

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
ANNUAL REPORT 1977/1978

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The Year's Highlights

for the year ended 31 March

	1978	1977
	<i>(in thousands)</i>	
FINANCIAL STATISTICS		
Gross revenues	<u>\$ 801,843</u>	<u>\$ 656,282*</u>
Net income (loss)		
Electric	\$ 82,584	\$ 46,079
Gas	4,921	(162)
Passenger transportation	(61,294)	(50,256)
Rail freight	1,761	1,132
Sundry	(472)	9,196
Provincial Government special subsidy	—	32,600
Total net income	<u>\$ 27,500</u>	<u>\$ 38,589</u>
Expenditures on fixed assets	<u>\$ 641,120</u>	<u>\$ 548,454</u>

*Includes Provincial Government special subsidy of \$32,600.

OPERATING STATISTICS

Electricity sold in British Columbia (millions of kW·h)	24,106	22,882
Gas sold (millions of therms)	790	759
Freight carried (thousands of tonnes)	2,397	2,393

Specially equipped aircraft
used for aerial thermographic
survey.



B.C. Hydro's net income for the year ended 31 March 1978 was \$27 million, compared with a net income of \$6 million before special subsidy in the preceding year. The improvement in earnings was a direct result of sales of surplus electricity to the United States.

Sales of surplus electricity are accounted for as a nonrecurring source of revenue, because these sales are dependent on such variable factors as the availability of surplus water in B.C. Hydro's storage system and the market for electric power in the United States. During the year under review, favourable water storage conditions in British Columbia, coinciding with a severe drought in the northwestern United States and California, made possible large sales of surplus power.

Although sales volumes of electricity in British Columbia continued to increase, the growth rate of 5.3% in the year under review was less than the average growth rate for the last ten years. The lower rate of growth has provided B.C. Hydro with a welcome respite in the pace of its endeavours to meet the Province's future requirements for electricity.

Electric, gas and transportation revenues for the year totalled \$802 million, up \$178 million from the previous year. The cost of providing services, meanwhile, rose to \$774 million, an increase of \$157 million.

During the year, the commodity charge for natural gas purchased by

B.C. Hydro for resale increased 23%. Over the last two years, this commodity charge has increased 118%.

Net earnings continued to be affected by the losses associated with the passenger transportation service, which rose to \$61 million during the year under review. The Provincial Government's special subsidies for passenger transportation losses received in previous fiscal years were not provided in the year just concluded.

While important economies in transit operations have been achieved, the implementation of broader measures affecting transit have been deferred pending the development of public policy establishing the level and form of external financial support of the transit services.

The major thrust of B.C. Hydro's investment activity continues to be expansion of the electric system to meet projected demands for service. B.C. Hydro has only two sources of capital for system expansion, self-generated funds and borrowed funds. During the year under review, borrowings totalled \$790 million.

Expected levels of future capital requirements, which are both large and sensitive to inflation, continue to require that great care be taken to maintain and improve B.C. Hydro's overall profitability so that sufficient capital can be borrowed at advantageous interest rates. This factor is a major consideration prompting

B.C. Hydro's annual review of rates for electricity and gas.

During the past fiscal year, B.C. Hydro continued and extended its involvement in programs related to conservation of energy and to research and development. The conservation practices of B.C. Hydro's customers have undoubtedly had some effect on load growth. Nevertheless, per capita residential consumption was 8,620 kW·h compared with 8,452 kW·h for the previous year, reflecting in part a continuing trend towards electric space heating.

Mica Dam was officially opened by Premier William R. Bennett on 13 October 1977, marking the operational completion of Columbia River Treaty projects begun in 1964.

The Directors express their appreciation to the employees of B.C. Hydro for their continued industry and loyalty during the past year.



ROBERT W. BONNER,
Chairman

19 May 1978

The first Annual Report of B.C. Hydro was for the fiscal year ended 31 March 1963.

Since this first report, B.C. Hydro has experienced noteworthy growth. During its first year of operation gross revenues totalled \$138 million; during the year ended 31 March 1978 gross revenues were \$802 million. During this same period, the cost of providing services has escalated from \$124 million to \$774 million.

Four main services are provided: generation, transmission and distribution of electricity; distribution of gas; and passenger and rail freight transportation.

Electric service

Electricity is generated and distributed throughout areas of British Columbia which contain more than 90% of the population of the Province. The rapid growth of the electric service that has occurred since B.C. Hydro's first year of operation is illustrated by the following table:

	Year ended 31 March	
	1963	1978
Sales in B.C. (<i>kWh in millions</i>)	6,060	24,106
Generating capacity (<i>kW in thousands</i>)	1,865	7,176
Customers (<i>thousands</i>)	459	952

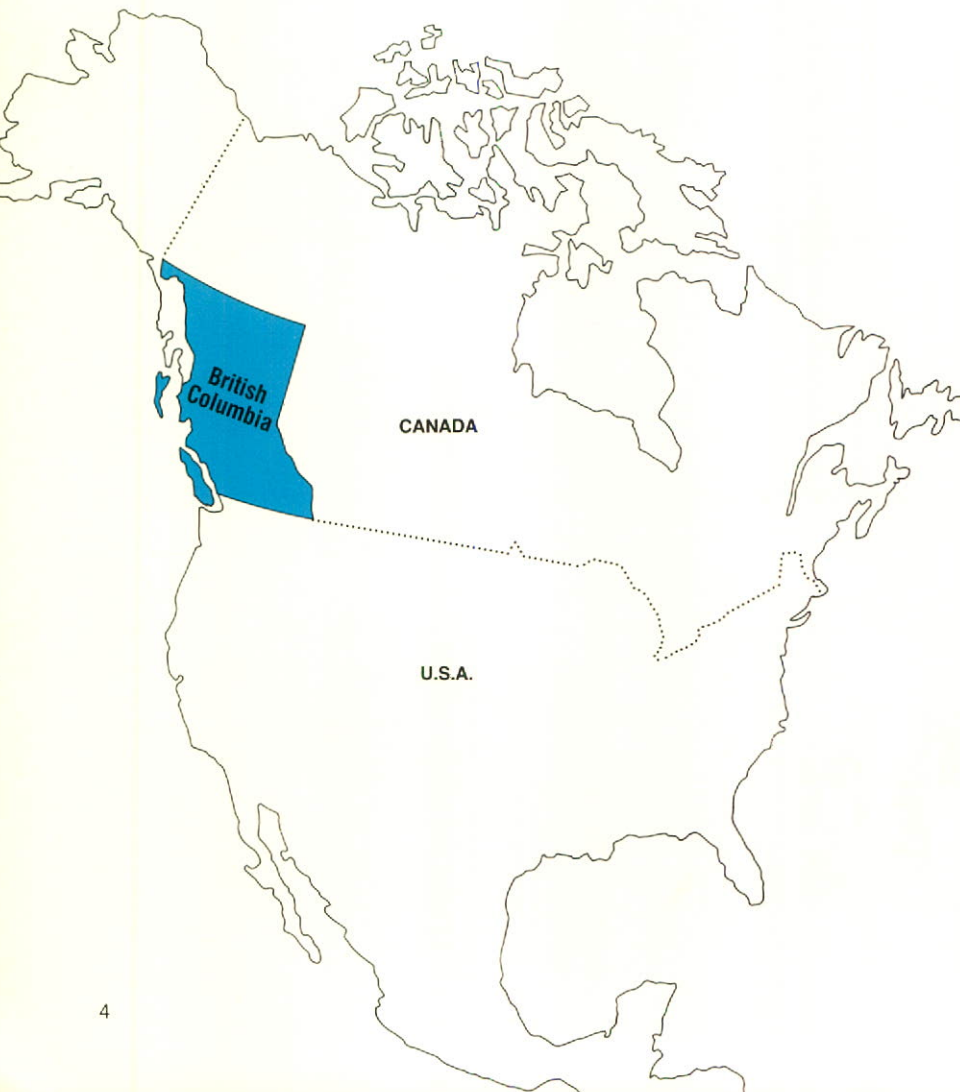
Gas service

Natural gas is distributed in the Greater Vancouver and Fraser Valley areas and butane-air gas in the Greater Victoria area. In B.C. Hydro's first year of operation, the gas system served 137 thousand customers and sold a total of 240 million therms of gas. At 31 March 1978, the number of customers totalled 278 thousand, and annual sales had increased to 790 million therms.

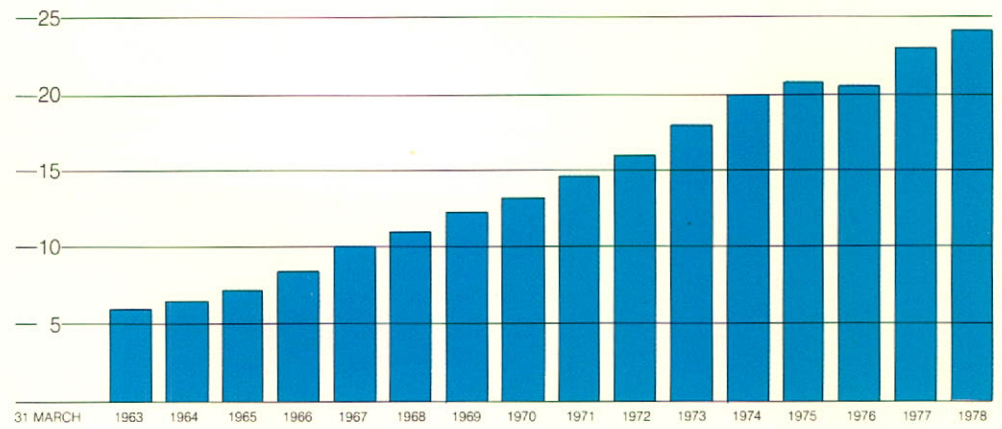
Transportation services

The passenger transportation service operates mainly in Vancouver, surrounding municipalities and Victoria. The railway operates a terminal freight service in Greater Vancouver and the Fraser Valley. Growth in the rail freight service has been relatively steady since 1963 with some tapering off in recent years as a result of a decline in economic activity. In contrast, growth in the passenger transportation system has been substantial in the last five years. The following table indicates the growth since 1963:

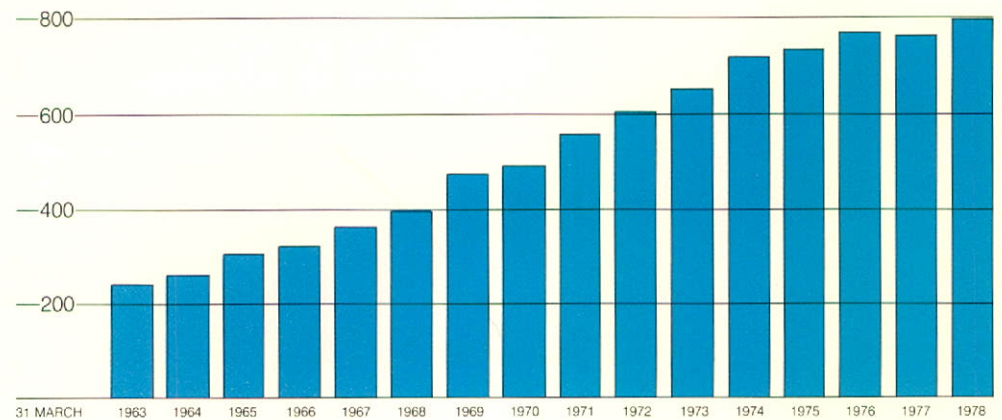
	Year ended 31 March	
	1963	1978
Passenger vehicles in operation	732	1,111
Rail freight (<i>tonnes in thousands</i>)	1,422	2,397



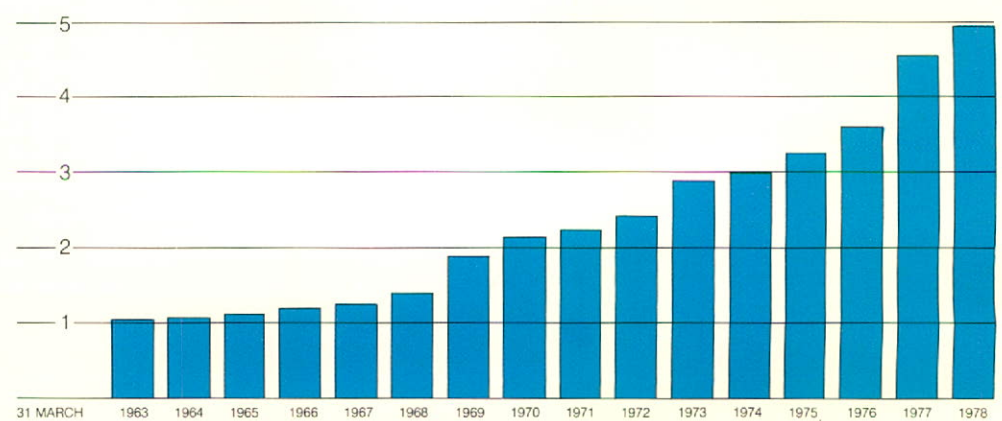
Electricity Sold in British Columbia (kW·h in billions)



Sales of Gas (therms in millions)



Fixed Assets in Service (dollars in billions)



Rates

Under Provincial and Federal laws, B.C. Hydro is responsible for determining rates and collecting revenues for its electric, gas, railway freight, motor bus and trolley coach services. The British Columbia Energy Commission is empowered to review certain complaints of discrimination made by customers.

B.C. Hydro policy is to provide service to customers at the lowest practical cost consistent with sound management. Rates for electricity and gas services are reviewed on a continuing basis. In line with this general policy, and following a review of projected costs and revenues, revised electric and gas rates were instituted effective 1 March 1978.

The new rates are expected to result in increased revenues, averaging an estimated 13.1% from service to residential electric customers and 14.2% from service to non-residential electric customers. Firm gas revenues are expected to increase an average of 10.5% from residential service and 32.7% from general service. Revenues from service to interruptible gas customers are expected to rise an average of 31.5%. Most of the additional gas revenues must be passed on to the pipeline supplier, because of a higher wholesale price charged to B.C. Hydro effective 1 March 1978.

Cost of providing services

B.C. Hydro's cost of providing all services during the year was \$774 million, an increase of \$157 million or 25.4% over the previous year.

Interest and other costs on debt charged to operations during the year were \$264 million, up \$75 million or 39.9%. The major factors contributing to this increase were the transfer to active service of new fixed assets and higher interest rates.

Salaries, wages and employee benefits charged to operations amounted to \$202 million, an increase of \$23 million or 12.7%. Higher rates of pay and increases in employee benefits were the major factors contributing to the increase.

Provision for depreciation, directly related to fixed assets in service, totalled \$100 million, up \$19 million or 23.9% over the previous year.

Grants, school taxes and water rentals charged to operations totalled \$54 million, an increase of \$8 million or 17.5%. Additions to fixed assets, higher rates and revised assessments were the primary causes for the increase.

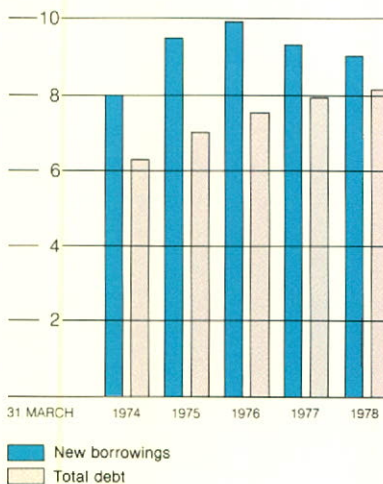
In the year under review, purchases of natural gas totalled \$81 million. During the past two years, the commodity price of natural gas has been increased significantly. Following a recommendation by the British Columbia Energy Commission, the field price of natural gas was raised on 1 March 1978, increasing the commodity price of gas to \$1.107 per Mcf from 89.7¢ per Mcf.

Financing

B.C. Hydro finances its investment in fixed assets with self-generated funds and borrowed funds. Borrowings from outside Canada are subject to cost and availability of funds in Canada. While most borrowings have been from Province of British Columbia and Government of Canada trustee funds, B.C. Hydro has also borrowed in the three main bond markets of Canada, United States and Europe. All existing debt is in either Canadian or United States dollars.

All long-term borrowings have sinking fund provisions to ensure that funds are available at maturity to repay a portion of the debt.

Average Coupon Rates Paid by B.C. Hydro on Long-Term Borrowings (percentages)



During the year under review, \$790 million was borrowed from the following sources:

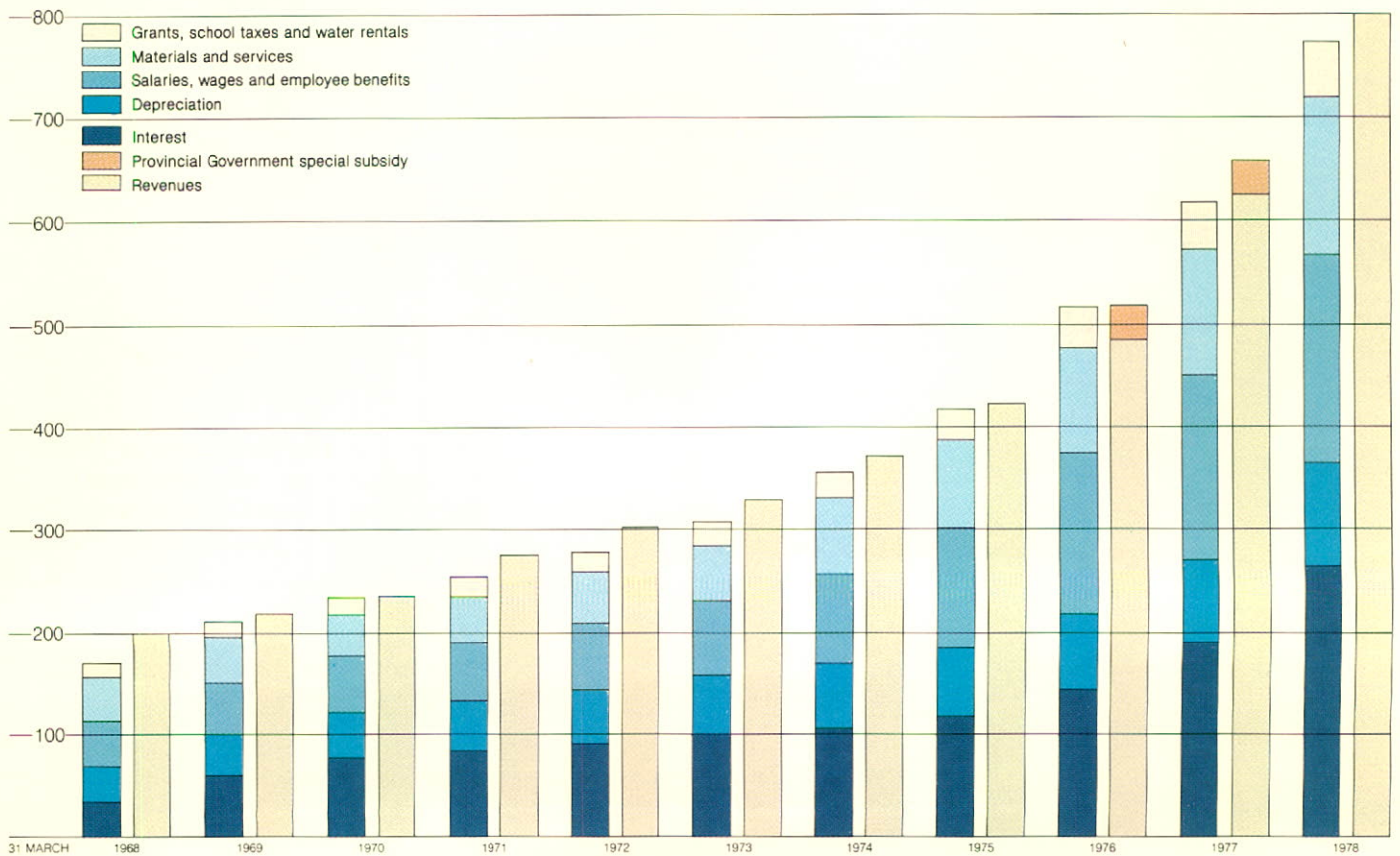
	Millions
Public bond issues:	
United States	\$200 (U.S.)
Europe	\$ 75 (U.S.)
Canada Pension Plan	
Investment Fund	\$ 40
Provincial Government	
trusteed funds	\$475

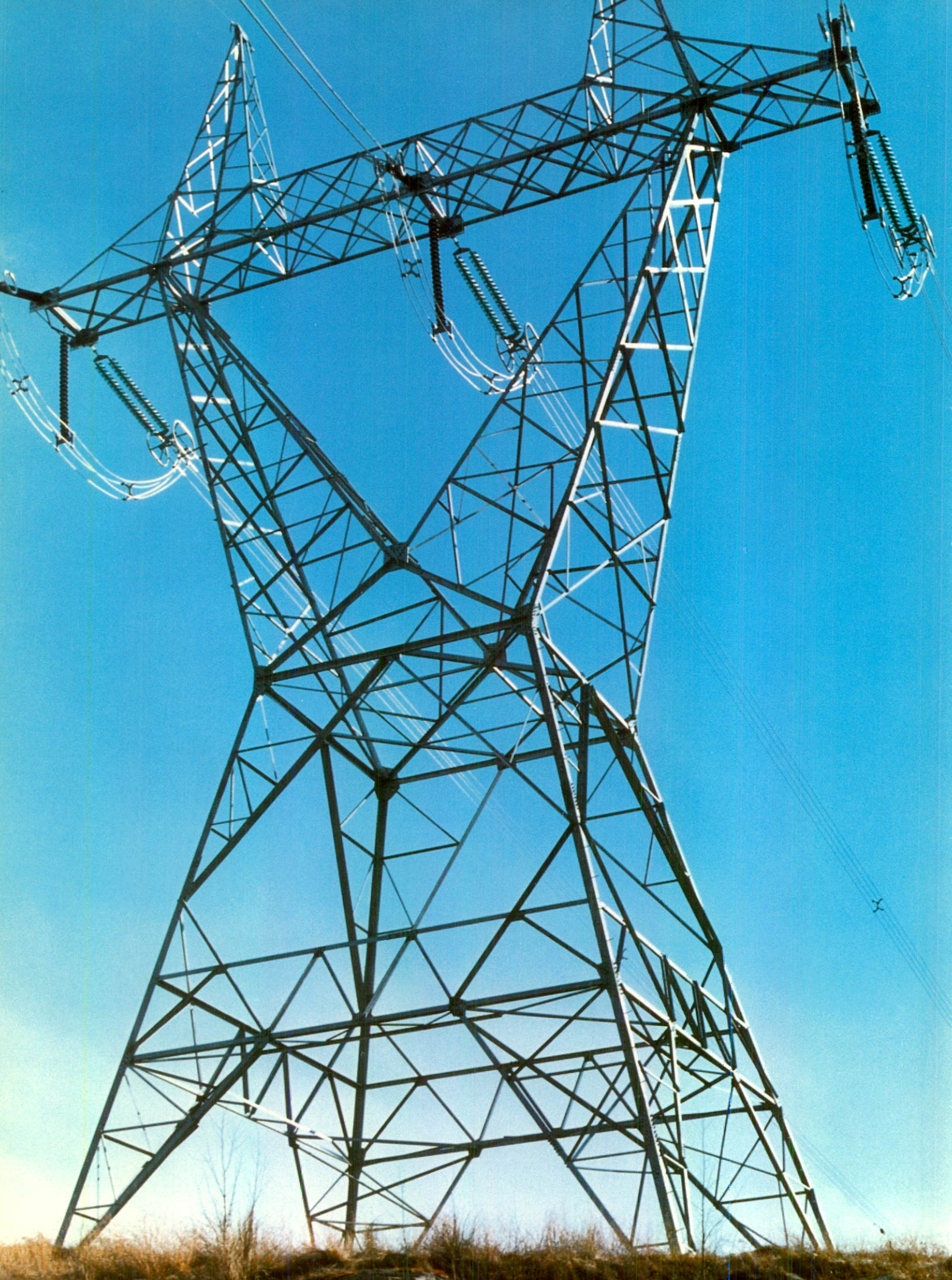
compared with an average of 9.34% for the previous year. At year-end, the average interest rate on outstanding long-term debt and Parity Development Bonds was 8.09% in comparison with 7.87% at the end of the previous fiscal year.

During the year, Trustees received \$63 million to meet sinking fund requirements of long-term debt.

The average annual coupon rate of bonds sold during the year was 8.98%,

B.C. Hydro's Revenues and Expenses (dollars in millions)





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 1978, 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 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 these financial statements present fairly the financial position of British Columbia Hydro and Power Authority as at 31 March 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.

Vancouver, British Columbia
18 May 1978

PRICE WATERHOUSE & CO.
Chartered Accountants

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Statement of Income

for the year ended 31 March 1978

	1978	1977
	<i>(in thousands)</i>	
Gross revenues, excluding Provincial Government special subsidy (Notes 7 and 9)	\$801,843	<u>\$623,682</u>
Expenses:		
Salaries, wages and employee benefits	202,018	179,238
Materials and services	153,857	122,691
Grants, school taxes and water rentals	54,300	46,175
Depreciation	99,960	80,657
Interest (Note 8)	264,208	<u>188,932</u>
	774,343	<u>617,693</u>
Income before Provincial Government special subsidy	27,500	5,989
Provincial Government special subsidy (Note 9)	—	<u>32,600</u>
Net income	\$ 27,500	<u>\$ 38,589</u>

Statement of Earnings Retained in the Business

for the year ended 31 March 1978

	1978	1977
	<i>(in thousands)</i>	
Balance at beginning of year	\$201,220	\$162,631
Net income	27,500	<u>38,589</u>
Balance at end of year	\$228,720	<u>\$201,220</u>

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Statement of Changes in Financial Position
for the year ended 31 March 1978

	1978	1977
	<i>(in thousands)</i>	
SOURCE OF FUNDS:		
Operations—		
Net income	\$ 27,500	\$ 38,589
Charges not affecting current funds—		
Depreciation	99,960	80,657
Other (Note 10)	858	7,804
	128,318	127,050
Long-term debt	799,598	710,577
Contributions in aid of construction	21,855	22,271
Miscellaneous	12,294	114
	<u>\$962,065</u>	<u>\$860,012</u>
APPLICATION OF FUNDS:		
Fixed assets	\$641,120	\$548,454
Sinking funds—		
Instalments	42,777	42,425
Income invested by Trustee (Note 8)	20,102	15,581
Retirement of long-term debt	39,892	12,073
Retirement of Parity Development Bonds	25,000	—
	768,891	618,533
INCREASE IN WORKING CAPITAL exclusive of changes in current portion of long-term debt	<u>193,174</u>	<u>241,479</u>
	<u>\$962,065</u>	<u>\$860,012</u>

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Balance Sheet

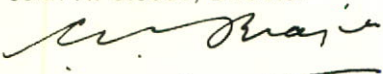
as at 31 March 1978

	1978	1977
	(in thousands)	
FIXED ASSETS:		
Fixed assets in service, at cost	\$4,920,538	\$4,541,306
Less—		
Accumulated depreciation	877,938	784,319
	4,042,600	3,756,987
Deferred costs of powerhouse and other common generating property	—	102,426
Unfinished construction	750,819	406,661
	4,793,419	4,266,074
CURRENT ASSETS:		
Cash	6,005	888
Temporary investments, at cost (Note 2)	514,632	294,591
Accounts receivable and unbilled revenues	151,702	121,359
Materials and supplies, at average cost	55,485	54,018
Prepaid expenses	2,564	2,401
	730,388	473,257
MORTGAGES AND OTHER DEFERRED ACCOUNTS RECEIVABLE		
	4,258	5,926
INSURANCE FUND		
	5,000	5,000
PAYMENT IN RESPECT OF LITIGATION (Note 3)		
	36,500	36,500
UNAMORTIZED DISCOUNT AND EXPENSE ON DEBT		
	28,169	24,254
	\$5,597,734	\$4,811,011

APPROVED BY THE DIRECTORS:



John H. Steede, Director



Charles W. Brazier, Q.C., Director

19 May 1978

	1978	1977
	<i>(in thousands)</i>	
LONG-TERM DEBT, per statement (Note 4)	<u>\$4,337,463</u>	<u>\$3,604,722</u>
PARITY DEVELOPMENT BONDS, payable on demand (Notes 4 and 5)	<u>75,000</u>	<u>100,000</u>
CURRENT LIABILITIES:		
Bank indebtedness	8,209	3,174
Accounts payable	203,558	168,762
Accrued interest	111,229	87,103
Long-term debt payments due within one year—		
Sinking fund instalments	44,180	42,772
Debt maturities, less sinking fund	7,341	39,892
	<u>374,517</u>	<u>341,703</u>
DEFERRED LIABILITIES	<u>34,898</u>	<u>24,588</u>
CONTRIBUTIONS ARISING FROM COLUMBIA RIVER TREATY	<u>433,039</u>	<u>442,253</u>
CONTRIBUTIONS IN AID OF CONSTRUCTION	<u>114,097</u>	<u>96,525</u>
EARNINGS RETAINED IN THE BUSINESS	228,720	201,220
COMMITMENTS AND CONTINGENCIES (Note 11)		
	<u><u>\$5,597,734</u></u>	<u><u>\$4,811,011</u></u>

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Statement of Long-Term Debt

as at 31 March 1978

Interest Rate %	Series	Date of Maturity		1978	1977
				<i>(in thousands)</i>	
<i>Issued by British Columbia Hydro and Power Authority—</i>					
Bonds:					
3¼	B	1 October	1979	\$ 10,000	\$ 10,000
9¾	EH	16 December	1981	100,000(1)	100,000(1)
8⅞	DT	2 January	1982	25,000	25,000
5¼	A	1 May	1982	32,496	32,496
9¾	DV	3 December	1982	100,000	100,000
8⅝	DW	19 February	1985	100,000(2)	100,000(2)
7¾	EM	15 May	1985	75,000(3)	—
5.46	W-A	1 February	1987	80,396	80,396
5.71	W-B	1 February	1988	95,001	95,001
6.68	W-C	3 February	1989	65,862	65,862
7.32	WD	2 September	1989	68,396	68,396
7.77	WE	2 March	1991	110,949	110,949
5¾	U	18 April	1991	40,000	40,000
5¾	X	1 July	1991	5,000	5,000
5⅝	Y	2 July	1991	41,250(3)	42,500(3)
6¼	AG	1 December	1991	20,000	20,000
5⅞	AH	2 January	1992	50,000(3)	50,000(3)
7.10	WF	2 March	1992	109,182	109,182
6	AJ	15 March	1992	25,000	25,000
6	BA	29 May	1992	2,500	2,500
6¼	AK	1 June	1992	50,000(3)	50,000(3)
6.10	AL-A	2 July	1992	10,000	10,000
6¼	AM	4 July	1992	25,000	25,000
6¼	BB	19 July	1992	4,000	4,000
6½	AP	1 November	1992	20,000	20,000
6¾	BC	1 February	1993	10,200	10,200
6¾	Z-S	15 February	1993	3,300	3,300
6¾	Z-T	15 February	1993	4,200	4,200
5	C	1 March	1993	15,000	15,000
7.33	WG	9 March	1993	73,847	73,847
6⅞	AR	29 March	1993	10,000	10,000
5¼	D	1 May	1993	25,000	25,000
5¼	F	1 June	1993	10,000	10,000
7¼	AS	1 June	1993	10,000	10,000
7¼	BD	2 July	1993	5,500	5,500
7	AU	5 August	1993	10,000	10,000
7	AV	1 October	1993	10,000	10,000
5¼	G	15 October	1993	15,000	15,000
7	BE	1 December	1993	12,800	12,800
7	Z-G	15 December	1993	7,000	7,000
5¼	H	15 December	1993	10,000	10,000
	Carried forward			\$1,496,879	\$1,423,129

Interest Rate %	Series	Date of Maturity		1978	1977
				<i>(in thousands)</i>	
	Brought forward			\$1,496,879	\$1,423,129
5¼	J	1 March	1994	10,000	10,000
7.54	WH	4 March	1994	91,105	91,105
7½	AW	31 March	1994	10,000	10,000
7½	AX	2 June	1994	25,000	25,000
5¼	L	2 July	1994	10,000	10,000
7⅝	AY	1 October	1994	30,000	30,000
8	CA	1 December	1994	10,000	10,000
5¼	M	15 December	1994	20,000	20,000
8	CB	30 December	1994	15,000	15,000
8.78	WJ	7 February	1995	66,609	66,609
5¼	N	15 March	1995	10,000	10,000
8	CC	31 March	1995	20,000	20,000
8	CD	31 March	1995	5,000	5,000
8.92	WK	2 July	1995	26,546	26,546
8	CE	1 August	1995	10,000	10,000
5⅜	S	15 September	1995	10,000	10,000
7.54	CF	30 December	1995	15,000	15,000
6.90	CH	30 March	1996	10,000	10,000
6.90	CJ	30 March	1996	20,000	20,000
9⅝	EJ	15 July	1996	500,000(3)	500,000(3)
7.25	CK	1 October	1996	20,000	20,000
7.25	CL	1 October	1996	5,000	5,000
6.93	CM	15 December	1996	20,000	20,000
6.93	CN	15 December	1996	5,000	5,000
6.90	CP	1 March	1997	7,000	7,000
7.38	CR	15 June	1997	10,000	10,000
9.06	VA	8 July	1997	6,000	—
9.00	VB	10 August	1997	7,418	—
8.99	VC	9 September	1997	11,709	—
8.77	VD	7 October	1997	2,969	—
7.76	CT	3 November	1997	25,000	25,000
8.88	VE	10 November	1997	12,257	—
7.76	CU	15 November	1997	4,000	4,000
7.63	CV	15 December	1997	5,000	5,000
7.63	CW	15 December	1997	25,000	25,000
10¾	EB	29 December	1997	29,000	29,000
7.48	CX	30 March	1998	25,000	25,000
8	CZ	3 July	1998	20,000	20,000
8	DA	1 September	1998	30,000	30,000
8⅞	DB	1 November	1998	13,000	13,000
8⅞	DC	1 November	1998	7,000	7,000
8.30	DD	1 December	1998	7,000	7,000
	Carried forward			\$2,708,492	\$2,594,389

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Statement of Long-Term Debt (Continued)
as at 31 March 1978

Interest Rate %	Series	Date of Maturity		1978	1977
				(in thousands)	
	Brought forward			\$2,708,492	\$2,594,389
8.30	DE	15 December	1998	5,000	5,000
8.30	DF	15 December	1998	15,000	15,000
8.55	DG	15 February	1999	15,000	15,000
8.55	DH	15 February	1999	5,000	5,000
8.70	DJ	29 March	1999	25,000	25,000
8.70	DK	29 March	1999	5,000	5,000
9.45	DL	15 May	1999	25,000	25,000
9.45	DM	15 May	1999	5,000	5,000
10½	DR	30 August	1999	12,000	12,000
10¼	DN	1 October	1999	100,000(3)	100,000(3)
10.40	DS	15 October	1999	15,000	15,000
10	DU	2 January	2000	50,000	50,000
9¾	DZ	10 February	2000	10,000	10,000
9⅞	DX	1 May	2000	45,000	45,000
10½	EE	18 August	2000	10,000	10,000
10½	ED	1 September	2000	50,000	50,000
10	EC	15 October	2000	50,000(4)	50,000(4)
10	EF	17 February	2001	50,000	50,000
10⅜	EG	29 March	2001	60,000	60,000
9	EL	24 January	2002	50,000	50,000
9½	EO	2 June	2002	100,000	—
9¼	EP	15 August	2002	100,000	—
9¼	EQ	1 November	2002	75,000	—
9⅜	ER	15 December	2002	100,000	—
9¾	ES	1 March	2003	100,000	—
9⅝	DY	1 June	2005	150,000(3)	150,000(3)
8⅝	EK	1 December	2006	175,000(3)	175,000(3)
8⅜	EN	15 June	2007	200,000(3)	—

Issued by the former British Columbia Electric Company Limited—

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

4¾	"H"	1 December	1977	—	7,492
4¾	"I"	1 February	1979	7,341	7,874
3¾	"J"	1 June	1980	8,199	8,638
4¼	"K"	1 February	1981	15,982	16,931
5	"L"	1 February	1982	22,114	23,485
5⅞	"M"	2 January	1988	27,468	29,411
5½	"N"	1 March	1989	17,683	18,796
6½	"O"	1 April	1990	19,943	20,956
5¾	"P"	1 May	1991	10,275	10,749
4	"F"	1 July	1991	1,087	1,282
	Carried forward			\$4,440,584	\$3,667,003

Interest Rate %	Series	Date of Maturity		1978	1977
				<i>(in thousands)</i>	
	Brought forward			\$4,440,584	\$3,667,003
Perpetual Callable Bonds:					
4				183	188
4 1/4				70	72
4 1/2				96	102
4 3/4				274	304
5				260	276
5 1/2				161	178
25-year Callable Bonds:					
4	AA	1 August	1986	11,817	11,812
4 1/4	AB	1 August	1986	10,930	10,928
4 1/2	AC	1 August	1986	14,904	14,898
4 3/4	AD	1 August	1986	26,140	26,110
5	AE	1 August	1986	24,740	24,724
5 1/2	AF	1 August	1986	14,839	14,822
Sinking Fund Debentures:					
5 3/4	A	1 April	1977	—	32,400

Issued by the former British Columbia Power Commission—

Bonds:					
3 5/8	T	1 April	1977	—	9,285
5	MC	15 September	1982	5,149	5,149
4	G	1 November	1988	10,000(3)	10,000(3)
3 1/4	H	15 July	1989	6,300(3)	6,300(3)
3 3/4	C	15 September	1991	3,000	3,000
4	D	21 May	1992	1,000	1,000
4	E	15 June	1992	1,000	1,000
4	F	15 September	1992	1,500	1,500
5	MD	15 September	1992	18,724	18,724
5	N	15 September	1992	10,000	10,000
Debentures:					
3 3/4	K	15 June	1986	20,000(3)	20,000(3)
4 3/8	L	15 April	1987	25,000(3)	25,000(3)
3 7/8	P	1 February	1988	20,000(3)	20,000(3)
	Carried forward			\$4,666,671	\$3,934,775

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Statement of Long-Term Debt (Continued)
as at 31 March 1978

	1978	1977
	<i>(in thousands)</i>	
Brought forward	\$4,666,671	\$3,934,775
Exchange premium at date of issue on long-term debt payable in United States dollars	16,648	1,164
	<u>4,683,319</u>	<u>3,935,939</u>
<i>Less—</i>		
Sinking funds on deposit with Trustee, Minister of Finance for the Province of British Columbia	294,335	248,553
	<u>4,388,984</u>	<u>3,687,386</u>
<i>Less—</i>		
Long-term debt payments due within one year:		
Sinking fund instalments	44,180	42,772
Debt maturities, less sinking fund	7,341	39,892
	<u>51,521</u>	<u>82,664</u>
	<u><u>\$4,337,463</u></u>	<u><u>\$3,604,722</u></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 (1978—\$1,423,000,000; 1977—\$1,149,000,000).
- (4) Redeemable at option of holder on 15 October 1983.

Long-term debt and sinking fund requirements for the years ending 31 March 1980 to 1983 are \$45,800,000, \$92,300,000, \$137,500,000 and \$161,700,000 respectively.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Notes to Financial Statements
as at 31 March 1978

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, which expires in 2025, 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 have been transferred to fixed assets in service by instalments proportionate to the number of completed and operational units in relation to the four units presently installed at Mica. By 31 March 1977, three units were in service, and therefore, 75% of the above-mentioned assets had been transferred to fixed assets in service. The fourth unit was installed and placed in operation during the year ended 31 March 1978, and consequently, the remaining 25% of the above-mentioned costs was transferred from deferred costs to fixed assets in service.

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 34% (33% at 31 March 1977) of the buses and trolley coaches operated and maintained by B.C. Hydro, as well as the two Burrard Inlet ferries and associated terminals, are provided by the Provincial Government without charge.

Insurance—

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. An insurance fund of \$5,000,000, invested in government and municipal bonds and short-term deposits with financial institutions, is maintained to provide funding for uninsured losses up to that amount. To protect against losses in excess of \$5,000,000, B.C. Hydro carries catastrophe insurance which provides coverage up to \$100,000,000.

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, service vehicles and the Burrard Inlet ferries are insured for public liability.

Unamortized discount and expense on debt—

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

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 offset operating losses of electric systems purchased or constructed in isolated areas with such funds and to improve and extend electric service in rural areas.

Foreign exchange—

The liability for long-term debt payable in United States dollars is 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 1978, the liability for long-term debt payable in United States dollars would have been increased by approximately \$174,000,000. 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 except for those amounts covered by forward sales of United States dollars, in which case contracted rates are used. Foreign exchange adjustments are included in income.

Note 2 — Temporary investments:

	1978	1977
	(in thousands)	
Deposits with banks and other financial institutions	\$330,650	\$252,522
Notes of banks and other financial institutions	177,861	39,273
Bonds held for sinking fund	6,121	2,796
	<u>\$514,632</u>	<u>\$294,591</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 \$20,000,000 and \$30,000,000 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 \$51,000,000 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 \$36,124,000 and this amount together with costs was awarded to the Plaintiffs. On 3 March 1976, payment into Court was made in the sum of \$36,500,000, including interest from 13 November 1975 to 28 January 1976. By order of Court at that time, this amount might have been 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 filed a Notice of Cross-Appeal in which the entire amount of \$51,000,000 was claimed. The Appeals were heard in the latter part of 1977; the Appeal by B.C. Hydro was allowed, and the Cross-Appeal

by the contractors was dismissed. Unless there is a further appeal to the Supreme Court of Canada, the litigation is referred back to the Trial Judge for assessment of damages suffered by the contractors. 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 — Parity Development Bonds

	1978	1977
	(in thousands)	
8½ % Series CS due 15 August 1977	\$ —	\$ 25,000
8½ % Series CY due 3 August 1978	25,000	25,000
8½ % Series DP due 1 September 1979	25,000	25,000
8½ % Series EA due 1 September 1980	25,000	25,000
	<u>\$75,000</u>	<u>\$100,000</u>

Note 6 — 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 \$394,000 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. 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 latest actuarial report, dated 28 April 1978, which was based on revised assumptions respecting rates of inflation, increases in pay, return on investments and early retirements to make them more representative of current expectations and prior experience than those

used in earlier actuarial evaluations, reflects an increase in pension benefits from 1 July 1975 and an increase of 1% in the rate of contribution, shared equally by B.C. Hydro and employees, that was implemented 1 September 1976. This report indicated an additional evaluated accrued deficit of approximately \$3,000,000 as at 31 December 1976, relating principally to indexed supplements to be paid to existing pensioners. The additional deficit in the plan is estimated to be approximately \$6,000,000 as at 31 March 1978.

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 1978 was \$14,930,000 (1977 — \$13,683,000).

Note 7 — Sales of surplus electricity to the United States:

Gross revenues for the year ended 31 March 1978 include \$77,700,000 from sales of surplus electricity to the United States (1977—\$22,600,000).

Note 8 — Interest:

	1978	1977
	<i>(in thousands)</i>	
Interest on debt	\$366,126	\$292,379
Amortization of discount and expense	2,419	2,164
Interest charged to construction	(50,472)	(71,459)
	<u>318,073</u>	<u>223,084</u>
<i>Less—</i>		
Income from sinking fund investments held by Trustee	20,102	15,581
Income from temporary investments	33,763	18,571
	<u>53,865</u>	<u>34,152</u>
	<u>\$264,208</u>	<u>\$188,932</u>

Note 10 — Deferred costs of generation:

In the year ended 31 March 1977, deferred costs of generation, in the amount of \$7,473,000, was charged to income (included in "Materials and services" in the statement of income and in "Other" in the statement of changes in financial position).

Note 11 — 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 \$540,000,000 as at 31 March 1978.

Note 9 — 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. No special subsidy was received by B.C. Hydro during the year ended 31 March 1978.

Note 12 — Segment information for the year ended 31 March 1978 (in millions):

	Electric	Gas	Passenger Transportation	Rail Freight	Sundry	Eliminations	Combined
Gross revenues from sales to public (Note 7)	\$ 609.8	\$135.9	\$ 37.5	\$18.3	\$.3	\$—	\$ 801.8
Intersegment revenues	3.2	.3	1.3	—	—	(4.8)	—
Total revenues	<u>613.0</u>	<u>136.2</u>	<u>38.8</u>	<u>18.3</u>	<u>.3</u>	<u>(4.8)</u>	<u>801.8</u>
Expenses:							
Salaries, wages and employee benefits ..	97.8	19.8	77.2	8.2	—	(1.0)	202.0
Materials and services	51.0	85.3	16.7	4.6	—	(3.8)	153.8
Grants, school taxes and water rentals ..	49.6	2.9	.9	.9	—	—	54.3
Depreciation	90.0	6.3	2.7	1.0	—	—	100.0
Total expenses	<u>288.4</u>	<u>114.3</u>	<u>97.5</u>	<u>14.7</u>	<u>—</u>	<u>(4.8)</u>	<u>510.1</u>
Operating income before interest	<u>324.6</u>	<u>21.9</u>	<u>(58.7)</u>	<u>3.6</u>	<u>.3</u>	<u>—</u>	<u>291.7</u>
Interest charges (Note 8)	291.5	20.5	3.1	2.2	.8	—	318.1
Interest income (Note 8)	(49.5)	(3.5)	(.5)	(.4)	—	—	(53.9)
Interest charged to operations	<u>242.0</u>	<u>17.0</u>	<u>2.6</u>	<u>1.8</u>	<u>.8</u>	<u>—</u>	<u>264.2</u>
Net income	<u>\$ 82.6</u>	<u>\$ 4.9</u>	<u>\$ (61.3)</u>	<u>\$ 1.8</u>	<u>\$ (.5)</u>	<u>\$—</u>	<u>\$ 27.5</u>
Identifiable assets as at 31 March 1978 ...	<u>\$4,635.2</u>	<u>\$265.6</u>	<u>\$ 44.4</u>	<u>\$40.6</u>	<u>\$10.7</u>	<u>\$—</u>	<u>\$4,996.5</u>
Corporate assets as at 31 March 1978							601.2
Total assets as at 31 March 1978							<u>\$5,597.7</u>
Expenditures on fixed assets	<u>\$ 595.8</u>	<u>\$ 29.8</u>	<u>\$ 9.1</u>	<u>\$ 6.4</u>	<u>\$—</u>	<u>\$—</u>	<u>\$ 641.1</u>

B.C. Hydro is engaged in the operation of four principal services: generation, transmission and distribution of electricity; distribution of gas; operation of urban and interurban bus passenger systems; and operation of a railway freight system.

Intersegment revenues, derived from electric, gas and transportation services provided to other segments, are accounted for on the same basis as comparable revenues earned from sales to the public and are eliminated in arriving at the combined operating results.

Most expenses are directly attributable to specific segments. Common expenses are allocated among the segments using appropriate bases established by regular review and analysis.

Identifiable assets are those assets that are used in each service. Corporate assets are principally cash, temporary investments, payment in respect of litigation and unamortized discount and expense on debt.

Financial Statistics (in millions of dollars)
year ended 31 March

	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968
SOURCES OF REVENUE											
Electric	\$609.8	461.0	341.4	296.8	268.0	235.0	211.4	193.0	162.8	149.4	137.7
Gas	135.9	104.1	89.1	77.6	60.7	55.2	51.7	47.5	41.0	40.6	34.4
Passenger transportation	37.5	35.6	33.1*	30.5*	27.7*	25.1*	24.2*	21.3*	20.7*	19.5*	18.1
Rail freight	18.3	15.9	14.6	13.1	12.1	10.8	10.2	8.0	8.4	7.4	7.0
Sundry3**	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	<u>\$801.8</u>	<u>656.3</u>	<u>516.3</u>	<u>421.3</u>	<u>370.6</u>	<u>328.0</u>	<u>299.6</u>	<u>272.0</u>	<u>234.3</u>	<u>218.3</u>	<u>198.5</u>

*Includes metropolitan transit subsidy received from Provincial Government.

**1978 figures reflect reclassification of miscellaneous revenues to services.

DISPOSITION OF REVENUE

Salaries, wages and employee benefits	\$202.0	179.2	157.0	117.9	88.5	72.7	67.6	57.9	55.1	49.6	44.0
Materials and services	153.8	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	54.3	46.2	39.5	28.8	25.0	22.2	20.0	18.6	17.0	15.0	13.3
Depreciation	100.0	80.7	72.8	65.8	61.7	57.7	52.9	50.2	44.7	38.6	34.7
Interest charged to operations	264.2	188.9	143.3	117.1	104.9	101.1	91.3	83.9	77.5	60.9	50.2
Retained in the business	27.5	38.6	1.3	4.4	15.2	22.0	17.4	16.7	—	9.3	12.9
Total	<u>\$801.8</u>	<u>656.3</u>	<u>516.3</u>	<u>421.3</u>	<u>370.6</u>	<u>328.0</u>	<u>299.6</u>	<u>272.0</u>	<u>234.3</u>	<u>218.3</u>	<u>198.5</u>

FIXED ASSETS

Fixed assets in service, at cost	\$4,920.5	4,541.3	3,606.7	3,254.4	3,002.3	2,887.1	2,423.8	2,242.2	2,131.1	1,899.7	1,416.9
Accumulated depreciation	877.9	784.3	706.1	634.1	568.7	511.9	463.5	417.2	371.1	332.0	300.1
	<u>\$4,042.6</u>	<u>3,757.0</u>	<u>2,900.6</u>	<u>2,620.3</u>	<u>2,433.6</u>	<u>2,375.2</u>	<u>1,960.3</u>	<u>1,825.0</u>	<u>1,760.0</u>	<u>1,567.7</u>	<u>1,116.8</u>

LONG-TERM DEBT

EXPENDITURES ON FIXED ASSETS

Operating Statistics

year ended 31 March

	1978	1977	1976
ELECTRIC			
Generating nameplate capacity at year-end (rated kW in thousands)*			
Hydro	5,883	5,449	3,882
Thermal	1,293	1,301	1,299
Total	7,176	6,750	5,181
Peak one-hour demand, integrated system (kW in thousands)	4,621	4,258	4,063
Customers at year-end (in thousands)	952	917	875
Electricity sold (kW-h in millions)			
Sales in B.C.	24,106	22,882	20,511
Other sales	3,908	1,961	85
Total	28,014	24,843	20,596
Increase (decrease) over previous year (%)	12.8	20.6	(4.2)
By class of customer (%)			
Residential	25	27	30
General	30	31	36
Bulk	30	33	33
Other systems	1	2	1
Export to United States**	14	7	—
Residential service			
Average annual kW-h use per customer	8,620	8,452	8,370
Average revenue per kW-h (cents)	3.1	2.7	2.3
Lines in service (circuit kilometres)			
Distribution	36,049	35,084	33,853
Transmission	14,259	14,082	12,733
*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	4,000
—plant	1,000	1,000	1,000
Greater Victoria—plant	56	56	50
Peak one-day demand (therms in thousands)			
Mainland system—including interruptible	3,830	3,573	4,080
—excluding interruptible	3,813	3,463	3,456
Greater Victoria system	18	18	22
Customers at year-end (in thousands)	278	270	259
Gas sold (therms)			
Total (in millions)	790	759	764
Increase (decrease) over previous year (%)	4.1	(.7)	4.5
Average revenue per therm (cents)	17.1	13.7	11.7
*On basis of 2.83 cubic metres to one therm.			
PASSENGER TRANSPORTATION			
Vehicles in operation at year-end			
Urban—buses	668	664	648
—trolley coaches	311	312	312
—total	979	976	960
Interurban buses	132	141	125
Revenue kilometres run—urban (in millions)	58.8	58.6	54.1
Passenger revenue per kilometre—urban (cents)	47.2	44.7	42.8
RAIL FREIGHT			
(tonnes in thousands)	2,397	2,393	2,321
EMPLOYEES AT YEAR-END			
Regular	11,611	11,339	11,226
Temporary	946	1,001	807
Total	12,557	12,340	12,033

1975	1974	1973	1972	1971	1970	1969	1968
3,618	3,318	3,318	2,814	2,455	2,455	2,001	1,320
<u>1,104</u>	<u>1,061</u>	<u>1,041</u>	<u>1,038</u>	<u>1,059</u>	<u>1,056</u>	<u>1,055</u>	<u>906</u>
4,722	4,379	4,359	3,852	3,514	3,511	3,056	2,226
3,791	3,578	3,499	2,970	2,769	2,499	2,357	2,152
843	801	765	726	690	652	605	583
20,688	19,902	17,938	15,953	14,369	13,351	12,233	11,084
808	2,038	1,165	221	464	305	4	—
<u>21,496</u>	<u>21,940</u>	<u>19,103</u>	<u>16,174</u>	<u>14,833</u>	<u>13,656</u>	<u>12,237</u>	<u>11,084</u>
(2.0)	14.9	18.1	9.0	8.6	11.6	10.4	10.8
27	24	25	28	28	27	28	28
32	30	31	34	32	32	33	33
36	36	37	36	36	37	37	37
1	1	1	1	1	2	2	2
4	9	6	1	3	2	—	—
7,928	7,694	7,365	7,342	6,949	6,651	6,674	6,222
2.1	1.9	1.9	1.9	1.9	1.7	1.7	1.7
32,700	32,631	29,734	27,859	26,578	25,186	24,018	23,363
12,424	12,435	12,374	12,040	11,555	10,824	10,079	9,262
3,900	3,260	2,660	2,400	2,460	2,360	2,529	2,260
1,000	1,000	1,000	1,000	1,000	250	250	250
60	60	60	53	53	45	45	36
3,491	3,640	3,461	3,279	2,939	2,770	3,108	2,537
3,379	3,136	3,359	3,065	2,762	1,962	2,889	1,905
22	24	29	29	22	19	24	19
249	238	227	215	205	197	186	178
731	711	649	601	554	485	470	391
2.8	9.6	8.0	8.5	14.2	3.1	20.2	9.6
10.6	8.5	8.5	8.6	8.6	8.4	8.6	8.8
558	447	335	326	353	340	339	340
<u>301</u>	<u>293</u>	<u>293</u>	<u>298</u>	<u>298</u>	<u>296</u>	<u>296</u>	<u>296</u>
859	740	628	624	651	636	635	636
134	98	91	90	85	66	71	70
44.5	38.0	32.9	32.2	31.0	34.1	33.6	33.5
47.1	50.0	52.6	51.9	48.7	44.3	44.6	44.0
2,494	2,539	2,426	2,364	1,996	2,237	2,055	1,866
10,361	8,945	7,474	7,173	7,205	7,056	6,905	6,737
<u>1,255</u>	<u>1,080</u>	<u>772</u>	<u>669</u>	<u>481</u>	<u>810</u>	<u>717</u>	<u>614</u>
<u>11,616</u>	<u>10,025</u>	<u>8,246</u>	<u>7,842</u>	<u>7,686</u>	<u>7,866</u>	<u>7,622</u>	<u>7,351</u>

Review of Operations

Electric service

Gross revenues from the electric service were \$610 million, up 32.3% from the previous year, reflecting a 12.8% increase in sales volumes from the previous year and the effect of higher rates.

Exports of surplus electricity to the United States amounted to 3,907 million kW·h providing revenue of \$78 million, \$55 million greater than in the previous year. These sales, which are a nonrecurring source of revenue, were made possible because of favourable water conditions in British Columbia coinciding with a severe drought in the northwestern United States and California.

The total system requirement for electricity from all sources during the year ended 31 March 1978 was 31,444 million kW·h, an increase of 13.5% from the previous year's total of 27,703 million kW·h.

The peak demand on the integrated system reached 4,621,000 kW on 9 December 1977, representing an 8.5% increase over the previous year's high of 4,258,000 kW.

Generating capacity was significantly increased during the year by the addition of the fourth 434,000 kW unit at Mica.

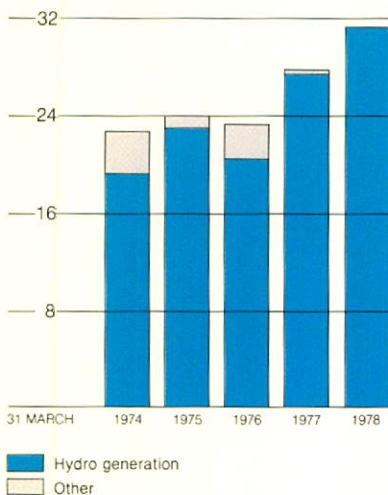
The following table shows total requirements for electricity and sources of supply for the year under review:

	kW·h in millions	% of total
<i>Requirements:</i>		
Sales in B.C.	24,106	76.7
Export	3,908	12.4
Line loss and system usage	<u>3,430</u>	<u>10.9</u>
	<u>31,444</u>	<u>100.0</u>
<i>Sources of supply:</i>		
Hydro generation—		
Peace River Project	15,398	49.0
Other	16,043	51.0
Thermal generation	278	0.9
Purchases and miscellaneous	<u>(275)</u>	<u>(0.9)</u>
	<u>31,444</u>	<u>100.0</u>

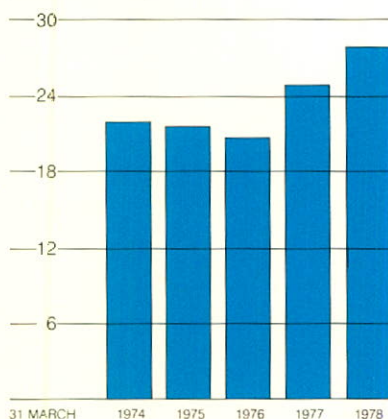
The generating capacity of plants operated by B.C. Hydro at 31 March 1978 was as follows:

	Installed nameplate generating capacity (kW in thousands)
<i>Hydroelectric plants</i>	
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	1,736.0
Other (21 plants)	<u>558.3</u>
Total hydroelectric	<u>5,883.1</u>
<i>Thermal plants</i>	
Georgia	75.5
Port Mann	100.0
Burrard	912.5
Prince Rupert	57.3
Keogh	40.5
Other (79 plants)	<u>106.8</u>
Total thermal	<u>1,292.6</u>
Total generating capacity	<u>7,175.7</u>

Sources of Electric Supply
(kW·h in billions)



Sales of Electricity
(kW·h in billions)



Gas service

Gross revenues from sale of gas to the public were \$136 million, up \$32 million or 30.6% over the previous year. The increased revenues resulted from a combination of higher gas prices and increased sales volumes.

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

	Year ended 31 March 1978 therms in millions	% Increase from previous year
Residential	296.0	2.2
General	289.8	8.7
Interruptible	<u>203.8</u>	0.7
	<u>789.6</u>	4.1

The peak one-day output of gas in the Lower Mainland, excluding interruptible loads and gas delivered to Burrard Thermal Generating Plant, was 3.8 million therms. This record peak

In this industrial application, a natural gas oxygen mix is used to pre-heat steel prior to casting.

occurred on 21 November 1977 when the average temperature dropped to almost -4°C . The previous peak of 3.5 million therms occurred in January 1977, equalling the peak set in March 1976.

In January 1978, B.C. Hydro intervened before the National Energy Board to oppose the application of Westcoast Transmission Company Limited to increase the transportation component of the domestic wholesale price of gas by approximately 80%. At year-end, the hearings had not been completed.

In an effort to improve operating efficiency, B.C. Hydro expanded investigations in the Lower Mainland to identify potential underground storage reservoirs. The results of the survey indicate that prospective storage sites exist in the Municipality of Surrey. Meetings have been held with the Municipality to acquaint local officials and residents with B.C. Hydro's storage plans.

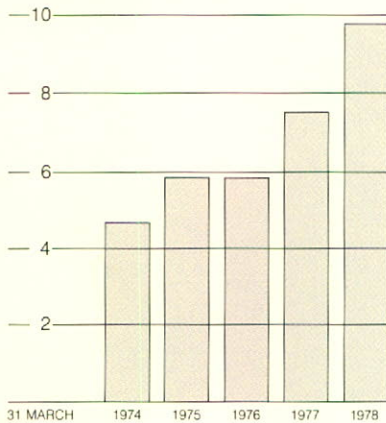
A study—funded in part by the Federal Department of Energy, Mines and Resources—to evaluate the characteristics required for a substitute natural gas (SNG) demonstration plant was completed. The results of the investigation proved that it is not necessary to proceed with construction of a demonstration plant in British Columbia.

Passenger transportation service

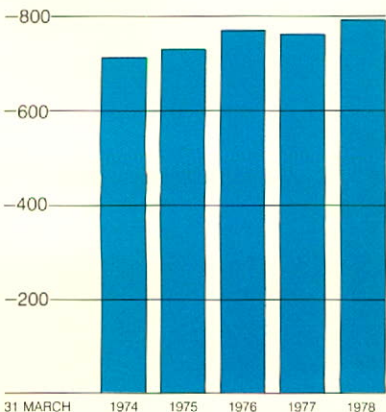
Gross revenues from passenger transportation for the year ended 31 March 1978 were \$37 million compared with \$36 million for the previous year. Despite increased revenue, losses continued to rise, reaching \$61 million compared with \$50 million in the preceding fiscal year.

Passenger transportation service is maintained on the principle of meeting demands in the communities served and providing off-peak service at a level generally acceptable to the public

Average Cost of Natural Gas Purchased for Resale (cents per therm)



Sales of Gas (therms in millions)



while attempting to minimize operating losses. It is characteristic of the transit industry that a large investment is required for equipment which is used only in peak periods and lies idle during off-peak hours. It is also characteristic of the industry that, although it remains highly labour-intensive and costly to operate, a fare structure sufficient to recover all costs is publicly unacceptable.

The fiscal year now under review, and the year previous, have been periods of low-growth following several years of rapid expansion of urban transit services. In June 1977, The SeaBus ferry link between the north shore of Burrard Inlet and downtown Vancouver was inaugurated. Two ferries of unique catamaran design have been assigned to this service together with extensive terminal facilities constructed by the Provincial Government.

At the close of the year, the public transportation fleet consisted of 1,111 vehicles.

Rail freight service

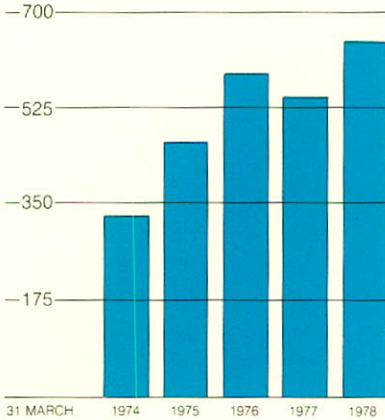
Gross revenues from rail freight operations for the year ended 31 March 1978 amounted to \$18 million, an increase of \$2 million or 14.9% from the previous year.

B.C. Hydro's railway is a freight operation generally handling carload freight only. The railway currently operates 23 diesel locomotives, ranging from 600 to 2,000 horsepower. Most freight equipment is rented under normal railway per diem agreements; however, B.C. Hydro also has 60 boxcars under lease for use in transcontinental and international service. Local and terminal service is provided in Greater Vancouver and the Fraser Valley over 312 kilometres of track.



SeaBus ferry link between north shore of Burrard Inlet and downtown Vancouver was inaugurated on 17 June 1977. Two ferries of unique catamaran design had carried more than 2,700,000 passengers by the end of the fiscal year.

Expenditures on Fixed Assets
(dollars in millions)



Construction and Planning

Expenditures on fixed assets totalled \$641 million compared with \$548 million the previous year.

Expenditures for the year, by service and in broad categories, are shown below:

	Millions
<i>Electric service</i>	
<i>Generation</i>	
Hydro	
Peace Canyon project	\$ 92
Seven Mile project	75
Revelstoke project	59
Other	27
Thermal	27
Transmission	
500 kV	84
Other	25
Transformation	102
Distribution	66
General	39
<i>Gas service</i>	30
<i>Transportation services</i>	15

Electric service plant additions

In October 1977, the Mica project was officially dedicated, and the fourth 434,000 kW unit was placed in service, bringing the project's total generating capacity to 1,736,000 kW. Space is provided for two more units, which can be added as required. Work continued on the second 500 kV transmission line from Mica to Nicola Substation, scheduled to be completed in 1978.

The Peace Canyon project, situated on the Peace River about 22.5 km downstream from W.A.C. Bennett Dam, will consist of a concrete gravity dam 50.3 metres high with four 175,000 kW units in a surface powerhouse. It will be connected to Gordon M. Shrum Generating Station and Williston Substation by 500 kV lines now under construction. The first two units are scheduled for completion in 1979 and the others in 1980. Contracts for supply of all major equipment have been awarded, and manufacture is progressing satisfactorily.

Work continued on the Seven Mile project, on the Pend-d'Oreille River about 10 km upstream of the confluence with the Columbia River. The project, now in its fourth year of construction, will include a concrete gravity dam 85.5 metres high and a surface powerhouse with space for four 202,500 kW units. Three units are expected to be brought into service in 1980 and the fourth later as required. Work is scheduled to begin in 1978 on related transmission lines, including 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 a 500 kV line to Ashton Creek completed in 1976.

The Revelstoke project, a 2,700,000 kW development on the Columbia River downstream from Mica, is situated about 5 km north of the City of Revelstoke. It will consist of a concrete gravity dam 161.5 metres high and a surface powerhouse with six generating units. The first three units are scheduled for service in 1983 and the fourth in 1984. The remaining two will be added later as required. Transmission will include two 500 kV lines from the generating station to Nicola Substation. The Conditional Water Licence for the Revelstoke project, issued in December 1976, was confirmed in a modified form in September 1977 following lengthy appeal hearings before a committee of the Provincial Cabinet.

Manufacture of the turbine and generator for the tenth and final unit at Gordon M. Shrum Generating Station on the Peace River is proceeding satisfactorily. Other equipment is being ordered to enable the 300,000 kW unit to be placed in service in 1980, which will bring the total rated capacity of the plant to 2,416,000 kW.

Funds provided by the Provincial Government for rural electrification and administered by B.C. Hydro were

used during the year to build 225 km of new distribution lines serving 268 customers. Among these was a self-help project at Tatla Lake in the Chilcotin region.

In addition, substation capacities were increased at various locations, an additional 177 km of transmission lines were placed in service and 965 km of distribution lines were added to the electric system.

Gas service plant additions

Four major pipeline construction projects were carried out during the year. The capacity of a portion of the existing transmission pipeline was doubled by the construction of an adjacent supplementary pipeline. A trunk pipeline into Richmond was laid, and a pipeline was installed on the Second Narrows Bridge with connections to existing trunk pipelines on both shores of Burrard Inlet. Finally, a portion of the transmission main in Coquitlam was relocated to accommodate a proposed highway interchange.

A total of 101 km of mains was added to the distribution system. A program of replacing mains and services progressed steadily. Gradual replacement of old lines, together with the installation of an all-welded, coated steel system protected from corrosion has significantly reduced the incidence of repair.

Studies

Investigation of the low-grade thermal coal deposit in the Hat Creek Valley near Cache Creek continued during the year. An expanded drilling program took place to further define the distribution and quality of coal and the limits of the deposit. A test burn of a bulk sample was carried out to determine the handling and burning characteristics of the coal. The Hat Creek project's preliminary engineering phase will be completed by the end of 1978 and, together with assessments

of environmental and socioeconomic impact, will provide the information necessary to determine whether the project should proceed to the licensing phase.

Engineering studies have confirmed the feasibility of the Site C project on the Lower Peace River near Fort St. John. Environmental and socioeconomic studies of the project are nearing completion.

A preliminary assessment report on the potential Kootenay Diversion project, which can be developed after September 1984 under the terms of the Columbia River Treaty, was issued to the public during the year. Work continued on preliminary design and environmental and social impact studies.

Engineering studies of the proposed McGregor Diversion project were suspended. This decision was made after field studies identified a number of fish parasites not common to both the Arctic and Pacific drainage basins. Five parasites known to cause mortality in fish have been found in the Pacific drainage, but not in the Arctic drainage.

Project planning

To fulfill its responsibility to meet customers' requirements for electricity, B.C. Hydro has developed a planning process designed to ensure that adequate plant and related facilities will be available when needed. The process begins with preparation of load forecasts which incorporate information and advice from district operations and market specialists, plans of existing and potential large customers and general economic data. Based on these forecasts, the need for new projects is determined, and because of the lengthy lead times required for the construction of major facilities, detailed planning commences well in advance of anticipated need. The planning process is flexible, with projections

reviewed on a continuing basis and construction plans and schedules modified where necessary.

In the selection of sites for new electric and gas facilities, precautions are taken to mitigate the impact on fish and wildlife, forests, agriculture, archeology and human settlements. The enhancement of recreational facilities is also considered. To accomplish these objectives, B.C. Hydro's planning process provides the opportunity for B.C. Hydro and the public to exchange information. Participation at this stage is sought from environmental specialists, appropriate government agencies and the public at large. Various project alternatives are examined and weighed in the search for plans which satisfy environmental, technical and economic concerns.

When a major project is identified and its technical and economic feasibility established, B.C. Hydro commissions independent consultants to conduct comprehensive studies of all environmental factors. The consultants' reports are made available to all levels of government and the public for reaction and comment. Open community meetings are held at which questions on any aspect of the project may be raised with representatives of B.C. Hydro and its consultants.

Should B.C. Hydro decide to seek approval for a project, detailed reports are published and made available to interested parties. In this way, the public can be informed prior to public hearings held by government licensing authorities.

Research and development

A new research and development centre is under construction in Surrey, which will consolidate and expand existing facilities now located in three leased buildings in Greater Vancouver. The new facilities, estimated to cost \$15 million, will include a high-voltage

testing laboratory; a distribution short-circuit testing facility; and improved equipment for electrical, mechanical, metallurgical, chemical and civil engineering investigations. When the centre is completed, B.C. Hydro will be able to carry out special test programs not currently available in Western Canada.

Conservation of energy

Conservation of energy continues to be a principal concern. All classes of customers are being encouraged to seek additional ways to conserve energy.

A variety of programs designed to assist residential, commercial and industrial customers to reduce consumption of energy has been instituted. A Province-wide survey of commercial exterior lighting was conducted, and where appropriate, B.C. Hydro specialists recommended reduced operating hours, lower lighting levels and more efficient equipment.

B.C. Hydro continued its 10% interest loan program to provide financial assistance to customers wishing to upgrade insulation and extended the program to cover installation of multiple-glazed windows to further reduce heat losses.

During November, B.C. Hydro, in cooperation with the Federal Department of Energy, Mines and Resources, commenced a thermographic survey in the Lower Mainland. The project consists of an aerial infrared scanning of rooftops to detect excess heat loss. Owners are able to view the results, which identify homes and buildings with a high rate of heat loss. It is expected that thermographic studies of other areas will be scheduled after the current project is completed.

Alternative sources of energy

B.C. Hydro's options for future generation of electricity have four basic attributes: availability in British Columbia, well-developed technology, cost-competitiveness with other available sources and compatibility with Provincial Government policy and public consensus. Within these parameters, B.C. Hydro's options are primarily hydroelectric and conventional coal-fired thermal developments.

During the next 15 years, low-temperature solar collectors may contribute to British Columbia's overall supply of energy by supplementing electricity and fossil fuels for space and water heating in domestic and commercial applications. Such low-temperature collectors, however, are incapable of generating steam for production of electricity.

In its search for other sources of energy, B.C. Hydro is continuing investigations of geothermal potential at Meager Creek and of advanced coal technologies such as gasification and fluidized bed combustion. B.C. Hydro also participates in joint research programs of the Canadian Electrical Association and supports research programs of other agencies and individuals.

In 1977, the Canadian Electrical Association committed \$4 million to research projects. These projects included studies of solar-assisted heat pumps, integration of solar heating with electric heating, use of wood and biomass in small-scale generation and investigation of improved methods for reclamation of used insulating oil.

The Canadian Electrical Association's research program will be expanded significantly in 1978, permitting further investigations such as the evaluation of systems for storage of energy and renewable energy resources. Through exchange of information between the Association and other research organizations in various parts of the world, B.C. Hydro keeps abreast of developments in energy research.

Environment

In addition to environmental and socio-economic impact studies of potential major projects, B.C. Hydro undertook or continued a number of programs designed to minimize the environmental impact of its operations.

Removal of debris continued at Williston, McNaughton, Duncan and Stave Lakes. A total of \$2 million was spent on these operations during the year, with two-thirds of the amount allocated to major clean-up activities on the Peace River Project's Williston Lake reservoir.

In the summer of 1977, the Arrow reservoir dropped to a record low level as a result of below-normal runoff following the previous winter's light snowpack. An experimental seeding program was continued as a possible future method of alleviating dust problems.

Measures to reduce noise from thermal, diesel and gas turbine electric generating plants also were undertaken during the year.

B.C. Hydro endeavours to select the safest and most economical approach to transmission right-of-way maintenance by using a combination of mechanical, biological and chemical methods. The use of herbicides is restricted to areas of rapid regrowth or where other methods are either unsafe or uneconomical. Only those herbicides approved by Federal statute and authorized by Provincial regulatory agencies are considered for use. B.C. Hydro is continuing a research program into non-chemical right-of-way maintenance methods in the hope of further reducing dependency upon herbicides.

tives, were presented at various locations throughout the Province. These seminars consist of a film presentation followed by a question period at which employees address questions to a panel of senior management staff.

Improvement of safety practices continued during the year. For the second consecutive year, a Canadian Electrical Association award was received in recognition of a 25% or greater reduction in accident frequency in B.C. Hydro's electrical and construction operations.

A total of 193 employees retired on pension during the year. Twenty-five of these employees had each accumulated 40 or more years' service.

Employee relations

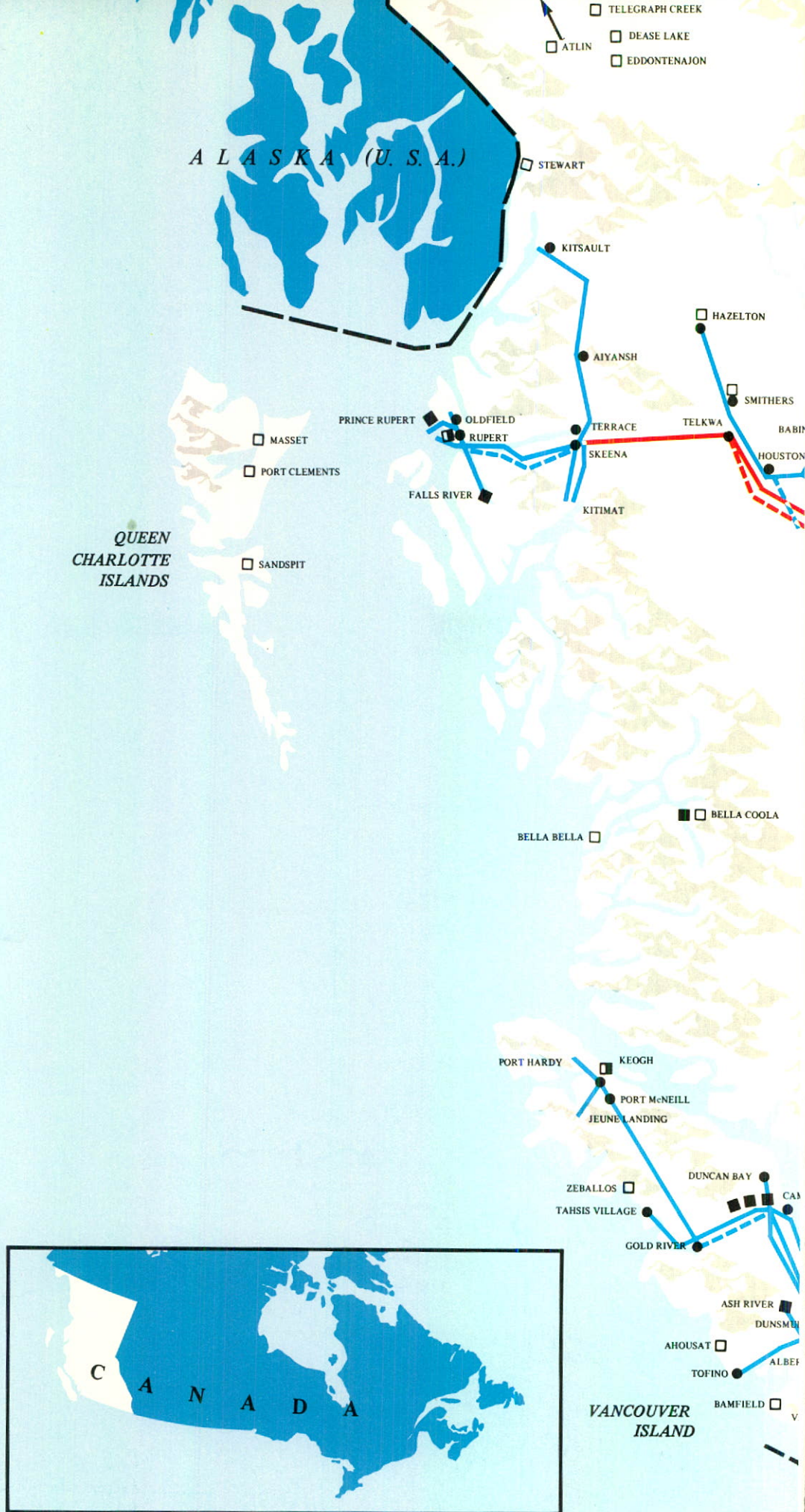
The current fiscal year proved to be an active year in collective bargaining as B.C. Hydro engaged in negotiations with all its bargaining units. During the year, eight agreements were settled through either direct negotiation, mediation or arbitration, and at year-end, six of these had been submitted to the Anti-Inflation Board for approval.

At year-end, negotiations were under way with a number of bargaining units, and subsequently, settlements were reached.

During the year, a number of programs were instituted to strengthen employee relations and communications.

Examples include the establishment of a steering committee for equal opportunities for men and women and the introduction of employee awareness seminars entitled Operation Update.

The purpose of the steering committee is to review hiring and promotional practices to ensure that both men and women enjoy equal opportunity for employment and subsequent advancement within B.C. Hydro. The Operation Update seminars, which are designed to familiarize employees with B.C. Hydro's organization and objec-



British Columbia Hydro and Power Authority

Electric Transmission System at 31 March 1978 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
 Burrard: Steam-Turbine
 Lake Buntzen: Hydroelectric

Port Mann: Gas-Turbine
 Ruskin: Hydroelectric
 Stave Falls: Hydroelectric

MAJOR SUBSTATIONS

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

Victoria Area

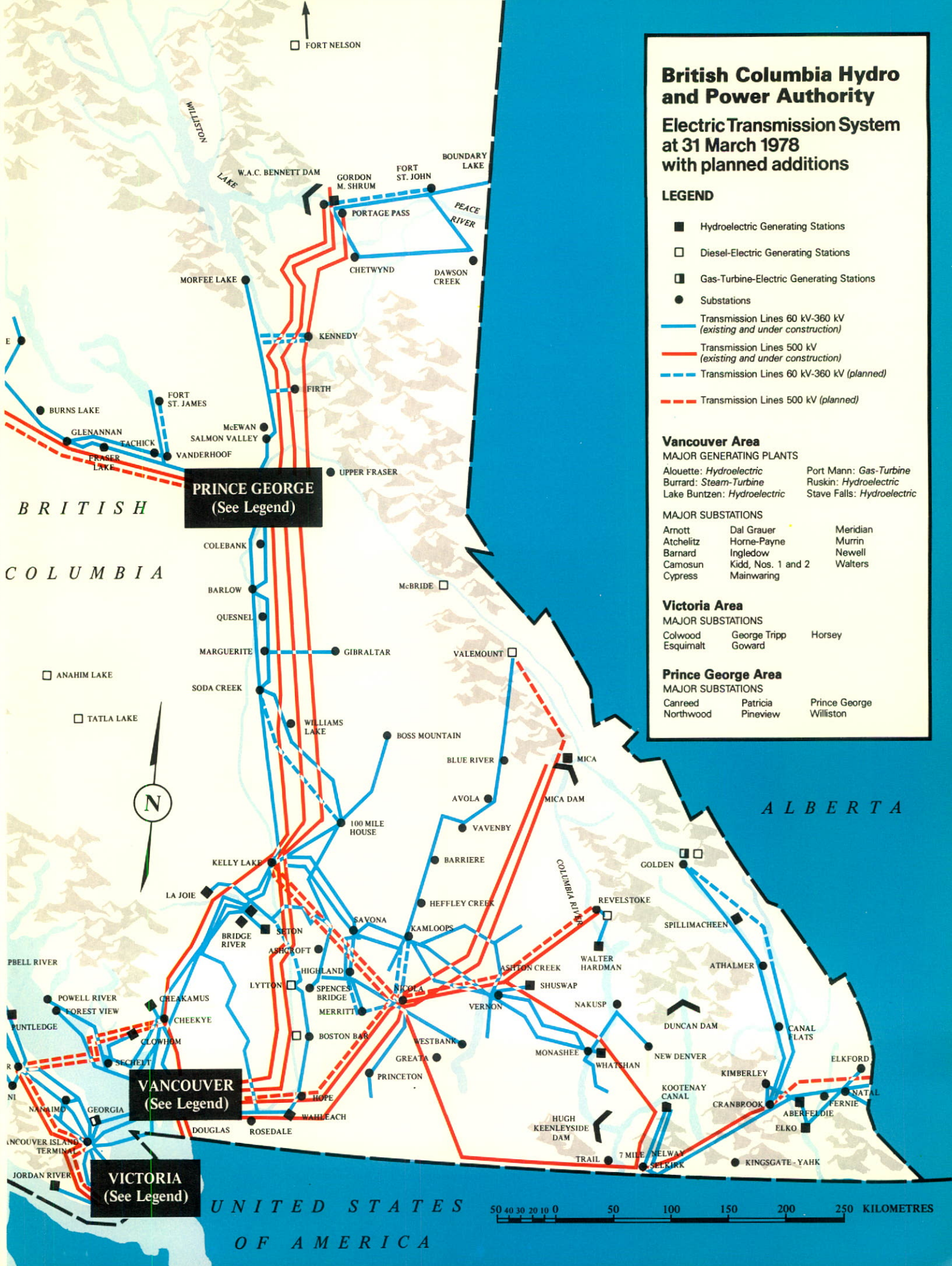
MAJOR SUBSTATIONS

Colwood	George Tripp	Horsley
Esquimalt	Goward	

Prince George Area

MAJOR SUBSTATIONS

Canreed	Patricia	Prince George
Northwood	Pineview	Williston



BRITISH
COLUMBIA

ALBERTA

UNITED STATES
OF AMERICA



VANCOUVER
(See Legend)

VICTORIA
(See Legend)

PRINCE GEORGE
(See Legend)

FORT NELSON

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British Columbia Hydro and Power Authority

Directors

Robert W. Bonner, Q.C.
*Charles W. Brazier, Q.C.
*John H. Steede
The Honourable Evan M. Wolfe
(effective 6 April 1978)
The Honourable John Davis (to 6 April 1978)

*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*

Group 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

R. H. Hunt, *Manager*

DIVISION MANAGERS:

R. H. Downey, *Personnel*
B. A. Hawrysh, *Manpower Planning and
Development*
P. J. McAllister, *Labour Relations*
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*
L. E. Wight, *Deputy 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*

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

