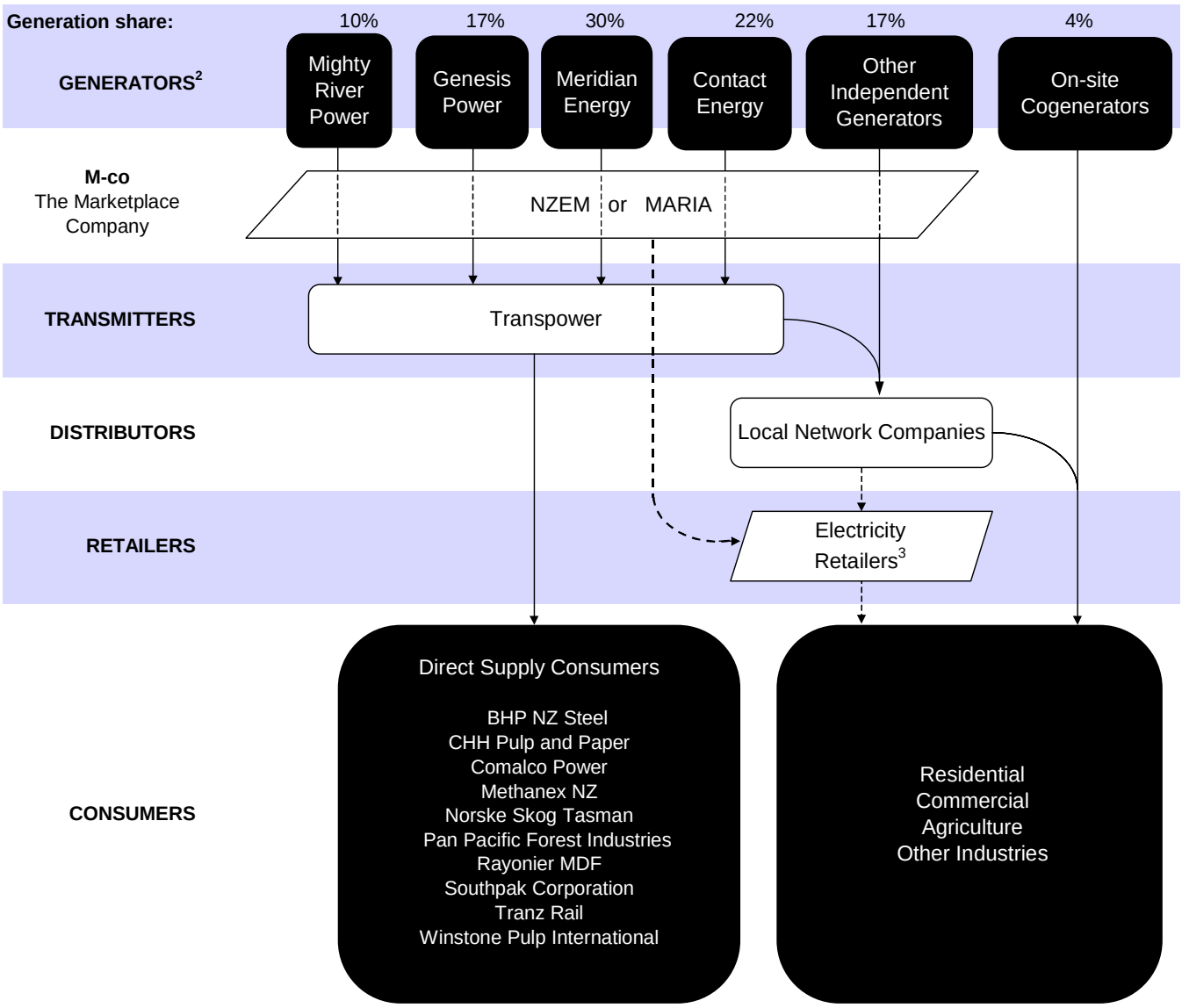
G. Electricity

Figure G.1: Electricity Industry[1] General Structure as at 31 March 2002



Notes:
1. Company names are listed without the suffixes "Limited" and "New Zealand Limited" where applicable.
2. The new SOEs (State-owned enterprises) created from the split of the former Electricity Corporation of New Zealand Limited (1 April 1999) and Contact Energy Limited (established 1 February 1996) are the major electricity generators. Generation for March year ending 2002 has been estimated based on known quarterly generation data provided by the major generators and other major cogenerators.
3. The main electricity retailers are Natural Gas Corporation, Mercury Energy and First Electric (owned by Mighty River Power), Contact Energy, TrustPower, Genesis Power and Meridian Energy. Other electricity retailers include King Country Energy, Bay of Plenty Electricity, Empower (owned by Contact Energy), Fresh Start (owned by Todd Energy) and New Zealand Energy.

→ Conveyance of power from generators to end users.

– – → Contractual agreements between generators and retailers via NZEM and MARIA to purchase and supply power to electricity end users through Transpower and local network companies.

Overview of New Zealand's Electricity Industry

Electricity statistics in this section apply to the **year ended March 2002** unless otherwise stated. In some instances, estimates have been made of generation by fuel type for the **year ended September 2002** to show generation trends based on known quarterly data from major generating companies.

The industry has been through major structural reforms in the past four years. In 1999, State-owned generator ECNZ was split into three competing SOEs (Meridian Energy, Genesis Power and Mighty River Power). This followed the 1996 split of Contact Energy from ECNZ. Contact Energy was privatised in May 1999.

The Electricity Industry Reform Act 1998 required electricity distribution companies to be separated into line and energy businesses with different ownership of each business. Most electricity distribution companies decided to retain ownership of their line business and sell their energy business. Ownership separation was achieved by 1 April 1999 for most companies.

Figure G.1 depicts the general structure of the electricity industry as at 31 March 2002.

Competition for retail consumers began in April 1999 with the introduction of profiling (a system of estimating a consumer's consumption by half-hourly periods). There were 237,455 customers[1] who changed electricity supplier (retailer) during the year ended September 2002.

Following the Ministerial Inquiry into the Electricity Industry (June 2000), the Government announced its "Power Package" of electricity reforms on 3 October 2000. As part of the Power Package, a Government policy statement on electricity was released setting out the Government's expectations for industry action and its views on governance matters. A key expectation in the statement is that the industry will establish a new governance structure with a single Electricity Governance Board which will replace the existing governance arrangements of NZEM, MARIA and MACQS.

The industry has created an Electricity Governance Establishment Committee to develop and implement the new governance structure. The Committee has developed draft rules for the new arrangements and in September 2002, the Commerce Commission authorised the proposed arrangements under the Commerce Act 1986 (subject to conditions).

The industry is expected to hold a referendum in early 2003 on whether to introduce new arrangements. The Electricity Amendment Act 2001 gave the Government power to take direct control of the industry and meet the expectations in the Government Policy Statement if the industry fails to deliver on those expectations in a timely manner.

The industry has met a number of other expectations set out in the government policy statement, including the establishment of a Consumer Complaints Commission which opened for business in January 2002, the disclosure of spill from hydro dams, hedge price disclosure and the release of market bids and offers after four weeks. A further expectation is that retailers will offer a low fixed charge tariff to domestic consumers. Although retailers have made considerable progress with introducing these tariffs, compliance is not complete. The Ministry of Economic Development is monitoring progress to ensure that retailers comply with Government expectations.

The Commerce Amendment Act (No.2) 2001 gives the Commerce Commission responsibility for regulating natural monopoly line companies. As part of the overall regulatory regime, the Commission is required to review asset valuation methodologies and publish performance thresholds. If an electricity lines business breaches a threshold, the Commission can further investigate the performance of that business to determine whether it is necessary to place that business under control.

In December 2002, the Commission published its draft decisions on the target control regime, including draft decisions on methodologies for the valuation of line businesses' system fixed assets and information disclosure requirements. The commission intends to release another paper focusing on matters of detail and will seek submissions.

[1] Sourced from the Marketplace Company (M-co).

Generation

As a result of the electricity industry reform, there are now 16 generating companies. Table G.1 shows a summary of estimated generation by fuel type for the year ended 31 March 2002. During this period, Meridian Energy, Mighty River Power, Genesis Power and Contact Energy generated about 29%, 10%, 17% and 22% respectively of total electricity used in New Zealand. On-site cogenerators generated about 8% while the remaining 14% came from independent generating companies. The table shows that about 57% of electricity generation was from hydro, of which 70% was from the South Island.

Table G.1: Summary of Generation by Fuel Type for March Year 2002

Fuel Type	GWh	PJ	% of total generation
Hydro	21,594	77.7	56.5
Gas [1]	11,415	41.1	29.9
Geothermal	2,644	9.5	6.9
Coal [1]	1,405	5.1	3.7
Oil	0	0.0	0.0
Others [2]	1,179	4.2	3.1
TOTAL	**38,237**	**137.6**	**100**

[1] Includes output of cogeneration plants for these fuel types.
[2] Others include electricity generation from biogas, industrial waste, wood and wind, including cogeneration.

New Zealand has also significant resources of geothermal energy (all in the North Island) and during the same period, about 7% of electricity was generated from geothermal. Gas accounted for about 30% of electricity generation (including gas used in cogeneration plants).

Generation from coal is estimated to be about 4% while other fuels including biogas, wind, wood and industrial waste contributed about 3% of total generation.

An increasing range of generation possibilities from non-traditional renewable resources, such as wind and biogas, is also under investigation. Generation from wind farms (Haunui and Tararua wind farms) in the lower half of the North Island decreased slightly by 0.4% to 136 GWh during the year ended March 2002 from 142 GWh in the previous year.

Wholesale Market

The sale and purchase of wholesale electricity is organised by the participants in a private sector wholesale market operated by the Marketplace Company (M-co). Spot prices are set half-hourly (two hours in advance) to match supply and demand. Generators and buyers also hedge against spot prices for a part of their supply and demand.

The industry's new governance structure is to include rationalisation of MARIA[3], NZEM[4] and MACQS[5].

Transmission

Transpower, a State-owned enterprise, operates the national grid, which connects most of the major power stations around the country to local distribution lines. It also conveys electricity directly to major users such as Comalco, Tasman Pulp and Paper, and BHP Steel.

Power transmission between the North and South Island is via a high-voltage direct current (HVDC) link from Benmore power station in the South Island to Haywards substation in the North Island. Part of this link is a submarine cable running under Cook Strait. The link allows surplus power generated in the South Island to be transmitted to the North Island where demand is greatest but also allows transmission from north to south.

[3] Metering and Reconciliation Information Agreement, which outlines the rules that allow a buyer and seller to form a contract to supply electricity.

[4] New Zealand Electricity Market, the multilateral agreement under which most wholesale electricity is bought by retailers and sold by generators on a half-hourly basis.

[5] The new Multilateral Agreement on Common Quality Standards, which aims to transfer responsibility for transmission supply quality to the industry – the reponsibility which currently lies with Transpower.

Distribution

There are currently 30 network (distribution) businesses in New Zealand with a variety of ownership forms, varying from publicly listed companies to local community owned trusts. Local line businesses are responsible for conveying power to electricity end users within their network area on behalf of the retailing companies.

Retailing and Consumption

With the introduction of the reforms in 1998, competition in electricity retailing has increased. There are currently twelve retailers competing in various parts of New Zealand. These include major generators such as Contact Energy, Genesis Power, Meridian Energy, Mighty River Power, and TrustPower who have become retailers as well.

Table G.2 shows consumption by residential, commercial and industrial sectors, classified according to the Australia-New Zealand Standard Industrial Classification (ANZSIC).

Table G.2: Consumption by Sector for March Year 2002[6]

Sector	GWh	PJ	% of Total Consumption
Residential	11,660	41.98	35.2
Non-Residential	21,490	77.36	64.8
of which:			
Industrial	14,525	52.29	43.8
Commercial	6,964	25.07	21.0
TOTAL[7]	**33,150**	**119.34**	**100.0**

Total consumption in the March year 2002 was 33,150 GWh, 0.6% lower than the previous year at 33,348 GWh. Consumption in the residential and commercial sectors (Tables G9 and G10) has increased by about 3% and 1% respectively while consumption in the industrial sector decreased by about 4%. The corresponding nominal average price (energy and line charges exclusive of GST) for the residential and industrial sectors increased by about 9%, and 6% respectively while that of the commercial sector decreased by about 1%.

Market Share

Electricity's share of non-transport consumer energy was 44.8% for the year ended March 2002, a slight increase from the previous year at 44.4% while for the year ended September 2002, it is estimated at 43.9%.

Carbon Dioxide Emissions

The latest report [8] by the Ministry of Economic Development showed that during the calendar year 2001, carbon dioxide emissions from electricity generation amounted to 6.8 million tonnes including fugitive emissions from geothermal fields.

About 76% of these emissions came from natural gas combustion, 20% from coal combustion and 4% from geothermal generation.

Electricity generation was responsible for about 23% of the 29.8 million tonnes of carbon dioxide emitted from energy sources in 2001 including fugitive source such as geothermal activities. When considering total national carbon dioxide emissions (from both energy and industrial processes), the proportion due to electricity generation declined to 21%.

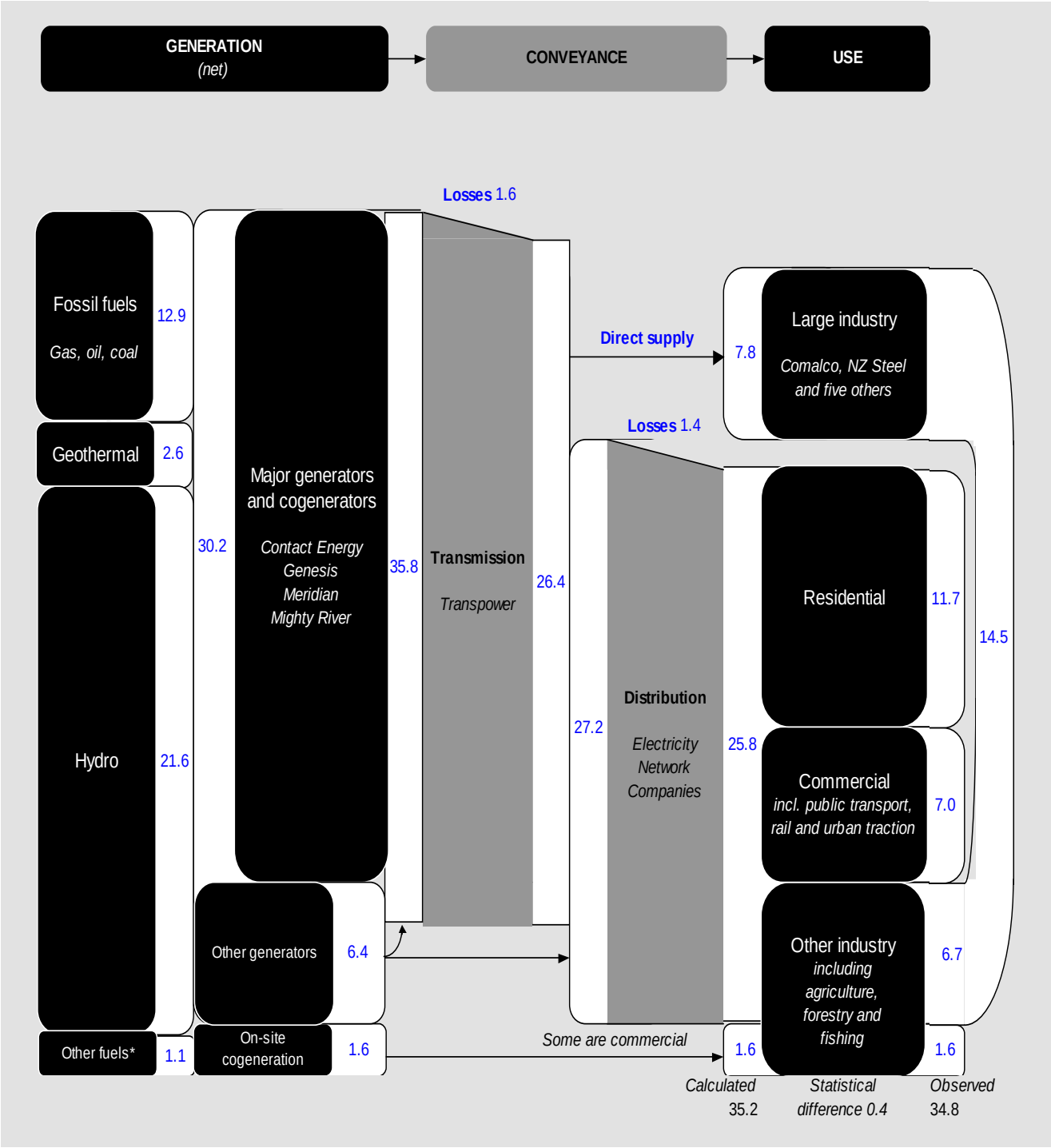
[6] Consumption data by NZSIC codes are collected annually through the MED-ER (electricity retailing) returns.

[7] Total consumption shown does not include on-site cogeneration consumption of about 1.6 TWh.

[8] *New Zealand Greenhouse Gas Emissions 1990-2001*, Energy Markets Information and Services Group, Ministry of Economic Development, June 2002.

Figure G.2: Electricity Flow Summary for March Year 2002

TWh (to approximate vertical scale)



* Other fuels include biogas, waste heat (steam), wood and wind.

Table G.3: Electricity Generation by Fuel Type (GWh)

Calendar Years or Quarters		Hydro	Geo	Oil [1]	Coal [2,3]	Gas [2]	Biogas [2]	Steam [2,3]	Wood [2]	Wind	Total
1974		15,037	1,358	1,943	1,303	209	8	18	306	0.0	20,181.4
1975		16,497	1,350	787	1,052	51	41	42	306	0.0	20,125.8
1976		15,344	1,290	1,280	1,103	1,801	53	50	306	0.0	21,226.0
1977		14,573	1,217	729	916	3,955	53	50	306	0.0	21,798.0
1978		15,503	1,239	199	743	3,763	53	50	306	0.0	21,855.9
1979		18,259	1,118	48	392	1,946	56	50	306	0.0	22,174.7
1980		19,171	1,206	-10	426	1,494	57	50	306	0.0	22,699.7
1981		19,483	1,141	-7	390	1,813	91	65	306	0.0	23,281.5
1982		18,121	1,158	3	422	4,382	102	70	306	0.0	24,563.9
1983		19,554	1,173	144	651	4,137	105	70	306	0.0	26,139.3
1984		20,173	1,294	1	729	4,553	105	66	329	0.0	27,249.6
1985		19,511	1,165	48	661	5,744	105	103	336	0.0	27,672.2
1986		21,877	1,233	5	399	4,475	105	93	336	0.0	28,524.0
1987		21,709	1,229	9	810	4,724	106	113	336	0.0	29,036.1
1988		22,733	1,237	6	630	5,118	106	120	336	0.0	30,286.7
1989		22,333	1,706	-2	395	5,556	106	95	336	0.0	30,525.9
1990		22,953	2,091	9	489	5,335	131	123	336	0.0	31,467.0
1991		22,666	2,185	23	290	6,866	151	83	336	0.0	32,600.3
1992		20,882	2,180	188	963	7,005	156	143	336	0.7	31,853.4
1993		23,258	2,284	59	498	6,542	156	128	336	1.0	33,261.8
1994		25,579	2,140	10	442	5,137	162	130	336	1.0	33,938.1
1995		27,259	2,049	47	596	4,539	172	153	336	1.0	35,153.4
1996		25,713	2,020	15	873	6,422	217	163	311	8.2	35,741.6
1997		23,594	2,130	-14	1,279	8,074	139	335	312	13.5	35,863.2
1998		24,165	2,386	-1	1,043	8,086	137	481	409	21.8	36,728.5
1999		23,221	2,637	0	1,183	8,294	114	570	438	38.8	36,497.3
2000		24,387	2,756	0	940	8,941	100	593	447	119	38,285.2
2001		21,392	2,700	0	1,385	11,623	100	637	332	136	38,305.2
1999	Mar	5,562	558	0	88	1,829	31	118	100	5.5	8,291.6
	Jun	5,753	677	0	397	2,106	27	147	110	10.8	9,228.7
	Sep	6,287	740	0	430	2,302	30	161	121	11.9	10,081.8
	Dec	5,619	661	0	268	2,058	27	144	108	10.6	8,895.2
2000	Mar	5,589	658	0	285	2,046	26	143	107	10.5	8,865.4
	Jun	6,139	685	0	214	2,252	25	147	111	35.4	9,607.7
	Sep	6,577	734	0	229	2,412	27	157	119	37.9	10,292.9
	Dec	6,082	679	0	212	2,231	25	146	110	35.1	9,519.2
2001	Mar	5,895	658	0	205	2,162	24	141	106	34.0	9,225.7
	Jun	5,236	640	0	365	3,592	25	163	63	32.3	10,117.3
	Sep	4,687	714	0	516	3,788	26	169	69	29.6	9,998.3
	Dec	5,575	688	0	299	2,081	24	164	93	39.5	8,964.0
2002[4]	Mar	6,097	602	0	225	1,954	25	113	107	34.1	9,157.0
	Jun	5,292	550	0	503	2,788	22	136	96	34.1	9,420.3
	Sep	6,856	771	0	255	1,902	25	147	68	39.7	10,065.0
Year Ended	**Sep 2001**	21,900	2,691	0	1,298	11,772	100	619	349	131.1	38,860.4
	Sep 2002	23,819	2,611	0	1,282	8,725	97	561	364	147.4	37,606.4

Notes:
[1] Negative generation by oil-fired plants implies a net import into the station to maintain station viability and system voltage stability.
[2] These fuels also include generation from cogeneration plants.
[3] Generation from coal and steam have been revised from 1985 as a result of the update of the cogeneration database.
[4] Figures for June and September of 2002 are estimated.

1 petajoule (PJ) ~ 277.778 gigawatt hours (GWh)

Table G.4: Electricity Generation by Fuel Type (PJ)

Calendar Years or Quarters		Hydro	Geo	Oil[1]	Coal [2,3]	Gas [2]	Biogas [2]	Steam [2,3]	Wood[2]	Wind	Total
1974		54.13	4.89	6.99	4.69	0.75	0.03	0.07	1.10	0.000	72.65
1975		59.39	4.86	2.83	3.79	0.18	0.15	0.15	1.10	0.000	72.45
1976		55.24	4.64	4.61	3.97	6.48	0.19	0.18	1.10	0.000	76.41
1977		52.46	4.38	2.62	3.30	14.24	0.19	0.18	1.10	0.000	78.47
1978		55.81	4.46	0.72	2.68	13.55	0.19	0.18	1.10	0.000	78.68
1979		65.73	4.02	0.17	1.41	7.00	0.20	0.18	1.10	0.000	79.83
1980		69.02	4.34	-0.04	1.53	5.38	0.21	0.18	1.10	0.000	81.72
1981		70.14	4.11	-0.03	1.40	6.53	0.33	0.23	1.10	0.000	83.81
1982		65.24	4.17	0.01	1.52	15.77	0.37	0.25	1.10	0.000	88.43
1983		70.39	4.22	0.52	2.34	14.89	0.38	0.25	1.10	0.000	94.10
1984		72.62	4.66	0.00	2.62	16.39	0.38	0.24	1.18	0.000	98.10
1985		70.24	4.19	0.17	2.38	20.68	0.38		1.21	0.000	99.62
1986		78.76	4.44	0.02	1.44	16.11	0.38	0.33	1.21	0.000	102.69
1987		78.15	4.42	0.03	2.92	17.01	0.38	0.41	1.21	0.000	104.53
1988		81.84	4.45	0.02	2.27	18.42	0.38	0.43	1.21	0.000	109.03
1989		80.40	6.14	-0.01	1.42	20.00	0.38	0.34	1.21	0.000	109.89
1990		82.63	7.53	0.03	1.76	19.21	0.47	0.44	1.21	0.000	113.28
1991		81.60	7.87	0.08	1.04	24.72	0.55	0.30	1.21	0.000	117.36
1992		75.17	7.85	0.68	3.47	25.22	0.56	0.51	1.21	0.002	114.67
1993		83.73	8.22	0.21	1.79	23.55	0.56	0.46	1.21	0.004	119.74
1994		92.08	7.70	0.04	1.59	18.49	0.58	0.47	1.21	0.004	122.18
1995		98.13	7.38	0.17	2.15	16.34	0.62	0.55	1.21	0.004	126.55
1996		92.57	7.27	0.05	3.14	23.12	0.78	0.59	1.12	0.030	128.67
1997		84.94	7.67	-0.05	4.61	29.07	0.50	1.21	1.12	0.048	129.11
1998		86.99	8.59	0.00	3.76	29.11	0.49	1.73	1.47	0.079	132.22
1999		83.60	9.49	0.00	4.26	29.86	0.41	2.05	1.58	0.140	131.39
2000		87.79	9.92	0.00	3.38	32.19	0.37	2.14	1.61	0.428	137.83
2001		77.01	9.72	0.00	4.99	41.84	0.36	2.29	1.20	0.488	137.90
1999	Mar	20.02	2.01	0.00	0.32	6.58	0.11	0.42	0.36	0.020	29.85
	Jun	20.71	2.44	0.00	1.43	7.58	0.10	0.53	0.40	0.039	33.22
	Sep	22.63	2.66	0.00	1.55	8.29	0.11	0.58	0.43	0.043	36.29
	Dec	20.23	2.38	0.00	0.96	7.41	0.10	0.52	0.39	0.038	32.02
2000	Mar	20.12	2.37	0.00	1.03	7.37	0.09	0.52	0.39	0.038	31.92
	Jun	22.10	2.47	0.00	0.77	8.11	0.09	0.53	0.40	0.128	34.59
	Sep	23.68	2.64	0.00	0.82	8.68	0.10	0.57	0.43	0.137	37.05
	Dec	21.90	2.44	0.00	0.76	8.03	0.09	0.52	0.40	0.126	34.27
2001	Mar	21.22	2.37	0.00	0.74	7.78	0.09	0.51	0.38	0.122	33.21
	Jun	18.85	2.30	0.00	1.31	12.93	0.09	0.59	0.23	0.116	36.42
	Sep	16.87	2.57	0.00	1.86	13.63	0.09	0.61	0.25	0.107	35.99
	Dec	20.07	2.48	0.00	1.08	7.49	0.09	0.59	0.34	0.142	32.27
2002	Mar	21.95	2.17	0.00	0.81	7.03	0.09	0.41	0.39	0.123	32.90
	Jun	19.05	1.98	0.00	1.81	10.04	0.08	0.49	0.34	0.123	33.91
	Sep	24.68	2.78	0.00	0.92	6.85	0.09	0.53	0.24	0.143	36.23
Year Ended	**Sep 2001**	**78.84**	**9.69**	**0.00**	**4.67**	**42.38**	**0.36**	**2.23**	**1.26**	**0.472**	**139.90**
	Sep 2002	**85.75**	**9.40**	**0.00**	**4.62**	**31.41**	**0.35**	**2.02**	**1.31**	**0.531**	**135.38**

Notes:
[1] Negative generation by oil-fired plants implies a net import into the station to maintain station viability and system voltage stability.
[2] These fuels also include generation from cogeneration plants.
[3] Generation from coal and steam have been revised from 1985 as a result of the update of the cogeneration database.
[4] Figures for June and September of 2002 are estimated.

1 petajoule (PJ) ~ 277.778 gigawatt hours (GWh)

Chart G.4a: Quarterly Electricity Generation

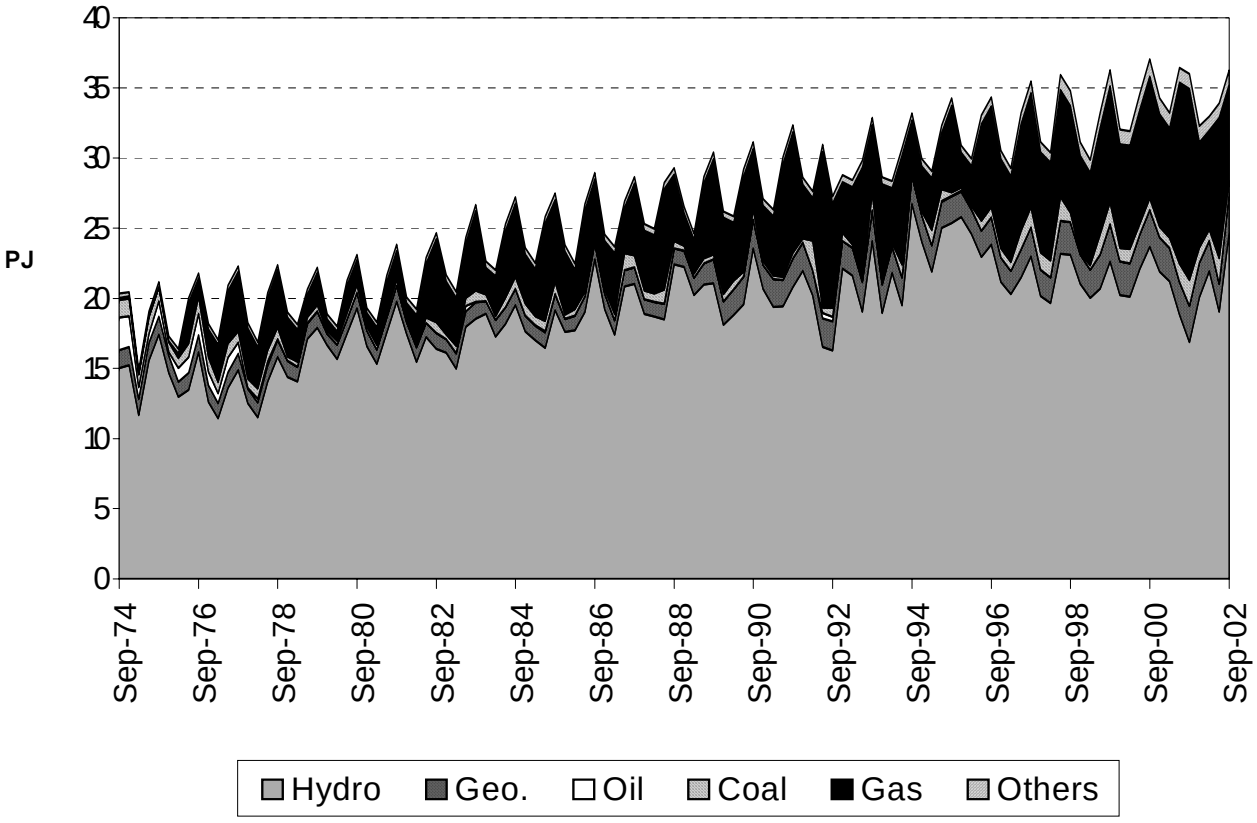
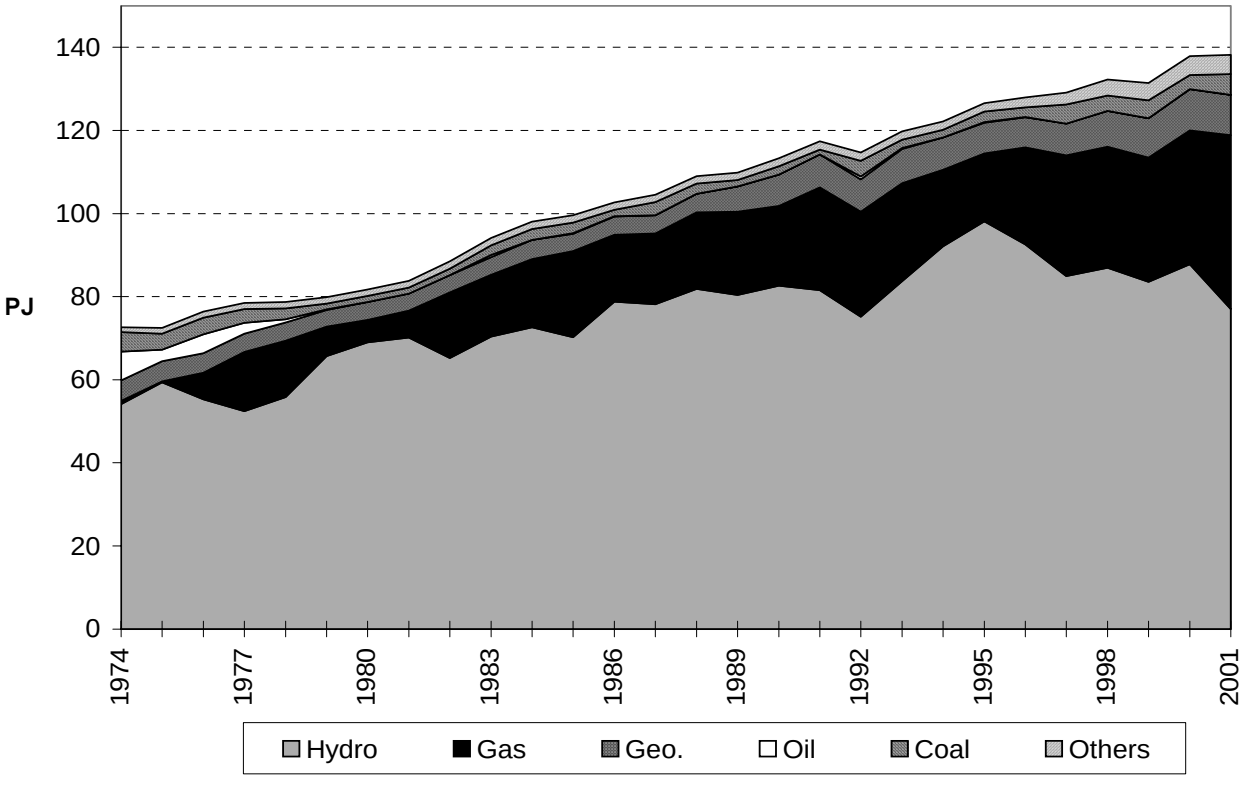


Chart G.4b: Annual Electricity Generation



"Others" includes electricity generation from biogas, industrial waste, wood and wind.

Table G.5: Generating Capacity by Fuel Type for March Year 2002 (MW)

Generating stations[1]	Hydro	Geothermal	Oil	Coal [2]	Gas [2]	Biogas	Steam	Wood	Wind	Total
North Island										
Above or equal to 100 MW	1,129.00	269.00	-	280.00	1,855.00	-	-	-		3,533.00
Less than 100 MW but greater or equal to 10 MW	723.00	138.00	-	-	-	-	-	-	32.00	893.00
Less than 10 MW	48.27	16.00	-	-	-	9.00	-	-	3.73	77.00
Cogeneration	-	8.00	-	51.00	331.54	8.73	92.80	58.00	-	550.07
North Island Total	**1,900.27**	**431.00**	**-**	**331.00**	**2,186.54**	**17.73**	**92.80**	**58.00**	**35.73**	**5,053.07**
South Island										
Above or equal to 100 MW	2,945.00	-	-	-	-	-	-	-	-	2,945.00
Less than 100 MW but greater or equal to 10 MW	330.00	-	-	-	-	-	-	-	-	330.00
Less than 10 MW	70.02	-	-	-	-	-	-	-	-	70.02
Cogeneration	-	-	-	3.90	0.74	2.61	5.83	1.82	-	14.90
South Island Total	**3,345.02**	**-**	**-**	**3.90**	**0.74**	**2.61**	**5.83**	**1.82**	**-**	**3,359.92**
New Zealand										
Above or equal to 100 MW	4,074.00	269.00	-	280.00	1,855.00	-	-	-	-	6,478.00
Less than 100 MW but greater or equal to 10 MW	1,053.00	138.00	-	-	-	-	-	-	32.00	1,223.00
Less than 10 MW	118.59	16.00	-	-	-	9.00	-	-	3.73	147.02
Cogeneration	-	8.00	-	54.90	332.28	11.34	98.63	59.82	-	564.97
New Zealand Total	**5,245.29**	**431.00**	**-**	**334.90**	**2,187.28**	**20.34**	**98.63**	**59.82**	**35.73**	**8,412.99**

Notes:

1. Stations have been aggregated according to their rated capacity in MW.
2. Huntly station's dual-fired generating capacity (1000 MW) has been split between coal and gas according to the units of electricity generated by the type of fuel during the period.

Table G.6: Generation by Fuel Type for March Year 2002 (MWh)

Generating stations[1]	Hydro	Geothermal	Oil [2]	Coal	Gas	Biogas	Steam	Wood	Wind	Total
North Island										
Above or equal to 100 MW	3,571,279	1,534,531	-	1,351,317	9,379,553	-	-	-	-	15,836,680
Less than 100 MW but greater or equal to 10 MW	2,626,839	928,218	-	-	-	-	-	-	122,814	3,677,871
Less than 10 MW	182,762	125,075	-	-	-	66,101	-	-	12,775	386,713
Cogeneration	-	56,064	-	33,527	2,030,848	26,591	589,022	322,613	-	3,058,665
North Island Total	**6,380,880**	**2,643,888**	**-**	**1, 384,844**	**11,410,401**	**92,692**	**589,022**	**322,613**	**135,589**	**22,959,929**
South Island										
Above or equal to 100 MW	13,543,564	-	-	-	-	-	-	-	-	13,543,564
Less than 100 MW but greater or equal to 10 MW	1,421,703	-	-	-	-	-	-	-	-	1,421,703
Less than 10 MW	247,494	-	-	-	-	-	-	-	-	247,494
Cogeneration	-	-	-	20,262	4,432	7,999	20,495	10,667	-	63,855
South Island Total	**15,212,761**	**-**	**-**	**20,262**	**4,432**	**7,999**	**20,495**	**10,667**	**-**	**15,276,616**
New Zealand										
Above or equal to 100 MW	17,114,843	1,534,531	-	1,351,317	9,379,553	-	-	-	-	29,380,244
Less than 100 MW but greater or equal to 10 MW	4,048,542	928,218	-	-	-	-	-	-	122,814	5,099,574
Less than 10 MW	430,256	125,075	-	-	-	66,101	-	-	12,775	634,207
Cogeneration	-	56,064	-	53,789	2,035,280	34,590	609,517	333,280	-	3,122,520
New Zealand Total	**21,593,641**	**2,643,888**	**-**	**1,405,106**	**11,414,833**	**100,691**	**609,517**	**333,280**	**135,589**	**38,236,545**

Notes:
1. Stations have been aggregated according to their rated capacity.

Table G.7a: Information on Current Generating Plants (10 MW or Greater)

Owners/Operators	Plant name	Commis-sioned	Fuel type	Capacity (MW)	Availabilty factor[1]
Bay of Plenty Electricity	Aniwhenua	1981	Hydro	25	N/A
Bay of Plenty Electricity	Edgecumbe	1996	Gas	10	N/A
Capital Coast Health	Wellington Hospital	1992	Gas (Cogen)	11	N/A
Contact Energy	Clyde	1992	Hydro	432	95%
Contact Energy	New Plymouth	1976	Gas	400	69%
Contact Energy	Ohaaki	1989	Geothermal	104	93%
Contact Energy	Otahuhu B	1999	Gas	380	90%
Contact Energy	Pohipi	1997	Geothermal	55	97%
Contact Energy	Roxburgh	1956	Hydro	320	89%
Contact Energy	Te Rapa	2000	CoGen	44	91%
Contact Energy	Wairakei	1958	Geothermal	165	92%
Duke Energy	Glenbrook	1998	Waste Heat (Cogen)	94	N/A
Genesis	Huntly	1987	Gas/Coal	1000	90%
Genesis	Kaitawa	1947	Hydro	37	95%
Genesis	Piripaua	1942	Hydro	44	98%
Genesis	Tuai	1929	Hydro	60	95%
Genesis	Rangipo	1983	Hydro	120	97%
Genesis	Tokaanu	1973	Hydro	240	98%
Genesis/Anchor Dairy	Te Awamutu	1995	Gas (Cogen)	52	N/A
Genesis/Carter Holt Harvey	Kinleith	1998	Gas/Wood/Coal	40	N/A
Mangahao Joint Venture	Mangahao	1925	Hydro	36	N/A
Meridian Energy Ltd	Aviemore	1968	Hydro	220	90%
Meridian Energy Ltd	Benmore	1966	Hydro	540	97%
Meridian Energy Ltd	Manapouri	1971	Hydro	700	86%
Meridian Energy Ltd	Ohau A	1979	Hydro	264	95%
Meridian Energy Ltd	Ohau B	1980	Hydro	212	95%
Meridian Energy Ltd	Ohau C	1985	Hydro	212	95%
Meridian Energy Ltd	Tekapo A	1951	Hydro	25	83%
Meridian Energy Ltd	Tekapo B	1977	Hydro	160	93%
Meridian Energy Ltd	Waitaki	1936	Hydro	90	84%

[1] Normal availability factor is the expected proportion of time that the plant is capable of providing full service at full capacity after allowing for planned maintenance and possible forced outages. With hydro plant, water is assumed to be available - ie, water availability is not taken to be a factor in determining the normal availability factor of the plant.

Table G.7a: Information on Current Generating Plants (10 MW or Greater) ...continued

Owners/Operators	Plant name	Commis-sioned	Fuel type	Capacity (MW)	Availabilty factor[1]
Mighty River Power	Arapuni	1946	Hydro	197	90%
Mighty River Power	Aratiatia	1964	Hydro	84	96%
Mighty River Power	Atiamuri	1962	Hydro	76	91%
Mighty River Power	Karapiro	1948	Hydro	96	97%
Mighty River Power	Maraetai	1954/1971	Hydro	360	97%
Mighty River Power	Ohakuri	1962	Hydro	112	99%
Mighty River Power	Rotokawa	1997	Geothermal	28	98%
Mighty River Power	Waipapa	1961	Hydro	58	95%
Mighty River Power	Whakamaru	1956	Hydro	100	96%
NGC	Cobb	1956	Hydro	32	89%
NGC	Kapuni	1998	Gas (Cogen)	25	N/A
NGC/Mighty River	Southdown	1997	Gas (Cogen)	118	N/A
NGC/Stratford Power Ltd	Taranaki CC	1998	Gas	355	N/A
TrustPower Ltd	Argyle x 2		Hydro	11	N/A
TrustPower Ltd	Branch		Hydro	11	N/A
TrustPower Ltd	Coleridge	1914	Hydro	45	N/A
TrustPower Ltd	Highbank x 2		Hydro	27	N/A
TrustPower Ltd	Kaimai x 4		Hydro	42	N/A
TrustPower Ltd	Kumara x 3		Hydro	11	N/A
TrustPower Ltd	Matahina	1967	Hydro	72	N/A
TrustPower Ltd	Paerau x 2		Hydro	12	N/A
TrustPower Ltd	Patea		Hydro	31	N/A
TrustPower Ltd	Tararua Wind Farm	1999	Wind	32	N/A
TrustPower Ltd	Waipori x 4	1903/1955	Hydro	66	N/A
TrustPower Ltd	Wheao x 2		Hydro	26	N/A
Tuaropaki Power Company	Mokai	2000	Geothermal	55	N/A
Whareroa Kiwi Dairy Plant	Kiwi Dairy	1997	Gas (Cogen)	65	N/A
Tai Tokerau Trust	Ngawha	1998	Geothermal	11.6	N/A

[1] Normal availability factor is the expected proportion of time that the plant is capable of providing full service at full capacity after allowing for planned maintenance and possible forced outages. With hydro plant, water is assumed to be available - i.e. water availability is not taken to be a factor in determining the normal availability factor of the plant.

Table G.7b: Information on Possible Future Plant Changes (10 MW or Greater)

Owners/Operators	Plant name	Commissioning year	Fuel/Plant type	Capacity (MW)
Commissioning				
Contact Energy	Tauhara	2004	Geothermal	15
Contact Energy	Whirinaki	2004	Gas (GCCT)	80-100
Trustpower	Tararua II	2004	Wind	36
Tuaropaki Trust	Mokai Stage 2	2004	Geothermal	39
Contact Energy	Poihipi Road (Steamfield)	2005	Geothermal	25
Meridian	Wellington's West Coast	2005	Wind	40-80
Genesis	Huntly - E3P	2006	Gas (GCCT)	400
Contact Energy	Otahuhu C	2006	Gas (GCCT)	400
Putauaki Trust	Kawerau II	2006	Geothermal	50
Top Energy	Ngawha II	2006	Geothermal	20
Meridian	Lower Waitaki (Aqua)	2007	Hydro	280
Modification				
Contact Energy	New Plymouth	2003	Gas/Oil	400*

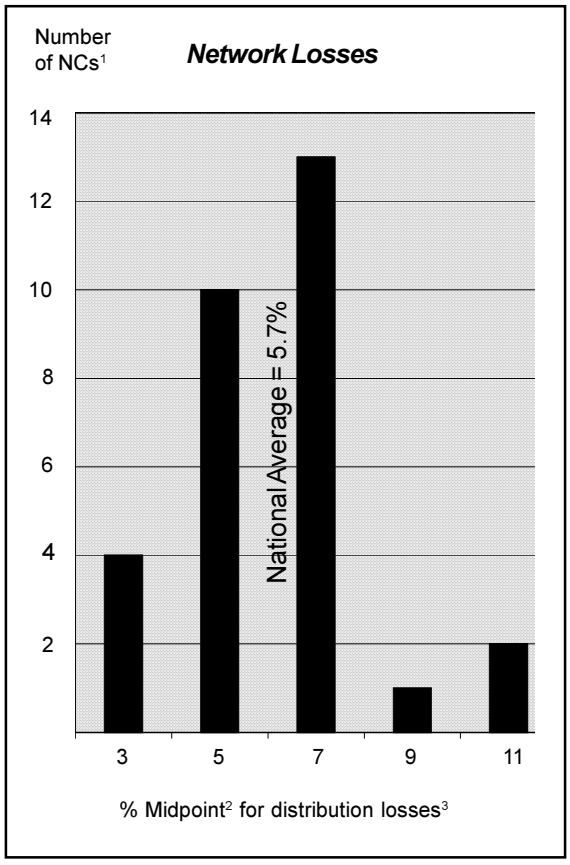
* Dual fuelling capability with the introduction of oil in 2003

Table G.8: Transmission and Distribution Network Statistics for March Year 2002

Aggregation	Distribution substations	Lines and cables (km)		
	Installed capacity**	Overhead lines	Underground cables	Total
National Transmission*	9,180	17,457	80	17,537
North Island Distribution	12,579	62,461	19,957	82,418
South Island Distribution	4,438	42,540	9,266	51,806
National Total	26,197	122,458	29,303	151,761

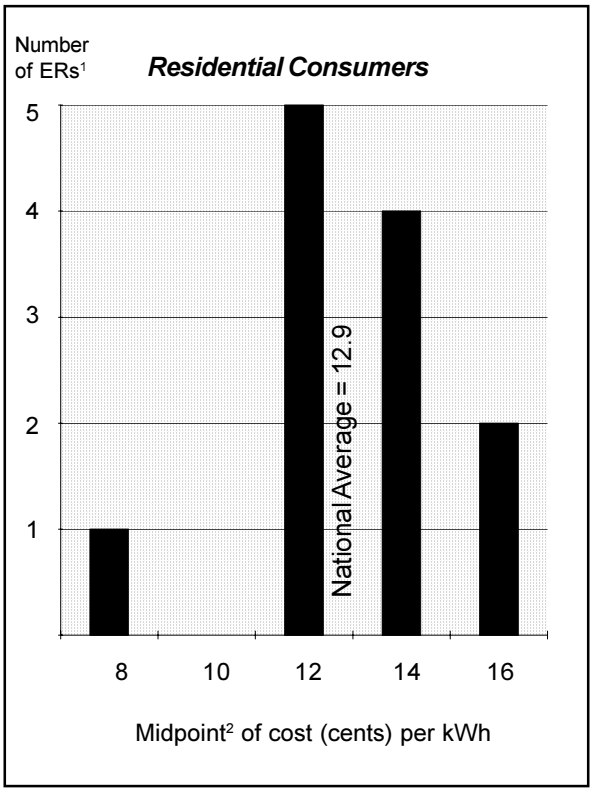
* Includes Cook Strait submarine cables.
** MVA

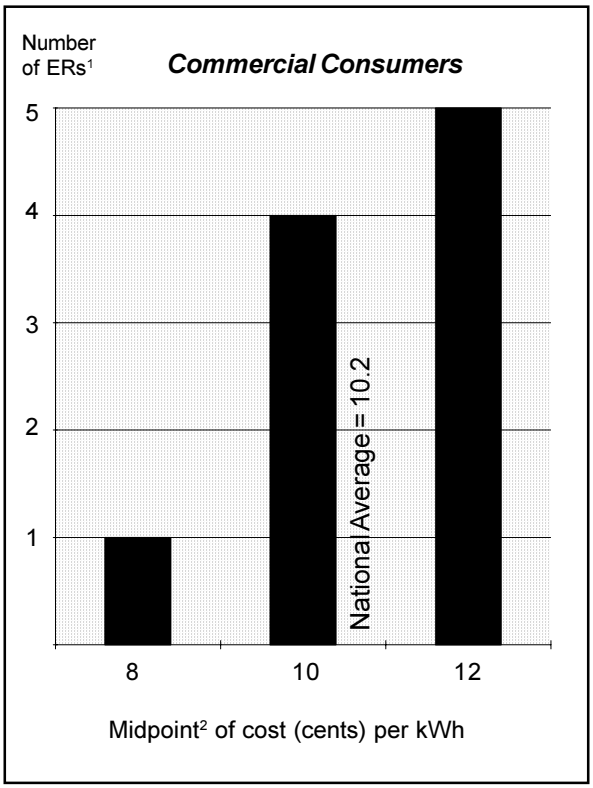
Chart G.5: Combined Efficiency Statistics of Distribution Companies for March Year 2002

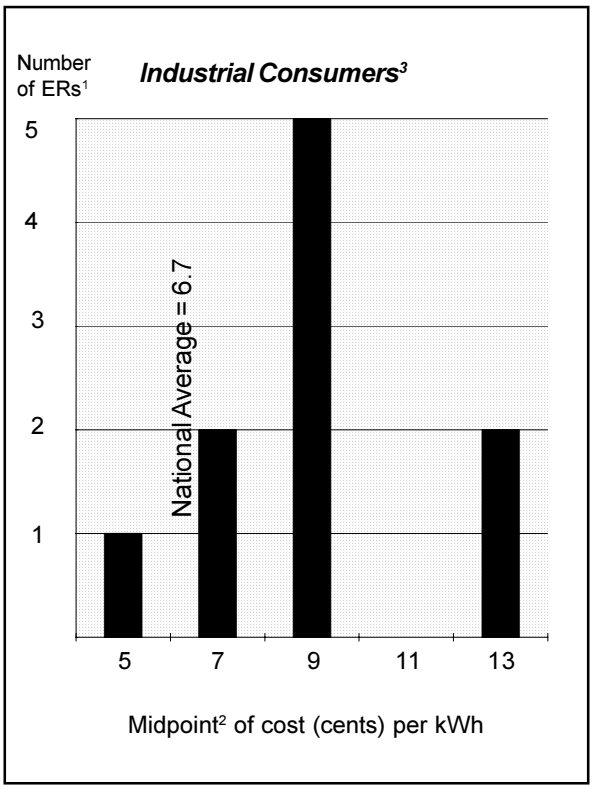


Notes:
1. NCs stands for network companies, of which there are 30.
2. % Midpoint gives the number of line companies whose losses or non-productive units fall around that percentage midpoint. For example, there are 13 line companies whose losses (expressed as a percentage of total units entering their network) fall between 6% and 8%.
3. Distribution losses are the number of units (kWh) lost in distribution but excluding the amount used internally by each electric power company. These losses are expressed as a percentage of total units entering a network. Transpower's losses (expressed as a percentage of total units entering its transmission network) were 3.9%.

Chart G.6: Variation in Cost of Electricity Purchased by Sector for March Year 2002







Notes:
1. ERs stands for electricity retailers, of which there are 12 for residential customers.
2. Midpoint of cost of electricity purchased gives the number of electricity retailers whose prices per kWh falls around that midpoint. For example, in the commercial sector, there are four retailers whose prices fall between 9 cents and 11 cents per kWh sold (excluding GST).
3. Industrial sector covers Agriculture, Hunting, Forestry, Logging and Fishing.

Table G.9: Electricity Consumption by the Residential Sector

March Year	Residential				
	Consumption MWh	Income $(000)	Average Price (excl. GST) cents/kWh	No. of Consumers	Average Consumption MWh
1975	7,553,518	87,439	1.16	1,002,384	7.54
1976	8,402,610	101,015	1.20	1,033,982	8.13
1977	8,397,994	141,028	1.68	1,061,398	7.91
1978	8,313,666	191,460	2.30	1,083,893	7.67
1979	8,181,471	200,948	2.46	1,101,612	7.43
1980	7,909,239	272,245	3.44	1,116,512	7.08
1981	8,034,955	303,373	3.78	1,131,740	7.10
1982	8,264,924	341,880	4.14	1,142,024	7.24
1983	8,732,552	409,579	4.69	1,157,571	7.54
1984	8,980,789	421,655	4.70	1,173,532	7.65
1985	8,997,924	435,092	4.84	1,188,692	7.57
1986	9,080,157	534,335	5.88	1,208,887	7.51
1987	9,424,041	627,442	6.66	1,228,617	7.67
1988	9,422,574	702,280	7.45	1,242,214	7.59
1989	9,510,441	767,773	8.07	1,261,646	7.54
1990	9,823,674	797,327	8.12	1,275,425	7.70
1991	10,263,873	845,712	8.24	1,303,863	7.87
1992	10,474,202	929,427	8.87	1,325,678	7.90
1993	10,124,316	932,866	9.21	1,333,337	7.59
1994	10,255,797	994,727	9.70	1,342,845	7.64
1995	10,415,895	1,066,265	10.24	1,355,526	7.68
1996	10,584,306	1,135,437	10.73	1,370,640	7.72
1997	10,958,947	1,254,914	11.45	1,377,048	7.96
1998	10,824,169	1,307,190	12.08	1,417,773	7.63
1999	11,290,087	1,310,931	11.61	1,423,433	7.93
2000[1]	11,057,016	1,312,016	11.87	1,443,579	7.66
2001[1]	11,306,306	1,329,758	11.76	1,543,380	7.33
2002[1]	11,660,201	1,499,724	12.86	1,501,322	7.77

Note:
[1] Inter-year movements in prices between 2000 and 2001, and 2001 and 2002 may not be reliable. (See explanation on page 3).

Table G.10: Electricity Consumption by the Commercial Sector

March Year	Commercial[1]				
	Consumption MWh	Income $(000)	Average Price (excl. GST) cents/kWh	No. of Consumers	Average Consumption MWh
1975	2,544,755	52,875	2.08	131,130	19.41
1976	2,730,077	58,487	2.14	133,825	20.40
1977	2,905,695	84,685	2.91	136,266	21.32
1978	3,054,108	121,272	3.97	142,383	21.45
1979	3,039,154	130,855	4.31	141,239	21.52
1980	3,256,385	186,035	5.71	143,072	22.76
1981	3,345,480	207,443	6.20	144,068	23.22
1982	3,581,548	241,464	6.74	146,282	24.48
1983	3,891,805	292,258	7.51	147,673	26.35
1984	4,122,909	310,956	7.54	150,759	27.35
1985	4,388,238	339,886	7.75	153,014	28.68
1986	4,578,735	422,329	9.22	157,363	29.10
1987	4,886,742	496,665	10.16	161,930	30.18
1988	5,051,858	568,110	11.25	166,033	30.43
1989	5,436,489	630,599	11.60	167,683	32.42
1990	5,643,627	662,911	11.75	172,814	32.66
1991	5,667,656	663,898	11.71	173,663	32.64
1992	5,550,356	640,631	11.54	148,172	37.46
1993	5,396,613	619,115	11.47	144,835	37.26
1994	5,580,439	616,335	11.04	146,451	38.10
1995	5,674,570	616,009	10.86	139,343	40.72
1996	5,595,318	622,285	11.12	141,335	39.59
1997	6,101,427	670,840	10.99	138,109	44.18
1998	7,172,934	715,807	9.98	136,799	52.43
1999	7,334,036	712,757	9.72	139,525	52.56
2000[2]	6,918,978	699,439	10.11	137,730	50.24
2001[2]	6,899,407	711,507	10.31	136,525	50.54
2002[2]	6,964,466	707,919	10.16	128,683	54.12

Notes:
[1] Commercial sector includes public lighting, rail and urban traction transport.
[2] Inter-year movements in prices between 2000 and 2001, and 2001 and 2002 may not be reliable. (See explanation on page 3).

Table G.11: Electricity Consumption by the Industrial Sector

March Year	Industrial [1]				
	Consumption MWh	Income $(000)	Average Price (excl. GST) cents/kWh	No. of Consumers	Average Consumption MWh
1975	6,174,012	56,092	0.91	81,403	75.85
1976	6,517,670	61,973	0.95	81,097	80.37
1977	6,998,560	93,648	1.34	82,499	84.83
1978	7,540,977	134,542	1.78	83,682	90.11
1979	7,667,636	153,333	2.00	84,696	90.53
1980	7,874,102	223,171	2.83	85,746	91.83
1981	8,159,840	254,282	3.12	87,367	93.40
1982	8,257,824	282,401	3.42	89,376	92.39
1983	8,746,401	340,346	3.89	91,539	95.55
1984	9,923,548	374,769	3.78	93,315	106.34
1985	10,607,647	415,469	3.92	95,024	111.63
1986	10,616,527	504,902	4.76	96,485	110.03
1987	11,038,168	580,046	5.25	97,706	112.97
1988	11,330,156	627,750	5.54	100,962	112.22
1989	11,751,110	679,780	5.78	99,221	118.43
1990	11,841,598	683,950	5.78	99,334	119.21
1991	11,887,202	678,853	5.71	104,353	113.91
1992	12,584,331	730,405	5.80	125,187	100.52
1993	12,264,757	744,329	6.07	129,722	94.55
1994	13,392,207	802,854	5.99	131,966	101.48
1995	13,834,045	807,889	5.84	131,622	105.10
1996	14,342,421	908,360	6.33	131,314	109.22
1997	14,199,753	868,478	6.12	136,328	104.16
1998	13,936,551	976,375	7.01	124,792	111.68
1999	14,010,344	978,569	6.98	127,274	110.08
2000[2]	14,759,073	876,790	5.94	112,056	131.71
2001[2]	15,142,147	955,773	6.31	110,311	137.27
2002[2]	14,525,124	974,514	6.71	101,764	142.73

Note:
[1] Industrial Sector includes Agriculture, Hunting, Forestry and Logging, and Fishing.
[2] Inter-year movements in prices between 2000 and 2001, and 2001 and 2002 may not be reliable. (See explanation on page 3).

Table G.12: Electricity Consumption by All Sectors

March Year	All Sectors[1]				
	Total Consumption MWh	Total Income $(000)	Average Price (excl. GST) cents/kWh	Total No. of Consumers	Average Consumption MWh
1975	16,272,285	196,406	1.21	1,214,917	13.39
1976	17,650,357	221,476	1.25	1,248,904	14.13
1977	18,302,249	319,361	1.74	1,280,163	14.30
1978	18,908,750	447,274	2.37	1,309,958	14.43
1979	18,888,261	485,136	2.57	1,327,547	14.23
1980	19,039,725	681,451	3.58	1,345,330	14.15
1981	19,540,276	765,097	3.92	1,363,175	14.33
1982	20,104,295	865,746	4.31	1,377,682	14.59
1983	21,370,757	1,042,183	4.88	1,396,783	15.30
1984	23,027,245	1,107,380	4.81	1,417,606	16.24
1985	23,993,808	1,190,447	4.96	1,436,730	16.70
1986	24,275,419	1,461,567	6.02	1,462,735	16.60
1987	25,348,951	1,704,152	6.72	1,488,253	17.03
1988	25,804,588	1,898,139	7.36	1,509,209	17.10
1989	26,698,040	2,078,152	7.78	1,528,550	17.47
1990	27,308,899	2,144,188	7.85	1,547,573	17.65
1991	27,818,731	2,188,463	7.87	1,581,879	17.59
1992	28,608,889	2,300,463	8.04	1,599,037	17.89
1993	27,785,685	2,296,309	8.26	1,607,894	17.28
1994	29,228,443	2,413,916	8.26	1,621,262	18.03
1995	29,924,510	2,490,163	8.32	1,626,491	18.40
1996	30,522,045	2,666,082	8.73	1,643,289	18.57
1997	31,260,126	2,794,232	8.94	1,651,485	18.93
1998	31,933,654	2,999,372	9.39	1,679,364	19.02
1999	32,634,467	3,002,257	9.20	1,690,232	19.31
2000[2]	32,735,067	2,888,245	8.82	1,693,365	19.33
2001[2]	33,347,860	2,997,038	8.99	1,790,216	18.63
2002[2]	33,149,791	3,182,157	9.60	1,731,769	19.14

Notes:
[1] Includes residential, commercial and industrial sectors.
[2] Inter-year movements in prices between 2000 and 2001, and 2001 and 2002 may not be reliable. (See explanation on page 3).

Chart G.7a: Electricity Consumption by Sector

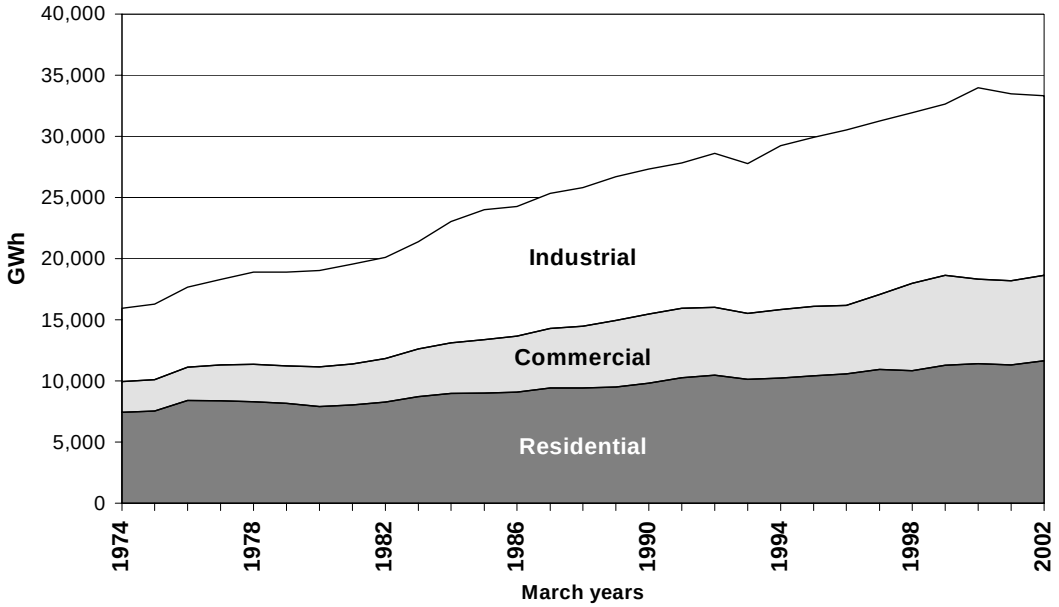


Chart G.7b: Electricity Consumers by Sector

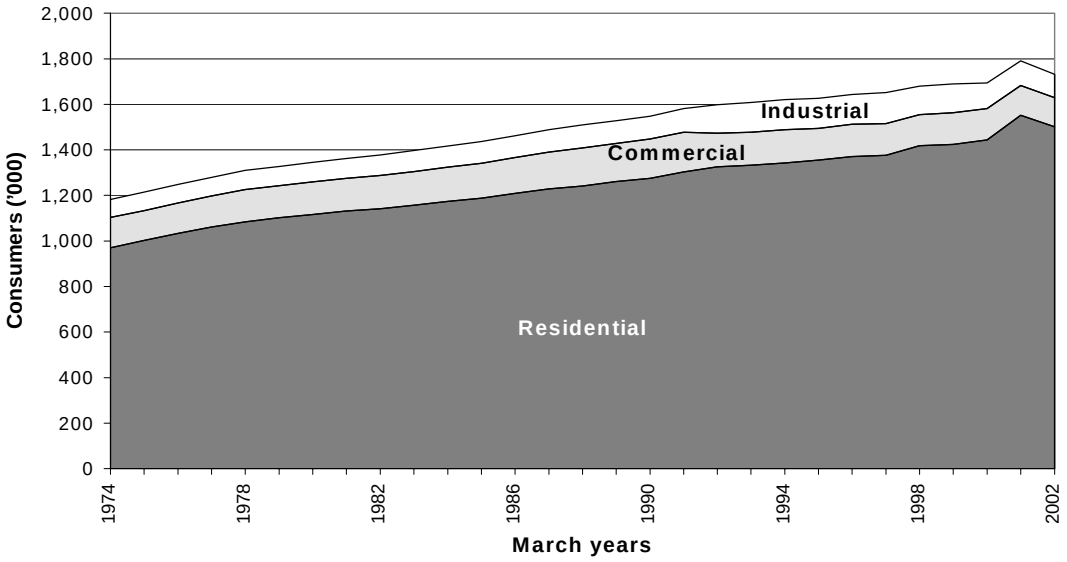


Chart G.7c: Share of Consumption by Sector during MYE 2002

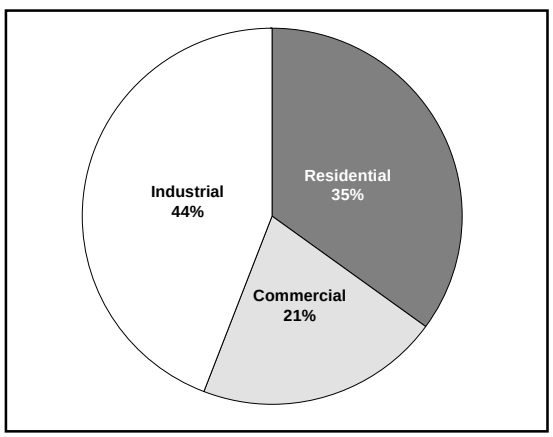


Chart G.7d: Share of Consumers by Sector during MYE 2002

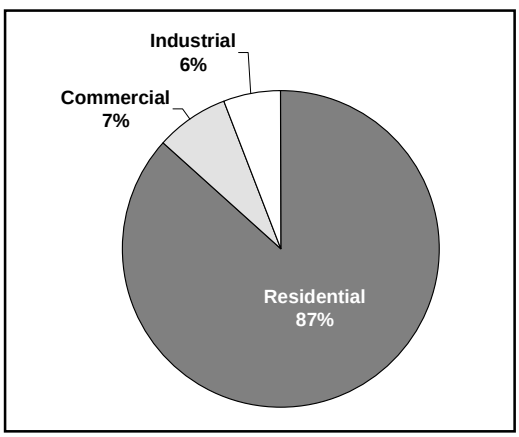


Table G.13a: Electricity End Use[1, 2] for March Year 2000

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
INDUSTRIAL of which:.....		**14,759,073**	**581,410**	**295,380**	**876,790**	**5.94**	**112,056**	**131.71**
Agriculture, agricultural services and hunting	A01-A02	1,128,555	66,541	56,733	123,274	10.92	79,661	14.17
Forestry and logging	A03	127,676	5,085	4,011	9,096	7.12	428	298.31
Commercial fishing	A04	31,452	1,435	1,089	2,524	8.02	222	141.68
Coal mining	B11	57,848	2,004	2,062	4,066	7.03	135	428.50
Oil and gas extraction	B12	21,564	593	707	1,300	6.03	57	378.32
Other mining and quarrying, and services to mining	B13-B15	194,052	9,095	4,812	13,907	7.17	433	448.16
Meat and meat products	C211	492,249	19,741	12,529	32,270	6.56	471	1045.11
Dairy products	C212	253,435	9,113	6,543	15,656	6.18	237	1069.35
Other food processing; beverages, malt, tobacco etc	C213-C219	588,237	29,982	18,659	48,641	8.27	2,204	266.90
Textile, clothing, footwear and leather	C22	191,987	9,983	6,043	16,026	8.35	1,403	136.84
Log sawmilling and timber dressing, wood products etc	C231-C232	1,240,639	50,640	20,255	70,895	5.71	1,713	724.25
Paper and paper products	C233	2,590,066	122,803	47,646	170,449	6.58	446	5807.32
Printing, publishing and recorded media	C24	156,259	9,211	5,365	14,576	9.33	1,435	108.89
Petroleum refining	C251	65,851	2,714	137	2,851	4.33	39	1688.49
Petroleum and coal products	C252	4,037	207	178	385	9.54	57	70.82
Chemicals and chemical products	C253-C254	213,073	8,910	6,018	14,928	7.01	880	242.13
Rubber and plastic products	C255-C256	196,719	10,228	6,683	16,911	8.60	563	349.41
Non-metallic mineral products	C26	204,252	8,404	5,906	14,310	7.01	975	209.49
Iron and steel	C271	827,851	16,605	8,492	25,097	3.03	386	2144.69
Basic non-ferrous metals	C272	5,045,577	136,836	35,497	172,333	3.42	62	81380.27
Basic non-ferrous metal products	C273	19,436	1,046	723	1,769	9.10	189	102.84
Metal products *(other)*	C274-C276	201,173	11,021	9,464	20,485	10.18	2,672	75.29
Transport equipment	C281-C282	64,560	3,229	2,181	5,410	8.38	799	80.80
Photographic and scientific equipment	C283	7,223	780	418	1,198	16.59	125	57.78
Electronic, electrical and industrial equipment etc	C284-C286	184,493	9,599	7,502	17,101	9.27	2,011	91.74
Other manufacturing	C29	111,745	6,836	4,419	11,255	10.07	2,001	55.84
Electricity supply	D361	65,410	3,397	2,735	6,132	9.37	1,074	60.90
Gas supply (including LPG and CNG)	D362	12,164	465	423	888	7.30	149	81.64
Water supply, sewerage and drainage services	D37	250,755	12,293	8,398	20,691	8.25	3,788	66.20
Construction	E	210,735	12,614	9,752	22,366	10.61	7,441	28.32

Table G.13a: Electricity End Use[1, 2] for March Year 2000... (continued)

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
COMMERCIAL of which:		**6,918,978**	**370,962**	**328,477**	**699,439**	**10.11**	**137,730**	**50.24**
Wholesale and retail trade	F-G	2,082,599	111,018	104,527	215,545	10.35	51,748	40.25
Accommodation, cafes and restaurants	H	836,484	45,816	39,103	84,919	10.15	10,897	76.76
Road freight	I611	36,429	2,191	1,764	3,955	10.86	1,293	28.17
Road passenger	I612	10,560	606	692	1,298	12.29	282	37.45
Rail[2]	I62	57,778	1,979	2,892	4,871	8.43	494	116.96
Water	I63	21,930	837	824	1,661	7.57	111	197.57
Air	I64	132,367	5,198	3,229	8,427	6.37	249	531.59
Other transport, and services to transport	I65-I66	161,631	8,939	5,964	14,903	9.22	2,890	55.93
Storage	I67	142,198	7,007	5,350	12,357	8.69	1,629	87.29
Communication services	J	130,949	6,832	6,771	13,603	10.39	4,873	26.87
Finance, insurance, property and business services	K-L	1,334,833	70,647	61,348	131,995	9.89	19,229	69.42
Government, administration and defence	M	556,285	28,895	24,769	53,664	9.65	6,290	88.44
Education	N	362,598	20,681	17,824	38,505	10.62	6,159	58.87
Health and community services	O	354,207	16,533	14,181	30,714	8.67	6,236	56.80
Cultural, recreational, personal and other services	P-Q	698,130	43,783	39,239	83,022	11.89	25,350	27.54
NON-RESIDENTIAL[3]:		**21,678,051**	**952,372**	**623,857**	**1,576,229**	**7.27**	**249,786**	**86.79**
RESIDENTIAL:		**11,057,016**	**699,341**	**612,675**	**1,312,016**	**11.87**	**1,443,579**	**7.66**
TOTAL RETAIL SALES:		**32,735,067**	**1,651,713**	**1,236,532**	**2,888,245**	**8.82**	**1,693,365**	**19.33**

1. Cost figures provided here may not be totally accurate for reasons outlined on page 3. While absolute values for these factors are at least indicative, inter-year movements in such factors that can be obtained from comparison of tables G.13a, G.13b and G.13c should be viewed with caution.
2. Note that on-site cogeneration demand is not included in this end-use summary. It has been assumed that most of the electricity generated by on-site cogeneration plants (about 1.6 TWh) was consumed on site.
3. "Non-residential" includes Commercial and Industrial sectors.

Table G.13b: Electricity End Use[1, 2] for March Year 2001

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
IINDUSTRIAL of which:		**15,142,147**	**630,445**	**325,328**	**955,773**	**6.31**	**110,311**	**137.27**
Agriculture, agricultural services and hunting	A01-A02	1,073,511	60,315	52,925	113,240	10.55	69,771	15.39
Forestry and logging	A03	160,205	7,142	5,496	12,638	7.89	525	305.15
Commercial fishing	A04	62,538	2,893	1,938	4,831	7.72	316	197.91
Coal mining	B11	47,473	1,680	1,265	2,945	6.20	89	533.40
Oil and gas extraction	B12	63,946	1,423	1,166	2,589	4.05	38	1682.79
Other mining and quarrying, and services to mining	B13-B15	250,019	9,308	5,385	14,693	5.88	612	408.53
Meat and meat products	C211	547,334	23,348	15,056	38,404	7.02	415	1318.88
Dairy products	C212	216,396	9,330	7,706	17,036	7.87	239	905.42
Other food processing; beverages, malt, tobacco etc	C213-C219	526,550	25,057	17,916	42,973	8.16	5,886	89.46
Textile, clothing, footwear and leather	C22	187,010	9,300	7,066	16,366	8.75	1,351	138.42
Log sawmilling and timber dressing, etc	C231-C232	1,407,548	61,508	23,407	84,915	6.03	1,696	829.92
Paper and paper products	C233	2,582,121	96,184	58,587	154,771	5.99	380	6795.06
Printing, publishing and recorded media	C24	160,590	8,750	5,729	14,479	9.02	1,527	105.17
Petroleum refining	C251	82,064	3,223	2,657	5,880	7.17	60	1367.73
Petroleum and coal products	C252	3,894	193	186	379	9.73	59	66.00
Chemicals and chemical products	C253-C254	203,366	9,755	5,558	15,313	7.53	1,615	125.92
Rubber and plastic products	C255-C256	202,609	10,510	6,167	16,677	8.23	2,159	93.84
Non-metallic mineral products	C26	280,326	9,921	7,572	17,493	6.24	974	287.81
Iron and steel	C271	819,494	40,514	8,708	49,222	6.01	354	2314.95
Basic non-ferrous metals	C272	5,017,391	176,302	33,331	209,633	4.18	70	71677.01
Basic non-ferrous metal products	C273	15,745	926	571	1,497	9.51	109	144.45
Metal products *(other)*	C274-C276	195,010	10,539	9,472	20,011	10.26	2,515	77.54
Transport equipment	C281-C282	67,248	3,293	2,633	5,926	8.81	803	83.75
Photographic and scientific equipment	C283	3,144	175	151	326	10.37	138	22.78
Electronic, electrical and industrial equipment etc	C284-C286	197,817	10,295	8,518	18,813	9.51	2,142	92.35
Other manufacturing	C29	142,726	5,618	4,302	9,920	6.95	2,206	64.70
Electricity supply	D361	57,875	3,225	3,375	6,600	11.40	1,407	41.13
Gas supply (including LPG and CNG)	D362	127,342	4,956	8,754	13,710	10.77	107	1190.11
Water supply, sewerage and drainage services	D37	248,924	13,485	9,181	22,666	9.11	3,375	73.76
Construction	E	191,931	11,277	10,550	21,827	11.37	9,373	20.48

Table G.13b: Electricity End Use[1, 2] for March Year 2001... (continued)

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
COMMERCIAL of which:		**6,899,407**	**386,299**	**325,208**	**711,507**	**10.31**	**136,525**	**50.54**
Wholesale and retail trade	F-G	1,872,382	104,602	96,766	201,368	10.75	43,838	42.71
Accommodation, cafes and restaurants	H	780,730	46,012	36,715	82,727	10.60	13,214	59.08
Road freight	I611	35,123	2,152	1,826	3,978	11.33	1,166	30.12
Road passenger	I612	9,020	596	487	1,083	12.01	316	28.54
Rail[2]	I62	105,152	5,012	5,132	10,144	9.65	1,030	102.09
Water	I63	21,676	943	700	1,643	7.58	116	186.86
Air	I64	65,039	3,838	2,309	6,147	9.45	372	174.84
Other transport, and services to transport	I65-I66	196,247	9,571	7,054	16,625	8.47	2,396	81.91
Storage	I67	150,258	6,628	5,281	11,909	7.93	1,764	85.18
Communication services	J	295,880	20,224	15,720	35,944	12.15	5,931	49.89
Finance, insurance, property and business services	K-L	1,300,330	71,074	56,316	127,390	9.80	19,071	68.18
Government, administration and defence	M	585,610	34,080	27,302	61,382	10.48	8,068	72.58
Education	N	432,821	24,237	20,765	45,002	10.40	8,012	54.02
Health and community services	O	438,635	19,113	16,667	35,780	8.16	6,917	63.41
Cultural, recreational, personal and other services	P-Q	610,504	38,217	32,168	70,385	11.53	24,314	25.11
NON-RESIDENTIAL[3]:		**22,041,554**	**1,016,744**	**650,536**	**1,667,280**	**7.56**	**246,836**	**89.30**
RESIDENTIAL:		**11,306,306**	**711,664**	**618,093**	**1,329,758**	**11.76**	**1,543,380**	**7.33**
TOTAL RETAIL SALES:		**33,347,860**	**1,728,409**	**1,268,629**	**2,997,038**	**8.99**	**1,790,216**	**18.63**

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2. Note that on-site cogeneration demand is not included in this end-use summary. It has been assumed that most of the electricity generated by on-site cogeneration plants (about 1.5 TWh) was consumed on site.
3. "Non-residential" includes Commercial and Industrial sectors.

Table G.13c: Electricity End Use[1, 2] for March Year 2002

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
INDUSTRIAL of which:.....		**14,525,124**	**688,521**	**285,993**	**974,514**	**6.71**	**101,764**	**142.73**
Agriculture, agricultural services and hunting	A01-A02	1,398,030	77,255	71,475	148,730	10.64	71,695	19.50
Forestry and logging	A03	200,192	9,471	4,186	13,657	6.82	456	439.02
Commercial fishing	A04	86,890	3,964	2,382	6,346	7.30	272	319.45
Coal mining	B11	91,701	5,059	2,457	7,516	8.20	85	1078.84
Oil and gas extraction	B12	17,610	1,255	816	2,071	11.76	83	212.17
Other mining and quarrying, and services to mining	B13-B15	238,279	8,477	5,209	13,686	5.74	492	484.31
Meat and meat products	C211	499,879	21,912	12,652	34,564	6.91	396	1262.32
Dairy products	C212	346,621	12,831	8,612	21,443	6.19	226	1533.72
Other food processing; beverages, malt etc	C213-C219	462,610	21,173	15,203	36,376	7.86	1,821	254.04
Textile, clothing, footwear and leather	C22	184,570	8,274	6,207	14,481	7.85	1,146	161.06
Log sawmilling and timber dressing etc	C231-C232	1,213,187	62,881	20,238	83,119	6.85	1,305	929.65
Paper and paper products	C233	1,949,557	90,031	20,494	110,525	5.67	191	10207.10
Printing, publishing and recorded media	C24	185,270	8,865	6,949	15,814	8.54	1,280	144.74
Petroleum refining	C251	42,147	1,942	2,565	4,507	10.69	37	1139.11
Petroleum and coal products	C252	2,498	127	122	249	9.97	28	89.21
Chemicals and chemical products	C253-C254	254,083	11,594	5,086	16,680	6.56	600	423.47
Rubber and plastic products	C255-C256	226,164	10,493	7,066	17,559	7.76	501	451.43
Non-metallic mineral products	C26	282,536	12,566	6,819	19,385	6.86	789	358.09
Iron and steel	C271	642,532	37,126	8,154	45,280	7.05	550	1168.24
Basic non-ferrous metals	C272	4,964,318	217,985	30,917	248,902	5.01	90	55159.09
Basic non-ferrous metal products	C273	62,571	2,892	543	3,435	5.49	73	857.14
Metal products *(other)*	C274-C276	145,078	7,307	7,041	14,348	9.89	1,429	101.52
Transport equipment	C281-C282	51,937	2,696	2,313	5,009	9.64	863	60.18
Photographic and scientific equipment	C283	3,706	184	172	356	9.61	139	26.66
Electronic, electrical and industrial equipment etc	C284-C286	239,757	11,263	7,211	18,474	7.71	2,016	118.93
Other manufacturing	C29	132,243	6,877	6,040	12,917	9.77	1,855	71.29
Electricity supply	D361	84,363	5,799	3,518	9,317	11.04	1,660	50.82
Gas supply (including LPG and CNG)	D362	21,092	2,165	812	2,977	14.11	128	164.78
Water supply, sewerage and drainage services	D37	215,624	9,834	7,576	17,410	8.07	2,775	77.70
Construction	E	280,079	16,223	13,158	29,381	10.49	8,783	31.89

Table G.13c: Electricity End Use[1, 2] for March Year 2002... (continued)

	ANZSIC	Consumption MWh	Energy Cost $(000)	Line Cost $(000)	Total Cost $(000)	Average Cost c/kWh	No. of Consumers	Average Consumption MWh
COMMERCIAL of which:.....		**6,964,466**	**372,880**	**335,039**	**707,919**	**10.16**	**128,683**	**54.12**
Wholesale and retail trade	F-G	2,107,774	114,495	103,214	217,709	10.33	43,049	48.96
Accommodation, cafes and restaurants	H	992,491	50,191	45,596	95,787	9.65	12,260	80.95
Road freight	I611	30,397	1,992	1,876	3,868	12.72	1,193	25.48
Road passenger	I612	4,386	305	286	591	13.47	300	14.62
Rail[2]	I62	94,105	4,226	5,128	9,354	9.94	898	104.79
Water	I63	20,412	804	736	1,540	7.54	136	150.09
Air	I64	64,055	2,835	2,541	5,376	8.39	407	157.38
Other transport, and services to transport	I65-I66	152,650	7,569	6,794	14,363	9.41	2,327	65.60
Storage	I67	126,317	6,178	4,721	10,899	8.63	1,604	78.75
Communication services	J	264,077	11,879	11,693	23,572	8.93	2,929	90.16
Finance, insurance, property and business services	K-L	970,155	60,337	48,123	108,460	11.18	17,384	55.81
Government, administration and defence	M	589,424	30,190	27,025	57,215	9.71	9,069	64.99
Education	N	479,987	23,907	23,812	47,719	9.94	7,223	66.45
Health and community services	O	466,091	23,963	18,875	42,838	9.19	7,358	63.34
Cultural, recreational, personal and other services	P-Q	602,145	34,009	34,619	68,628	11.40	22,546	26.71
NON-RESIDENTIAL[3] :.....		**21,489,590**	**1,061,401**	**621,032**	**1,682,433**	**7.83**	**230,447**	**93.25**
RESIDENTIAL:.....		**11,660,201**	**781,307**	**718,417**	**1,499,724**	**12.86**	**1,501,322**	**7.77**
TOTAL RETAIL SALES:.....		**33,149,791**	**1,842,708**	**1,339,449**	**3,182,157**	**9.60**	**1,731,769**	**19.14**

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2. Note that on-site cogeneration demand is not included in this end-use summary. It has been assumed that most of the electricity generated by on-site cogeneration plants (about 1.6 TWh) was consumed on site.
3. "Non-residential" includes Commercial and Industrial sectors.