

NEW ZEALAND

ANNUAL STATISTICS IN RELATION TO
HYDRO-ELECTRIC DEVELOPMENT AND OPERATION

YEAR ENDED 31 MARCH 1957

Condensed Statistics for the Combined Development and Operations of the State Hydro-electric Department and Distributing Electrical Supply Authorities

No.			Water	Steam	Oil	Total	No.
1	Generating stations	No.	43	5	12	60	1
2	Installed capacity	kW.	1,138,801	52,025	14,364	1,205,190	2
3	Generation	kWh.	4,763,161,769	198,857,831	5,342,203	4,967,361,803	3
4	Maximum load	kW.				992,100	4
5	Retail sales	kWh.				4,064,292,175	5
6	Consumers	No.				725,947	6
7	Population	No.				2,221,169	7
8	Capital outlay, generation, transmission, and distribution	£				203,087,812	8
9	Revenue retail sales of electricity	£			19,034,919		9
10	Revenue from other sources	£			460,706		10
11	Total revenue	£				19,495,625	11
12	Working costs	£			8,306,086		12
13	Capital charges	£			9,286,677		13
14	Total costs	£				17,592,763	14
15	Net profit	£				1,902,862	15
16	Working costs per kWh. sold retail	d.			0.4905		16
17	Capital charges per kWh. sold retail	d.			0.5484		17
18	Total costs per kWh. sold retail	d.				1.0389	18
19	Total revenue per kWh. sold retail	d.				1.1512	19
20	Revenue retail sales of electricity per kWh. sold retail	d.				1.1240	20
21	Generation per head of total population	kWh.				2236	21
22	Retail sales per consumer	kWh.				5599	22
23	Capital outlay per kW. installed capacity	£				168.51	23
24	Ratio of capital charges to capital outlay	%				4.573	24
25	Electrical fires reported during year	No.				168	25
26	Fatal electrical accidents during year	No.				21	26
27	Electric ranges	No.				381,220	27
28	Electric water heaters	No.				433,664	28
29	Electric motors	No.				402,494	29

TABLE I—STATE HYDRO-ELECTRIC DEPARTMENT ONLY
Summarised Gross Revenue, Net Revenue, and Appropriation Accounts for Year Ended 31 March 1957

Working costs	£ 3,897,915	Revenue—	£
Capital charges—		Sales of energy	9,562,701
Interest	4,144,338	Rent and miscellaneous receipts	82,097
Depreciation	1,629,187	Total revenue	9,644,798
	5,773,525	Transfer from Reserve Fund	26,642
Total costs (see Table IV)	9,671,440		9,671,440

NOTE—No surplus profits available for loan capital repayments

TABLE II—STATE HYDRO-ELECTRIC DEPARTMENT ONLY
Summarised Balance Sheet as at 31 March 1957

Loan liability	£ 125,487,682	Completed works	£ 117,339,950
Sundry creditors, etc.	1,354,341	Works under construction	22,987,443
Reserves—		Plant, motor vehicles, and tools	946,184
Depreciation	11,800,930	Stocks of materials	1,809,891
Loan capital repayments	7,113,180	Capital outlay (see Table V)	143,083,468
Reserve Fund	111,162	Sundry debtors, etc.	2,783,827
	19,025,272		
	145,867,295		

TABLE III—OPERATING RESULTS: STATE HYDRO-ELECTRIC DEPARTMENT ONLY

	1956-57		1956-57
Maximum load (kilowatts)—		Revenue—	
North Island†	686,577	Per kW. of maximum load	£9 9954
South Island†	270,129	Per unit output	0 479d.
	*956,706	Per unit sold	0 532d.
Average load (kilowatts)—		Working costs—(including administration)—	
North Island	397,563	Per kW. of maximum load	£4 0743
South Island	149,600	Per unit output	0 195d.
		Per unit sold	0 217d.
Average load factor—	Per cent.	Capital charges—(including taxation)—	
North Island	57 91	Per kW. of maximum load	£6 0348
South Island	55 38	Per unit output	0 289d.
		Per unit sold	0 321d.
Unit output (generated and purchased)—		Total costs—(including taxation)—	
North Island	3,482,652,309	Per kW. of maximum load	£10 1091
South Island	1,310,496,574	Per unit output	0 484d.
		Per unit sold	0 538d.
Total	4,793,148,883		
Units sold—			
North Island	3,154,312,572		
South Island	1,159,109,838		
Total	4,313,422,410		
Units unsold (used free of charge)—			
North Island	33,346,044		
South Island	16,981,896		
Total	50,327,940		
Line losses			
Transmission and distribution—	Units	Per Cent	
North Island	294,993,693	8 47	
South Island	134,404,840	10 26	
Total	429,398,533	8 96	

*Sum of North and South Island maximum loads—not simultaneous maximum demand.

†See footnote, Table VII, for maximum load for total public supply.

TABLE IV—STATE HYDRO-ELECTRIC DEPARTMENT ONLY
Analysis of Operating Costs for Year Ended 31 March 1957

	(a) Working Costs	(b) Administration Costs	(c) Capital Charges	(d) Total Costs	(e) Total Cost Per kWh		(f) Pence
					Output	Sold	
Hydro-electric stations	£ 591,752	£ 252,593	£ 3,805,065	£ 4,649,410	Pence 0 2475		
Fuel stations	1,113,887	92,049	52,575	1,258,511	1 6397		
Power purchases and standby provision	347,967	6,959		354,926	0 8518		
Generated and purchased	2,053,606	351,601	3,857,640	6,262,847	0 3136	0 3485	
Transmission	305,147	130,254	867,272	1,302,673	0 0652	0 0725	
Substations	447,852	191,168	914,193	1,553,213	0 0778	0 0864	
Communications	50,934	21,742	45,161	117,837	0 0059	0 0065	
Retail distribution	95,202	85,275	89,259	269,736	0 0135	0 0150	
System operation	115,733	49,401		165,134	0 0083	0 0092	
Totals	3,068,474	829,441	5,773,525	9,671,440	0 4843	0 5381	
Administration (see column (b))	829,441						
	3,897,915	SUMMARY					
		Working costs	3,068,474	0 1536	0 1707		
		Administration costs	829,441	0 0415	0 0462		
		Capital charges	5,773,525	0 2892	0 3212		
		Total costs	9,671,440	0 4843	0 5381		

TABLE V—STATE HYDRO-ELECTRIC DEPARTMENT ONLY
Analysis of Capital Outlay as at 31 March 1957

	Land, Fencing, and Roading	Headworks	Station Buildings and Village	Generating Plant and Machinery	Total	Grand Total
	<i>Completed Works</i>					
Hydro-electric stations—	£	£	£	£	£	£
Karapiro	404,269	2,204,216	569,187	956,247	4,133,919	
Arapuni	120,462	1,426,019	521,124	1,098,293	3,165,898	
Maracetai	644,558	5,528,753	1,514,546	1,773,379	9,461,236	
Whakamaru	331,221	6,623,603	1,280,069	2,199,596	10,434,489*	
Lake Taupo Control		205,165			205,165	
Kaitawa	45,799	1,182,816	169,919	314,450	1,712,984	
Tuairua	90,821	253,729	266,185	474,281	1,085,016	
Piripaua	54,008	715,668	94,740	212,709	1,077,125	
Lake Waikaremoana Control		466,828			466,828	
Mangahao	83,881	949,637	137,188	285,501	1,456,207	
Cobb	63,499	4,090,479	370,878	400,277	4,925,133	
Arnold	1,830	108,161	10,767	26,917	147,675	
Lake Coleridge	35,476	546,175	136,628	252,627	970,906	
Highbank	18,584	333,788	108,032	179,901	640,305	
Lake Tekapo	28,421	2,535,639	502,795	441,887	3,508,742	
Lake Pukaki Control		2,309,883			2,309,883	
Waitaki	53,811	1,689,315	1,521,599	1,164,004	4,428,729	
Roxburgh	192,053	15,369,355	2,619,635	2,506,087	20,687,130	
Lake Wakatipu Control		208			208	
Monowai	46,160	86,660	59,827	60,090	252,737	
	2,214,853	46,626,097	9,883,119	12,346,246		71,070,315
Fuel Stations—						
King's Wharf	42,950		122,220	259,243	424,413	
Evans Bay	5,766		71,300	221,484	298,550	
Stoke			12,341	66,961	79,302	
Dobson	3,188		40,800	129,350	173,338	
	51,904		246,661	677,038		975,603
Transmission system—						
33 kV. lines					45,123	
50 kV. lines					852,294	
66 kV. lines					1,913,830	
110 kV. lines					6,554,401	
220 kV. lines					6,727,965	
Substations—						
33 kV.					30,675	
50 kV.					1,284,976	
66 kV.					1,697,294	
110 kV.					7,422,264	
220 kV.					6,067,753	
Communications						16,502,962
Distribution system						838,040
Offices, stores, land, and buildings						1,656,339
Cost of raising loans						625,317
Interest during construction on completed works						850,286
						8,727,475
						117,339,950
	<i>Works Under Construction</i>					
Hydro-electric stations—						
Atiamuri	506,313	4,441,839	44,388	450,259	5,442,799	
Waipapa		1,189,880			1,189,880	
Ohakuri		1,089,373		54,207	1,143,580	
Roxburgh		530,667			530,667	
Lake Hawea Control		1,610,915			1,610,915	
Additions to completed stations			10,978	10,231	21,209	
	506,313	8,862,674	55,366	514,697		
Fuel stations—						
Meicor	1,066,872	69,634	483,741	1,719,101	3,339,348	
Geothermal station—						
Wairakei		2,963,322	32,938	26,734	3,022,994	
Transmission system—						
33 kV. lines					7,084	
66 kV. lines					223,218	
110 kV. lines					655,912	
220 kV. lines					2,105,547	
Substations—						
33 kV.					210	
50 kV.					32,827	
66 kV.					82,015	
110 kV.					975,639	
220 kV.					375,422	
Communications					39,448	
Distribution system					10,582	
Offices, stores, land, and buildings					61,510	
Interest on works under construction					20,870,806	
Surveys and investigations of other schemes					716,125	
					1,400,512	
						22,987,443
Fixed Assets						
Plant, motor vehicles, and tools						140,327,393
						946,104

TABLE VI—STATISTICS OF GENERATING PLANTS, SYSTEM VOLTAGE, ROUTE-MILES OF LINES, TRANSFORMERS, ETC., FOR THE YEAR ENDED 31 MARCH 1957

Main table containing columns: Supply Authorities, Source of Supply, Year When Supply Commenced, Capacity of Generating Plant (Water, Steam, Oil, Total Capacity), Static Head, Generation, Voltage, Distribution, Distribution Transformers (Number, KVA), Route Miles of Lines, No.

TABLE VI—STATISTICS OF GENERATING PLANTS, SYSTEM VOLTAGE, ROUTE-MILES OF LINES, TRANSFORMERS, ETC., FOR THE YEAR ENDED 31 MARCH 1957—continued

Continuation of the main table, listing supply authorities such as North Auckland, North Canterbury, Otago, Poverty Bay, etc., with their respective statistics.

Final section of the table, listing City Councils such as Christchurch, Dunedin, Hamilton, etc., with their respective statistics.

(For notes see page 6.)

TABLE VIII—CAPITAL OUTLAY, FINANCIAL RESULTS OF GENERATION, DISTRIBUTION, AND OPERATION FOR THE YEAR ENDED 31 MARCH 1957

Main table on page 10 showing financial results for generation, distribution, and operation for the year ended 31 March 1957. It includes columns for Capital Outlay, Loan Liability, Revenue, Working Costs, Capital Charges, Total Annual Costs, and Net Results.

TABLE VIII—CAPITAL OUTLAY, FINANCIAL RESULTS OF GENERATION, DISTRIBUTION, AND OPERATION FOR THE YEAR ENDED 31 MARCH 1957—continued

Continuation of Table VIII on page 11, showing further financial results for generation, distribution, and operation for the year ended 31 March 1957.

Notes: 1 Returns for year ended 31 December 1956. 2 Standby charges. 3 Actual running costs only, including fuel, wages, stores, repairs, and maintenance. 4 Purchases from sources other than State Hydro-electric Department or supply authorities. 5 Includes cost of street lighting. 6 Purchased.

TABLE IX—AVERAGES DERIVED FROM PREVIOUS TABLES FOR THE YEAR ENDED 31 MARCH 1957

Table with columns: Supply Authorities, Revenue from Sale of Electricity, Capital Outlay, Capital Charges, Working Costs, Total Costs, Per Cent of Distribution Capital. Rows include STATE HYDRO-ELECTRIC DEPARTMENT and various local authorities like Ashburton, Auckland, Bay of Islands, etc.

(For notes see page 14.)

TABLE IX—AVERAGES DERIVED FROM PREVIOUS TABLES FOR THE YEAR ENDED 31 MARCH 1957—continued

Continuation of Table IX, showing data for CITY COUNCILS (Christchurch, Dunedin, Hamilton, etc.) and TOWN BOARDS (Kaponga, Mangaweka, etc.). Columns include Supply Authorities, Revenue from Sale of Electricity, Capital Outlay, Capital Charges, Working Costs, Total Costs, Per Cent of Distribution Capital.

(For notes see page 14.)

TABLE XI—STATISTICS RELATING TO ELECTRICIANS REGISTRATION BOARD FOR YEAR ENDED 31 MARCH 1957
(The figures in parentheses are for the previous year)

1. Number of Board meetings: 15 (15)

	During Year		Total		Current	
2 Registrations ³ —						
Inspectors	37	(45)	588	(551)	513	(502)
Electricians	373	(399)	6,646	(6,235)	6,602	(6,199)
Electrical servicemen	29	(25)	341	(305)	327	(294)
Electrical (radio) servicemen	101	(138)	874	(765)	861	(754)
Limited registration ¹	246	(102)	1,186	(922)	1,094	(855)
3. Provisional Licences ²	291	(361)	1,213	(922)		
4. Permits to Assist	89	(98)	478	(389)		
5. Applications for Ruling on Experience	147	(119)				
	Candidates		Passed, Percentage		Highest Marks	
6. Examinations (2 examinations)—						
Electricians (written)	676	(723)	50	(52)	96	(100)
Electricians (practical)	456	(533)	80	(74)	99	(99)
Electrical servicemen and limited registration (written)	261	(292)	75	(70)	100	(100)
Electrical servicemen and limited registration (practical)	222	(252)	69	(73)	89	(91)

7. Defective work reports, 8 (8); endorsements made, 2 (1); endorsements removed, nil (1).

8. Breach of Act reports, 24 (26); prosecutions authorised, 13 (23).

9. Appeals, 1 (nil)

NOTES.—¹ Includes 18 New Zealand Broadcasting Service; 41 refrigeration servicemen; 2 electrical wiring for radio sets; 1 assembly and repair of Bendix washing machines; 15 radio servicemen's limits restricted to Civil Aviation Administration; 2 theatrical maintenance work; 1 the replacement of fuse links; the replacement of flexible cords; assembly and repair of electrical shavers, clocks, and electric display units whilst employed by Ponsford, Newman, and Benson Ltd.; 3 assembly and repair of portable domestic appliances; 1 the operation of motion and sound pictures; 1 servicing calculating machines and like office appliances; 1 all classes of electrical wiring work carried out for and whilst employed under the general direction of Thompson and Doreen Ltd., Christchurch; 159 supply authority work; 1 work under the direct supervision and in the presence of a registered electrician carried out for and whilst employed by E. Spedding, New Plymouth. ² Fifty-three were issued to apprentices. ³ The figures quoted refer to new registrations and do not include registrations under section 12 (1) and (2) of the Electricians Act 1952.