

B.C. Hydro
Annual Report 1976/1977

British Columbia Hydro and Power Authority

Letters of Transmittal

Colonel the Honourable Walter S. Owen, Q.C., LL.D.,
Lieutenant-Governor of the Province of British Columbia

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present the Annual Report of
British Columbia Hydro and Power Authority for the year ended 31 March 1977.

Jack Davis,
Minister of Transport and Communications

Victoria, B.C., 27 May 1977

The Honourable J. Davis,
Minister of Transport and Communications

Dear Sir:

Presented herewith is the Annual Report of British Columbia Hydro and
Power Authority for the year ended 31 March 1977.

Robert W. Bonner,
Chairman, British Columbia Hydro and Power Authority

Vancouver, B.C., 26 May 1977

Cover photograph by Binette
Photographic, Hope, B.C.

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Map of Electric Transmission System	Fold Out

The Business of B.C. Hydro

Electric Service

Generation and transmission of electricity.

Distribution of electricity throughout areas of British Columbia containing more than 90% of the population of the Province.

Gas Service

Distribution of natural gas in Greater Vancouver and the Fraser Valley.

Distribution of liquid petroleum gas-air in Greater Victoria.

Passenger Transportation Service

Bus service in Greater Vancouver and Greater Victoria, in the Fraser Valley, between Vancouver and Victoria, and between Vancouver and Nanaimo.

Rail Freight Service

Rail freight operations in Greater Vancouver and the Fraser Valley.

The Year's Highlights

for the year ended 31 March (amounts in thousands of dollars)

	1977	1976
Financial Statistics		
Gross Revenues (including subsidy)	\$ 656,282	\$ 516,266
Net Income (Loss)		
Electric	\$ 46,079	\$ (2,156)
Gas	(162)	2,120
Passenger Transportation	(50,256)	(36,567)
Rail Freight	1,132	1,709
Miscellaneous	9,196	3,591
Provincial Government special subsidy	32,600	32,600
Total Net Income	\$ 38,589	\$ 1,297
Expenditures on Fixed Assets	\$ 548,454	\$ 590,504
Operating Statistics		
Electricity Sold in British Columbia (millions of kW.h)	23,126	20,585
Gas Sold (millions of therms)	759	764
Freight Carried (thousands of tons)	2,637	2,558
Passengers Carried (millions)	109	106

Distribution of B.C. Hydro's Revenue Dollar

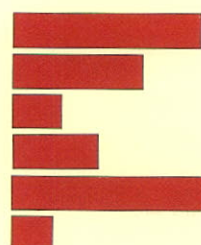
REVENUE CAME FROM:

Sale of electricity	70.2%
Sale of gas	15.9%
Passenger transportation	5.4%
Rail freight operations	2.4%
Miscellaneous	1.1%
Provincial Government special subsidy	5.0%



REVENUE USED FOR:

Salaries, wages and employee benefits	27.3%
Materials and services	18.7%
Grants, school taxes and water rentals	7.0%
Depreciation	12.3%
Interest charged to operations	28.8%
Retained in the business	5.9%



Report of the Directors

In the 12 months covered by this report B.C. Hydro's profit before subsidy was \$6.0 million, in contrast to a loss of \$31.3 million before subsidy in the preceding year. This improvement in overall performance has come about as a result of internal economies, adjustment of customer rates, an increase in volume of electric sales (including sales of surplus electrical power to the United States) and an increase in the number of customers.

When the Provincial Government subsidy of \$32.6 million is taken into account B.C. Hydro's profit for the year ended 31 March 1977 was \$38.6 million.

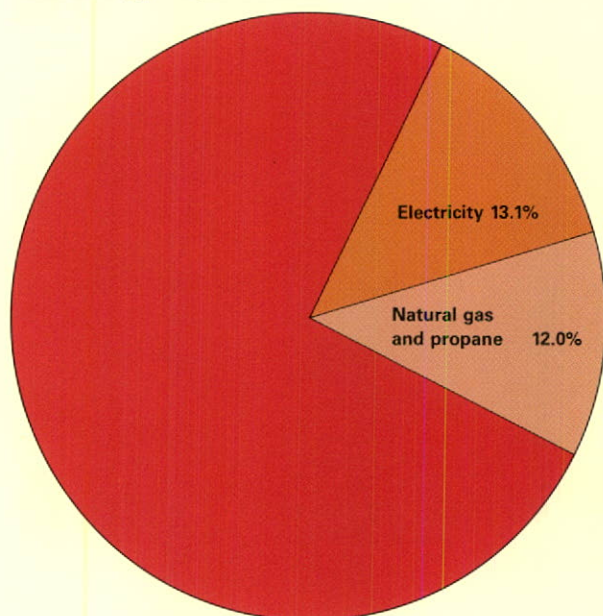
Revenues for the period, excluding subsidy, amounted to \$623.7 million.

During the 1976/77 fiscal year costs rose \$102.7 million, with over 50% of the increase occurring in the interest, depreciation and property tax categories.

In this connection, it has been also necessary to absorb substantial increases in the price of natural gas on two occasions; on 1 April 1976 and again on 1 March 1977. These increases raised the cost of gas purchased for resale by \$13.5 million in the period covered by this report and this amount was passed on to gas customers by increasing rates.

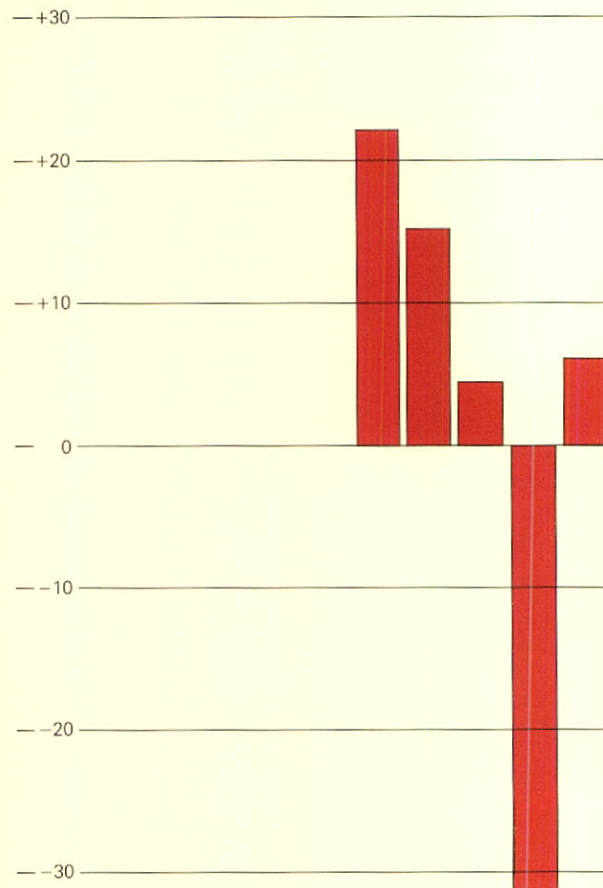
Passenger transportation losses continue to be a major problem in seeking to improve profitability,

B.C. Hydro's Contribution toward British Columbia's Total Energy Requirements



Net Income before Special Subsidy

(Dollars in Millions)



YEARS ENDED 31 MARCH

1973 1974 1975 1976 1977

the loss for the year being \$50.3 million, notwithstanding a third quarter adjustment in fares.

The major thrust of B.C. Hydro's investment activity continues to be expansion of the electrical system to meet projected demands for service. A substantial amount was borrowed for this purpose during the year just concluded, and, in the future, large borrowings will be required annually to meet the continuing and growing demand for electricity.

Indeed, the increasing pressures upon hydrocarbon sources of energy, notably oil and natural gas, accompanied by probable price increases for these resources, are likely to increase the demand for electricity, and call into use the Province's considerable potential for additional hydroelectric generation.

Expected levels of future capital requirements which are both large and affected by inflation require that great care be taken to improve the overall profitability of B.C. Hydro so as to enable it to have advantageous access to the major sources of capital needed for expansion. In the absence of B.C. Hydro having any significant equity, financial objectives aimed at improving interest coverage and debt equity ratios were adopted by the Board in January 1976. These objectives, in combination with the need to meet rising operating costs, compel a review of rates at least annually and suggest the inevitability of rate adjustments from time to time.

A variety of measures aimed at improved energy efficiency are being undertaken by B.C. Hydro, the most recent and notable of which is a program of financial assistance to customers for home insulation.

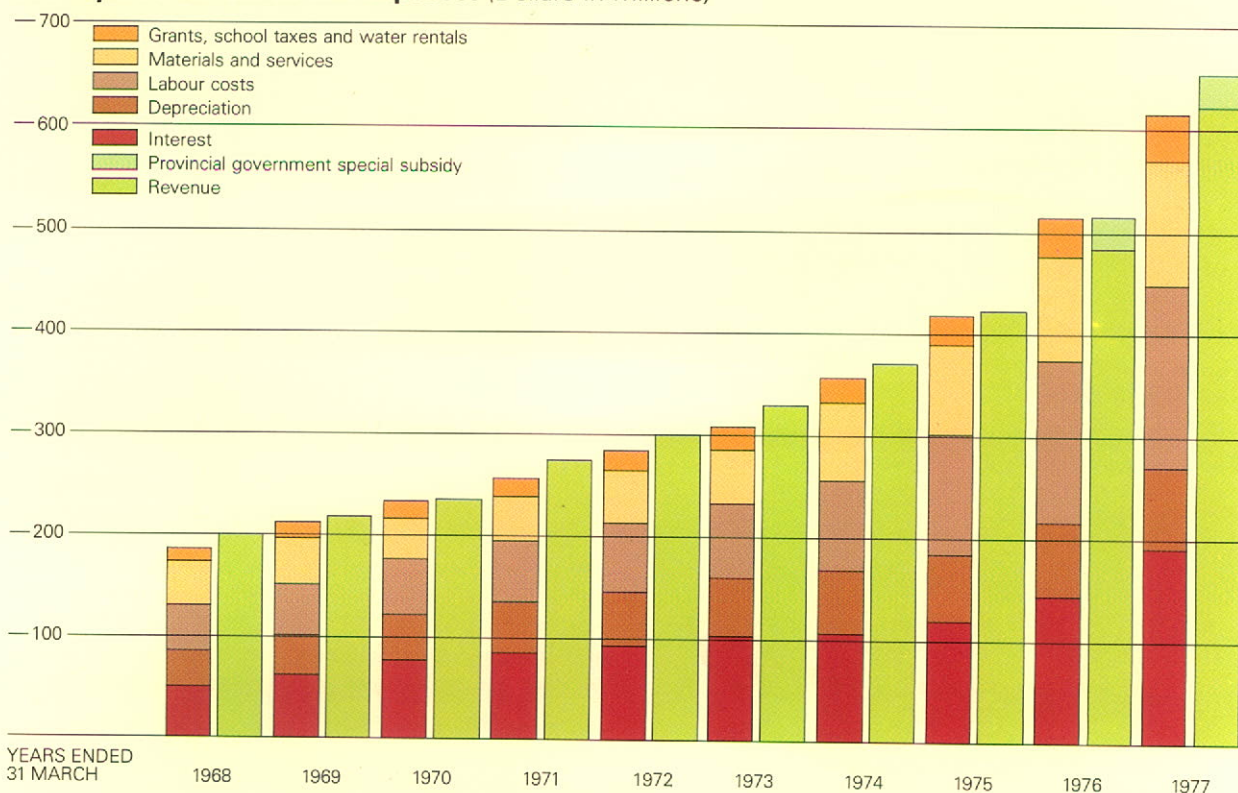
As the principal supplier of electrical and gas energy in the Province, B.C. Hydro is dedicated to the task of meeting its service obligations with a high degree of reliability and at customer rates reflecting due economy, managerial efficiency and prudent financial administration.

The Board expresses its appreciation to management and staff alike for their conscientious efforts to improve B.C. Hydro's general performance in the year just concluded.

On behalf of the Board,

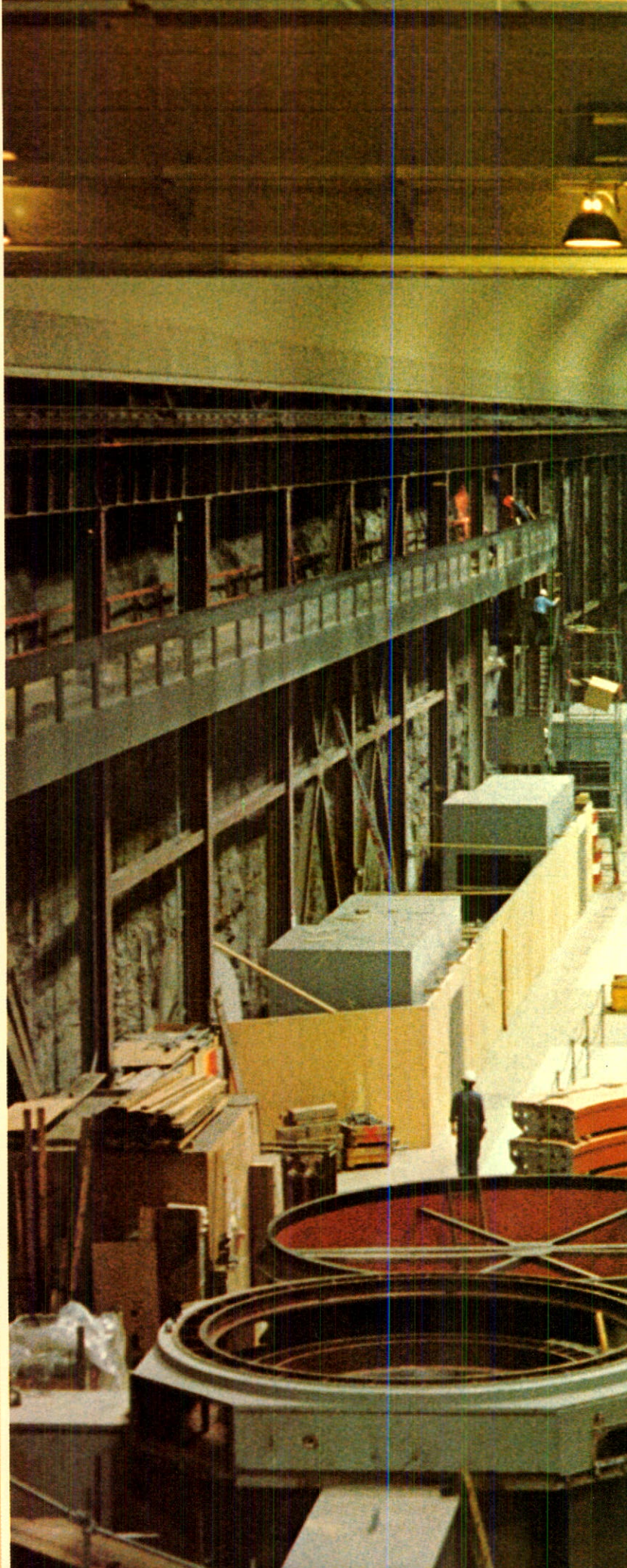
Robert W. Bonner, *Chairman*

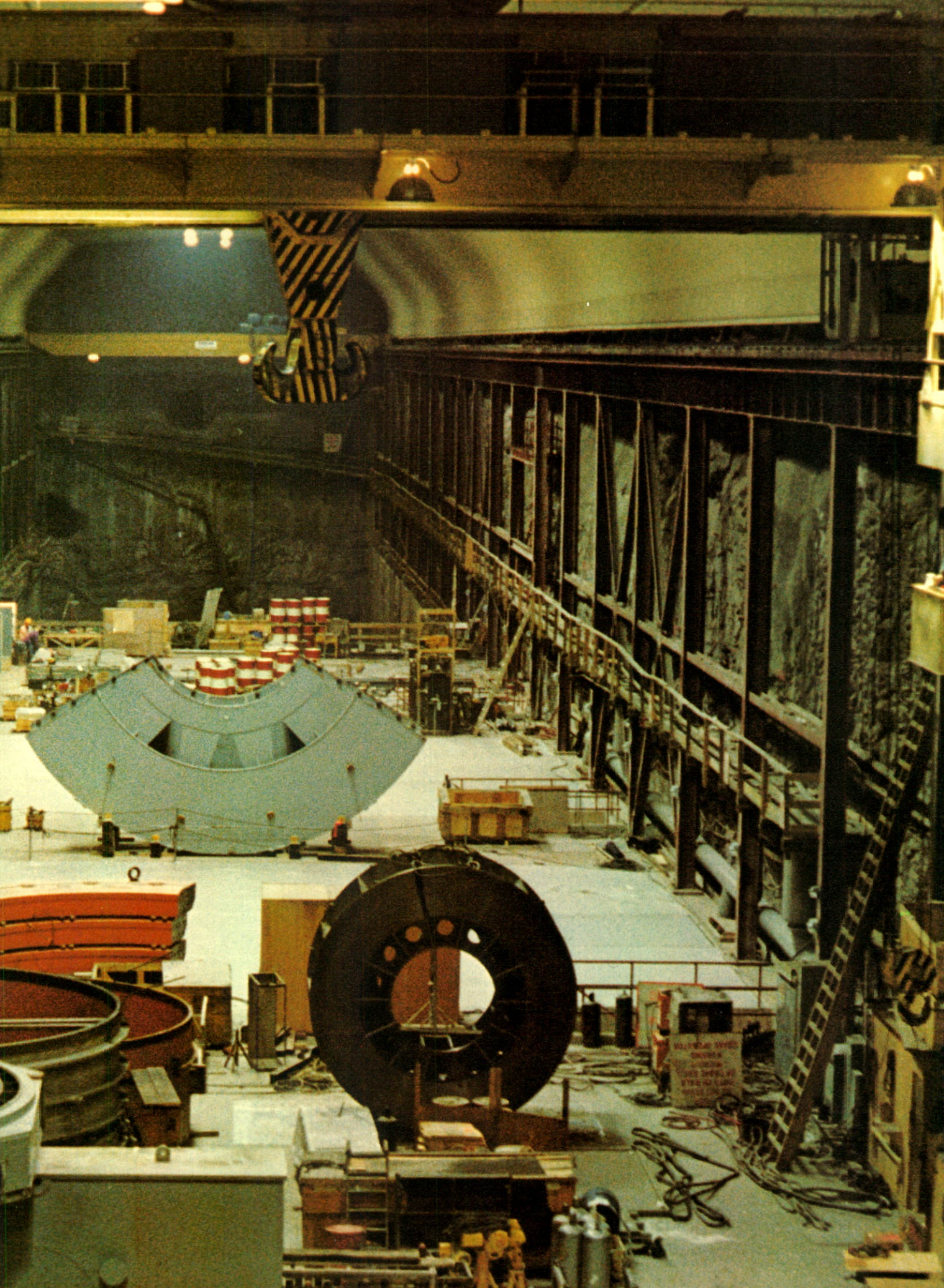
B.C. Hydro's Revenues and Expenses (Dollars in Millions)



With three generating units now in operation, the powerhouse at Mica Dam, 85 miles north of Revelstoke, hums with activity. Technicians are now installing a fourth unit which is scheduled to be in service in the fall of 1977. The first two units were placed in service in 1976 and the third began generating electricity early in 1977, feeding power into B.C. Hydro's integrated power grid. The final two units will be added later when required to meet growing demand for power. Ultimate capacity of the Mica project will be 2,610,000 kilowatts with all six units in operation.

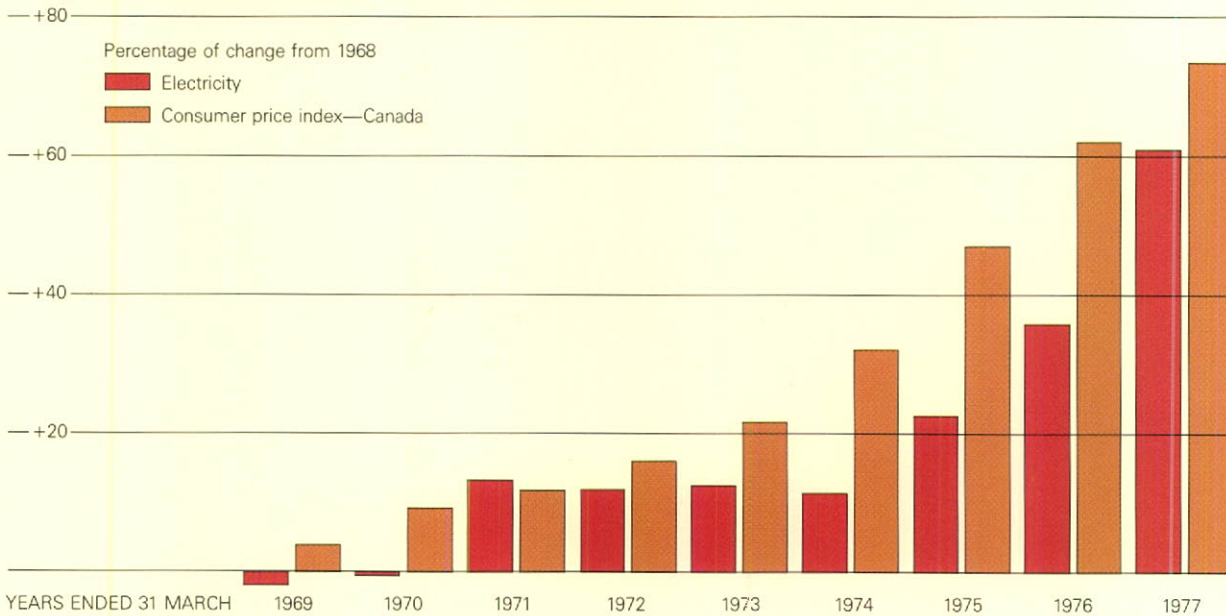
The huge underground powerhouse is located on the west bank of the Columbia River immediately below the toe of 800-foot-high Mica Dam. The powerhouse is 178 feet high, 80 feet wide and 778 feet long. Power from the Mica project is delivered to B.C. Hydro's Ingledow Substation in Surrey on the Lower Mainland via a 500 kV, 354-mile-long transmission line. A second line is now under construction and is scheduled to be in service in 1977. Mica Dam was declared operational on 29 March 1973 and is believed to be the highest earthfill dam outside the U.S.S.R.





Review of Operations

B.C. Hydro's Average Selling Price of Electricity for Residential Use Compared with the Consumer Price Index—Canada



Rates

To offset increased costs and in continuation of the program to improve earnings, rates for electricity, gas, and public transportation were increased during the year. The new rates for electricity and gas, which became effective 1 March 1977, incorporate a service charge designed to recover a portion of the fixed costs of distribution that B.C. Hydro incurs regardless of the amount of energy used. These costs include depreciation, interest, and taxes. The effective rate increases averaged 15% for electric customers and 22% for firm gas customers. Rates for interruptible gas customers increased in the range of 25% to 33%. Most of the increase in gas revenues was necessary to offset an increase in the wholesale price B.C. Hydro pays for natural gas.

In November 1976, the basic urban transit fare was increased from 25¢ to 35¢ in order to meet a portion of the rising losses on public transportation. This was the first fare increase since 1970. At the same time, fare zones on the Lower Mainland were consolidated, resulting in lower fares for most multi-zone passengers.

Electric Service

Sales of Electricity

Requirements for electricity for the year ended 31 March 1977 returned to their normal pattern of growth, primarily because of uninterrupted production in the forest industry and improved economic conditions in the Province. Sales of kilowatt-hours (kW.h) of electricity in British Columbia by B.C. Hydro, which in the previous fiscal year declined for the first time in B.C. Hydro's history, increased 12.3% in the year under review.

Gross revenues from the electric service were \$461.0 million, up 35.0% from the previous year, reflecting the increased sales volume and higher rates. In addition, gross revenues included \$22.6 million from the sale of surplus power to the United States.

Sales of kW.h of electricity in British Columbia by category of customer and percentage changes

from the previous year were:

	Year Ended 31 March 1977 kW.h in Millions	% Increase from Previous Year
Residential	6,664	6.7
General	7,855	8.1
Bulk	8,166	19.9
Other systems	441	64.4
	<u>23,126</u>	12.3

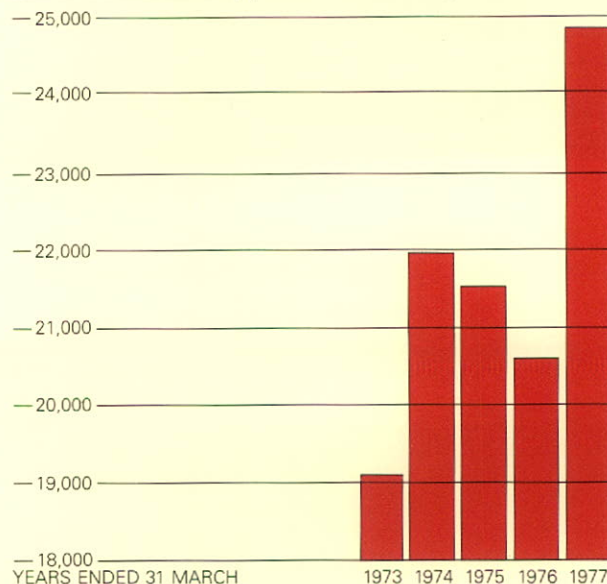
B.C. Hydro was serving 916,876 customers with electricity at 31 March 1977, an increase of 41,617 during the year. Average annual consumption per residential customer rose from 8,370 kW.h to 8,452 kW.h.

Generation and Supply of Electricity

Demand for electricity during the year totalled 27,703 million kW.h compared with 23,538 million kW.h during the previous year, an increase of 17.7%.

An above normal snowpack in the winter of 1975/76, followed by an unusually wet summer, resulted in favourable water conditions throughout most of the year. As a result, requirements for thermal production were reduced and the demand on Burrard Thermal Generating Plant was the lowest in the plant's history. During the latter part of the year, surplus water conditions existed and B.C. Hydro was able to utilize the surplus to generate power for export.

Sales of Electricity (kW.h in Millions)



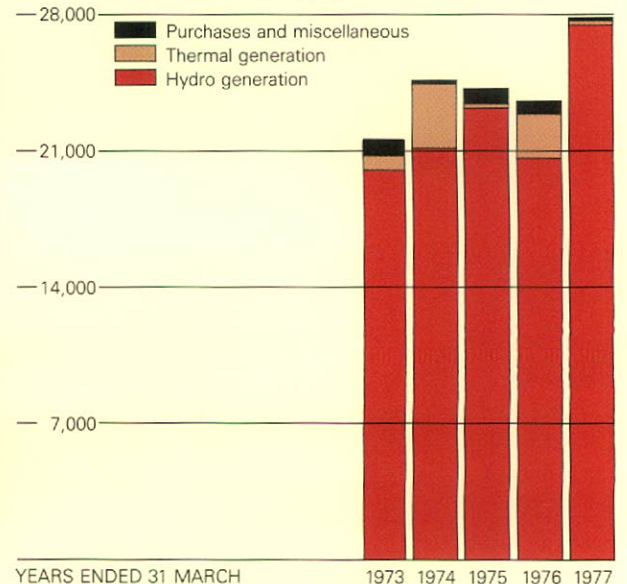
The following table shows total energy requirements and sources of supply for the year under review:

	kW.h in Millions	% of Total
Requirements for energy:		
Sales to customers	23,126	83.5
Export	1,717	6.2
Line loss and system usage	<u>2,860</u>	<u>10.3</u>
	<u>27,703</u>	<u>100.0</u>
Sources of supply:		
Hydro generation—		
Peace River Project	15,317	55.3
Other	12,099	43.7
Thermal generation	184	0.6
Purchases and miscellaneous	<u>103</u>	<u>0.4</u>
	<u>27,703</u>	<u>100.0</u>

The highest one-hour demand ever recorded on the integrated system, 4,258,000 kW, occurred on 11 January 1977. This demand represented an increase of 4.8% over the previous one-hour peak which occurred in December 1975.

Generating capacity increased during the year with the addition of two 132,300 kW units at Kootenay Canal and three 434,000 kW units at Mica.

Sources of Electric Supply (kW.h in Millions)



The generating capacity of plants operated by B.C. Hydro at 31 March 1977 was as follows:

	Installed Nameplate Generating Capacity (kW in thousands)
Hydroelectric plants	
Ruskin	105.6
John Hart	120.0
Bridge River	428.0
Cheakamus	140.0
Gordon M. Shrum	2,116.0
Jordan River	150.0
Kootenay Canal	529.2
Mica	1,302.0
Other (22 plants)	558.3
Total hydroelectric	5,449.1
Thermal plants	
Georgia	75.5
Port Mann	100.0
Burrard	912.5
Prince Rupert	57.3
Keogh	40.5
Other (82 plants)	114.9
Total thermal	1,300.7
Total generating capacity	6,749.8

Gas Service

Gross revenues from the sale of gas to the public were \$104.1 million, up \$15.0 million or 16.8% over the previous year. The increase in revenue is attributable to a rate adjustment implemented in March 1976 to offset an increase in the wholesale price of natural gas. Sales volumes declined 0.7%, primarily because a warm winter reduced heating requirements.

The following table shows therms sold to the public and percentage changes from the previous year, by categories:

	Year Ended 31 March 1977 Therms in Millions	% Increase (Decrease) from Previous Year
Residential	289.7	(4.8)
General	266.6	(0.7)
Interruptible	202.3	5.9
	<u>758.6</u>	<u>(0.7)</u>

The peak one-day output of gas in the Lower Mainland, excluding interruptible loads and gas

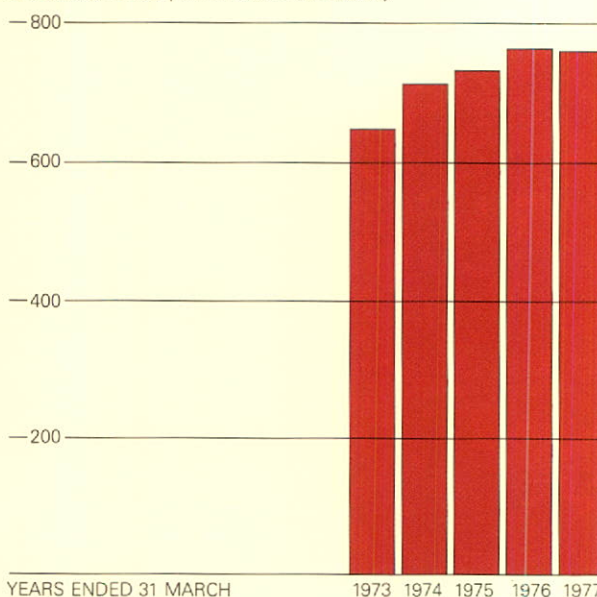
delivered to Burrard Thermal Generating Plant, was 3.5 million therms. This peak occurred 4 January 1977 and equalled the previous peak set in March 1976.

It is anticipated that the demand for gas will continue to grow but at a slower rate than in the past, particularly as energy conservation measures take effect. To meet this demand, however, it is important that B.C. Hydro receives an adequate long-term supply of gas. The resumption of an extensive exploration program within the Province, and the access to previously uneconomic natural gas reserves, should increase supplies.

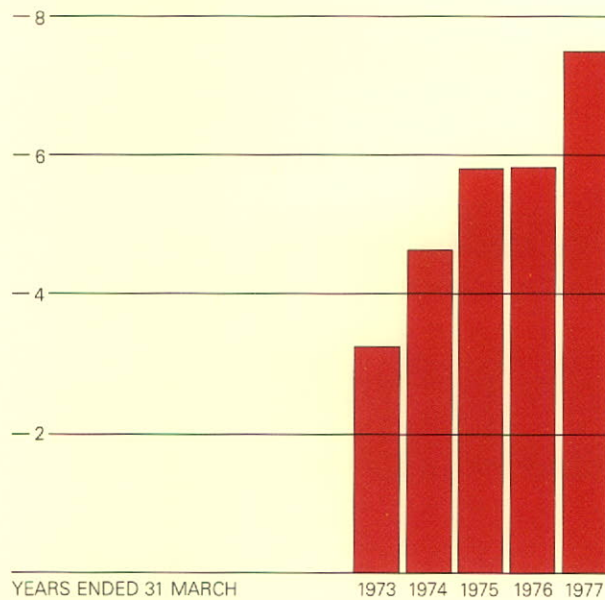
B.C. Hydro is studying ways of increasing the deliverability of gas to the Lower Mainland during the winter months and of improving its load factor. These objectives could be accomplished by the purchase of large volumes of surplus gas in the summer for storage in deep subterranean porous rock reservoirs (aquifers) in the Lower Fraser Valley for subsequent use when demand warrants. The advantages of underground storage include large capacity, safety, low unit cost, and minimal environmental impact.

Since British Columbia has an abundance of coal, a study, funded in part by the Federal Department of Energy, Mines and Resources, to evaluate the characteristics required of a demonstration plant to produce substitute natural gas (SNG) from coal is

Sales of Gas (Therms in Millions)



Average Cost of Natural Gas Purchased for Resale
(Cents per Therm)



underway. The demonstration plant, if built, would enable B.C. Hydro to test coal in a full-size gasifier, and should provide valuable operating experience and technical data. It would also enable B.C. Hydro to compare the relative costs of serving its customers with either SNG or natural gas from the Canadian Arctic. The project is being considered in conjunction with a second study which is examining potential demonstration plants for advanced methods of generating electric power from coal.

Passenger Transportation Service

Gross revenues from passenger transportation rose 7.8% to \$35.6 million. The increase arises from new fares introduced in November 1976 and a greater number of passengers carried. Losses on passenger transportation rose to \$50.3 million, notwithstanding the improvement in revenues. The Provincial Government is studying the desirability of a new transit authority to be responsible for public transportation.

The year under review was one of consolidation after the expansion of the past few years. Few new routes were added, and service on some existing routes was modified to serve passengers more economically. The earlier period of rapid expansion placed a severe strain on all facilities and, during the year, B.C. Hydro sought to

consolidate and rationalize transit services. In May 1976, the administrative staff was relocated to a new Transit Administration Centre.

At the close of the year, the public transportation fleet consisted of 1,117 vehicles of which B.C. Hydro owned 753 and the remaining 364 were provided without charge by the Provincial Government.

Rail Freight Service

Gross revenues from rail freight operations amounted to \$15.9 million, an increase of 8.9% over the previous year. Two major factors contributed to the increase in revenue: general freight rate increases on a wide variety of commodity groups, and higher freight volumes. Freight handled during the year increased 3.1% to 2,637,463 tons, in contrast to the decline in volume experienced in the two previous fiscal years.

Throughout the year, existing trackage facilities were modified and some new trackage constructed. Additions included fifteen new private spur tracks at various locations and a team track at Chilliwack.

Redevelopment of the Carrall Yard in Vancouver commenced and at year-end, one-half mile of old track had been removed and one mile of new track installed. Also, several old buildings had been demolished and the first major new building was under construction.

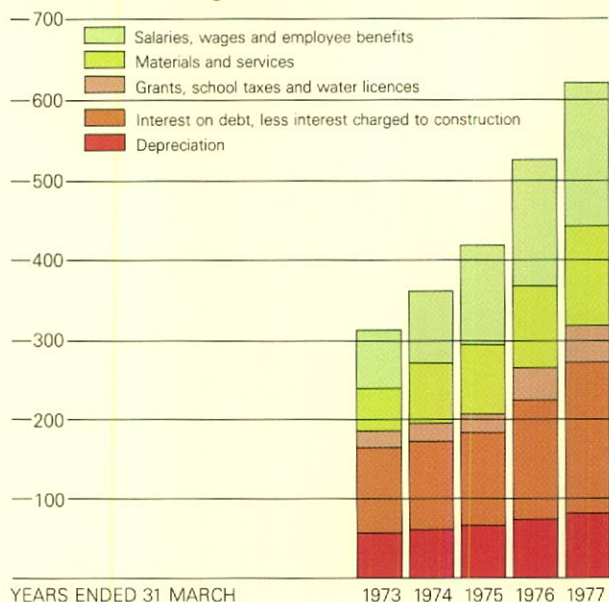
Cost of Providing Services

The total cost of providing all services during the year was \$617.7 million, an increase of \$102.7 million or 19.9% over the previous year.

Salaries, wages and employee benefits charged to operations amounted to \$179.2 million, up \$22.2 million or 14.2%. The increase reflects higher rates of pay, a nominal increase in the number of employees, and improvements to pension plans.

Grants, school taxes and water rentals charged to operations totalled \$46.2 million, an increase of \$6.6 million or 16.8%. Increases in grants and school taxes were caused primarily by additions of property and higher mill rates. Water rentals

Cost of Providing Services (Dollars in Millions)



increased \$0.9 million or 11.5%, as a result of increases in generating capacity and higher sales volumes.

Interest and other costs on debt charged to operations during the year were \$188.9 million, up \$45.6 million or 31.8%. The major factors contributing to this increase were higher average interest rates and the transfer to active service of new plant, in particular the Mica Generating Station and related transmission facilities. Provision for depreciation of plant, also directly related to plant in service, totalled \$80.7 million, up \$7.9 million or 10.8% over the previous year.

In the year under review purchases of natural gas for use by B.C. Hydro totalled \$59.6 million, of which \$58.8 million was for gas purchased for resale to the public with the remainder being used principally at Burrard Thermal Generating Plant. During the year, the commodity price of natural gas was increased significantly. The increase was in two stages: 15.0¢ per Mcf on 1 April 1976 and 24.0¢ per Mcf on 1 March 1977. At year-end, the commodity price per Mcf was 89.7¢, or 76.9% higher than the 50.7¢ per Mcf which B.C. Hydro was paying at the end of the previous fiscal year.

In the previous fiscal year, the cost of fuel used to generate electricity for delivery to the United States in lieu of water releases from Mica was

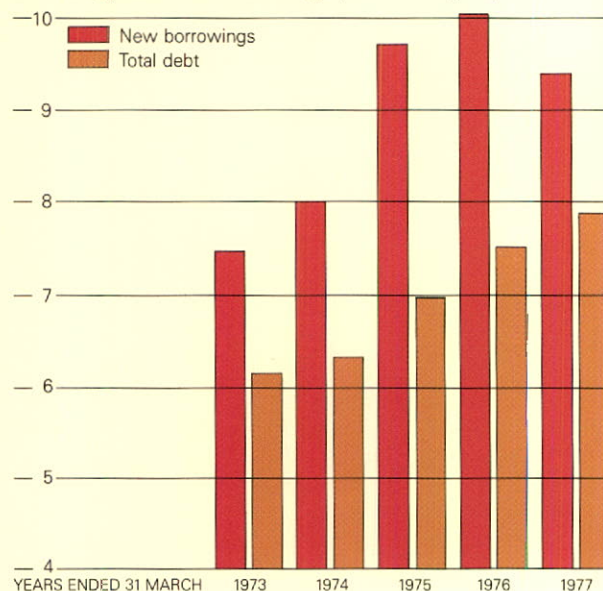
deferred. These deferred costs were to be charged to operations over seven years. Because of a favourable run-off in the late spring and summer of 1976 in the upper Columbia basin, the Mica reservoir was filled by August 1976. With the full reservoir, B.C. Hydro was in a position to generate surplus power for sale to the United States to alleviate power shortages in that country during the fall and winter of 1976/77. As a consequence, it was deemed appropriate to charge the total deferred amount of \$7.5 million to income in the year ended 31 March 1977, the period during which the sales of surplus power were made.

Financing

During the year under review, interest rates declined and conditions in the bond market improved. Because of these two factors, B.C. Hydro was able to place \$725.0 million in bonds at rates lower than those encountered in the previous fiscal year. The proceeds were used to finance capital expansion and funds in excess of immediate requirements were placed in short-term investments. At year-end, these short-term investments totalled \$294.6 million.

The average effective annual interest cost of all long-term bonds sold by B.C. Hydro during the year was 9.40%, compared with an average of 10.02%

Average Interest Rates Paid by B.C. Hydro on Long-Term Borrowings (Percentages)



for the previous year. At year-end, the average interest rate for B.C. Hydro's outstanding long-term debt and Parity Development Bonds was 7.87%, in comparison to 7.51% at the end of the previous fiscal year.

During the year, \$42.4 million was paid to Trustees to meet sinking fund requirements of long-term debt. All sinking fund obligations have been met.

Construction Program

Expenditures on fixed assets totalled \$548.5 million compared with \$590.5 million for the previous year. Net additions to fixed assets were \$531.6 million after deducting retirements of \$16.9 million. Expenditures on fixed assets included an allocation of indirect costs of administration, engineering, and supervision; and interest on plant under construction, at rates equivalent to the cost of borrowing funds.

Expenditures on fixed assets for the year, by service and in broad categories, were as follows:

	Millions
Electric service	
Generation	
Hydro	
Mica generating plant	\$76.6
Site One project	64.0
Seven Mile project	45.6
Other	22.6
Thermal	19.5
Transmission	
500 kV	78.9
Other	26.5
Transformation	87.6
Distribution	71.2
Other electric	15.9
Gas service	22.9
Transportation services	7.4
General	9.8

Major Electric Service Plant Additions

The second stage of the Kootenay Canal hydroelectric project, which included two 132,300 kW units and a 500 kV line from Kootenay Canal Plant to Ashton Creek Substation, was completed in November 1976. The line will operate initially at 230 kV until Seven Mile project is brought into service.

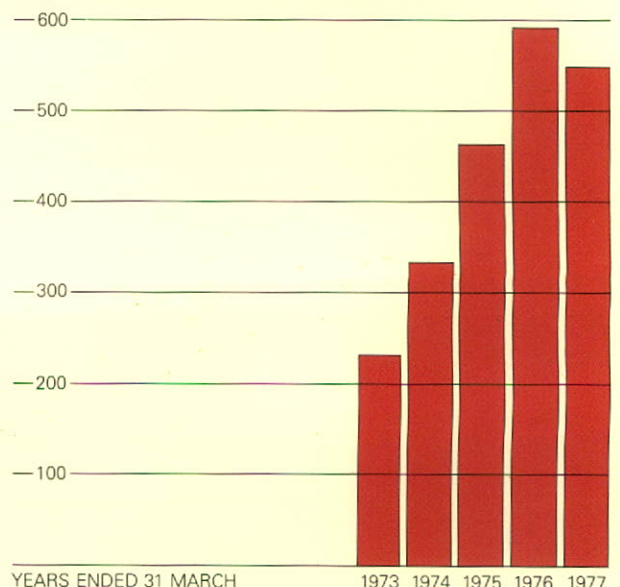
The first stage of Mica project was brought on line during the year. This stage included three 434,000

kW units, a fully enclosed 500 kV SF6 gas-insulated bus and switchgear structure (the first in Canada) and a 500 kV line from Mica to Nicola. The second stage of Mica, which consists of an additional unit of a similar size and a second 500 kV line from Mica to Nicola, will be completed in 1978.

Site One project, situated on the Peace River about 14 miles downstream from W.A.C. Bennett Dam, consists of a concrete gravity dam 165 feet high with four 175,000 kW units in a surface powerhouse. It will be connected to Gordon M. Shrum Generating Station and to Williston Substation by 500 kV lines presently under construction. The first two units are scheduled for completion in 1979 and the others in 1980. Diversion of the river was completed in April 1976 and construction commenced on the dam, intake structure, spillway, powerhouse, and the service bay. Work is essentially on schedule and equipment contracts for the project are proceeding satisfactorily.

Work continued on the Seven Mile project, located on the Pend-d'Oreille River about six miles upstream from the confluence with the Columbia River. This project includes a concrete gravity dam 215 feet high and a surface powerhouse with space for four 202,500 kW units, three of which will be brought into

Expenditures on Fixed Assets (Dollars in Millions)





service in 1980. The river diversion and the project access road were completed in 1976. The contract for the dam and powerhouse has been awarded and work on cofferdam construction and excavation for the dam abutment is proceeding on schedule. Contracts have been awarded for the powerhouse equipment such as transformers and SF6 gas-insulated switchgear, exciters, cranes, and gates. Manufacture of the turbines and generators is also proceeding on schedule. Transmission will consist of two short 230 kV lines from Seven Mile to Selkirk Substation and a 500 kV line from Selkirk Substation to the vicinity of Kootenay Canal where it will connect with the line to Ashton Creek. A 230 kV line will be constructed to connect Kootenay Canal Plant to Selkirk Substation in parallel with a 230 kV line constructed in 1975.

The tenth and final unit at Gordon M. Shrum Generating Station on the Peace River is to be installed for service in 1980. When completed, 300,000 kW will be added to the station's present capacity of 2,116,000 kW. Options have been exercised for the supply and installation of the turbine and generator.

A Conditional Water Licence has been granted for the Revelstoke project. This project, a 2,700,000 kW development on the Columbia River downstream from Mica, consists of a 530-foot concrete gravity dam and six generating units. The first three units are scheduled for installation in 1982 and the fourth in 1983. In an effort to maintain construction schedules, the contract for the diversion tunnel has been awarded subject to cancellation in the event of successful appeals against the granting of a licence.

Exploration of the Hat Creek coal deposit continued. Drilling to date indicates a reserve of about one billion tons amenable to mining to a depth of 600 feet. Advances in mining technology may make reserves up to four billion tons available. Site evaluation and conceptual design studies were undertaken for a plant capacity of approximately 2,000,000 kW.

Installation of the 53,900 kW second unit at Keogh Gas Turbine Station, near Port Hardy was

Geologist examines core sample of Hat Creek coal. B.C. Hydro has begun studies for a 2,000,000 kW thermal-electric generating plant at Hat Creek.

completed and, at year-end, testing was underway. This station provides peaking capacity for Vancouver Island and standby generation for the northern part of the island.

In the non-integrated system, a new generating station was established at Tatla Lake, and additional facilities were added at Atlin, Bella Bella, Bella Coola, Dease Lake, Fort Nelson, Masset, Revelstoke, Stewart, Valemount and Zeballos. Blue River was integrated into the system by transmission extension from Avola.

B.C. Hydro participated in joint studies undertaken by agencies of the Alberta and British Columbia governments to determine the most suitable overall power development on the Peace River downstream from the Site One project. It has been decided not to pursue a joint venture for power development on the lower Peace in Alberta at this time.

Phase three of the Meagher Creek geothermal studies was completed and results were sufficiently encouraging to warrant further study.

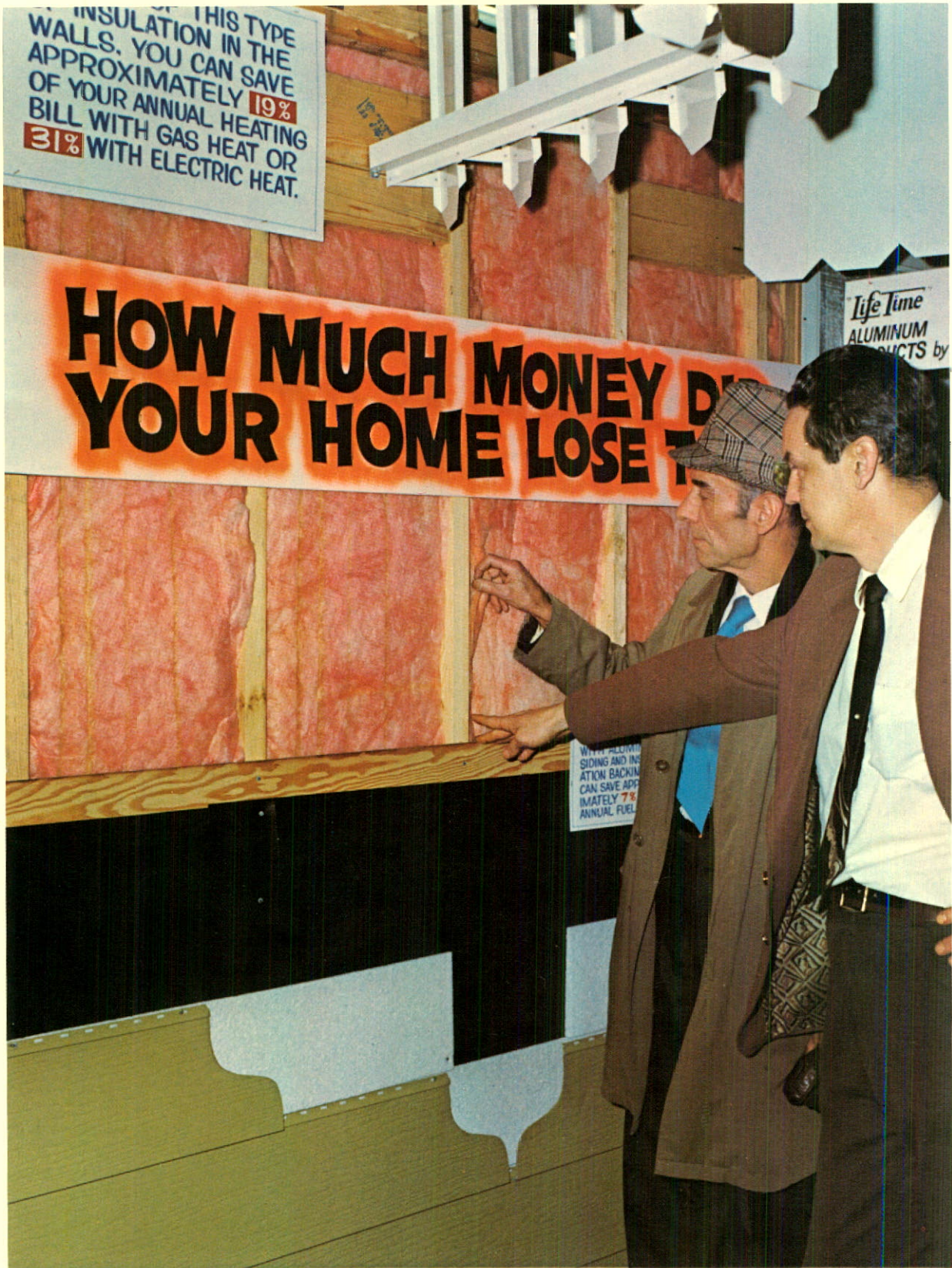
During the year, substation capacities were increased at various locations and work continued on additions to the transmission system.

Energy Conservation

During the year, B.C. Hydro increased its energy conservation activities and continued to offer guidance to customers on the efficient use of energy.

Building insulation standards which have been developed have gained wide acceptance through active promotion by displays, media advertising and personal presentations to interested groups. Insulation display homes have become a familiar feature at trade shows and shopping malls throughout British Columbia. These displays have stimulated public interest in the benefits to be derived from effective insulation and have attracted the attention of utilities in Canada and the United States.

In January 1977, B.C. Hydro announced a plan to provide financial assistance to customers wishing to upgrade the insulation in their homes. The plan provides for financing up to \$500 per household, at 10% interest, repayable over 24 months.



Sound thermal design and alternate energy concepts were demonstrated in the 1976 Pacific National Exhibition Conservation House. This house featured optimum insulation, specially planned heating and lighting systems, and a solar energy system designed to supply approximately 40% of the home's space heating and water heating requirements. During the period the house was on public display, B.C. Hydro maintained a separate display of solar equipment and provided information on insulation and solar heating.

B.C. Hydro began a program of energy audits in schools in a selected area of the Province. These audits measure the efficiency of equipment and point out the need for improved energy management. In addition, a number of large industrial customers were given comprehensive reports on energy consumption within their operations, together with suggestions for improving energy utilization.

Environment

The environment continued to be a major concern throughout the year as B.C. Hydro embarked on environmental and socio-economic studies that were more extensive than ever before. Members of B.C. Hydro's staff and teams of outside consultants, often including federal and provincial agencies, assessed potential effects of projects on communities, fish, wildlife, agriculture, forestry, and archaeology, as well as other ecological aspects. The goal of these studies is to identify potential problems and, wherever possible, find methods to alleviate or surmount them.

The Revelstoke project, for which B.C. Hydro has undertaken the most extensive environmental and socio-economic studies in its history, continues to be examined.

Intensive studies of the effects of Hat Creek, Site C, McGregor Diversion, and Kootenay Diversion projects were also continued throughout the year. McGregor Diversion studies are particularly complex because of the project's potential impact on the salmon fishery and the necessity for precise

Energy savings are encouraged through displays at trade shows and shopping malls showing benefits of effective insulation in homes.

information on the possible results of mixing the waters of two separate watersheds.

Results of B.C. Hydro's environmental efforts were evident at the Seven Mile project. With construction still in progress, areas that a year before were disturbed by construction are now rehabilitated with a thick growth of newly-seeded grass. In addition, more than 50,000 young trees were planted. As well as improving appearance, the revegetation program provides control of erosion and increased stability of slopes. Where feasible, such early rehabilitation work is being written into contracts for major construction carried out on B.C. Hydro's behalf.

Litigation

A lawsuit was started on 17 July 1967 in the Supreme Court of British Columbia by the contractors constructing the underground powerhouse and associated works at Gordon M. Shrum Generating Station, alleging breach of contract. Amounts between \$20 million and \$30 million were claimed as damages. During the trial, the contractors introduced an alternative claim, to which they gave priority, for the total cost to them of the construction work, including interest and profit, and a balance owing of \$51 million was claimed. The alternative claim was tried and judgment delivered, declaring the contractors to be entitled to compensation on the basis of quantum meruit. In a judgment delivered 13 November 1975, the compensation on the basis of quantum meruit was determined by the Trial Judge to be \$36,124,400, and this amount together with costs was awarded to the Plaintiffs. On 3 March 1976, payment into Court was made in the sum of \$36,500,490, including interest from 13 November 1975 to 28 January 1976. By order of Court, this amount may be paid to the contractors upon deposit of a bond satisfactory to the Court.

A Notice of Appeal from the judgment was filed on 20 November 1975, submitting that the judgment was in error both in law and fact as to there being a fundamental breach of contract by B.C. Hydro and in the award to the Plaintiffs upon the basis of quantum meruit. The contractors have filed a Notice of Cross-Appeal in which the entire amount of \$51 million is claimed. The hearing of the Appeals is scheduled to commence in September 1977.

Labour Relations

The year under review was the first full year of operation of B.C. Hydro's program to limit staff additions and replacements. The results were gratifying in that the increase in regular employees was held to 1.0%.

Federal wage controls had a significant impact on negotiations during the year. Two agreements achieved by binding arbitration were subsequently rolled back by the Anti-Inflation Board. The Board allowed increases in total average compensation of 9.0% in the first year, and 6.07% in the following ten-month period, to the Office and Technical Employees' Union for a contract period commencing 1 June 1975 and ending 31 March 1977. The second settlement rolled back was that with the Management and Professional Employees Society of B.C. Hydro for the period 1 December 1975 to 30 November 1976; the allowed increase in total average compensation was 8.0%.

A one-year agreement for the period ending 31 July 1977 has been negotiated with the Brotherhood of Locomotive Engineers. The negotiated settlement, which provides for increases in total average compensation of 8.34%, has been submitted to the Anti-Inflation Board for review.

At year-end, negotiations or arbitrations were underway with the following bargaining units:

- Amalgamated Transit Union (Pacific Stage Lines)
- International Brotherhood of Electrical Workers (Electric)
- International Brotherhood of Electrical Workers (Right-of-way Agreement)
- Management and Professional Employees Society of B.C. Hydro
- Office and Technical Employees' Union
- Transportation Employees Canadian Union

Financial Statements

Report of the Auditors

The Lieutenant-Governor in Council, Province of British Columbia:

We have examined the balance sheet of British Columbia Hydro and Power Authority as at 31 March 1977, and the statements of income, earnings retained in the business and changes in financial position for the year then ended and the statement of long-term debt as at 31 March 1977. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion these financial statements present fairly the financial position of British Columbia Hydro and Power Authority as at 31 March 1977 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.

Vancouver, British Columbia
12 May 1977

PRICE WATERHOUSE & CO.
Chartered Accountants

Statement of Income*for the year ended 31 March 1977*

	1977		1976
Gross revenues, excluding Provincial Government special subsidy (Note 7) .	<u>\$623,682,221</u>		<u>\$483,665,777</u>
Expenses:			
Salaries, wages and employee benefits	179,238,300		157,000,822
Materials and services	122,690,990		102,342,574
Grants, school taxes and water rentals	46,174,734		39,531,674
Depreciation (Note 1)	80,657,350		72,779,127
Interest (Note 6)	\$260,391,231	\$204,892,988	
Less—			
Interest charged to construction (Note 1)	<u>71,459,025</u>	<u>188,932,206</u>	<u>61,578,833</u>
		<u>617,693,580</u>	<u>514,968,352</u>
Income (loss) before Provincial Government special subsidy	5,988,641		(31,302,575)
Provincial Government special subsidy (Note 7)	<u>32,600,000</u>		<u>32,600,000</u>
Net income	<u>\$ 38,588,641</u>		<u>\$ 1,297,425</u>

*1976 figures have been reclassified to conform with the presentation used for 1977 (Note 6).***Statement of Earnings Retained in the Business***for the year ended 31 March 1977*

	1977	1976
Balance at beginning of year as previously reported	\$162,631,155	\$156,876,429
Adjustment to reflect change in accounting for self-insurance (Note 1)	<u>—</u>	<u>4,457,301</u>
Balance at beginning of year as restated	162,631,155	161,333,730
Net income	<u>38,588,641</u>	<u>1,297,425</u>
Balance at end of year	<u>\$201,219,796</u>	<u>\$162,631,155</u>

Statement of Changes in Financial Position*for the year ended 31 March 1977*

	1977	1976
SOURCE OF FUNDS:		
Operations—		
Net income	\$ 38,588,641	\$ 1,297,425
Charges (credits) not affecting current funds:		
Depreciation	80,657,350	72,779,127
Other (Note 1—Deferred costs of generation)	<u>7,804,336</u>	<u>(51,923)</u>
	127,050,327	74,024,629
Long-term debt	710,576,504	569,491,047
Parity Development Bonds	—	24,737,365
Contributions in aid of construction	22,271,420	19,090,887
Miscellaneous	<u>114,356</u>	<u>622,039</u>
	<u>\$860,012,607</u>	<u>\$687,965,967</u>
APPLICATION OF FUNDS:		
Fixed assets	\$548,454,050	\$590,504,012
Sinking funds—		
Instalments	42,425,122	30,742,041
Income invested by Trustee (Note 6)	15,581,211	13,868,517
Retirement of long-term debt	12,073,125	33,438,000
Retirement of Parity Development Bonds	—	25,000,000
Payment in respect of litigation (Note 3)	—	36,500,490
Deferred costs of generation (Note 1)	<u>—</u>	<u>7,472,870</u>
	618,533,508	737,525,930
Increase (decrease) in working capital exclusive of changes in current portion of long-term debt	<u>241,479,099</u>	<u>(49,559,963)</u>
	<u>\$860,012,607</u>	<u>\$687,965,967</u>

1976 figures have been reclassified to conform with the presentation used for 1977.

Balance Sheet

as at 31 March 1977

	1977	1976
FIXED ASSETS:		
Fixed assets in service, at cost	\$4,541,305,817	\$3,606,706,279
Less—		
Accumulated depreciation	<u>784,318,915</u>	<u>706,057,493</u>
	3,756,986,902	2,900,648,786
Deferred costs of powerhouse and other common generating property (Note 1)	102,426,360	107,827,843
Unfinished construction	<u>406,660,614</u>	<u>804,275,409</u>
	<u>4,266,073,876</u>	<u>3,812,752,038</u>
CURRENT ASSETS:		
Cash	888,015	2,816,089
Temporary investments, at cost (Note 2)	294,591,008	47,916,717
Accounts receivable and unbilled revenues	121,358,947	104,397,840
Materials and supplies, at average cost	54,018,546	50,794,457
Prepaid expenses	<u>2,400,944</u>	<u>2,168,260</u>
	473,257,460	208,093,363
MORTGAGES AND OTHER DEFERRED ACCOUNTS RECEIVABLE		
	<u>5,925,916</u>	<u>5,084,915</u>
INSURANCE FUND (Note 1)	<u>5,000,000</u>	<u>5,000,000</u>
PAYMENT IN RESPECT OF LITIGATION (Note 3)	<u>36,500,490</u>	<u>36,500,490</u>
DEFERRED CHARGES:		
Unamortized discount and expense on debt (Note 1)	24,253,598	22,486,451
Deferred costs of generation (Note 1)	<u>—</u>	<u>7,472,870</u>
	24,253,598	29,959,321
	<u>\$4,811,011,340</u>	<u>\$4,097,390,127</u>

On Behalf of the Board:



Charles W. Brazier, Q.C., Director



John H. Steede, Director

	1977	1976
LONG-TERM DEBT, per statement (Note 4)	<u>\$3,604,722,118</u>	<u>\$2,990,317,901</u>
PARITY DEVELOPMENT BONDS, payable on demand (Note 4):		
8½% Series CS due 15 August 1977	25,000,000	25,000,000
8½% Series CY due 3 August 1978	25,000,000	25,000,000
8½% Series DP due 1 September 1979	25,000,000	25,000,000
8½% Series EA due 1 September 1980	<u>25,000,000</u>	<u>25,000,000</u>
	<u>100,000,000</u>	<u>100,000,000</u>
CURRENT LIABILITIES:		
Bank indebtedness	3,174,157	—
Accounts payable	168,762,016	165,333,457
Accrued interest	87,102,617	70,020,335
Long-term debt payments due within one year—		
Sinking fund instalments	42,771,650	42,399,383
Debt maturities, less sinking fund	<u>39,892,300</u>	<u>11,572,575</u>
	<u>341,702,740</u>	<u>289,325,750</u>
DEFERRED LIABILITIES	<u>24,588,306</u>	<u>25,960,240</u>
CONTRIBUTIONS ARISING FROM COLUMBIA RIVER TREATY (Note 1)	<u>442,253,099</u>	<u>451,466,705</u>
CONTRIBUTIONS IN AID OF CONSTRUCTION (Note 1)	<u>96,525,281</u>	<u>77,688,376</u>
EARNINGS RETAINED IN THE BUSINESS	201,219,796	162,631,155
COMMITMENTS AND CONTINGENCIES (Note 8)		
	<u>\$4,811,011,340</u>	<u>\$4,097,390,127</u>

Statement of Long-Term Debt

as at 31 March 1977

Interest Rate %	Series	Date of Maturity	1977	1976
<i>Issued by British Columbia Hydro and Power Authority—</i>				
Bonds:				
3¼	B	1 October 1979	\$ 10,000,000	\$ 10,000,000
9¾	EH	16 December 1981	100,000,000 (1)	100,000,000 (1)
8⅞	DT	2 January 1982	25,000,000	25,000,000
5¼	A	1 May 1982	32,496,300	32,496,300
9¾	DV	3 December 1982	100,000,000	100,000,000
8⅞	DW	19 February 1985	100,000,000 (2)	100,000,000 (2)
5.46	W-A	1 February 1987	80,396,000	80,396,000
5.71	W-B	1 February 1988	95,001,000	95,001,000
6.68	W-C	3 February 1989	65,862,000	65,862,000
7.32	WD	2 September 1989	68,396,000	68,396,000
7.77	WE	2 March 1991	110,949,000	110,949,000
5¾	U	18 April 1991	40,000,000	40,000,000
5¾	X	1 July 1991	5,000,000	5,000,000
5⅝	Y	2 July 1991	42,500,000 (3)	43,750,000 (3)
6¼	AG	1 December 1991	20,000,000	20,000,000
5⅞	AH	2 January 1992	50,000,000 (3)	50,000,000 (3)
7.10	WF	2 March 1992	109,182,000	109,182,000
6	AJ	15 March 1992	25,000,000	25,000,000
6	BA	29 May 1992	2,500,000	2,500,000
6¼	AK	1 June 1992	50,000,000 (3)	50,000,000 (3)
6.10	AL-A	2 July 1992	10,000,000	10,000,000
6¼	AM	4 July 1992	25,000,000	25,000,000
6¼	BB	19 July 1992	4,000,000	4,000,000
6½	AP	1 November 1992	20,000,000	20,000,000
6¾	BC	1 February 1993	10,200,000	10,200,000
6¾	Z-S	15 February 1993	3,300,000	3,300,000
6¾	Z-T	15 February 1993	4,200,000	4,200,000
5	C	1 March 1993	15,000,000	15,000,000
7.33	WG	9 March 1993	73,847,000	73,847,000
6⅞	AR	29 March 1993	10,000,000	10,000,000
5¼	D	1 May 1993	25,000,000	25,000,000
5¼	F	1 June 1993	10,000,000	10,000,000
7¼	AS	1 June 1993	10,000,000	10,000,000
7¼	BD	2 July 1993	5,500,000	5,500,000
7	AU	5 August 1993	10,000,000	10,000,000
7	AV	1 October 1993	10,000,000	10,000,000
5¼	G	15 October 1993	15,000,000	15,000,000
7	BE	1 December 1993	12,800,000	12,800,000
7	Z-G	15 December 1993	7,000,000	7,000,000
5¼	H	15 December 1993	10,000,000	10,000,000
5¼	J	1 March 1994	10,000,000	10,000,000
	Carried forward		\$1,433,129,300	\$1,434,379,300

Interest Rate %	Series	Date of Maturity		1977	1976
	Brought forward			\$1,433,129,300	\$1,434,379,300
7.54	WH	4 March	1994	91,105,000	91,105,000
7½	AW	31 March	1994	10,000,000	10,000,000
7½	AX	2 June	1994	25,000,000	25,000,000
5¼	L	2 July	1994	10,000,000	10,000,000
7⅝	AY	1 October	1994	30,000,000	30,000,000
8	CA	1 December	1994	10,000,000	10,000,000
5¼	M	15 December	1994	20,000,000	20,000,000
8	CB	30 December	1994	15,000,000	15,000,000
8.78	WJ	7 February	1995	66,609,000	66,609,000
5¼	N	15 March	1995	10,000,000	10,000,000
8	CC	31 March	1995	20,000,000	20,000,000
8	CD	31 March	1995	5,000,000	5,000,000
8.96	VX	4 June	1995	—	10,000,000
8.96	VY	5 June	1995	—	10,000,000
8.80	VZ	2 July	1995	—	6,546,000
8.92	WK	2 July	1995	26,546,000(4)	—
8	CE	1 August	1995	10,000,000	10,000,000
5⅜	S	15 September	1995	10,000,000	10,000,000
7.54	CF	30 December	1995	15,000,000	15,000,000
6.90	CH	30 March	1996	10,000,000	10,000,000
6.90	CJ	30 March	1996	20,000,000	20,000,000
9⅝	EJ	15 July	1996	500,000,000(3)	—
7.25	CK	1 October	1996	20,000,000	20,000,000
7.25	CL	1 October	1996	5,000,000	5,000,000
6.93	CM	15 December	1996	20,000,000	20,000,000
6.93	CN	15 December	1996	5,000,000	5,000,000
6.90	CP	1 March	1997	7,000,000	7,000,000
7.38	CR	15 June	1997	10,000,000	10,000,000
7.76	CT	3 November	1997	25,000,000	25,000,000
7.76	CU	15 November	1997	4,000,000	4,000,000
7.63	CV	15 December	1997	5,000,000	5,000,000
7.63	CW	15 December	1997	25,000,000	25,000,000
10¾	EB	29 December	1997	29,000,000	29,000,000
7.48	CX	30 March	1998	25,000,000	25,000,000
8	CZ	3 July	1998	20,000,000	20,000,000
8	DA	1 September	1998	30,000,000	30,000,000
8⅛	DB	1 November	1998	13,000,000	13,000,000
8⅛	DC	1 November	1998	7,000,000	7,000,000
8.30	DD	1 December	1998	7,000,000	7,000,000
8.30	DE	15 December	1998	5,000,000	5,000,000
8.30	DF	15 December	1998	15,000,000	15,000,000
8.55	DG	15 February	1999	15,000,000	15,000,000
	Carried forward			\$2,629,389,300	\$2,130,639,300

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
STATEMENT OF LONG-TERM DEBT (Continued)
as at 31 March 1977

Interest Rate %	Series	Date of Maturity	1977	1976
	Brought forward		\$2,629,389,300	\$2,130,639,300
8.55	DH	15 February 1999	5,000,000	5,000,000
8.70	DJ	29 March 1999	25,000,000	25,000,000
8.70	DK	29 March 1999	5,000,000	5,000,000
9.45	DL	15 May 1999	25,000,000	25,000,000
9.45	DM	15 May 1999	5,000,000	5,000,000
10½	DR	30 August 1999	12,000,000	12,000,000
10¼	DN	1 October 1999	100,000,000(3)	100,000,000(3)
10.40	DS	15 October 1999	15,000,000	15,000,000
10	DU	2 January 2000	50,000,000	50,000,000
9¾	DZ	10 February 2000	10,000,000	10,000,000
9⅞	DX	1 May 2000	45,000,000	45,000,000
10½	EE	18 August 2000	10,000,000	10,000,000
10½	ED	1 September 2000	50,000,000	50,000,000
10	EC	15 October 2000	50,000,000(5)	50,000,000(5)
10	EF	17 February 2001	50,000,000	50,000,000
10¾	EG	29 March 2001	60,000,000	60,000,000
9	EL	24 January 2002	50,000,000	—
9⅝	DY	1 June 2005	150,000,000(3)	150,000,000(3)
8⅝	EK	1 December 2006	175,000,000(3)	—

Issued by the former British Columbia Electric Company Limited—

First Mortgage Bonds, after deducting bonds redeemed in accordance with sinking fund requirements:

3¾	"G"	1 December 1976	—	11,750,000(3)
4¾	"H"	1 December 1977	7,492,300	8,019,000
4¾	"I"	1 February 1979	7,874,300	8,379,400
3¾	"J"	1 June 1980	8,638,100	9,082,200
4¼	"K"	1 February 1981	16,931,100	17,880,300
5	"L"	1 February 1982	23,484,600	24,811,900
5⅞	"M"	2 January 1988	29,411,300	31,295,500
5½	"N"	1 March 1989	18,796,400	19,849,300
6½	"O"	1 April 1990	20,955,400	21,925,800
5¾	"P"	1 May 1991	10,749,300	11,212,400
4	"F"	1 July 1991	1,281,700	1,468,600

Perpetual Callable Bonds:

4		188,000	198,100
4¼		72,200	80,950
4½		101,750	110,750
4¾		303,700	326,600
5		275,550	289,500
5½		178,250	189,350

Carried forward \$3,668,123,250 \$2,964,508,950

Interest Rate %	Series	Date of Maturity		1977	1976
	Brought forward			\$3,668,123,250	\$2,964,508,950
25-year Callable Bonds:					
4	AA	1 August	1986	11,812,000	11,801,900
4¼	AB	1 August	1986	10,927,800	10,919,050
4½	AC	1 August	1986	14,898,250	14,889,250
4¾	AD	1 August	1986	26,109,700	26,086,800
5	AE	1 August	1986	24,724,450	24,710,500
5½	AF	1 August	1986	14,821,750	14,810,650
Sinking Fund Debentures, after deducting debentures redeemed in accordance with sinking fund requirements:					
5¾	A	1 April	1977	32,400,000	32,800,000
<i>Issued by the former British Columbia Power Commission—</i>					
Bonds:					
3	S	1 April	1976	—	17,738,000
3⅝	T	1 April	1977	9,285,000	9,285,000
5	MC	15 September	1982	5,149,000	5,149,000
4	G	1 November	1988	10,000,000(3)	10,000,000(3)
3¼	H	15 July	1989	6,300,000(3)	6,300,000(3)
3¼	C	15 September	1991	3,000,000	3,000,000
4	D	21 May	1992	1,000,000	1,000,000
4	E	15 June	1992	1,000,000	1,000,000
4	F	15 September	1992	1,500,000	1,500,000
5	MD	15 September	1992	18,724,000	18,724,000
5	N	15 September	1992	10,000,000	10,000,000
Debentures:					
3¾	K	15 June	1986	20,000,000(3)	20,000,000(3)
4⅜	L	15 April	1987	25,000,000(3)	25,000,000(3)
3⅞	P	1 February	1988	20,000,000(3)	20,000,000(3)
				3,934,775,200	3,249,223,100
Exchange premium at date of issue on long-term debt payable in United States dollars, including adjustment to restate debt maturing within one year at current rate of exchange				1,163,774	11,572,502
				3,935,938,974	3,260,795,602
<i>Less—</i>					
Sinking funds on deposit with Trustee, Minister of Finance for the Province of British Columbia				248,552,906	216,505,743
	Carried forward			\$3,687,386,068	\$3,044,289,859

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
STATEMENT OF LONG-TERM DEBT (Continued)
as at 31 March 1977

	1977	1976
Brought forward	<u>\$3,687,386,068</u>	<u>\$3,044,289,859</u>
<i>Less—</i>		
Long-term debt payments due within one year:		
Sinking fund instalments	42,771,650	42,399,383
Debt maturities, less sinking fund	<u>39,892,300</u>	<u>11,572,575</u>
	<u>82,663,950</u>	<u>53,971,958</u>
	<u>\$3,604,722,118</u>	<u>\$2,990,317,901</u>

- (1) \$50,000,000 payable 16 December 1980 (selected by lot).
- (2) \$50,000,000 payable 19 February 1984 (selected by lot).
- (3) Payable in United States dollars.
- (4) Issued in consolidation of Series VX, VY and VZ sold during period 4 June 1975 to 2 July 1975.
- (5) Redeemable at option of holder on 15 October 1983.

Long-term debt and sinking fund requirements for the years ending 31 March 1979 to 1982 are \$50,000,000, \$45,100,000, \$91,700,000 and \$127,700,000 respectively.

Notes to Financial Statements*as at 31 March 1977***Note 1 — Significant accounting policies:**

The accounting policies of B.C. Hydro conform to accounting principles generally accepted in Canada for public utilities. A description of significant accounting policies follows.

Fixed assets and depreciation—

Fixed assets consist principally of land, franchises, water rights, storage dams, plants for the generation, transmission and distribution of electricity and gas, trolley coaches, motor buses, freight railway and rolling stock.

Fixed assets include the cost of plant financed by contributions in aid of construction and contributions arising from the Columbia River Treaty. Contributions in aid of construction, which include grants for rural electrification from the Government of the Province of British Columbia and amounts paid by customers towards construction of plant, are being amortized over the estimated service lives of the related assets, and the credit resulting therefrom is offset against the corresponding provision for depreciation. Contributions arising from the Columbia River Treaty are being amortized over the remaining term of the Treaty, and the credit resulting therefrom is offset against and is equal to the annual provision for depreciation of the related assets.

The difference between the construction costs associated with the Columbia River Treaty storage projects and the total contributions arising from the Columbia River Treaty, which is considered to relate to generation of power at Mica, and construction costs of the powerhouse and other common property relating to the Mica generating plant are being transferred to fixed assets in service by instalments proportionate to the number of completed and operational units in relation to the four units presently being installed at Mica. Three units were installed and placed in operation during the year ended 31 March 1977, and consequently, 75% of the above-mentioned costs were transferred to fixed assets in service. The amount not yet transferred to fixed assets in service is included in deferred costs.

B.C. Hydro charges interest to unfinished construction and to deferred costs of fixed assets at rates equivalent to the cost of borrowing funds.

The depreciation policy of B.C. Hydro is to charge the original cost of fixed assets to income over the estimated service lives of the assets. Depreciation is provided on all depreciable assets in service at the beginning of each year and is computed on the straight-line method.

Non-owned equipment—

Approximately 33% (25% at 31 March 1976) of the buses and trolley coaches operated and maintained by B.C. Hydro are provided by the Provincial Government without charge.

Insurance—

B.C. Hydro is purchasing catastrophe insurance for liability and for difference in conditions to provide protection against major losses in excess of \$5,000,000 up to \$100,000,000. As at 31 March 1977, in excess of \$84,000,000 of this insurance was in effect.

Insurance coverage on major projects under construction is purchased either by B.C. Hydro or by its contractors as required by B.C. Hydro. Fire insurance coverage on certain plant and equipment is also purchased to comply with trust deed requirements. Motor buses, trolley coaches and service vehicles are insured for public liability with the Insurance Corporation of British Columbia.

With the above exceptions, B.C. Hydro generally follows a policy of self-insurance for damage to plant and equipment and for general liability, and any losses incurred are charged to income. B.C. Hydro maintains an insurance fund of \$5,000,000, invested in government and municipal bonds and short-term deposits with financial institutions, to provide funding for uninsured losses up to that amount.

Prior to 1 April 1975, a reserve for insurance was accumulated by annual charges to income commensurate with the current cost of insurance. This practice was discontinued in the year ended 31 March 1976, and the reserve of \$4,457,301 accumulated to 31 March 1975 was credited to earnings retained in the business.

Unamortized discount and expense on debt—

These costs are amortized by charges to income over the life of the respective issues.

Deferred costs of generation—

By agreement between the Canadian and United States Entities which are responsible for the operating plans under the Columbia River Treaty, B.C. Hydro, in order to accelerate filling of the Mica reservoir, delivered power generated at Burrard Thermal Generating Plant to the United States Entity as an alternative to releasing water from Mica for generation of power downstream. This delivery of power was to ensure availability of water when the Mica plant became operational and to contribute to a more efficient operation of the Mica plant. The cost of fuel used at Burrard Thermal Generating Plant to provide such power was deferred as at 31 March 1976 and, after the Mica plant became operational in 1976, was to be charged to income over seven years. Because of a favourable run-off in the late spring and summer of 1976 in the upper Columbia basin, the Mica reservoir was filled by August 1976. With the full reservoir, B.C. Hydro was in a position to generate surplus power for sale to the United States to alleviate power shortages in that country during the fall and winter of 1976/77. As a consequence, it was deemed appropriate to charge the total deferred amount of \$7,472,870 to income in the year ended 31 March 1977, the period during which the sales of surplus power were made. This amount is included in "Materials and services" in the statement of income and in "Other" in the statement of changes in financial position.

Rural electrification assistance grant—

B.C. Hydro receives an annual grant of \$3,000,000 from the Provincial Government for rural electrification assistance. These funds are used to improve and extend electric service in rural areas and to offset operating losses of electric systems purchased or constructed in isolated areas with such funds.

Foreign exchange—

The liability for long-term debt payable in United States dollars has been translated to Canadian dollars at the rates of exchange prevailing at the date the debt was incurred. Translated at the rates prevailing at 31 March 1977, the liability for long-term debt payable in United States dollars would have been increased by approximately \$60,800,000. Current assets and current liabilities

in United States dollars, including long-term debt payable within one year, are translated at the rate of exchange prevailing at the date of the balance sheet. The resulting unrealized profits or losses, which were not significant for the years ended 31 March 1977 and 1976, have been included in income.

Note 2 — Temporary investments:

	1977	1976
Deposits with banks and other financial institutions	\$289,795,208	\$44,840,276
Commercial note	2,000,000	—
Bonds held for sinking fund	2,795,800	3,076,441
	<u>\$294,591,008</u>	<u>\$47,916,717</u>

Note 3 — Payment in respect of litigation:

A lawsuit was started on 17 July 1967 in the Supreme Court of British Columbia by the contractors constructing the underground powerhouse and associated works at Gordon M. Shrum Generating Station, alleging breach of contract. Amounts between \$20 million and \$30 million were claimed as damages. During the trial, the contractors introduced an alternative claim to which they gave priority for the total cost to them of the construction work, including interest and profit, and a balance owing of \$51 million was claimed. The alternative claim was tried and judgment delivered, declaring the contractors to be entitled to compensation on the basis of quantum meruit. In a judgment delivered 13 November 1975, the compensation on the basis of quantum meruit was determined by the Trial Judge to be \$36,124,400, and this amount together with costs was awarded to the Plaintiffs. On 3 March 1976, payment into Court was made in the sum of \$36,500,490, including interest from 13 November 1975 to 28 January 1976. By order of Court, this amount may be paid to the contractors upon deposit of a bond satisfactory to the Court. A Notice of Appeal from the judgment was filed on 20 November 1975, submitting that the judgment was in error both in law and fact as to there being a fundamental breach of contract by B.C. Hydro and in the award to the Plaintiffs upon the basis of

quantum meruit. The contractors have filed a Notice of Cross-Appeal in which the entire amount of \$51 million is claimed. The hearing of the Appeals is scheduled to commence in September 1977. The amount of the final judgment or any settlement by B.C. Hydro as a result of this litigation will be capitalized as part of the cost of construction and included in fixed assets.

Note 4 — Guarantee by Province of British Columbia:

The Government of the Province of British Columbia has unconditionally guaranteed the principal of and premium, if any, and interest on the long-term debt and Parity Development Bonds.

Note 5 — Pension plans:

Employees of B.C. Hydro are covered under contributory pension plans, and provisions are being made for current service according to the requirements of the various plans.

B.C. Hydro is funding the estimated past service costs of a contributory plan introduced effective 1 January 1965 by equal annual payments of \$393,800 over a period of 15 years which commenced 1 April 1967. An actuarial report dated 1 December 1975 indicated an evaluated accrued deficit in this plan of \$41,057,000 as at 31 December 1974, largely resulting from changes in the plan since the last actuarial report. This deficit is in addition to past service costs referred to above and is being funded by equal annual payments of \$3,061,000 over a period of 25 years which commenced with the year ended 31 March 1976. The actuarial report also indicated that, if contributions to the plan continued at the rates in effect at 31 December 1974, there would be a future additional evaluated deficit in the plan of \$10,702,000, which could be funded by an increase of 1% in the rate of contribution. An increase of 1% in the rate of contribution, shared equally by B.C. Hydro and employees, was implemented 1 September 1976. Indexing of pension benefits and increases in rates of pay since 31 December 1974 will result in an additional deficit, the amount of which will be determined by an actuarial evaluation being made as at 31 December 1976.

The charge to income in respect of pension plans, including provision for supplementary payments and B.C. Hydro's share of Canada Pension Plan costs, for the year ended 31 March 1977 was \$13,683,235 (1976 — \$11,928,611).

Note 6 — Interest:

	1977	1976
Interest on debt	\$292,378,674	\$225,293,837
Amortization of discount and expense	<u>2,164,603</u>	<u>1,965,381</u>
	<u>294,543,277</u>	<u>227,259,218</u>
Less—		
Income from sinking fund investments held by Trustee . .	15,581,211	13,868,517
Income from temporary investments (previously included in gross revenues)	<u>18,570,835</u>	<u>8,497,713</u>
	<u>34,152,046</u>	<u>22,366,230</u>
	<u>\$260,391,231</u>	<u>\$204,892,988</u>

Note 7 — Provincial Government special subsidy:

In March 1977, B.C. Hydro received a special subsidy of \$32,600,000 from the Provincial Government towards the passenger transportation loss for the year ended 31 March 1977 (1976—\$32,600,000 to offset the projected loss of B.C. Hydro for the year ended 31 March 1976). The annual metropolitan transit subsidy of \$2,000,000 received from the Provincial Government in the year ended 31 March 1976 and prior years was not received in the year ended 31 March 1977.

Note 8 — Commitments and Contingencies:

Purchase commitments and contracts of B.C. Hydro for capital projects (including the estimated legal costs payable to the Plaintiffs with respect to the litigation referred to in Note 3 above) aggregated approximately \$575,000,000 as at 31 March 1977.

Financial Statistics *(in millions of dollars)*

year ended 31 March

Sources of Revenue	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968
Electric	461.0	341.4	296.8	268.0	235.0	211.4	193.0	162.8	149.4	137.7
Gas	104.1	89.1	77.6	60.7	55.2	51.7	47.5	41.0	40.6	34.4
Passenger transportation	35.6	33.1*	30.5*	27.7*	25.1*	24.2*	21.3*	20.7*	19.5*	18.1
Rail freight	15.9	14.6	13.1	12.1	10.8	10.2	8.0	8.4	7.4	7.0
Miscellaneous	7.1	5.5	3.3	2.1	1.9	2.1	2.2	1.4	1.4	1.3
Provincial Government special subsidy	32.6	32.6	—	—	—	—	—	—	—	—
Total	656.3	516.3	421.3	370.6	328.0	299.6	272.0	234.3	218.3	198.5

*Includes metropolitan transit subsidy received from Provincial Government.

Figures for 1968 to 1976 have been reclassified to conform with the presentation used for 1977.

Disposition of Revenue

Salaries, wages and employee benefits	179.2	157.0	117.9	88.5	72.7	67.6	57.9	55.1	49.6	44.0
Materials and services	122.7	102.4	87.3	75.3	52.3	50.4	44.7	40.0	44.9	43.4
Grants, school taxes and water rentals	46.2	39.5	28.8	25.0	22.2	20.0	18.6	17.0	15.0	13.3
Depreciation	80.7	72.8	65.8	61.7	57.7	52.9	50.2	44.7	38.6	34.7
Interest charged to operations	188.9	143.3	117.1	104.9	101.1	91.3	83.9	77.5	60.9	50.2
Retained in the business	38.6	1.3	4.4	15.2	22.0	17.4	16.7	—	9.3	12.9
Total	656.3	516.3	421.3	370.6	328.0	299.6	272.0	234.3	218.3	198.5

Figures for 1968 to 1976 have been reclassified to conform with the presentation used for 1977.

Expenditures on Fixed Assets

Expenditures on Fixed Assets	548.5	590.5	463.8	332.3	230.2	217.9	216.0	189.6	227.3	341.2
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Operating Statistics

year ended 31 March

	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968
Electric										
Generating nameplate capacity at year-end (rated kW in thousands)*										
Hydro	5,449	3,882	3,618	3,318	3,318	2,814	2,455	2,455	2,001	1,320
Thermal	1,301	1,299	1,104	1,061	1,041	1,038	1,059	1,056	1,055	906
Total	6,750	5,181	4,722	4,379	4,359	3,852	3,514	3,511	3,056	2,226
Peak one-hour demand, integrated system (kW in thousands)	4,258	4,063	3,791	3,578	3,499	2,970	2,769	2,499	2,357	2,152
Customers at year-end (in thousands)	917	875	843	801	765	726	690	652	605	583
Electricity sold (kW.h)										
Total, including export (in millions)	24,843	20,596	21,496	21,940	19,103	16,174	14,833	13,656	12,237	11,084
Increase (decrease) over previous year (%) ..	20.6	(4.2)	(2.0)	14.9	18.1	9.0	8.6	11.6	10.4	10.8
By class of customer (%)										
Residential	27	30	27	24	25	28	28	27	28	28
General	31	36	32	30	31	34	32	32	33	33
Bulk	33	33	36	36	37	36	36	37	37	37
Other systems	2	1	1	1	1	1	1	2	2	2
Export**	7	—	4	9	6	1	3	2	—	—
Residential service										
Average annual kW.h use per customer	8,452	8,370	7,928	7,694	7,365	7,342	6,949	6,651	6,674	6,222
Average revenue per kW.h (cents)	2.7	2.3	2.1	1.9	1.9	1.9	1.9	1.7	1.7	1.7
*Excludes electricity available from other systems. Rated capacity has been exceeded on occasion.										
**Less than ½ of 1% 1968, 1969 and 1976.										
Gas										
One-day capacity at year-end (therms in thousands)										
Mainland—firm pipeline contracts*	4,000	4,000	3,900	3,260	2,660	2,400	2,460	2,360	2,529	2,260
—plant	1,000	1,000	1,000	1,000	1,000	1,000	1,000	250	250	250
Greater Victoria—plant	56	50	60	60	60	53	53	45	45	36
Peak one-day demand (therms in thousands)										
Mainland system—including interruptible	3,573	4,080	3,491	3,640	3,461	3,279	2,939	2,770	3,108	2,537
—excluding interruptible	3,463	3,456	3,379	3,136	3,359	3,065	2,762	1,962	2,889	1,905
Greater Victoria system	18	22	22	24	29	29	22	19	24	19
Customers at year-end (in thousands)	270	259	249	238	227	215	205	197	186	178
Gas sold (therms)										
Total (in millions)	759	764	731	711	649	601	554	485	470	391
Increase (decrease) over previous year (%) ..	(.7)	4.5	2.8	9.6	8.0	8.5	14.2	3.1	20.2	9.6
Average revenue per therm (cents)	13.7	11.7	10.6	8.5	8.5	8.6	8.6	8.4	8.6	8.8
*On basis of 100 cu. ft. to one therm.										
Passenger Transportation										
Vehicles in operation at year-end										
Urban—buses	664	648	558	447	335	326	353	340	339	340
—trolley coaches	312	312	301	293	293	298	298	296	296	296
—total	976	960	859	740	628	624	651	636	635	636
Interurban buses	141	125	134	98	91	90	85	66	71	70
Passengers carried (in millions)										
Urban	106.4	104.0	94.3	85.5	76.7	72.6	65.9	78.7	77.4	74.6
Interurban	2.1	2.4	2.9	2.8	2.6	2.5	2.2	2.3	2.2	2.1
Revenue miles run—urban (in millions)	36.4	33.6	27.7	23.6	20.4	20.0	19.3	21.2	20.9	20.8
Passenger revenue per mile—urban (cents)	72.1	68.9	75.6	80.9	85.2	83.7	78.9	71.6	72.1	71.2
Rail Freight										
(tons in thousands)	2,637	2,558	2,749	2,799	2,674	2,606	2,200	2,466	2,265	2,057
Employees At Year-End										
Regular	11,339	11,226	10,361	8,945	7,474	7,173	7,205	7,056	6,905	6,737
Temporary	1,001	807	1,255	1,080	772	669	481	810	717	614
Total	12,340	12,033	11,616	10,025	8,246	7,842	7,686	7,866	7,622	7,351

British Columbia Hydro and Power Authority

Directors

Robert W. Bonner, Q.C.

*Charles W. Brazier, Q.C.

The Honourable John Davis

Roderick M. Hungerford (*resigned 31 January 1977*)

*John H. Steede

**Member of the Audit Committee*

Officers

Robert W. Bonner, Q.C., *Chairman*

J. Norman Olsen, *General Manager*

William D. Mitchell, *Secretary and
General Solicitor*

Elizabeth B. Fulwell, *Associate Secretary*

William M. Walker, *Chief Engineer*

Divisional Organization

OFFICE OF THE CHAIRMAN

W. D. Mitchell, *Legal Division Manager and
General Solicitor*

OFFICE OF THE GENERAL MANAGER

Dr. H. M. Ellis, *Director, Research
and Development*

ADMINISTRATION AND FINANCE

J. P. Sheehan, *General Manager*

DIVISION MANAGERS:

L. E. Beard, *Financial Planning*

E. S. Collins, *Properties*

R. Johnson, *Purchasing and Supply*

I. R. A. Mills, *Treasurer*

T. A. Nordstrom, *Computer and
Management Systems*

G. A. Woodbury, *Comptroller*

CORPORATE AFFAIRS

C. W. Nash, *General Manager (also Executive
Assistant to the Chairman)*

J. A. MacCarthy, *Public and Customer Relations*

CORPORATE SERVICES

L. E. Wight, *Manager*

DIVISION MANAGERS:

R. H. Downey, *Industrial Relations and Personnel*

D. G. McKillop, *General Services*

ELECTRICAL OPERATIONS

W. A. Best, *General Manager*

DIVISION MANAGERS:

W. A. Bateman, *Fraser Valley*

E. T. Davis, *North Coast*

T. V. Farmer, *South Interior*

W. B. Gale, *Operations Administration*

W. D. Gill, *Operations Engineering*

D. J. McLennan, *Metropolitan Vancouver*

G. J. Roper, *Vancouver Island*

P. D. Swoboda, *Central Interior*

ENGINEERING

E. H. Martin, *General Manager*

W. M. Walker, *Chief Engineer*

DIVISION MANAGERS:

E. Crowley, *System Design*

M. A. Favell, *Thermal*

H. J. Goldie, *System Engineering*

J. W. Milligan, *Construction*

F. J. Patterson, *Hydroelectric Design*

GAS/ENERGY SERVICES

R. K. Kidd, *General Manager*

DIVISION MANAGERS:

K. S. Henderson, *Gas Operations*

A. H. MacPherson, *Gas Engineering*

T. J. Newton, *Energy Services*

TRANSPORTATION

W. A. Duncan, *General Manager*

DIVISION MANAGERS:

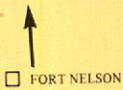
J. G. Stethem, *Pacific Stage Lines*

G. I. Stevenson, *Railway Operations*

D. T. Suttie, *Transit Operations*

J. H. Wright, *Transportation Maintenance*

Fold out Map of Electric Transmission System



British Columbia Hydro and Power Authority

Electric Transmission System at 31 March 1977 with planned additions

LEGEND

- Hydroelectric Generating Stations
- Diesel-Electric Generating Stations
- ▣ Gas-Turbine-Electric Generating Stations
- Substations
- Transmission Lines 60 kV-360 kV (existing and under construction)
- Transmission Lines 500 kV (existing and under construction)
- - - Transmission Lines 60 kV-360 kV (planned)
- - - Transmission Lines 500 kV (planned)

Vancouver Area

MAJOR GENERATING PLANTS

- | | |
|----------------------------|----------------------------|
| Alouette: Hydroelectric | Port Mann: Gas-Turbine |
| Burrard: Steam-Turbine | Ruskin: Hydroelectric |
| Lake Bunton: Hydroelectric | Stave Falls: Hydroelectric |

MAJOR SUBSTATIONS

- | | | |
|-----------|--------------------|----------|
| Arnett | Dal Grauer | Meridian |
| Atchelitz | Horne-Payne | Murrin |
| Barnard | Ingleadow | Newell |
| Camosun | Kidd, Nos. 1 and 2 | Walters |
| Cypress | Mainwaring | |

Victoria Area

MAJOR SUBSTATIONS

- | | | |
|-----------|--------------|--------|
| Colwood | George Tripp | Horsey |
| Esquimalt | Goward | |

Prince George Area

MAJOR SUBSTATIONS

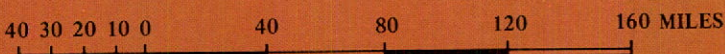
- | | | |
|-----------|----------|---------------|
| Canreod | Patricia | Prince George |
| Northwood | Pineview | Williston |

PRINCE GEORGE
(See Legend)



ALBERTA

UNITED STATES
AMERICA





Corporate Information

HEAD OFFICE:

970 Burrard Street, Vancouver,
British Columbia, Canada, V6Z 1Y3

AUDITORS

Price Waterhouse & Co.

BANKERS

Canadian Imperial Bank of Commerce

REGISTRARS

Securities issued by
British Columbia Hydro and Power Authority:

Canadian issues:

B.C. Hydro

United States issues:

The Canadian Bank of Commerce
Trust Company, New York

Securities issued by the former
British Columbia Electric Company Limited:

Callable Bonds:

Montreal Trust Company

First Mortgage Bonds:

Montreal Trust Company

Debentures:

The Royal Trust Company

Securities issued by the former
British Columbia Power Commission:

B.C. Hydro

*Nature provides an impressive halo over B.C. Hydro's
500 kV transmission line between Prince George
and Terrace in the central region of British Columbia.*







British Columbia Hydro and Power Authority
