,063**	150,506	146,456	143,014	148,680	1.1
Deliveries outside Québec						
Firm electricity	9,865	10,691	9,423	8,752	8,830	2.8
Short-term sales	5,256	1,900	392	451	886	56.1
Deliveries as per agreement	115	158	588	346	180	(10.6)
Generating-station service	61	43	39	31	36	14.1
Losses and other	646	449	440	298	376	14.5
Total deliveries outside Québec	**15,943**	13,241	10,882	9,878	10,308	11.5
Total requirements	**171,006**	163,747	157,338	152,892	158,988	1.8

POWER REQUIREMENTS FOR THE WINTER BEGINNING IN DECEMBER*

(in thousands of kilowatts)	1993	1992	1991	1990	1989	Average annual increase *(in %)* 1993/1989
Total requirements	**33,600**	30,070	32,040	28,494	27,934	4.7
Priority requirements	**30,609**	28,131	29,922	27,522	27,349	2.9

TOTAL INSTALLED CAPACITY**

(in thousands of kilowatts)	1993	1992	1991	1990	1989	Average annual increase *(in %)* 1993/1989
Installed capacity	**29,131**	28,145	26,839	25,682	25,126	3.8

* The power requirements of 1993 correspond to data available at February 7, 1994. These requirements include all interruptible power.

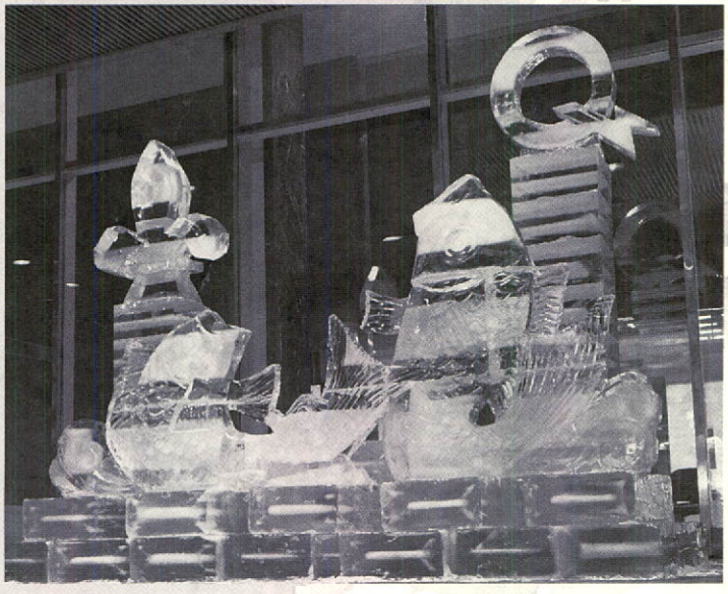
** In addition to the installed capacity of its own generating stations, Hydro-Québec has access to most of the generation of the Churchill Falls power plant, which has a nominal capacity of 5,428 MW.

Hydro-Québec turns 50 this year. Its history runs parallel to that of Québec as a whole in the second half of this century, from the enthusiasm of the postwar years, to the euphoria of the sixties, and the questionings of the nineties.

Hydro-Québec's story is one of five decades of challenges faced up to, and met. It chronicles a half-century in the progress of a utility whose mission has grown in complexity in step with the heightening expectations of its customers and other publics.

First came the energy challenge. Hydro-Québec was established in an atmosphere of skepticism, essentially to serve the Montréal region, yet it quickly had to meet electricity demand which doubled, inexorably, every 10 years during the utility's first four decades of existence.

Then there was the challenge of integration. In acquiring private distribution companies in 1963, Hydro-Québec extended its territory to all of Québec. Within a few years, it united these companies' highly diverse corporate structures, practices and cultures into a cohesive whole.



This ice sculpture was made by artists from China — to celebrate Hydro-Québec's 50th anniversary — based on an idea by a Hydro-Québec employee. The blocks represent the utilities that formed Hydro-Québec, while the fish are symbols of prosperity.

The next challenge was technology. Starting in the sixties, faced with the growing distance of the sources of hydropower, Hydro-Québec became a world leader in such fields as high-voltage transmission, the design and management of major power systems, construction in remote regions and the management of large-scale job sites. Many Québec companies took their place on world markets due to experience gained with Hydro-Québec.

The seventies were years of financial challenge, during which Hydro-Québec summoned together the resources needed to finance the first phase of James Bay development. They were also years of socio-political challenge, a time marked by two world energy crises and by precursors of changing values in industrialized countries.

The eighties heralded the coming of the turn of the century. The first challenge was the environment, which prompted Hydro-Québec to make ecological considerations an explicitly stated part of its project design. Next was a management challenge, posed by the two-fold reality of slowing growth in energy demand, and the increasingly complex expectations of the utility's publics.

In 1990, Hydro-Québec launched its approach to the next century with its Défi performance. *The goal of this "performance challenge" is to satisfy the customer — now legitimately more demanding than ever — at the lowest possible cost, and to incorporate the many different facets of Hydro-Québec's mission into its management and decision-making process.*

Hydro-Québec intends to be Canada's foremost electric utility for the quality of its services by the year 2000. This may be the most exciting challenge yet: it entails a thorough transformation from top to bottom of the utility. It targets not only Hydro-Québec's actions and priorities, but also its culture — the very way it acts, and the way it is.

With this 50-year wealth of experience behind it, Hydro-Québec has already embarked on forging the next half-century.

Hydro-Québec has three wholly owned subsidiaries: Hydro-Québec International, Nouveler and Société d'énergie de la Baie James.

HYDRO-QUÉBEC INTERNATIONAL

Chairman of the Board
PAUL GOBEIL
President and Chief Executive Officer
DENIS SAINT-PIERRE

HQI exports the know-how and products of Hydro-Québec and its subsidiaries. It also invests in the field of energy on international markets, providing maximum support for the activities of Québec consulting engineering firms abroad, and for other Québec exports. HQI engages in such activities insofar as they are self-financing. In addition, it carries out mandates which Hydro-Québec assigns to it in the area of international affairs.

NOUVELER

Chairman of the Board
PIERRE BOLDUC
President and Chief Executive Officer
GÉRARD PRÉVOST

This subsidiary markets, by itself or with partners, technologies developed by Hydro-Québec or related to its mission. Nouveler participates in managing and developing the companies in which it invests, based on profitability criteria. It also actively promotes the emergence of innovative, competitive high-technology firms, to further Québec's sustainable development.

SOCIÉTÉ D'ÉNERGIE DE LA BAIE JAMES

Chairman of the Board
ARMAND COUTURE
President and Chief Executive Officer
JEAN-GUY RENÉ

SEBJ manages the major construction projects for Hydro-Québec's power system.

In addition, Hydro-Québec has:

- a 34.2% holding in Churchill Falls (Labrador) Corporation, which operates the Churchill Falls power plant, most of whose output is sold to Hydro-Québec under a long-term contract;
- a 50% holding in ACEP, which has patent rights and know-how relative to solid-polymer electrolyte batteries and pursues research and development;
- a 50% holding in CITEQ *(Centre d'innovation sur le transport d'énergie du Québec)*, founded jointly with Asea Brown Boveri, which specializes in the development of systems and equipment related to alternating-current and direct-current power transmission.

RICHARD DROUIN, QC
Chairman of the Board and Chief Executive Officer

ARMAND COUTURE
President and Chief Operating Officer

MARCEL AUBUT
Senior Partner,
Aubut, Chabot, Lawyers, Québec City

HENRI AUDET*
Chairman of the Board and Chief Executive Officer,
COGECO

MARIO BERTRAND
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ROBERT DEMERS
President, Demers Conseil

PIERRE DESJARDINS**
President and Chief Executive Officer, Domtar

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Québec, Burns Fry

FRANÇOIS GEOFFRION
Deputy Minister of Natural Resources,
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NYCOL PAGEAU-GOYETTE
President, Pageau Goyette et Associés

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Executive Vice President and Chief Financial Officer,
Power Corporation of Canada

RAYMOND C. SETLAKWE***
President, A. Setlakwe

LOUISE SICARD****
Vice President, Residential Sales and Service,
Bell Canada

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OF THE BOARD OF DIRECTORS

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MARCEL AUBUT
MARIO BERTRAND
ARMAND COUTURE
JEAN-ANDRÉ ÉLIE
GEORGES LABERGE
MICHEL PLESSIS-BÉLAIR

** As of April 28, 1993, replaced Serge Ménard.*
*** As of December 8, 1993, replaced Charles-Albert Poissant.*
**** As of April 28, 1993.*
***** As of December 8, 1993, replaced Jean A. D'Argensio.*

Senior Management

(at December 31, 1993)

RICHARD DROUIN, QC

Chairman of the Board and Chief Executive Officer

Secretariat

MARIE-JOSÉ NADEAU
Corporate Secretary

JUSTINE SENTENNE
Corporate Ombudsman

Finance and Planning	Marketing and International Affairs	Quality and Human Resources	Communications and Public Relations	Corporate Audit	Europe	Law
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ARMAND COUTURE

President and Chief Operating Officer

Customers and Distribution	Generation, Transmission and Telecommunications	Indian and Inuit Affairs	Installations	Procurement and Services	Technology and IREQ
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Vice President,
Accounting and Internal Control

Daniel Leclair
Vice President,
Financing and Treasurer

Robert Proulx
Vice President,
Computer Services

Marketing and International Affairs

Jean H. Ouimet
Vice President,
Energy Efficiency

Joseph M. McNally
Vice President,
Major Client Accounts

Claude Dubé
Vice President,
External Markets

Quality and Human Resources

Michel Taillon
Vice President Responsible
for Quality

Customers and Distribution

Roger Lanoue
Vice President,
Customer Services

Jacques Grenier
Vice President,
Laurentides Region

Jean-Pierre Brassard
Vice President,
Matapédia Region

André Mercier
Vice President,
Montmorency Region

Lucie Bertrand
Vice President,
Richelieu Region

Gaëtan Marois
Vice President,
Saint-Laurent Region

Generation, Transmission and Telecommunications

Jean-Claude Rodrigue
Vice President,
System Operations

Ghislain Ouellet
Vice President,
La Grande Rivière Region

Pierre Nadeau
Vice President,
Maisonneuve Region

Denis Pelletier
Vice President,
Manicouagan Region

Claude Grandmaison
Vice President,
Mauricie Region

André Boily
Vice President,
Saguenay Region

André Lavoie
Vice President Responsible
for Subtransmission Projects

Installations

Jean-Louis Comtois
Vice President (interim),
Administration and Control

Daniel Dubeau
Vice President,
Environment

Paul C. Nadeau
Vice President (interim),
Generating Facilities and
Buildings

Claude de Grandmont
Vice President,
Transmission Facilities

Louis Masson
Vice President,
System Planning

OPERATING DATA

ENERGY RESERVE

In 1993, inflows were 9% lower than the historical average, affecting the major drainage basins, and explaining the decrease in Hydro-Québec's energy reserves, which are held in the form of accumulated water in the reservoirs. On January 1, 1994, these reserves stood at 97.1 TWh, including the energy stored in the reservoirs at the Churchill Falls complex, or 3 TWh lower than on the same date in the previous year. Nonetheless, the utility has sufficient reserves to meet the needs of its Québec customers and to honor its commitments to neighboring systems.

GENERATION

Gross generation of Hydro-Québec's generating stations was 131.6 TWh in 1993, 5.2 TWh more than in 1992. This generation was 95.8% hydroelectric. The six generating stations of the La Grande complex alone supplied 44.2% of the hydroelectric generation. Gentilly-2 power station generated 93.7% of the thermal-electric power.

INSTALLED CAPACITY

In 1993, the installed capacity of the Hydro-Québec system increased by 986 MW to reach 29,131 MW at December 31.

This increase is mostly attributable to the commissioning of the following facilities:

- the last two units at Bécancour peaking plant;
- the first two units at Laforge-1 generating station;
- both units at Brisay generating station;
- the upgraded units at Manic-5 generating station.

Hydro-Québec also has access under contract to most of the generation of the Churchill Falls power plant, which has a nominal capacity of 5,428 MW.

PEAK DEMAND

Peak demand for priority requirements in Québec on the system during the winter of 1993-1994 occurred on Thursday, January 27, 1994, at 8 a.m., when demand reached 30,609 MW, compared with the previous winter's peak of 28,131 MW, an increase of 8.8%. This considerable increase occurred largely because the previous year's peak took place on a Sunday in February and was consequently relatively low compared with the usual peaks. In fact, the record for peak demand (29,922 MW, recorded on January 16, 1992) was broken several times during the particularly cold January of 1994.

GENERATING STATIONS	INSTALLED CAPACITY
Hydroelectric	*(in kilowatts)*
La Grande-2	5,328,000
La Grande-4	2,650,500
La Grande-3	2,304,000
La Grande-2-A	1,998,000
Beauharnois	1,648,060
Manic-5	1,469,000
Manic-3	1,183,200
Manic-5-PA	1,064,000
Manic-2	1,015,200
Bersimis-1	936,000
Bersimis-2	798,000
Outardes-3	756,200
Carillon	654,500
Outardes-4	632,000
Outardes-2	453,900
Brisay	446,500
Trenche	302,400
Laforge-1*	279,300
Paugan	250,100
Beaumont	243,000
La Tuque	222,000
Rapide-Blanc	198,600
Shawinigan-2	191,500
Manic-1	184,410
Shawinigan-3	171,900
Les Cèdres	162,000
Grand-Mère	149,575
Chelsea	146,680
Rapides-des-Îles	146,520
La Gabelle	136,580
Première-Chute	124,200
Rapides-Farmers	98,250
Rapides-des-Quinze	94,560
Chute-des-Chats	89,300
Bryson	61,000
Rapide-7	57,000
Hart-Jaune	48,450
Rivière-des-Prairies	48,300
Rapide-2	48,000
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
Chute-Garneau	2,240
Magpie	1,800
Rawdon	1,720
Chute-Burroughs	1,600
L'Anse-Saint-Jean	400

Power our customers can rely on.

* At December 31, 1993, two of the six generating units were in service. The four others will go into operation in 1994, bringing the installed capacity to 838 MW.

GENERATING STATIONS	INSTALLED CAPACITY
Thermal	*(in kilowatts)*
Nuclear	
Gentilly-2	685,000
Oil	
Tracy	600,000
Gas-turbine	
Bécancour	428,200
La Citière	200,880
Cadillac	162,000
Diesel units	
Îles-de-la-Madeleine	67,200
Blanc-Sablon	11,200
La Tabatière	6,800
Kuujjuaq	3,935
La Romaine	3,800
Saint-Augustin	3,600
Kuujjuarapik	3,405
Diesel units (cont'd.)	
Obedjiwan	2,900
Povungnituk	2,870
Port-Menier	2,790
Inukjuak	2,735
Weymontachie	2,615
Natashquan	2,100
Salluit	2,000
Kangiqsujuaq	1,520
Kangiqsualujjuaq	1,450
Île-d'Entrée	1,190
Kangirsuk	1,050
Umiujaq	1,050
Ivujivik	975
Quaqtaq	900
Akulivik	850
Aupaluk	550
Clova	530
Tasiujaq	525

Total installed capacity at December 31, 1993*	*(in kilowatts)*
Hydroelectric generating stations (54)	26,926,745
Thermal generating stations (30)	2,204,620
Total generating stations (84)	29,131,365

GENERATING STATIONS UNDER CONSTRUCTION	COMMISSIONING DATE	INSTALLED CAPACITY
Hydroelectric		*(in kilowatts)*
Laforge-1**	1994	558,600
La Grande-1	1994-1995	1,368,000
Lac Robertson	1995	21,000
Laforge-2	1996	290,000

* Hydro-Québec also has access to most of the generation of the Churchill Falls power plant, which has a nominal capacity of 5,428 MW.

** At December 31, 1993, two of the six generating units were in service. The four others will go into operation in 1994, bringing the installed capacity to 838 MW.

Transmission and Distribution Lines

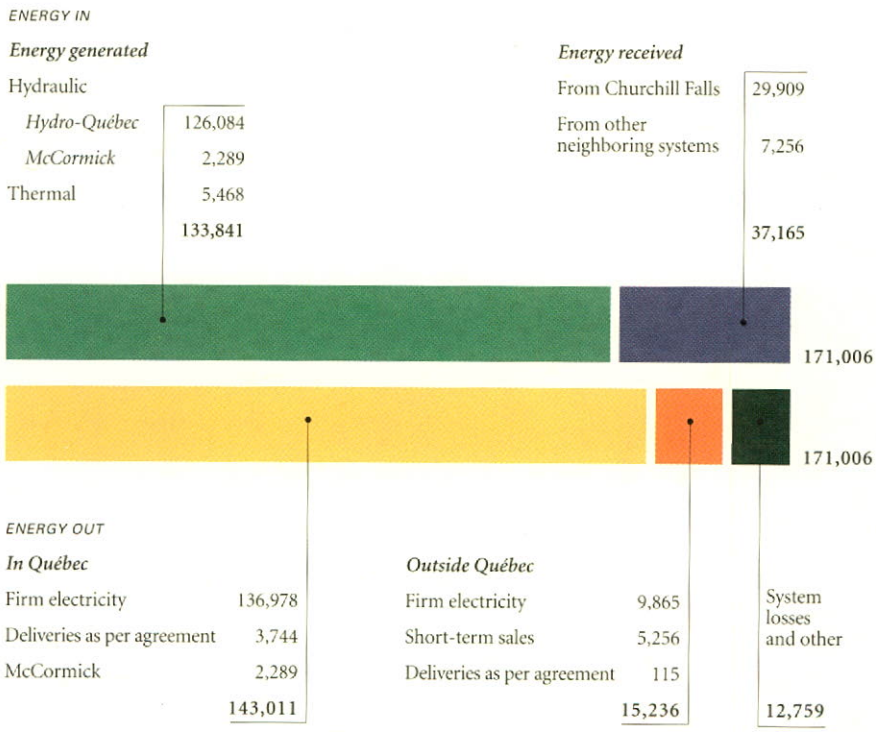
(Overhead and underground)

(in kilometres)	**1993**	1992	1991	1990	1989
Transmission					
735 and 765 kV	**10,265**	10,008	10,008	10,008	10,008
450 kV	**1,207**	1,207	1,201	1,201	78
315 kV	**4,286**	4,043	4,040	3,810	3,810
230 kV	**3,029**	3,029	3,067	3,041	3,041
161 kV	**1,615**	1,580	1,552	1,521	1,521
120 kV	**6,064**	5,944	6,153	6,053	5,890
49 and 69 kV	**3,403**	3,533	3,663	3,675	3,687
	29,869	29,344	29,684	29,309	28,035
Distribution					
34 kV	**552**	531	588	624	659
25 kV	**93,147**	90,002	87,581	85,375	83,168
4 and 12 kV	**7,209**	7,906	8,752	9,403	10,053
	100,908	98,439	96,921	95,402	93,880

Hudson Bay
Canada
Québec
Newfoundland
Labrador
James Bay
La Grande-2-A
La Grande-2
La Grande-1
Radisson
La Grande-3
Chissibi
La Grande-4
Tilly
Lemoyne
Laforge-1
Brisay
Churchill Falls
Némiscau
Albanel
Montagnais
Manic-5-PA
Manic-5
Arnaud
Micoua
Manic-3
Outardes-4
Manic-2
Outardes-3
Manicouagan
Outardes-2
Bersimis-1
Bersimis-2
Abitibi
Chibougamau
Chamouchouane
Saguenay
Bergeronnes
Périgny
St. Lawrence River
La Vérendrye
Laurentides
Jacques-Cartier
Lévis
Gentilly-2
Bécancour
Nicolet
Grand-Brûlé
Tracy
Duvernay
Carignan
Chénier
Carillon
Boucherville
Des Cantons
Hertel
Châteauguay
Beauharnois
Ontario
New Brunswick
Maine
Vermont
New York
United States
New Hampshire
Massachusetts
Generating station rated 350 MW or more
Generating station rated 350 MW or more under construction
735-kV substation
Interconnection
735-kV line
735-kV line under construction
765-kV line
450-kV direct-current line
Boundary of territory governed by The James Bay and Northern Québec Agreement

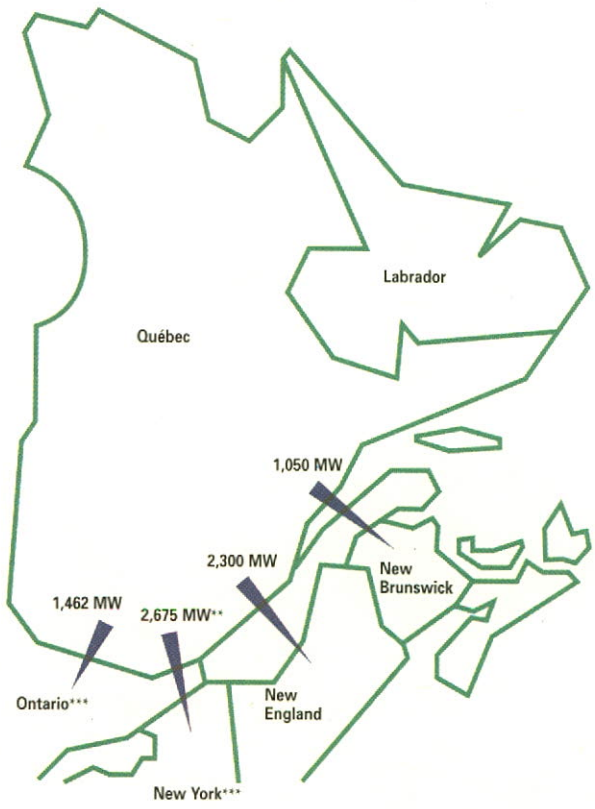
Energy Flows in 1993

(in millions of kilowatthours)



*Interconnections with Neighboring Systems**

(at December 31, 1993)



* Total interconnection capacity is 7,487 MW.

** New York State's reception capacity is limited to 2,495 MW.

*** Ontario and New York State are served by the same installations, limiting the simultaneous export capacity to these two systems to 2,987 MW. Hydro-Québec's total simultaneous export capacity is 6,337 MW.

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Hydro Québec

Our updated visual signature testifies to the changes we are making in our management values to serve our customers better.

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