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1978

Ontario Hydro Annual Report



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JUN 12 1979

MCGILL UNIVERSITY



# Ontario Hydro

Head Office,  
700 University Avenue, Toronto M5G 1X6

## Board of Directors

- Arthur J. Bowker**, Ottawa  
Research Officer  
National Research Council
- †† **William Dodge**, O.C., Ottawa  
Former Secretary-Treasurer  
Canadian Labour Congress
- †\* **Douglas J. Gordon**, Toronto  
President, Ontario Hydro
- † **Robert H. Hay**, Kingston  
Member, Kingston Public Utilities Commission
- \* **Allen T. Lambert**, O.C., Toronto  
Director  
The Toronto-Dominion Bank
- J. Conrad Lavigne**, Timmins  
President, Mid Canada Television System
- \* **Philip B. Lind**, Toronto  
Vice-President and Secretary  
Rogers Cable Communications Ltd.
- † **Sister Mary**, Toronto  
Executive Director,  
St. Michael's Hospital
- \* **J. Dean Muncaster**, Toronto  
President and Chief Executive Officer  
Canadian Tire Corporation Limited
- † **Robert M. Schmon**, St. Catharines  
President and Chief Executive Officer  
The Ontario Paper Company Limited
- William A. Stewart**, Denfield  
Former Ontario Minister of Agriculture and Food
- †\*\* **Robert B. Taylor**, F.C.A., Toronto  
Chairman, Ontario Hydro
- \* **Robert J. Uffen**, F.R.S.C., Kingston  
Vice-Chairman, Ontario Hydro  
Dean, Faculty of Applied Science  
Queen's University
- †† Chairman of the Audit Committee  
† Member of the Audit Committee  
\*\* Chairman of the Finance Committee  
\* Member of the Finance Committee

On December 31, 1978, Mr. Schmon retired from the Board. He was replaced by Hugh L. Macaulay of Toronto, who was named Chairman Designate (effective July 1, 1979). On January 15, 1979, Mr. Macaulay was elected Vice-Chairman by the Board.

## Officers

- Chairman of the Board**  
Robert B. Taylor, F.C.A.
- Vice-Chairman**  
Robert J. Uffen, F.R.S.C.
- President**  
Douglas J. Gordon
- Executive Vice-Presidents**  
Patrick G. Campbell  
Executive Vice-President Operations  
Milan Nastich  
Executive Vice-President Planning & Administration
- Vice-Presidents**  
George R. Currie  
Vice-President Distribution & Marketing  
Frank W. Gomer  
Vice-President Resources  
H.A. Jackson  
Vice-President Design & Construction  
Harold E. Kennedy  
Vice-President Supply & Services  
Lorne G. McConnell  
Vice-President Production & Transmission  
Arvo Niitenberg  
Vice-President Power System Program  
Henry J. Sissons, M.B.E.  
Vice-President Corporate Relations  
Harold A. Smith, M.B.E., F.R.S.C.  
Vice-President Special Assignments
- Secretary and General Counsel**  
William E. Raney, Q.C.

At its meeting of January 15, 1979, the Board of Directors established two new standing committees: Management Resources, with Dean Muncaster as Chairman; and Social Responsibility, with Hugh Macaulay as Chairman. The roles of these committees are set out in the Report of the Board.



# Report of the Board of Directors Of Ontario Hydro for the year 1978

TO THE HONORABLE JAMES AULD, MINISTER OF ENERGY

The year 1978 was a milestone in the history of electric power production in Ontario. For the first time, nuclear-electric generators surpassed coal-fired units as a source of electricity for the people of the province — contributing approximately 30 per cent of the total compared with 28 per cent for coal.

While all but 20 per cent of Ontario's total energy needs were imported last year, a little more than 68 per cent of the province's electricity came from its own resources — water power and uranium.

Primary energy demand in 1978 was up by 2.7 per cent compared with the increase of 2.2 per cent in the previous year. Export sales of interruptible power, mainly to utilities in New York and Michigan, were up by a substantial 39 per cent — partially due to interruptions of coal deliveries — and yielded a net benefit of almost \$120 million to Ontario power users.

The continuing prospect of slack economic conditions indicated that the new annual forecast of growth in customer demand, scheduled to be received by the Board in February, 1979, would again be below the projection made in February, 1978. In December, the Board instructed management to place a hold on all new commitments for generating facilities until the generation expansion program had been fully reviewed. In addition, it directed that cash expenditures on projects at Wesleyville, Atikokan, Bruce and Darlington be minimized until further decisions were made.

Furthermore, it was decided to stop construction and store equipment on the second half of the third heavy water plant at Bruce, and review the status of the first half again in the spring. Earlier, the Board had supported the position of the Ontario Minister of

Energy in urging an integrated federal-provincial program for the production and marketing of heavy water.

Although this report deals with the year 1978, some significant decisions made in the first four months of 1979 should be recorded here. At its meeting in February, 1979, the Board reviewed and accepted the new forecast, which, as expected, was significantly lower than that of February, 1978, as the planning document for the corporation's generation and transmission program. The forecast showed concrete evidence of the successful efforts of Hydro customers to conserve energy. The new forecast predicted an average growth of 4.7 per cent a year in customer demand to 1990, and 4.2 per cent from 1990 to the year 2000. In 1978, the forecast growth rate had been 5.5 per cent to 1987, gradually reducing to 4.5 per cent by the turn of the century. This downward trend indicated a reserve position in the years ahead that could be from 15 to 25 per cent higher than is considered appropriate for the Ontario power system.

So, in February, 1979, as the first step in attempting to balance the effects of weakening electrical demands with the committed expansion program, the Board decided that the construction of the remaining two oil-fired generating units at Wesleyville should be stopped and the equipment stored until needed, probably about 1990. This decision was based in part on information that had been presented to the Board in 1978 when alternatives were examined to reduce the then existing program.

With the prospective reserve position in mind and after a careful review of the generation program in April, 1979, the Board decided to continue construction of the Atikokan, Bruce B, and Dar-

lington generation stations but on an extended schedule. The operational dates for the individual units at the three stations will be stretched out so as gradually to bring capacity into line with projected demand. The Board concluded that the extended schedule was the best way to achieve its objective and would cause as little disruption to industry and employment as possible under the circumstances.

Compared with generation, the problem with respect to transmission lines is quite different. The Board is concerned about the costs — both in terms of economics and reliability of service — of the continuing delays being experienced in meeting service dates for new lines. One of the most urgently required lines is to move power from the now completed Bruce nuclear station into the provincial power grid. Legal action by local opposition groups again delayed construction of the last 28-mile section still to be completed. The cost penalty of this locked-in power is estimated at \$1 million to \$3 million a month. This line is now almost three years behind schedule.

The past months have seen a number of significant events. The federal and Ontario governments reached agreement committing both governments and their agencies, Atomic Energy of Canada Limited and Ontario Hydro, to develop and demonstrate the safe disposal of irradiated uranium fuel from nuclear power stations. The Select Committee of the Legislature on Hydro Affairs completed its review of the costs of the Bruce heavy water plants being built for Hydro by Lummus Canada Limited and found no evidence of mismanagement. Although it suggested that remedial action should have been taken sooner, it concluded that Hydro had demonstrated its capability to manage





projects of this magnitude.

In September, after public hearings on Hydro's 1979 rate proposal, the Ontario Energy Board informed the Minister of Energy that it accepted Hydro's forecast of revenue and its rate proposal. In September, after reviewing the OEB's report, the Hydro Board announced it would implement its rate proposals for the wholesale cost of power by an increase of 9.8 per cent to the municipal utilities and 10.1 per cent to approximately 100 large industrial customers, effective January 1, 1979. Revenue in 1978 exceeded the amount allowed within the spirit and intent of the Anti-Inflation program guidelines by \$130 million. This money, with interest, is being applied to reduce customers' bills in 1979.

Total "excess revenue" rebated to customers in 1978 and 1979 will amount to \$252 million. The effect of these refunds has been to limit the average net increase in wholesale power rates over the two years 1978-79 to 5.9 per cent a year. Without the benefit of these

rebates, the increases would have averaged 9.6 per cent.

Also in September, Dr. Arthur Porter and his colleagues on the Royal Commission on Electric Power Planning issued their interim report on nuclear energy entitled *A RACE AGAINST TIME*. The report recognized the need and safety of the CANDU nuclear system and also identified the uncertainties inherent in making forecasts of electric power consumption. It also said that growth scenarios of electric energy to the year 2000 of between two per cent and six per cent were credible, and offered four per cent as an interim conclusion.

One of the most significant public hearings in terms of its long run implications is the review by the Ontario Energy Board of Hydro's Costing and Pricing Study. It is expected to report its findings in 1979. The objective of the study and its review by the OEB is to find the most equitable method of pricing electricity in Ontario.

Within Hydro, three ad hoc

advisory committees to the Chairman, composed of members of the Hydro Board, examined three key areas of concern during 1978: organization, public accountability, and government relations.

As a result of the recommendations of the Committee on Organization, the Board of Directors in October approved a fundamental realignment of responsibilities at the senior level of the organization, details of which appear elsewhere in this report. The objective is to achieve more integrated strategic planning, improve monitoring and control capability at the corporate level, obtain a more definitive assignment of operational and corporate responsibilities, and place greater emphasis on accountability. In January, 1979, this committee was made a standing committee of the Board. Its name was changed to Management Resources and Mr. Dean Muncaster was elected Chairman.

The ad hoc committee on public accountability, chaired by Mr. Philip Lind, was also established as a standing committee, under the





**Ontario Hydro Board of Directors.** Seated (left to right): Sister Mary, Toronto; Robert J. Uffen, Vice-Chairman, Kingston; Robert B. Taylor, Chairman, Toronto; Douglas J. Gordon, President, Toronto; J. Dean Muncaster, Toronto; Standing, (left to right): Arthur J. Bowker, Ottawa; William A. Stewart, Denfield; William E. Raney, Secretary and General Counsel, Toronto; Philip B. Lind, Toronto; Hugh L. Macaulay, Chairman-designate, Toronto; William Dodge, Ottawa; J. Conrad Lavigne, Timmins; Robert H. Hay, Kingston. In absentia: Robert M. Schmon, St. Catharines; Allen T. Lambert, Toronto.

title Social Responsibility. The new Vice-Chairman of the Board, Mr. Hugh Macaulay, became its Chairman. Its function is to advise the Board and make recommendations with respect to Hydro's objectives, policies, and programs as they relate to its social responsibilities as a large public corporation serving the citizens of Ontario.

These two new committees bring to four the Board's standing committees, the others being Audit and Finance. Their establishment reflects a continuing effort on the part of the Hydro Board to discharge its responsibilities to its public as effectively as possible.

The third ad hoc committee, which reviewed relations between the Provincial Government and Hydro, was not established as a standing committee because discussions between Hydro and Government to develop a memorandum of understanding between the two have now been underway for some months and are expected to be finalized shortly. The committee will then be disbanded.

Such a memorandum would satisfy a recommendation of the report of Task Force Hydro that a contract be agreed to by Government and Hydro setting out their respective responsibilities. The Management Board of the Cabinet subsequently suggested a memorandum of understanding to reach the same objective.

On behalf of the Board, I would once again express its appreciation to all those individuals and groups whose help, assistance, and advice are always so deeply appreciated.

Our thanks are extended to the people of the municipal utilities of Ontario and their associations, the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities, for another year's outstanding performance. The Board also wishes to express its appreciation to the members of the Provincial Steering Committee for the Restructuring of Municipal Utilities, which was dissolved at year end, its work virtually complete. Chairman Syd Baldwin and his colleagues since 1975 have provided helpful guidance and encouragement to local study teams engaged in the difficult task. At the end of 1978, the number of municipal utility systems in the province stood at 334, compared with 353 when the restructuring program began.

We would also like to thank the Minister of Energy and his staff for their support and understanding, as well as all those ministries and agencies with which Hydro deals.

To the staff of Ontario Hydro, the Board wants me to express a special word of thanks and appreciation for their unceasing efforts and dedication in serving the people of Ontario. They have never

faltered despite the heavy demands placed upon them and the stresses caused by frequently being under the spotlight in the public debate on the province's energy future.

In mid-December, Premier William Davis announced that Hugh Macaulay would become Chairman of Ontario Hydro, effective July 1. Mr. Macaulay joined the Board of Directors January 1 and was elected Vice-Chairman January 15, succeeding Dr. Robert Uffen, who remains a member of the Board. Robert Schmon, who was appointed to the Board in 1976, retired at the end of the year because of ill health. The Board wishes to express its appreciation for his important contribution to the affairs of the Corporation during his term of office.

On a personal note, I wish to express my deep appreciation to my colleagues on the Board of Directors and to all those Hydro people who have helped make my term of office among the most stimulating and rewarding years of my working career.

On behalf of the Board,

Robert B. Taylor  
April, 1979



# ORGANIZATION STRUCTURE



**Robert Taylor**  
Chairman

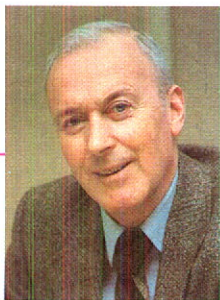
## BOARD OF DIRECTORS



**Douglas Gordon**  
President



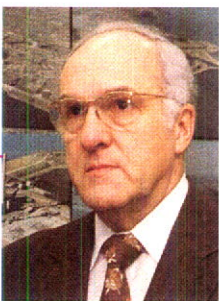
**William Raney**  
Secretary and  
General Counsel



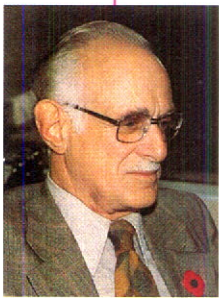
**John Matthew**  
Director  
Audit Division



**Milan Nastich**  
Executive Vice-President  
Planning and  
Administration



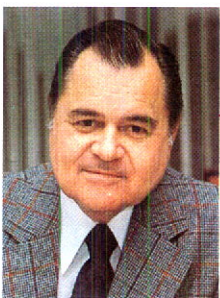
**Harold Smith**  
Vice-President  
Special Assignments



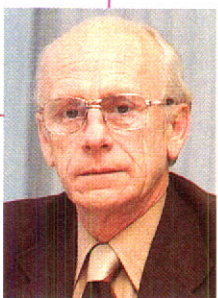
**Henry Sissons**  
Vice-President  
Corporate Relations



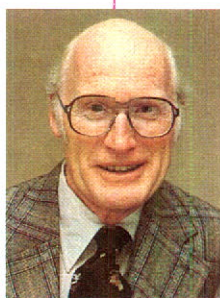
**Arvo Niitenberg**  
Vice-President  
Power System Program



**Gordon McHenry**  
General Manager  
Personnel



**Frank Gomer**  
Vice-President  
Resources



**H.A. Jackson**  
Vice-President  
Design and Construction



**George Currie**  
Vice-President  
Distribution and  
Marketing



In November, 1978, Ontario Hydro introduced a major re-organization of its senior management structure designed to more clearly define the responsibilities of corporate planning and administration, and operational activities.

Faced with an increasingly complex and rapidly changing environment, the Ontario Hydro Board of Directors identified a need for highly flexible and carefully integrated planning and improved monitoring, control and accountability.

To this end it appointed two executive vice-presidents, one to direct the Corporate Planning and Administration group, the other the Operations group, which includes essentially all the functions associated with the provision of electric service.

Named Executive Vice-President, Planning and Administration, was Milan Nastich, former Vice-President, Resources. P.G. Campbell, Acting Vice-President, Engineering & Operations, became Executive

Vice-President of the Operations group.

The two new executive vice-presidents, along with Chairman Robert Taylor and President Douglas Gordon, comprise the newly established Executive Office. Functions of the former General Managers' Committee now come under a Senior Management Committee comprising the president, executive vice-presidents, vice-presidents and the secretary and general counsel.

Reporting to Milan Nastich in the Planning and Administration group:

Frank Gomer, Vice-President, Resources, in charge of the Resources branch which includes the former Personnel branch, the Economics division, Comptroller's division, Financial Information Systems division and Treasury division.

Arvo Niitenberg, Vice-President, Power System Program, in charge of a new Power System Program branch which includes System Planning division, Research division and the load forecasting function.

Henry Sissons, Vice-President, Corporate Relations, in charge of a new Corporate Relations branch responsible for the customer relations, public relations, government relations and employee communication functions and the co-ordination of public hearings.

Harold Smith, Vice-President, Special Assignments, in charge of a Reorganization Secretariat to

assist in completing the re-organization.

Reporting to P.G. Campbell in the Operations Group:

George Currie, Vice-President, Distribution and Marketing, in charge of the Distribution and Marketing branch, which consists of the former Regions and Marketing branch except for the units performing load forecasting and certain customer relations functions. These are being transferred to branches in the Planning and Administration group.

H.A. Jackson, Vice-President, Design and Construction, in charge of the existing Design and Construction branch.

Harold Kennedy, Vice-President, Supply and Services, in charge of the Supply and Services branch, which includes the existing Services and Computer branches except for certain units performing public relations and communications functions. These are being transferred to the Corporate Relations branch. This branch will provide material procurement, computer, property and other services to all units of the organization.

Lorne McConnell, Vice-President, Production and Transmission, in charge of the former Operations branch, renamed Production and Transmission.

W.E. Raney, Secretary and General Counsel, continues to report respectively to the Board of Directors and to the president for his currently assigned functions (except for the transfer of the Internal Audit function to the new Audit division).

Earlier in October, the formation of a new Audit division was announced. J.G. Matthew was appointed Director of Audit, reporting to the president.

D.A. Dack was appointed to the position of Executive Assistant to the Chairman. His primary function is to provide direct assistance and advice to the chairman and the president on day-to-day corporate relations issues.



**P.G. Campbell**  
Executive Vice-President  
Operations



**Lorne McConnell**  
Vice-President  
Production and  
Transmission



**Dennis Gillman**  
General Manager  
Computers



**Harold Kennedy**  
Vice-President  
Supply and Services



# Export power sales again set new records

The demand for electrical energy by Ontario consumers increased only marginally during 1978 as the province's economy continued to lag and conservation practices intensified.

During 1978, primary energy



Equipment used in power plant construction, such as the cooling water intake shown above, often dwarfs the workmen.

demand totalled 95.4 billion kilowatt-hours, an increase of only 2.7 per cent over the previous year. This compares with an increase of 2.2 per cent in 1977.

While the increase in primary energy demand continues to be low, export power sales again set new records, increasing from 8.4 billion kilowatt-hours in 1977 to 10.4 billion kilowatt-hours in 1978. Revenue from these sales totalled \$285.2 million, yielding an estimated net benefit of \$120 million which is passed on to Ontario customers. All of the export sales were made to neighbouring utilities in Michigan and New York states.

Ontario Hydro's single major source of generation continued to be water power during 1978 — accounting for about 34 per cent of the total. Nuclear power production increased to 30 per cent of the total energy generated — 95.7 billion kilowatt-hours. To produce an equivalent amount of energy at coal-fired stations would have required burning about 8.8 million megagrams (9.7 million tons) of coal, an amount equal to the total quantity of coal Hydro used in 1977.

The annual all-time high

primary peak demand of 16,247,000 kilowatts was set on January 10 and was 2.2 per cent greater than the previous year's peak which occurred in January, 1977. This was only the second time since 1948 that the annual Ontario peak demand occurred in January rather than December.

The December 1978 peak demand of 15,722,000 kilowatts was slightly greater than the December 1977 peak. (Figures show that Hydro customers established an all-time record peak demand of 16,252,000 kilowatts on January 15, 1979.)

Dependable peak capacity at the time of the December peak was 22.8 million kilowatts which represented an increase of seven per cent over that of 1977. The new dependable peak capacity included a coal-fired unit at Nanticoke and a nuclear unit at Bruce coming into service, revisions to the dependable capacity of certain generating stations and an upward revision to the Manitoba purchase contract. The December dependable peak was made up of the following generation mix: 18.8 per cent nuclear; 51.6 per cent thermal; 28.0 per cent hydraulic; 1.6 per cent purchased.

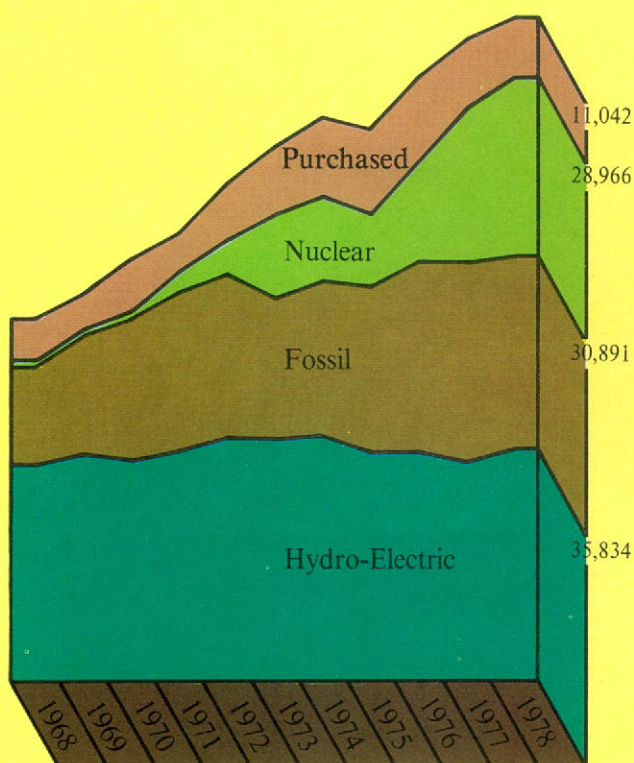
## Energy Made Available: 1978

	1978 Millions of kW·h	1977 Millions of kW·h	% Change Over 1977	% of Total 1978	% of Total 1977
Hydraulic.....	35,834	33,546	6.8	33.6	32.8
Coal .....	27,073	26,309	2.9	25.4	25.8
Natural gas .....	2,079	4,051	-48.7	2.0	4.0
Oil .....	1,739	1,564	11.2	1.6	1.5
Nuclear.....	28,966	24,488	18.3	27.1	24.0
Total generation .....	95,691	89,958	6.4	89.7	88.1
Energy received .....	11,042	12,186	-9.4	10.3	11.9
Total energy made available ...	106,733	102,144	4.5	100.0	100.0



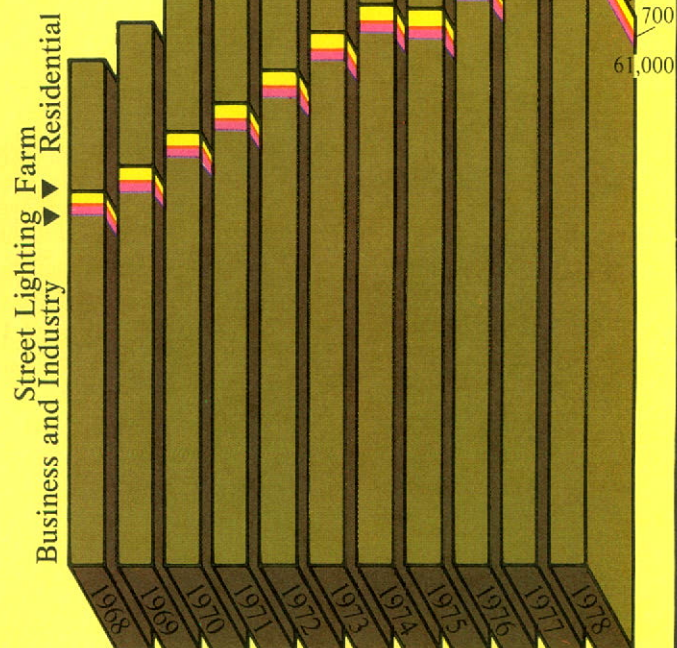
## Energy Made Available 1968-1978

Millions of  
kilowatt hours

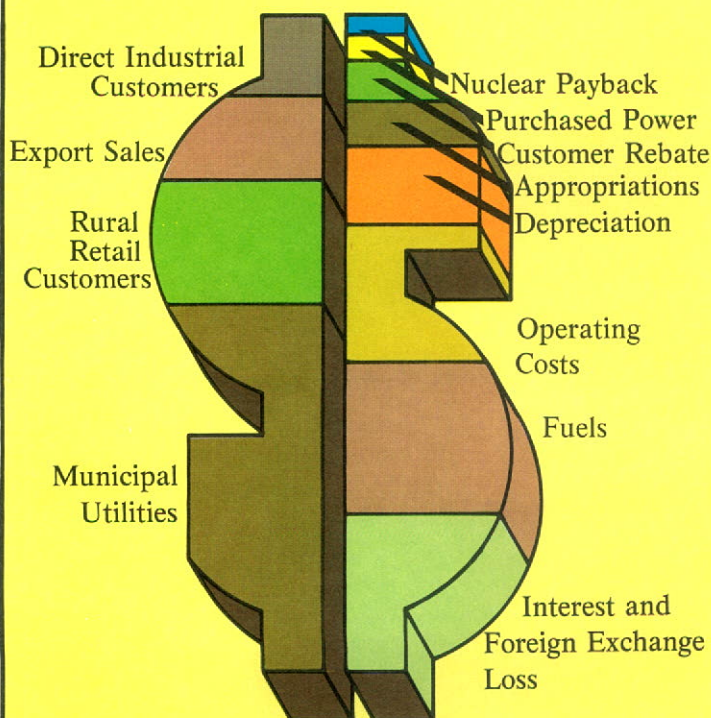


## Primary Electricity Sales Ontario Hydro and the Associated Municipal Utilities 1968-1978

Millions of  
kilowatt hours

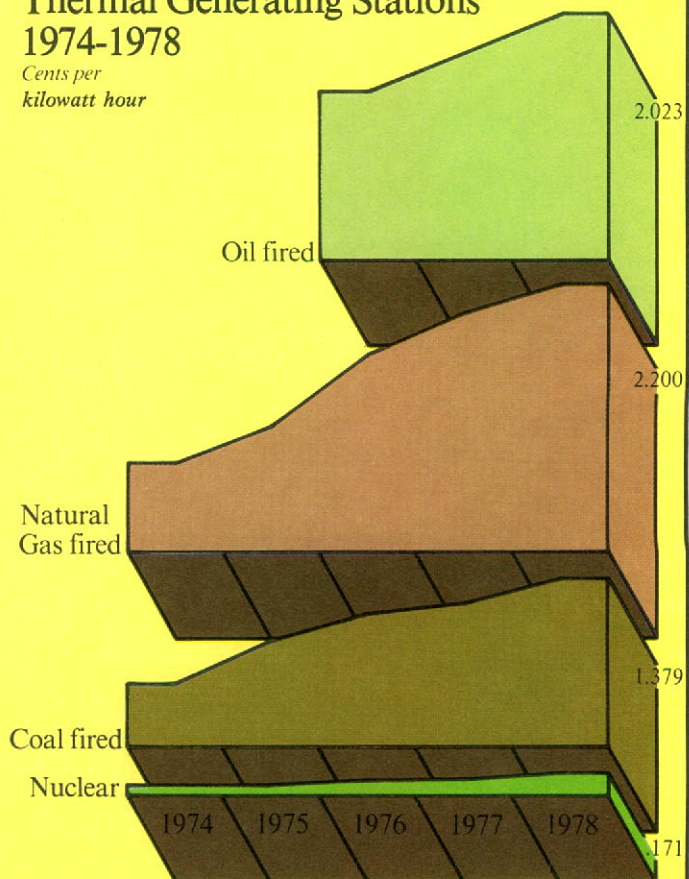


## Where Each Hydro Dollar came from went to



## Average Cost of Fuel Consumed by Thermal Generating Stations 1974-1978

Cents per  
kilowatt hour





# Municipal utilities structure streamlined

**During 1978** power was supplied under cost contracts to 334 associated municipal electrical utilities for resale to approximately 2,058,000 retail customers. In addition, the Ontario Hydro rural distribution system provided electrical service to some 785,000 customers located outside the areas served by municipal utilities, while 100 large industrial customers received direct service under special contract.

In April of 1978 the Hydro Board of Directors notified the Minister of Energy that rising costs necessitated average rate

increases of 9.8 per cent to municipal utilities and 10.1 per cent to industrial customers. The application was reviewed and approved by the Ontario Energy Board and was subsequently confirmed by Hydro's Board of Directors to become effective January 1, 1979.

As a result of higher than anticipated secondary revenues and lower than anticipated costs, the Board notified the Minister of Energy of excess revenues for 1977 and 1978. Of the 1977 excess revenues of \$122 million, \$120 million, together with interest,

was applied to reduce customers' bills in 1978, in accordance with Anti-inflation Board guidelines. The 1978 excess revenues of \$130 million and the 1977 remaining balance, together with interest are being applied to reduce customers' bills in 1979.

The electrical utility restructuring program, which was planned in 1975, resulted in a streamlining of municipal utilities in the regional municipalities of Waterloo and Peel and the County of Oxford and portions of the York Regional Municipality during 1978. A total of 31,000 customers of Ontario Hydro's rural system was transferred to municipal utilities in 1978.

At year end, restructuring studies were also in the final stages in the Regional Municipalities of Hamilton-Wentworth, Halton and Sudbury and legislation was pending for restructured utilities in the Regional Municipality of Niagara.

Its work virtually completed, the Provincial Steering Committee for the Restructuring of Municipal Utilities was dissolved at year end. This committee, composed of representatives from both the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities as well as Ontario Hydro, the Provincial Government and the Provincial Municipal Liaison Committee, had supervised the program since 1975 providing guidance on policy matters and technical assistance to local study teams which had been charged with the responsibility of recommending utility restructuring in their specific areas.



*A cashier in Hydro's Bowmanville office cheerfully deals with a customer's inquiry.*



## FINANCIAL SECTION



## Financial Review

Ontario Hydro's 1978 operating results showed a decline in net income as compared with 1977. Net income for 1978 was \$147 million as compared with \$194 million in 1977. In 1978, however, income was reduced by an extraordinary charge of \$21 million which arose from the cancellation in April, 1978 of two of the four oil-fuelled generating units then under construction at Wesleyville.

Total 1978 revenues of \$2,268 million exceeded amounts allowed within the spirit and intent of the Anti-Inflation program by \$130 million. These excess revenues, together with interest, will be applied to reduce customers' bills in 1979.

Revenues from sales of primary power and energy in 1978 were \$1,979 million, 13% higher than the previous year. This increase resulted mainly from higher rates and to a lesser extent, increases in the volume of sales.

Revenues from sales of secondary energy in 1978 amounted to \$289 million, \$79 million or 38% higher than in 1977. The greater demand for secondary energy by United States utilities and higher rates accounted for the increase in 1978.

Total costs, excluding financing charges and the extraordinary item, were \$1,421 million in 1978 compared to \$1,250 million in 1977, an increase of 14%. Operation, maintenance and administration costs were higher by \$88 million as a result of increases in wage and salary rates, staff levels, prices paid for materials and services, and included \$15 million for the costs of mothballing the second half of Bruce Heavy Water Plant "D". Fuel used for electric generation increased by \$45 million in 1978 because of higher prices and volumes. Power purchased was higher by \$22 million mainly as the result of increases in prices, partially offset by lower volumes purchased. Charges for energy produced by generating units during commissioning amounted to \$22 million in 1978. Depreciation costs rose \$49 million in 1978 to \$265 million, mainly as the result of units being placed in service at Bruce and Nanticoke generating stations.

Interest expense increased in 1978 by \$112 million. This represents an increase of 27% over 1977 and is primarily the result of new borrowings during the year together with interest payments on foreign bonds being made at higher rates of exchange. The foreign exchange losses of \$29 million in 1978 were comprised of a loss of \$48 million partly offset by foreign exchange gains from redemption and translation of foreign monetary assets and liabilities. The \$48 million loss resulted from Ontario Hydro calling, on November 6, 1978, a 7.75% bond issue of 150 million Swiss francs due in 1980. This issue was refinanced by a note of the same amount payable to a Swiss bank bearing interest at the rate of 2.625% and with the same maturity date. If the refinancing had not taken place, the exchange loss would normally have been charged to operations in 1979. However, in order to obtain the benefit of a lower interest rate the bond issue was refinanced in 1978, with resultant savings in interest of approximately \$10 million over the period to maturity in 1980.

The amount of net income appropriated for debt retirement as required by The Power Corporation Act, increased by \$15 million in 1978 to \$113 million. \$34 million of net income was also appropriated for the stabilization of rates and contingencies as compared to \$95 million in 1977.

Net additions to fixed assets in 1978 were \$1,652 million, increasing fixed assets in service and under construction to \$13,200 million. Major capital expenditures in 1978 included \$902 million for generation facilities, \$240 million for transmission facilities, and \$256 million for heavy water plants and facilities. The major expenditures for generating stations were \$296 million at Pickering G.S., \$263 million at Bruce G.S., \$103 million at Wesleyville G.S., and \$101 million at Thunder Bay G.S. At December 31, 1978 the costs of fixed assets in service and under construction were:

Asset Classification	In-Service Cost \$ million	Under Construction Cost \$ million
Generation facilities	5,894	2,156
Transmission facilities	2,111	379
Retail distribution facilities	741	4
Heavy water production facilities	368	1,094
Administration and service facilities	435	18
TOTAL	9,549	3,651

Funds provided from operations during 1978 were \$433 million while net borrowing provided \$1,235 million. Compared to 1977, these increased by \$24 million and \$261 million respectively. In addition, increases in accounts and interest payable amounted to \$150 million in 1978.

Proceeds from issues of long-term bonds, notes and other long-term debt during 1978, totalled \$1,847 million comprising: Canadian currency issues of \$800 million, issues in United States currency of \$825 million (Can. \$931 million), a note of 150 million Swiss francs (Can. \$106 million) and \$10 million of capitalized lease obligations. Retirement of long-term debt during the year amounted to \$357 million, an increase of \$79 million over 1977. The average coupon interest rate of bond issues in 1978 was 9.3%, as compared to an average rate in 1977 of 8.8%. Short-term notes outstanding at year-end amounted to \$25 million, a decrease of \$20 million from 1977.

Major applications of funds, in addition to the expenditure of \$1,652 million on fixed assets, were increases in fuel, materials and supplies of \$65 million, increases in advance payments for fuel supplies of \$46 million, and increases in accounts receivable and other assets of \$45 million.



## Auditors' Report

We have examined the statement of financial position of Ontario Hydro as at December 31, 1978 and the statements of operations, reserve for stabilization of rates and contingencies, equities accumulated through debt retirement appropriations and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

As explained in notes 5 and 13(a), the second half of Bruce Heavy Water Plant 'D' and the Wesleyville Generating Station have been deferred and it is not known when these assets will be used; and, as explained in note 13(b), decisions have been deferred concerning

the construction program on the first half of Bruce Heavy Water Plant "D" and on the Bruce "B", Darlington and Atikokan generating stations.

In our opinion, subject to the effect, if any, on the financial statements of the ultimate resolution of the uncertainties discussed in the preceding paragraph, these financial statements present fairly the financial position of Ontario Hydro as at December 31, 1978 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Toronto, Canada  
March 12, 1979

CLARKSON, GORDON & CO.  
Chartered Accountants



## Summary of Significant Accounting Policies

The accompanying financial statements have been prepared by management in accordance with accounting principles generally accepted in Canada, applied on a consistent basis. Because a precise determination of the carrying values of some assets and liabilities is dependent upon future events, the financial statements necessarily include estimates and approximations. These have been made using careful judgement and in the light of information available up to March 12, 1979. The financial statements, in management's opinion, have been properly prepared within reasonable limits of materiality and within the framework of the accounting policies summarized below.

### Fixed assets

Fixed assets include power supply facilities (generation, transmission and distribution); administration and service facilities (land, buildings, transport and service equipment); and heavy water production facilities.

The cost of additions and replacement of component units is capitalized. This cost includes material, labour, engineering, and overhead costs for administration, procurement and other services that are considered applicable to the capital construction program. In addition, the net cost of commissioning generating units is capitalized. This net cost represents the cost of material, labour, fuel and applicable overheads associated with the start-up, testing, and checking into service of generating units, less the value attributed to energy produced by units during their commissioning period. The commissioning period extends from the date of the initial start-up and testing of generating units to the date they are placed in service with an acceptable operating reliability.

In the case of nuclear generation facilities, cost also includes the cost of heavy water purchased and produced. The cost of producing heavy water includes the direct costs of production, applicable overheads, interest, and depreciation of the heavy water production facilities.

Interest is capitalized on construction and commissioning costs at effective annual rates of 9.9% in 1978 and 9.4% in 1977. These rates approximate the average cost of long-term funds borrowed in the years in which expenditures have been made for fixed assets under construction. Interest is capitalized on land costs during the construction and commissioning period; interest is not capitalized on land held for future use.

If a project is cancelled, all costs, including the costs of cancellation, are written off to operations. If a project is deferred after construction has started, mothballing costs associated with the deferment are charged to operations. Interest is not capitalized on deferred projects during the period of their deferral.

For normal retirements, the cost of assets retired is charged to accumulated depreciation with no gain or loss being reflected in operations. For unusual or premature retirements, the gains or losses on assets retired are reflected in operations. For all retirements, the costs of removal, less salvage proceeds, are reflected in current operations as an adjustment to depreciation expense in the year of retirement.

### Depreciation

Since January 1, 1971, all additions to fixed assets and the net book value of thermal-electric generating stations in service at the end of 1970 have been depreciated using the straight-line method. All other assets in service at the end of 1970 continue to be depreciated on the sinking fund method. Depreciation rates for the various classes of assets are based on the estimated service lives, which are subject to periodic review. The service lives of major asset classes are:

Generation facilities — Hydro-electric	50 to 100 years
— Thermal-electric	30 years
Transmission and distribution facilities	25 to 50 years
Administration and service facilities	5 to 60 years
Heavy water production facilities	20 years

Since 1971, the costs of minor deferred projects have been amortized on a straight-line basis. Commencing in 1979, the costs of major deferred projects will be amortized on a basis yet to be determined.

## Nuclear agreement — Pickering units 1 and 2

Ontario Hydro, Atomic Energy of Canada Limited and the Province of Ontario are parties to a joint undertaking for the construction and operation of units 1 and 2 of Pickering Nuclear Generating Station, with ownership of these units being vested in Ontario Hydro. Contributions to the capital cost by Atomic Energy of Canada Limited and the Province of Ontario amounted to \$258 million and these have been deducted in arriving at the value of fixed assets in service in respect of Pickering units 1 and 2. Ontario Hydro is required to make monthly payments until the year 2001 to each of the parties in proportion to their capital contributions. These payments, termed "payback", represent in a broad sense the net operational advantage of having the power generated by Pickering units 1 and 2 as compared with coal-fired units similar to Lambton units 1 and 2.

### Commissioning energy

Revenues from the sale of power and energy include revenues from energy produced by generating units during the commissioning period. A charge is included in the cost of operations for the value attributed to the energy produced during the commissioning period. This charge is equivalent to the operating and fuel costs of producing the same quantity of energy at generating units displaced because of the commissioning activity.

### Appropriations from net income

Under the provisions of The Power Corporation Act, the price payable by customers for power is the cost of supplying the power. Such cost is defined in the Act to include the cost of operating and maintaining the system, depreciation, interest, and the amounts appropriated for debt retirement and stabilization of rates and contingencies.

The debt retirement appropriation is the amount required under the Act to accumulate in 40 years a sum equal to the debt incurred for the cost of the fixed assets in service. The appropriation for or withdrawal from the stabilization of rates and contingencies reserve is an amount established to maintain a sound financial position and to stabilize the effect of abnormal cost fluctuations.

### Foreign currency translation

Long-term debt payable in foreign currencies is translated to Canadian currency at rates of exchange at the time of issue. Current monetary assets and liabilities, including long-term debt payable within one year, are adjusted to Canadian currency at year-end rates of exchange. The resulting translation gains or losses, together with realized exchange gains or losses, are credited or charged to operations.

### Advance payments for fuel supplies

As part of its program to ensure the adequate supply of fuels for its generating stations, Ontario Hydro has entered into long-term contracts for the supply of coal, oil and uranium. Where these contracts require Ontario Hydro to make payments in advance of product delivery, the prepayments and associated costs such as interest are carried in the accounts as advance payments for fuel supplies. These advance payments are to be amortized as part of the cost of the fuels delivered under the contracts or are to be recovered over periods which do not exceed the life of the contracts.

### Pension and Insurance Plan

The Pension and Insurance Plan is a contributory, defined benefit plan covering all regular employees of Ontario Hydro. The pension costs for each period include current service costs and amounts required to amortize any unfunded obligation. The most recent actuarial valuation of the pension plan, at December 31, 1977, reported an unfunded obligation of Ontario Hydro of approximately \$133 million. Of this amount:

- \$87 million, representing accumulated experience deficiencies and deficits resulting from changes in actuarial assumptions, was amortized in 1978 on a five year basis. Commencing on January 1, 1979, it is intended to amortize these deficiencies and deficits on a fifteen year basis; accordingly the remaining balances at December 31, 1978 will be amortized over the years 1979 through 1992. This change will reduce the amortization for 1979 by approximately \$15 million.
- \$46 million, representing an unfunded liability with respect to improved benefits, is being amortized on a fifteen year basis to 1991.



## Statement of Operations for the year ended December 31, 1978

	1978	1977
	\$'000	\$'000
<b>Revenues</b>		
Primary power and energy		
Municipal utilities .....	1,275,107	1,108,099
Retail customers .....	442,224	407,382
Direct customers .....	261,816	243,560
	<u>1,979,147</u>	<u>1,759,041</u>
Secondary power and energy .....	288,533	210,046
	<u>2,267,680</u>	<u>1,969,087</u>
Less excess revenues (note 1) .....	130,292	122,093
	<u>2,137,388</u>	<u>1,846,994</u>
<b>Costs</b>		
Operation, maintenance and administration .....	501,800	414,307
Fuel used for electric generation .....	487,037	441,902
Power purchased .....	97,949	75,842
Nuclear agreement — payback .....	46,936	49,643
Commissioning energy .....	21,866	52,322
Depreciation .....	265,060	215,601
	<u>1,420,648</u>	<u>1,249,617</u>
<b>Income before financing charges and extraordinary item .....</b>	<u>716,740</u>	<u>597,377</u>
Interest (note 2) .....	519,449	407,552
Foreign exchange losses (gains) (note 3) .....	29,346	(3,724)
	<u>548,795</u>	<u>403,828</u>
<b>Income before extraordinary item .....</b>	<u>167,945</u>	<u>193,549</u>
Extraordinary item (note 4) .....	20,500	—
<b>Net income .....</b>	<u>147,445</u>	<u>193,549</u>
<b>Appropriation for:</b>		
Debt retirement as required by The Power Corporation Act. .	113,446	98,078
Stabilization of rates and contingencies .....	33,999	95,471
	<u>147,445</u>	<u>193,549</u>

See accompanying summary of significant accounting policies and notes to financial statements



## Statement of Financial Position as at December 31, 1978

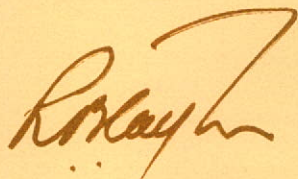
Assets	1978	1977
	\$'000	\$'000
<b>Fixed assets</b>		
Fixed assets in service, at cost. . . . .	9,549,008	8,423,173
Less accumulated depreciation. . . . .	<u>1,859,391</u>	<u>1,607,067</u>
	7,689,617	6,816,106
Fixed assets under construction, at cost (note 5) . . . . .	<u>3,651,344</u>	<u>3,137,872</u>
	<u>11,340,961</u>	<u>9,953,978</u>
 <b>Current assets</b>		
Cash and short-term investments (note 6) . . . . .	692,884	447,973
Accounts receivable. . . . .	254,785	256,035
Fuel for electric generation, at cost . . . . .	409,781	357,502
Materials and supplies, at cost. . . . .	<u>112,129</u>	<u>99,271</u>
	1,469,579	1,160,781
 <b>Other assets</b>		
Advance payments for fuel supplies (note 7) . . . . .	140,703	95,077
Long-term investments (note 8) . . . . .	59,555	68,623
Unamortized debt discount and expense . . . . .	105,635	91,003
Long-term accounts receivable and other assets . . . . .	<u>46,073</u>	<u>16,173</u>
	351,966	270,876
	<u>13,162,506</u>	<u>11,385,635</u>

See accompanying summary of significant  
accounting policies and notes to financial statements.



Liabilities	<u>1978</u>	<u>1977</u>
	<u>\$'000</u>	<u>\$'000</u>
<b>Long-term debt</b>		
Bonds and notes payable (note 9) . . . . .	10,129,119	8,640,531
Other long-term debt (note 10) . . . . .	<u>269,556</u>	<u>268,232</u>
	10,398,675	8,908,763
Less payable within one year . . . . .	<u>171,912</u>	<u>212,910</u>
	<u>10,226,763</u>	<u>8,695,853</u>
<b>Current liabilities</b>		
Accounts payable and accrued charges . . . . .	512,843	428,086
Short-term notes payable . . . . .	25,415	44,935
Accrued interest . . . . .	273,579	217,647
Long-term debt payable within one year . . . . .	171,912	212,910
Excess revenues payable (note 1) . . . . .	132,544	122,093
Estimated liability on cancellation of capital construction projects . . . .	<u>16,657</u>	<u>7,348</u>
	<u>1,132,950</u>	<u>1,033,019</u>
<b>Equity</b>		
Equities accumulated through debt retirement appropriations . . . . .	1,391,181	1,279,667
Reserve for stabilization of rates and contingencies . . . . .	284,917	250,401
Contributions from the Province of Ontario as assistance for rural construction . . . . .	<u>126,695</u>	<u>126,695</u>
	<u>1,802,793</u>	<u>1,656,763</u>
	<u>13,162,506</u>	<u>11,385,635</u>

On behalf of the Board



Chairman



President

Toronto, Canada  
March 12, 1979



Reserve for Stabilization  
of Rates and Contingencies  
for the year ended December 31, 1978

	Held for the benefit of all customers	Held for the benefit of (or recoverable from) certain groups of customers			Totals	
		Munici- palities	Retail Customers	Direct Customers	1978	1977
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Balances at beginning of year . . . . .	288,214	1,144	(32,324)	(6,633)	250,401	155,025
Appropriation . . . . .	31,825	104	(988)	3,058	33,999	95,471
Deficit recovered from municipalities on annexations . . . . .	(130)	—	751	—	621	—
Payment to Ontario Municipal Electric Association (note 11) . . . . .	—	(104)	—	—	(104)	(95)
Balances at end of year . . . . .	<u>319,909</u>	<u>1,144</u>	<u>(32,561)</u>	<u>(3,575)</u>	<u>284,917</u>	<u>250,401</u>

Equities Accumulated through  
Debt Retirement Appropriations  
for the year ended December 31, 1978

	Municipalities	Power District (Retail and Direct Customers)	Totals	
	\$'000	\$'000	1978	1977
	\$'000	\$'000	\$'000	\$'000
Balances at beginning of year . . . . .	881,022	398,645	1,279,667	1,181,569
Add:				
Debt retirement appropriation . . . . .	75,858	37,588	113,446	98,078
Annexation transfers and refunds . . . . .	11,041	(12,973)	(1,932)	20
Balances at end of year . . . . .	<u>967,921</u>	<u>423,260</u>	<u>1,391,181</u>	<u>1,279,667</u>

See accompanying summary of significant accounting policies and notes to financial statements.



**Statement of Changes in  
Financial Position  
for the year ended December 31, 1978**

	<u>1978</u>	<u>1977</u>
	\$'000	\$'000
<b>Source of Funds</b>		
Operations		
Income before extraordinary item .....	167,945	193,549
Depreciation, a charge not requiring funds in the current year .....	<u>265,060</u>	<u>215,601</u>
	433,005	<u>409,150</u>
Financing		
Long-term debt		
Bonds, notes and other long-term debt issued ..	1,846,530	1,406,720
Less retirements .....	<u>356,618</u>	<u>276,655</u>
	1,489,912	1,130,065
Short-term notes payable — (decrease) .....	(19,520)	(83,805)
Cash and investments — (increase) .....	<u>(235,843)</u>	<u>(71,961)</u>
	1,234,549	<u>974,299</u>
Increase in excess revenues payable (note 1) .....	10,451	122,093
Increase in accounts and interest payable including estimated liability on cancellation of capital construction projects .....	<u>149,998</u>	<u>100,133</u>
	<u><u>1,828,003</u></u>	<u><u>1,605,675</u></u>
<b>Application of funds</b>		
Net additions to fixed assets .....	1,652,043	1,413,120
Increase in advance payments for fuel supplies .....	45,626	57,169
Increase in fuel, materials and supplies .....	65,137	77,947
Increase in accounts receivable and other assets .....	44,697	57,439
Extraordinary item (note 4) .....	<u>20,500</u>	<u>—</u>
	<u><u>1,828,003</u></u>	<u><u>1,605,675</u></u>

See accompanying summary of significant accounting policies  
and notes to financial statements.



# Notes to financial statements

## 1. Anti-Inflation program

Ontario Hydro was subject to the guidelines under the Federal Anti-Inflation program in the matter of employee compensation to December 31, 1978, the date on which the program terminated. Management is of the opinion that Ontario Hydro has complied with the requirements of the anti-inflation legislation.

Ontario Hydro has also been required by the Province of Ontario to conform with the spirit and intent of the Federal Anti-Inflation program as it applied to net income. As a result of higher than anticipated secondary revenues and lower than anticipated costs, the Corporation had excess revenues in 1977 and 1978. Of the 1977 excess revenues of \$122 million, \$120 million, together with interest, was applied to reduce customers' bills in 1978. The 1978 excess revenues of \$130 million and the 1977 remaining balance, together with interest, will be applied to reduce customers' bills in 1979.

## 2. Interest

	1978	1977
	\$'000	\$'000
Interest costs consisted of:		
Interest on bonds, notes, and other debt	899,817	753,251
Less:		
Interest capitalized on fixed assets under construction	298,771	279,492
Interest charged to advance payments for fuel supplies	5,348	4,132
Interest earned on short-term and long-term investments	70,457	56,874
Net gain on redemption of bonds and sale of investments	5,792	5,201
	<u>380,368</u>	<u>345,699</u>
	<u>519,449</u>	<u>407,552</u>

## 3. Foreign exchange losses (gains)

	1978	1977
	\$'000	\$'000
Foreign exchange losses (gains) consisted of:		
Net exchange (gain) on redemption and translation of foreign monetary assets and liabilities	(18,932)	(3,724)
Exchange loss on refinancing of Swiss bond issue	48,278	—
	<u>29,346</u>	<u>(3,724)</u>

## 4. Extraordinary item

In February 1978 the Board of Directors initiated a review of the construction program, following receipt of a revised load forecast projecting a substantially lower rate of growth than previously forecast. As a consequence of this review, two of the four oil-fuelled generating units then under construction at Wesleyville were cancelled. The cost of cancellation of these two units is \$20.5 million which has been recorded as an extraordinary charge against income in 1978. (See note 13(a) for the subsequent deferral of construction of the remaining two units.)

## 5. Fixed assets under construction

	1978	1977
	\$'000	\$'000
Fixed assets under construction consisted of:		
Construction in progress	3,463,543	3,076,852
Deferred projects	124,542	7,963
Land held for future use	63,259	53,057
	<u>3,651,344</u>	<u>3,137,872</u>

In December 1978, the Board of Directors, following receipt of a report on the status of Bruce Heavy Water Plant "D" and on the heavy water supply and demand situation, approved a program to stop construction and store the components of the second half of Bruce Heavy Water Plant "D" and restrict expenditures accordingly. Capital expenditures of \$120 million incurred on the second half of this plant were transferred to deferred projects on December 31, 1978. Approximately \$10 million will be spent to bring construction of this half to a point where it can be safely mothballed and stored. Mothballing costs associated with deferment of this half, estimated at approximately \$15 million, were charged to 1978 operations. It is uncertain at this time when the second half of the plant will be used. (See note 13(b) for the subsequent decision relating to the first half of Bruce Heavy Water Plant "D".)

## 6. Cash and short-term investments

	1978	1977
	\$'000	\$'000
Cash and short-term investments are recorded at cost (approximately market value) and consisted of:		
Cash and interest bearing deposits with banks and trust companies	595,929	296,528
Corporate bonds and notes	77,074	82,930
Government and government-guaranteed bonds	19,881	68,515
	<u>692,884</u>	<u>447,973</u>



## 7. Advance payments for fuel supplies

	1978	1977
The advance payments consisted of:	\$'000	\$'000
Coal supply .....	69,181	58,589
Uranium supply .....	71,522	—
Residual fuel oil supply .....	—	36,488
	<u>140,703</u>	<u>95,077</u>

Based on present commitments, additional advance payments for fuel supplies, excluding interest, will total approximately \$541 million over the next five years (including approximately \$151 million in 1979).

## 8. Long-term investments

	1978	1977
These investments are recorded at amortized cost and consisted of:	\$'000	\$'000
Government and government-guaranteed bonds .....	<u>59,555</u>	<u>68,623</u>

Market value of these investments at December 31, 1978 was \$46 million. (1977 — \$58 million)

## 9. Bonds and notes payable

Bonds and notes payable, expressed in Canadian dollars, are summarized by years of maturity and by the currency in which they are payable in the following table:

Years of maturity	1978			Weighted Average Coupon Rate	1977	
	Principal outstanding \$'000				Principal outstanding \$'000	Weighted Average Coupon Rate
	Canadian	Foreign	Total			
1978	—	—	—		204,131	
1979	141,106	20,242	161,348		151,759	
1980	113,050	227,056	340,106		256,785	
1981	238,068	94,473	332,541		302,697	
1982	206,434	183,787	390,221		455,180	
1983	171,756	207,511	379,267		—	
1 - 5 years	870,414	733,069	1,603,483	7.2%	1,370,552	7.3%
6 - 10 years	346,284	796,071	1,142,355	7.5	1,212,890	7.4
11 - 15 years	230,761	240,494	471,255	7.6	614,870	7.2
16 - 20 years	995,389	414,967	1,410,356	8.0	1,153,753	8.1
21 - 25 years	1,183,668	652,562	1,836,230	9.3	1,932,226	9.1
26 - 30 years	1,536,373	2,129,067	3,665,440	9.2	2,356,240	9.0
	<u>5,162,889</u>	<u>4,966,230</u>	<u>10,129,119</u>		<u>8,640,531</u>	
Currency in which payable						
Canadian dollars . . . . .			5,162,889		4,555,260	
United States dollars . . . . .			4,679,236		3,842,686	
West German Deutsche marks . . . . .			124,055		127,924	
Swiss francs . . . . .			162,939		114,661	
			<u>10,129,119</u>		<u>8,640,531</u>	

Bonds and notes payable in United States dollars include \$3,420 million (1977-\$2,651 million) of Ontario Hydro bonds held by the Province of Ontario and having terms identical with Province of Ontario issues sold in the United States on behalf of Ontario Hydro. Except for these issues and a note of \$106 million payable in Swiss francs, all bonds and notes payable are guaranteed as to principal and interest by the Province of Ontario.

Long-term bonds and notes payable in foreign currencies are translated into Canadian currency at rates of exchange at time of issue. If Ontario Hydro were to translate the face value of its foreign bonds and notes payable at rates of exchange on December 31, 1978, the total amount of these liabilities would have to be increased by \$873 million.



## 10. Other long-term debt

	1978	1977
	\$'000	\$'000
Other long-term debt consisted of:		
(a) The balance due to Atomic Energy of Canada Limited for the purchase of Bruce Heavy Water Plant "A". Under the purchase agreement, Ontario Hydro pays equal monthly instalments of blended principal and interest to December 28, 1992, with interest at the rate of 7.795% .....	216,184	224,486
(b) Capitalized lease obligation for the head office building at 700 University Avenue, Toronto. The lease obligation is for the 30-year period ending September 30, 2005, payable in United States dollars at an effective interest rate of 8% .....	43,457	43,746
(c) Capitalized lease obligations for transport and service equipment. Under these agreements, payments of equal monthly instalments of blended principal and interest will be made to 1988, at effective interest rates ranging from 6.8% to 10.4% .....	9,915	—
	<u>269,556</u>	<u>268,232</u>

Payments required on the above debt, exclusive of interest, will total \$61 million over the next five years. The amount payable within one year is \$10.6 million. (1977 — \$8.8 million)

## 11. Payment to Ontario Municipal Electric Association

The amount of this payment is equivalent to interest on the balance held for the benefit of Municipalities in the Reserve for Stabilization of Rates and Contingencies.

## 12. Reclassification of 1977 amounts

In prior years,

- (a) foreign exchange gains or losses were included in interest costs; and
- (b) the revenues from primary power and energy were not detailed by class of customer.

To be consistent with the 1978 presentation, 1977 amounts have been reclassified in the Statement of Operations.

## 13. Subsequent events

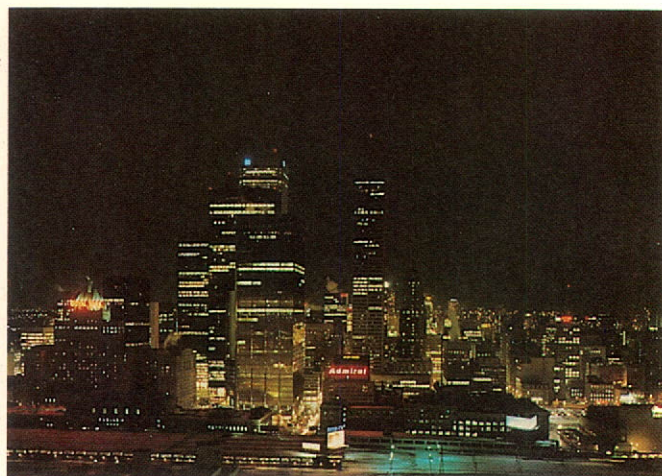
(a) At its meeting on February 12, 1979, the Board of Directors approved a load forecast which predicted an average annual compound growth rate to 1987 of 4.65% which is lower than the 5.4% previously forecast. As a result of this revision, the Board of Directors decided to stop construction and store the components of Wesleyville generating station until the early 1990's. Capital costs of \$192 million had been incurred to December 31, 1978 and approximately \$45 million will be spent to bring construction of the project to a point where it can be safely mothballed and stored. Mothballing costs associated with this deferment, which are estimated to be approximately \$35 million, will be charged to 1979 operations.

It was further decided to review the possibility of a deferment or cancellation of the coal-fired Atikokan generating station and an extension of the construction schedules for the Darlington and Bruce "B" nuclear generating stations.

(b) At its meeting on March 12, 1979, the Board of Directors decided, pending additional study, to defer any further decisions on the Bruce "B" and Darlington nuclear generating stations, the Atikokan coal-fired generating station and the first half of Bruce Heavy Water Plant "D" until its April 1979 meeting. Capital costs totalling \$313 million had been incurred to December 31, 1978 on these generating stations and \$200 million on the first half of Bruce Heavy Water Plant "D".



# Conservation program pays dividends



*These photos, taken of Toronto's skyline on March 3, 1978 at 6:30 p.m. (left) and 10:30 p.m. show dramatically how businesses are reducing office lighting during off hours.*

As the cover of this year's annual report reflects, Ontario Hydro continued to stress energy conservation both through information and advertising programs and in consulting services to business and industry.

These programs began to pay dividends as business readily responded to Hydro's offer of assistance. Noteworthy among them was a major conservation program at the giant Commerce Court complex in downtown Toronto. The bank managed to reduce consumption of electricity by 17 million kilowatt-hours in six months and over one year cut its electricity bill by \$180,000.

Other large office complexes have begun to pick up the energy conservation message and Hydro, along with local municipal utilities, has pursued the objective through participation with such groups as the influential Building Owners and Managers Association. Some 80 office buildings surveyed in 1976 were re-surveyed in 1978 and an average reduction in energy use of 10 per cent was indicated.

In the retail sector, Hydro

sponsored energy seminars which encouraged retailers to take a hard look at lighting levels with resulting benefits in reduced load. Among them was the Canadian Tire Corporation which subsequently adopted a corporate-wide policy reducing required minimum lighting in its stores by 50 per cent after experiments in Milton and Kingston produced significant cost reductions.

## Load management

While energy conservation efforts are producing significant savings for business and industry today, Hydro is committed to fostering long term programs to reduce the demands on its system.

The Corporation's commitment to load management — controlling customer demand for limited periods — reached the customer level early in 1978 with the decision to embark on major test programs with two municipal utilities in Oshawa and Scarborough. More than \$3 million will be expended on these programs over the next three years with special load

management metering equipment slated for installation in 650 homes. Heat storage furnaces will also be initiated in four homes, two in each municipality. These will store energy during off peak hours, then transmit the stored heat on their own during other hours. In addition, 50 special size water heaters are included in test installations across the two municipalities to operate on the same principle.

Discussions have also commenced with Canadian industry to develop heat storage systems for consumer use and for manufacturing.

While conservation efforts continued to gain momentum outside the corporation, inside, the employees took Hydro's own TRIM program in stride. These internal efforts to discover and implement cost effective conservation measures in 1978 resulted in a further cutback in energy consumption of 6.5 per cent — equivalent to 60 million kilowatt-hours — after having achieved a 12.5 per cent reduction in 1977.



# The prime concern is provision of power

**Ontario Hydro**, a special statutory corporation established by the Provincial Legislature in 1906, has broad powers to produce, buy, and deliver electric power throughout the Province of Ontario. It now operates under The Power Corporation Act, Revised Statutes of Ontario 1970, c.354 as amended.

The Corporation is administered by a Board of Directors that consists of a chairman, a vice-chairman, a president, and not more than ten other directors. An Executive Office, composed of the chairman, the president and the two executive vice-presidents, concentrates on overall corporate objectives and policies.

The prime concern of the Corporation is the provision of electric power to municipalities for resale to the people of the Province. Ontario Hydro also provides power to over 100 large, direct industrial customers and to 785,000 retail customers either in rural areas or in communities not served by municipal electric utilities.

Ontario Hydro also exercises

certain regulatory functions with respect to the electrical service provided by municipalities and maintains seven regional offices and 59 area offices suitably located throughout the Province.

With an operational area extending approximately 1,610 kilometres (1,000 miles) from east to west and covering about 647,500 square kilometres (250,000 square miles), Ontario Hydro is Canada's largest electrical utility and is one of the largest in North America.

## Part of a vast network

The Corporation has interconnections in Canada with Manitoba Hydro and the northwestern section of the Hydro-Quebec system and also has major interconnections with Michigan and New York states in the United States. Through its interconnections the Ontario Hydro system is effectively part of a vast electrical network joining together most of the central and eastern portions of the United States and the Canadian provinces of Saskatchewan, Manitoba, New Brunswick, Prince Edward Island,

Nova Scotia and parts of Quebec.

Ontario Hydro is a financially self-sustaining corporation that derives no revenue from taxes.

The Power Corporation Act by which Hydro is governed stipulates that service be provided at cost. The Act defines cost as including charges for power purchases, operation, maintenance, administration, fixed charges and reserve adjustments. Fixed charges include interest, depreciation and the provisions for the retirement of debt over a 40-year period.

The Province of Ontario guarantees the payment of principal and interest on bonds and notes issued to the public by Ontario Hydro. In the case of public borrowing in the United States, the Province borrows on behalf of Hydro by issuing its own debentures and advancing the proceeds to Ontario Hydro upon terms and conditions agreed upon between the Corporation and the Treasurer of Ontario.

# Higher achievements sought in health and safety

**Ontario Hydro continued** its efforts to achieve higher performance in employee and public health and safety during 1978.

The senior management committee on safety, The Safety Policy Committee, issued a revised general safety policy statement, established a corporate performance standard with respect to occupational fatalities, and arranged for a new system of employee representatives input to safety policy. Despite these initiatives, Hydro's health and safety record remained about the

same as that achieved in 1977. There were five occupational fatalities in the year for a fatality rate of 11 per million manhours — the same as in 1977. The overall corporate disabling injury rate was seven lost-time injuries per million manhours worked, and the medical attention frequency injury rate was 36 per million manhours — the same as 1977. A high standard of performance in radiological safety was again recorded in 1978, with no occupational or public fatalities or injuries due to exposure to radiation in the nuclear program.

The control of Polychlorinated Biphenyls (PCBs) received considerable attention. A corporate policy on the use of PCBs by Ontario Hydro was issued; assistance was provided to municipal utilities and the Fire Marshal's Office in the safe handling of this toxic agent. A corporate research and development program was initiated for total destruction of PCBs.



# Exploration for uranium continued in 1978

During 1978 Ontario Hydro continued its involvement in uranium exploration programs being carried out by Shell Canada Limited, Amok Limited and Norcen Energy Resources, and acquired an interest in a program being carried out by Canadian Nickel Company Limited.

Engineering and environmental studies were initiated by Norcen Energy Resources Limited on the Biizzard uranium property in British Columbia with a view to possible mining development. Ontario Hydro has an interest in the property through its involvement in the Norcen exploration program.

Movement of western Canadian bituminous coal by the integrated transportation system began at mid-year 1978 with 550,000 megagrams (610,000 tons) delivered before year-end to the terminal at Thunder Bay.

Total coal deliveries to generating stations from U.S. mines totalled 8,120,000 megagrams (8.96 million tons). The bulk of these deliveries were made under medium to long-term contracts and include coal from the U.S. Steel Cumberland mine. Supplementary spot U.S. coal purchases of 1,400,000 megagrams (1.5 million tons)



*High school students study the face of a CANDU nuclear reactor model at the Nuclear Information Center at Pickering Generating Station. During 1978, 40,000 people, many of them students, visited the center which is open seven days a week.*

were made to offset the effect of the United Mine Workers' strike in the United States on coal production during the first quarter of the year and to replenish stocks depleted by high levels of electricity exports.

Deliveries of residual oil

totalled 0.508 million cubic metres (3.2 million barrels) for the use at the Lennox Generating Station and Bruce Steam Plant. Deliveries of natural gas were 664 million cubic metres, 48% less than in 1977, and used exclusively at Hearn Generating Station.

## Canadians received 75% of Hydro's business

For the second consecutive year, the total value of contract awards increased substantially, reaching a new annual high of \$2.2 billion. This represents a \$800 million increase over 1977 and a \$674 million increase over the previous high established in 1974. The increase is mainly attributable to the award of two contracts for turbine generators for Darlington and Atikokan generating stations totalling approximately \$400 million.

During 1978, outstanding

equipment order commitments increased from \$1.95 billion to \$2.6 billion.

Excluding purchases for fuel, 75.8 per cent of the total value of 1978 purchases was directed to Canadian sources with 91.1 per cent of this business awarded in Ontario. This represents a drop of 9.4 per cent in the value of Canadian awards from the 1977 figures as a result of the impact of the foreign content of the turbine generator awards for Darlington and Atikokan. However, the

Canadian content of these turbine generators was the highest of any offered in the bids considered.

In general, the availability of materials remained excellent, with some improvement in delivery times. There were moderate increases in the costs for domestic goods during 1978, while the decline of the Canadian dollar resulted in significant increases in the cost of foreign products.



# Attention focused on alternate energy sources

**The research** and development programs of Ontario Hydro continued with considerable attention being paid to alternative energy sources.

Studies included the performance of three types of domestic solar water heaters and in monitoring and assessing the performance of solar systems such as the one to be installed in Hydro's new Thermal Training Center in Mississauga. The installation will include solar collectors and heat exchangers and will enable Hydro to monitor the potential of solar power and solar equipment.

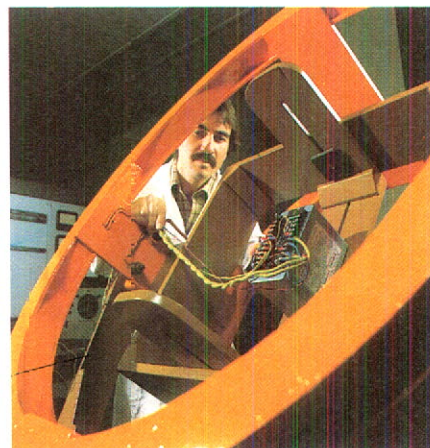
Hydro's Energy Conservation and Design and Development Divisions continued monitoring and investigating the potential of windpower and biomass fuel sources. Studies also went ahead towards the recovery of waste heat from generating stations for greenhouse and residential space heating.

## Distribution research

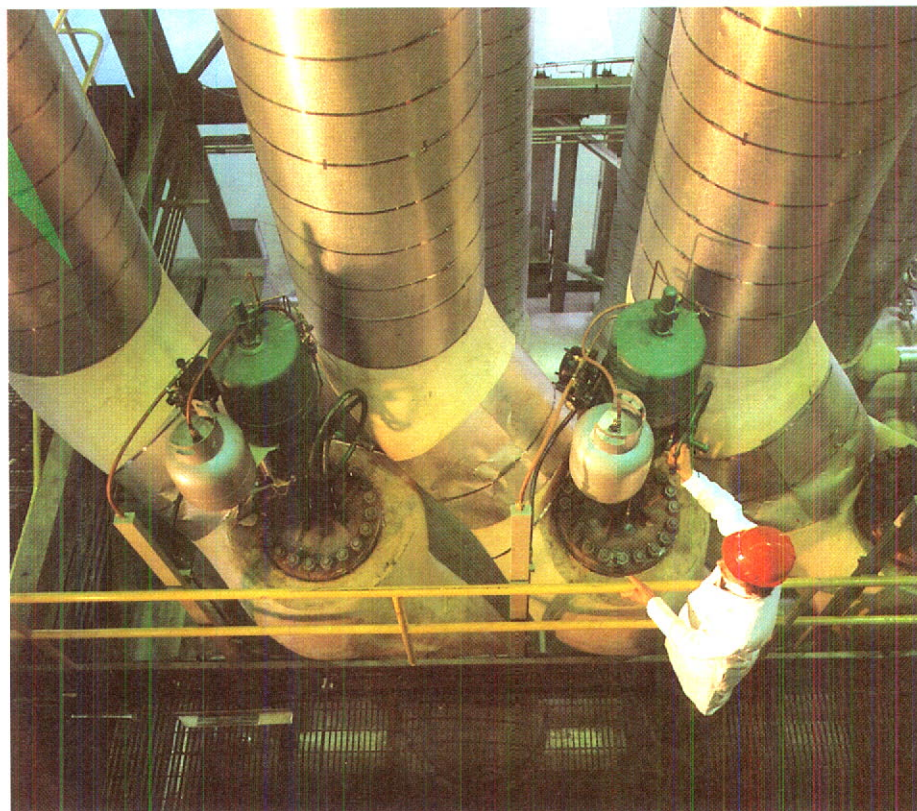
In the field of distribution research, projected increases in system voltage levels, higher load densities, and environmental concerns are major activities. Current efforts are focussed on distribution equipment. One phase of this work is being carried out under a Canadian Electrical Association contract and the results will be applicable to all Canadian electrical utilities.

Hydro researchers also sought ways to increase the load capacity of transmission tower footings without having to remove or rebuild them. They also co-operated with the City of Toronto in the "Watts from Waste" program. One of the limiting factors in the Toronto project is the excessively corrosive residue created when refuse is burned.

The Research division also continued the study of the structural and physical properties of rock a thousand feet below ground as the interest in deep, subterranean power stations grows. And experiments got underway to determine if light (either white or colored) will divert fish from cooling water intakes at thermal generating stations. Migrating fish have often forced costly shutdowns of generating units.



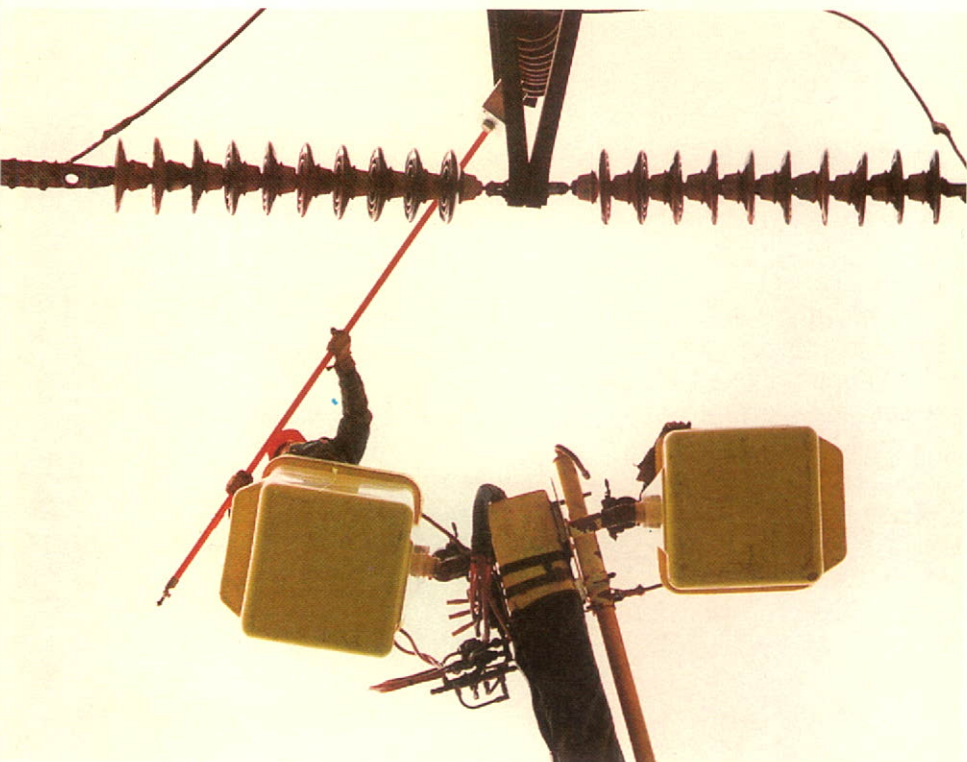
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2

1/ An engineer uses a watt transducer to measure the effect of stray magnetic fields. 2/ Hot pressurized water in this loop circuit is used for testing equipment associated with the primary heat transport circuits of nuclear reactors. 3/ A lineman uses an insulator tester developed by Ontario Hydro to locate faulty suspension insulators on a transmission line. 4/ A deformation gauge is lowered into a drillhole in rock to measure in-situ stresses. 5/ Torsional movement and stiffness measurements on bundle conductors is part of a research program to control conductor galloping. 6/ A technician on a drill tower connects electrical leads from a borehole deformation gauge. 7/ This equipment provides a petrographic thin section examination to determine the mineralogy of a rock sample. 8/ Researchers measure variations in infra-red radiation intensity from a coal-fired boiler in a search for ways to improve combustion efficiency and safety.

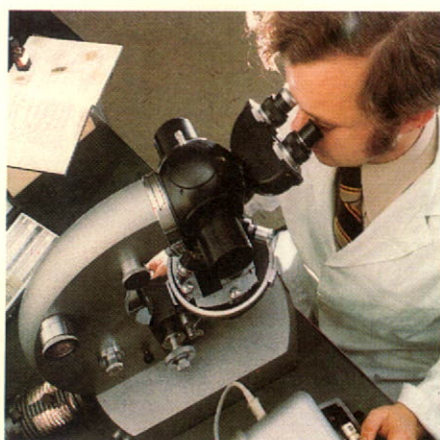




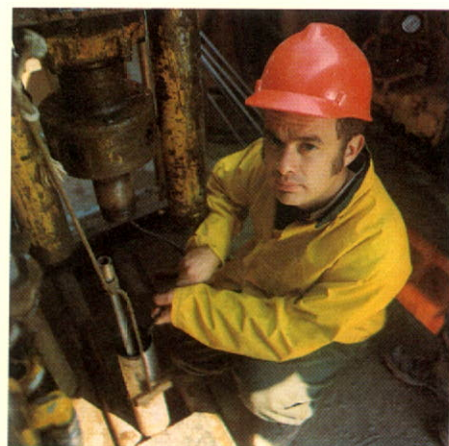
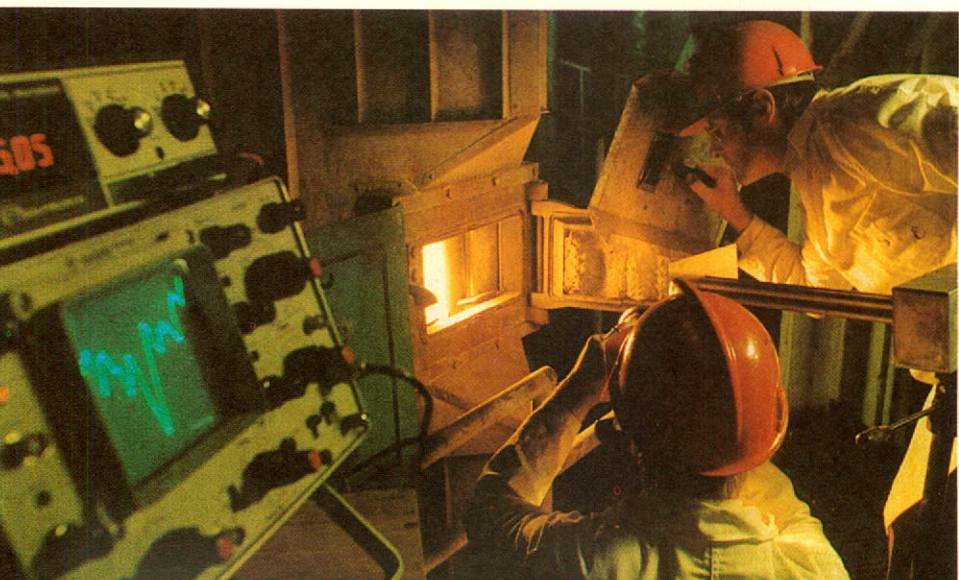
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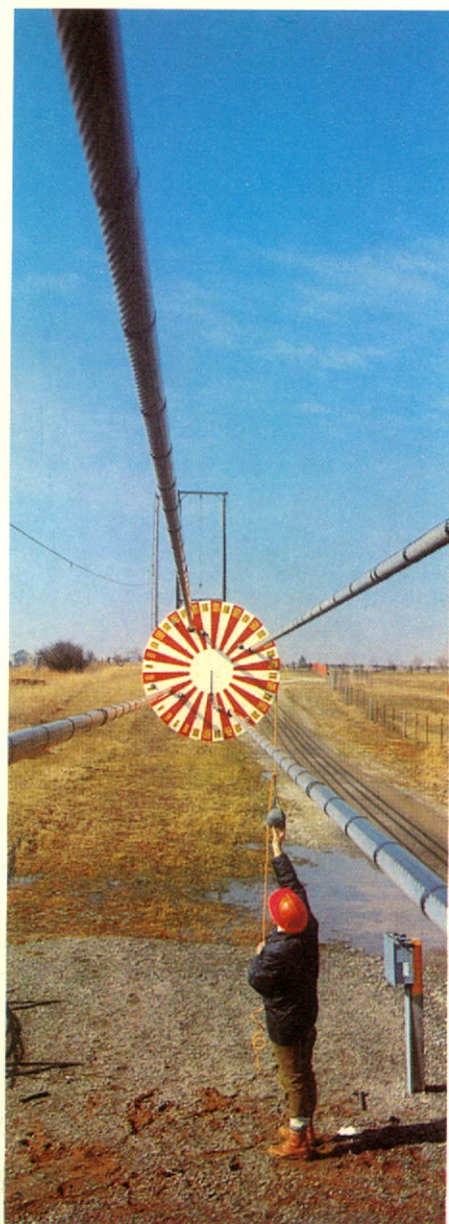
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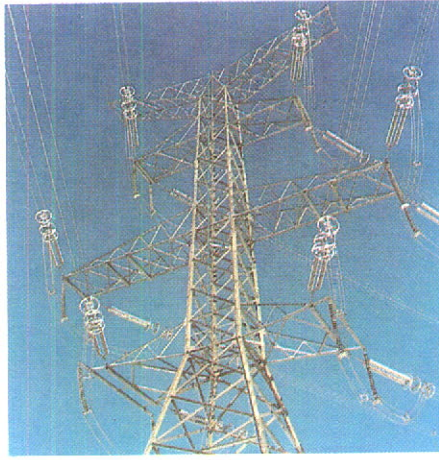
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# New transmission lines move the power to market

The construction of approximately 160 circuit kilometres (100 miles) of 500 kV transmission lines from Middleport transformer station to connect to new stations near Milton, Trafalgar and Claireville was completed in 1978. Portions of these lines were placed in service at 230 kV in November. In addition, Trafalgar TS, Hydro's first station with SF<sub>6</sub> gas-insulated metal-enclosed switchgear and bus, was placed in service at 230 kV in November. This technology permits a smaller, more compact structure. The 500 kV stations at Milton and Claireville are still under construction and it is expected that they will be completed and placed in service in 1979.

The 175-kilometre (109-mile) 500 kV line from the Bruce nuclear station to the Milton transformer station was completed as far as Belwood Junction where it has been connected in the existing system and placed in



*Aesthetics have improved with this 500 kV transmission tower just north of Oakville.*

service at 230 kV. Delays in the completion of the remainder of the 43-kilometre (28-mile) line from Belwood to Milton continued during the year because of legal action by groups opposed to its construction.

Delays caused by current legal actions have resulted in considerable power being locked-in at Bruce, at an estimated cost of

\$1 million to \$3 million a month. The costs are incurred by Hydro having to use imported coal to replace the cheaper, uranium-fueled nuclear power locked in at Bruce.

Expropriation of the right-of-way for the 500 kV line from Lennox GS to Oshawa was completed and construction of this line proceeded. It is expected that the line will be completed early in 1980.

In addition to the 500 kV lines, a number of 230 kV and 115 kV transmission lines were completed during the year involving the construction of approximately 42 circuit kilometres (26 miles) of line.

In terms of major transformer stations, four new stations were placed in service and additional capacity was added at seven existing stations. At the end of the year, construction was in progress on seven new stations and on additions to 15 existing stations.

## The public has a say in Hydro planning

During the year Ontario Hydro continued to involve the public and local and provincial governments in its plans to locate routes and sites for either new or upgraded transmission lines and generating station facilities.

This involvement concerned 30 projects, 27 of which were transmission projects that were brought to a successful conclusion following their review and processing under the appropriate applications of the Ontario Environmental Assessment Act.

Several social and community

studies were conducted in support of various planning projects to determine how they might affect neighbouring communities, and what measures could be taken to offset any detrimental effects. Over the past year, these studies were carried out in eight regions of the province.

Project information centres also played an important role in informing the public about specific project details. Over the past year, 24 information centres were well attended by the public.

Two major studies for the

selection of energy centre sites — areas large enough for at least two generating stations and associated transmission facilities — in Eastern Ontario and on Lake Huron's North Channel also proceeded during 1978.

After extensive studies and public hearings by citizens committees, government and Hydro personnel, Ontario Hydro in October, 1978 recommended the acquisition of the Dobie Point/Burton Island site on the North Channel. After similar studies and hearings in Eastern Ontario, site selections were narrowed to two locations — Edwardsburgh and Prescott. A final site selection is expected late in 1979, although Hydro is now considering a smaller site than originally planned.

Interest by the public in Hydro's facilities and technology continued to be demonstrated by the attendance of 700 visitors last year at the Essa Electrical Effects Demonstration Centre near Barrie.

*The photo below illustrates a typical public hearing that precedes any application to build new transmission lines and also shows Hydro's concern for full public participation*





## Pension and Insurance Fund Statement of Assets as at December 31, 1978

	1978	1977
	\$'000	\$'000
Fixed income securities		
Government and government-guaranteed bonds . . . . .	159,271	130,468
Corporate bonds . . . . .	131,069	119,565
First mortgages . . . . .	287,377	248,460
Total fixed income securities . . . . .	577,717	498,493
Equities — corporate shares . . . . .	262,404	271,466
Cash and short-term investments . . . . .	124,295	27,578
Total investments . . . . .	964,416	797,537
Accrued interest and dividends . . . . .	11,827	10,488
Receivable from Ontario Hydro . . . . .	1,786	11,499
	<u>978,029</u>	<u>819,524</u>

### Notes

1. The most recent actuarial valuation of the pension plan, at December 31, 1977, reported an unfunded obligation of Ontario Hydro of approximately \$133 million. Of this amount:

- \$87 million, representing accumulated experience deficiencies and deficits resulting from changes in actuarial assumptions, was amortized in 1978 on a five year basis. Commencing on January 1, 1979, it is intended to amortize these deficiencies and deficits on a fifteen year basis; accordingly the remaining balances at December 31, 1978 will be amortized over the years 1979 through 1992. This change will reduce the amortization for 1979 by approximately \$15 million.
- \$46 million, representing an unfunded liability with respect to improved benefits, is being amortized on a fifteen year basis to 1991.

2. In the above statement of assets, bonds are included at amortized cost, first mortgages at balance of principal outstanding and shares at cost. Total bonds and shares at December 31, 1978 with a book value of \$553 million had a market value of \$576 million (1977 book value \$521 million — market value \$510 million).

### Auditors' Report

(Pension and Insurance Fund)

We have examined the statement of assets of The Pension and Insurance Fund of Ontario Hydro as at December 31, 1978. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statement presents fairly the assets of the fund as at December 31, 1978.

Toronto, Canada  
March 12, 1979

CLARKSON, GORDON & CO.  
Chartered Accountants



# Superb performances by Pickering, Bruce reactors



*Workmen collect reinforcing rods for use in a reactor building dome at Pickering*

Ontario Hydro's nuclear generating capability continued to attract world-wide attention during 1978, with the CANDU reactors at Pickering and Bruce stations recording superb performances.

Year end figures show that Hydro's CANDU system reactors registered an average over-all nuclear-electric capacity factor of 81 per cent during 1978, while other systems throughout the world recorded capacity factors ranging from 43 to 65 per cent.

Meanwhile, Hydro's nuclear generation capacity increased measurably during 1978 when the third of the four-unit, 3,200,000 kilowatt Bruce A station came in service in February. The fourth and final unit was declared in service in January 1979. Work on Bruce B is well underway, with the first unit scheduled to be in service by 1983.

At the Pickering B nuclear station, four years of design and construction proceeded on schedule towards a 1981 in-service date for the first of the four, 540,000-kilowatt unit additions. The on-site construction force at the year's end approached 2,000.

Bruce Heavy Water Plant B was virtually complete by the year's

end. However, early in 1979 the prospects of reduced heavy water requirements both domestically and abroad forced a revision in plans for the third plant — Bruce D. The revision saw work stopped on the second half of the plant and the equipment placed in storage for possible later use, while work on the first half will continue until a further review is made later in 1979.

Site preparation and earth excavation work also continued for the four-unit, 3,600,000-kilowatt nuclear station at Darlington.

## **Fossil Generation**

Hydro's thermal generating capacity also increased in 1978 with the addition of two 500,000-kilowatt generators at Nanticoke in September and December. A major program of modifying generator rotors to reduce the risk of rotor cracking was initiated. Three of the seven rotors involved were returned to the manufacturer and are expected to be back in service early in 1979.

Work continued on the two-unit, 300,000-kilowatt extension to Thunder Bay GS, which is scheduled for completion in 1981; and site clearing was completed for

the two-unit, 400,000-kilowatt Atikokan GS.

Based on lower load forecasts, the decision was reached to place two units at Lennox and Units 1 to 4 at R.L. Hearn station into a "frozen reserve" state, starting in early 1979. All four 575,000-kilowatt units at the oil-fired Lennox station will receive routine maintenance; however, operating staff will be retained to operate only two units at any one time. Similarly, the gas-fired, 100,000-kilowatt units 1 to 4 at R.L. Hearn station will be maintained but not staffed for operation. This program, along with similar treatment of J.C. Keith station when it returns to service in 1980, will save more than \$20 million over the next five years.

The lower 1978 load forecast also resulted in the cancellation of two of the four oil-fired units at Wesleyville, and then in February, 1979 the decision was made to place the remainder of the project in storage over the next 12 months. Plans call for the generators and other major equipment to be purchased and stored at the plant, so that the station could be in service about 30 months after the need for it was determined.

## **Hydraulic Generation**

In August, 1978 the Board of Directors gave general approval for the development of a program for the future expansion of the corporation's hydro-electric system which could lead to 17 new projects over the next 16 years.

The 17 projects include 10 new developments plus extensions or redevelopment of present stations. The go-ahead for construction of each project will be made separately. Although the new and extended projects would add an average of only 523,000 kilowatts to Hydro's power production, at an estimated cost of \$1.4 billion, utilization of water power, a proven renewable resource, would record significant savings in fuels and maintenance costs.



# Comparative Statistics

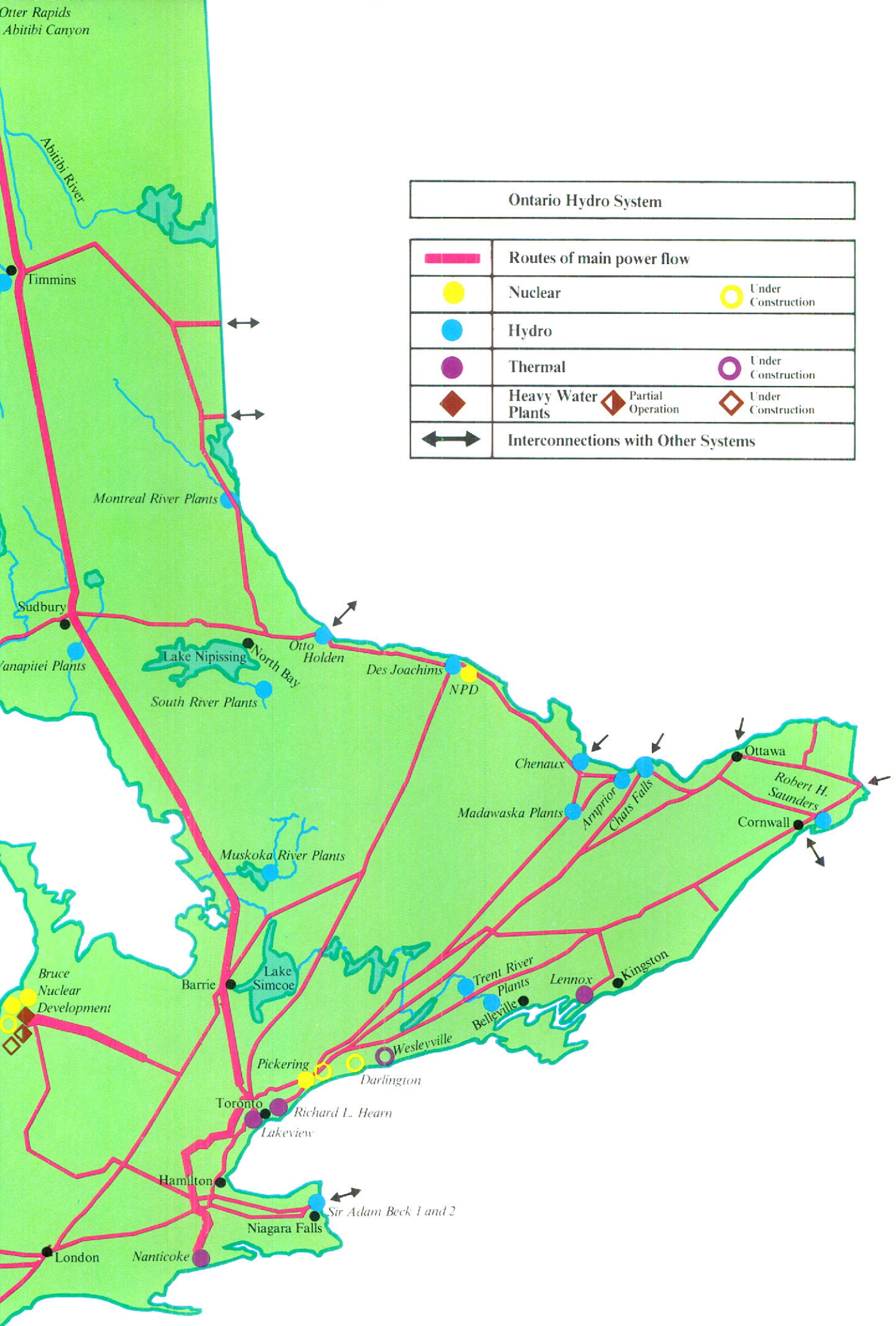
	1978	1977	1976	1973	1968
<b>Operating</b>					
Dependable peak capacity ('000 kW) .....	22,845	21,347	19,677	17,501	10,338
December primary peak demand ('000 kW) .....	15,722	15,677	15,896	13,606	9,994
Primary energy made available ('000,000 kW.h) ..	95,373	92,855	90,853	78,163	55,789
<b>Customer</b>					
Primary energy sales ('000,000 kW.h)					
Municipalities .....	61,246*	58,348	57,635	49,340	33,426
Retail .....	12,901*	13,021	12,436	9,880	6,266
Direct .....	14,794*	15,187	14,071	14,075	12,252
<b>Total</b> .....	<b>88,941*</b>	<b>86,556</b>	<b>84,142</b>	<b>73,295</b>	<b>51,944</b>
Secondary energy sales ('000,000 kW.h) .....	10,393	8,527	4,157	5,564	369
Total Ontario customers ('000)					
Residential .....	2,410*	2,358	2,297	2,140	1,941
Farm .....	115*	118	121	124	131
Commercial and industrial .....	305*	299	292	273	220
<b>Total</b> .....	<b>2,830*</b>	<b>2,775</b>	<b>2,710</b>	<b>2,537</b>	<b>2,292</b>
Average annual kW.h per customer					
Residential .....	9,740*	9,724	9,708	8,620	7,128
Farm .....	18,068*	17,554	16,955	14,332	10,837
Commercial and industrial .....	202,000*	201,384	198,722	190,600	162,613
Average revenue per kW.h (¢)					
Residential .....	2.93*	2.80	2.23	1.63	1.29
Farm .....	3.05*	3.02	2.46	1.87	1.69
Commercial and industrial .....	2.20*	2.08	1.63	1.13	0.87
<b>Financial</b>					
Bonds and other long-term debt issued (\$'000,000)	1,847	1,407	1,539	535	240
Gross expenditures on fixed assets (\$'000,000) ...	1,694	1,425	1,326	997	329
Revenues (\$'000,000)					
Primary power and energy .....	1,849***	1,637**	1,320	794	415
Secondary power and energy .....	289	210	90	62	2
Assets (\$'000,000) .....	13,163	11,386	9,924	6,343	3,749
Staff, average for year .....	27,850	25,118	24,123	22,962	19,550

\*Preliminary  
\*\*after deducting excess revenues of \$122 million  
\*\*\*after deducting excess revenues of \$130 million

OPEN PAGE FOR MAP OF ONTARIO HYDRO SYSTEM



Otter Rapids  
Abitibi Canyon









### Children's art carries the message

During 1978 Ontario Hydro, in conjunction with 465 elementary schools throughout the province, asked grades five and six students to submit posters in support of its conservation program. This was one of more than 28,000 entries. It came from 11-year-old Ann Tesluk, a grade six student of St. Jean School in Timmins, and features an imaginative use of felt letters on hopsack.

