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Copies of this Statistical Yearbook are distributed worldwide to utilities, business undertakings, banks, management consultants, consulting engineers, research institutions as well as industry and consumer associations.

Historical overview

1882 South Africa was one of the first countries in the world to use electricity on a commercial basis. As elsewhere, the supply of electricity began under the auspices of various municipalities. Kimberley was the first to introduce electric street lights in 1882, before London had electric lights. In 1891 Johannesburg became the first town to install a reticulation system, followed by Cape Town and Pretoria in 1894, Pietermaritzburg in 1896, Durban in 1897, East London in 1899, Bloemfontein in 1900, Kimberley in 1904 and Port Elizabeth in 1906.

1906 In the 1890s mining groups combined to erect power stations to supply their own needs. The Victoria Falls Power Company Limited (VFP) was registered in 1906 to harness the Victoria Falls and supply electricity to industries on the Witwatersrand and in Southern Rhodesia, now Zimbabwe. For technical and financial reasons the project was abandoned and the VFP concentrated on the exploitation of Transvaal coal. By 1915 it operated four power stations under the name of The Victoria Falls and Transvaal Power Company and at one stage was the largest utility in the British Empire.

1923 The need for a national power system which could meet the demands of the entire country led to the Electricity Act of 1922 and the establishment of the Electricity Supply Commission in 1923. The Commission's first chairman was Dr H.J. van der Bijl, an internationally recognised scientist who also founded Iscor and the Industrial Development Corporation (IDC). Eskom began generating power in 1925 and soon became South Africa's leading electricity supplier.

1948 Eskom took over the VFP in 1948, a further step towards a national supply system. By the end of 1990, Eskom was supplying more than half the electricity in Africa. It ranks among the largest electricity utilities in the world.

1962 Eskom's first power stations were far advanced for their time, but small by today's standards with sets of 33 MW and later 60 MW. In 1962, the first "big" sets, 100 MW and 125 MW, were commissioned. This led to the present 600 MW sets which are among the largest and technologically most advanced in the world.

1973 The idea of an integrated transmission system, linking all major cities in the country, was first raised in the 1920s. By 1973 this had become a reality when all Eskom undertakings had been connected. Eskom has more than 220 000 km of power lines of which 22 000 km are part of the national grid. In 1987, the first 765 kV lines were energised.

1984 With vast deposits of coal available, Eskom's base-load stations are mainly coal fired. It has also harnessed South Africa's meagre hydro potential. In addition, in 1984, South Africa's first nuclear power station became operational.

1985 Eskom was restructured in 1985 to meet the electricity demands of a changing South Africa. The Electricity Supply Commission was replaced by a body corporate known as Escom, controlled and managed by the Electricity Council and Management Board. In 1987 the Eskom Act and the Electricity Act were promulgated and Escom's name was changed to Eskom. Eskom commits itself to being a professionally managed, customer orientated business.

1991 Eskom is restructured to speed up electrification in South Africa and to harmonise with the new socio-political situation in South Africa.

Electricity Council

Dr J.B. Maree, OMSG SSAS
(Chairman)
G.P. Croeser
Dr J.W.L. de Villiers, OMSG
A.B. Dickman
Prof. C.R.M. Dlamini
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Dr D.C. Neethling
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A.A. Sealey
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R.C. Webb
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Management Board

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M.L. Davis *Executive Director, Finance & Services*
R.A. Forbes *Executive Director, Sales & Customer Service*
A.J. Ham *Executive Director, Technology*
Dr G.F. Lindeque *Executive Director, Human Resources*
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The information relevant to Eskom in this Yearbook may be reproduced subject to acknowledgement of source.

Additional copies of this Statistical Yearbook, as well as of the Annual Report, may be obtained from the Communication Manager at the above address.

Hierdie publikasie is ook in Afrikaans verkrygbaar.

Foreword

The Eskom Statistical Yearbook contains a wealth of electricity statistics from sub-Saharan Africa. I trust they illustrate to what extent this portion of the infrastructure in Africa is developed and can lead the way for and support development in other areas.

The African utilities are showing increasingly by their initiatives that they view cooperation across borders as crucial to satisfying common needs. Each year we are moving closer to the realisation of a regional electricity grid.

Neither South Africa nor southern African can show acceptable rates of economic growth unless the vast majority of inhabitants has access to electricity. We are concentrating our efforts on achieving this goal, and the statistics show how far we have progressed. We are happy to pool our experience and expertise with all other interested parties.

I.C. McRAE
Chief Executive
30 June 1991

Conversion factors and equivalents

Heat/energy

1 kWh	= 3 412,14 Btu = 3,6 MJ = 859,845 kcals
1 therm	= 29,307 1 kWh = 100 000 Btu = 105,506 MJ = 25,199 6 Mcals
1 GJ	= 277,778 kWh = 9,478 17 therms = 238,846 Mcals
1 CHU ^a	= 1,8 Btu = 1 900,4 J (approx)
1 Q	= 10 ¹⁸ Btu
1 quad	= 10 ¹⁵ Btu

Calorific value, mass basis

1 Btu/lb	= 2,326 kJ/kg
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Pressure

1 lb/in ²	= 6,894 76 kPa (or kN/m ²) = 0,070 31 kg/cm ² = 0,068 947 6 bar
1 bar	= 100 kPa = 10 ⁵ N/m ² = 14,503 68 lb/in ²

Other

1 cusec	= 0,028 317 m ³ /s
1 mile	= 1,609 344 km
1 lb	= 0,453 592 37 kg
1 gal (imp)	= 4,546 09 litres (1 litre = 1 dm ³ = 1 000 cm ³)
1 gal (US)	= 3,785 412 litres
1 ton (long)	= 1,016 05 tons (metric ton)
1 ton (short)	= 0,907 185 tons (metric ton)
1 hp (UK)	= 745,700 W (or J/s)
1 hp (metric)	= 735,499 W (or J/s)

Approximate equivalents

1 ft ³ natural gas	approximately equals	1,000 Btu
1 ton gas/diesel oil	approximately equals	431 therms
1 ton crude oil	approximately equals	7,35 barrels or 432 therms
1 ton fuel oil	approximately equals	6,55 barrels or 406 therms
1 ton power station oil	approximately equals	406 therms
1 ton power station coal ^b	approximately equals	231 therms
1 ton industrial coal	approximately equals	261 therms

Power station equivalents

475 tons of coal or 160 tons of oil will produce about 1 GWh in a typical modern power station. One ton of natural uranium, when used in a Magnox reactor, will supply about 30 GWh.

a Centigrade heat unit.

b For South African power stations:

Tutuka: 1 ton approx. equals 200 therms or 21,12 GJ

Lethabo: 1 ton approx. equals 147 therms or 15,48 GJ

GENERAL

Symbols and abbreviations used

– = not applicable/not available

kW = kilowatt

MW = megawatt (1 000 kW)

kWh = kilowatt hour (unit)

MWh = megawatt hour (1 000 units)

GWh = gigawatt hour (1 000 000 units)

The figures in the tables have, where necessary, been rounded off to the nearest final digit shown. There may, therefore, be slight discrepancies between the sums of the constituent items and the totals shown.

ESKOM: Statistical overview

Table 1

	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982
Financial, R million										
Turnover	11 726	10 736	9 271	8 159	7 046	5 845	4 625	3 832	3 302	2 695
Net income ^a	988	845	728	816	702	781	738	732	744	671
Fixed assets in commission, at cost	39 990	35 753	31 199	28 680	24 986	19 907	15 496	12 058	9 218	7 689
Works under construction and construction materials	3 668	5 771	6 638	5 512	6 075	7 753	8 552	7 271	6 434	5 198
Net capital expenditure	3 335	3 662	3 993	3 969	3 895	3 755	4 757	3 719	2 757	2 741
Total net borrowings	27 266	26 590	24 630	22 779 ^l	21 475	19 462	17 621	13 861	10 686	8 534
Plant performance										
Total power station capacity, installed rating, MW	38 396	35 673	34 141	33 176	31 261	28 086	25 716	24 514	22 949	21 749
Total power station capacity, assigned sent-out rating, MW	36 228	33 843	32 403	31 465	29 618	26 682	24 359	23 168	21 673	20 523
Peak demand on integrated Eskom system, MW	22 342	21 863	21 871	20 589	20 001	18 278	17 852	17 296	15 639	15 532
Average station availability % ^b	76,1	75,0	78,1	79,1	79,2	78,5	77,5	74,9	71,9	74,3
Station load factor (after excess capacity management), % ^c	49,8 (58,5)	50,5 (57,3)	51,1	52,3	54,3	55,5	58,0	58,1	55,6	59,3
Integrated Eskom system load factor, %	74,6	74,9	73,7	75,5	73,9	77,3	76,2	75,0	76,9	75,3
Water consumed in Eskom power stations, Mℓ	237 660	257 000	260 154	262 804	274 804	262 372	275 716	269 868	255 654	265 933
Coal burnt, thousands of tons	70 523,2	70 861,2	67 529,3	64 489,6	65 787,0	58 915,9	59 488,6	58 703,6	55 010,2	55 198,4
Coal burnt, kg/kWh sent out	0,518	0,526	0,521	0,521	0,535	0,515	0,522	0,533	0,546	0,551
Average heat rate of coal-fired stations, MJ/kWh sent out	10,49	10,66	10,72	10,71	11,00	10,95	11,26	11,45	11,57	11,82
Average heat content of coal (as received), MJ/kg	20,21	20,26	20,20	20,44	20,48	21,19	21,52	21,38	21,11	21,39
Overall thermal efficiency, sent-out basis, %	34,3	33,7	33,6	33,6	32,7	32,9	32,0	31,4	31,1	30,5
Average cost of coal burnt, R/ton	25,70	23,91	20,94	18,67	17,11	14,87	13,25	12,55	12,44	11,75
Average cost of coal burnt, c/kWh sent out	1,3354	1,2575 ^l	1,1023	0,9727	0,9155	0,7665	0,6916	0,6692	0,6793	0,6471
Electricity output										
Total electricity sent out in South Africa, GWh ^d	148 919	147 069 ^l	146 162 ^l	140 802	134 751	130 056	126 206	120 835	112 366	109 536
Total electricity sent out as a % of South African total	98,0	97,4	96,7	97,0	96,1	95,1	94,5	94,3	93,8	93,6
Total electricity sent out on Eskom system (Eskom stations and purchased), GWh ^e	148 934	146 320	143 548	139 197	132 774	126 766	122 494	117 086	108 321	104 920
Total sent out from Eskom stations, GWh	148 671	146 047	143 204	138 837	132 507	126 511	121 987	116 581	103 295	102 769
Subtotal from coal-fired stations, GWh	135 743	134 744	128 304	123 777	122 947	114 298	113 941	110 094	100 738	100 217
Subtotal from hydro-electric stations, GWh	1 980	1 010	2 759	3 162	1 617	1 623	624	560	595	1 016
Subtotal from pumped storage stations, GWh	1 804	1 841	1 039	1 403	1 774	1 785	2 107	1 994	1 957	1 519
Subtotal from diesel and gas-turbine stations, GWh	0	3	3	2	2	2	0	8	5	17
Subtotal from nuclear power station, GWh	9 144	8 449	11 099	10 493	6 167	8 803	5 315	3 925	–	–
Total purchased by Eskom and sent out on Eskom system, GWh	263	273	344	360	267	255	507	505	5 026	2 151
Total consumed by Eskom power stations, GWh ^f	2 933	2 953	2 265	2 567	3 229	3 018	3 265	3 188	2 917	2 404
Total available for distribution, GWh	146 001	143 367	141 283	136 630	129 545	123 748	119 229	113 898	105 404	102 516
Total sold, GWh ^g	138 658	136 155	134 347	129 493	122 524	117 353,0	112 305,9	106 904,1	98 251,1	96 135,9
Growth in GWh sales, %	1,8	1,4	3,7	5,7	4,4	4,5	5,1	8,8	2,2	2,4
Employees										
Total number at 31 December	46 637	50 000	51 554	56 726	56 830	60 800	66 000	64 560	62 420	58 850
GWh sold per employee	2,973	2,723 ^l	2,606 ^l	2,283 ^l	2,156 ^l	1,930 ^l	1,702 ^l	1,656 ^l	1,574 ^l	1,634 ^l
Power station assigned sent-out rating, MW										
Subtotal coal fired (17 stations) ^h	32 058	29 673	28 233	27 295	25 848	22 912	20 637	20 366	19 791	18 641
Subtotal gas turbine (3 stations) ⁱ	390	390	390	390	390	390	342	342	342	342
Subtotal hydro-electric (2 stations) ^j	540	540	540	540	540	540	540	540	540	540
Subtotal pumped storage (2 stations) ^k	1 400	1 400	1 400	1 400	1 000	1 000	1 000	1 000	1 000	1 000
Subtotal nuclear (1 station)	1 840	1 840	1 840	1 840	1 840	1 840	1 840	920	–	–
Total power station assigned sent-out rating, MW	36 228	33 843	32 403	31 465	29 618	26 682	24 359	23 168	21 673	20 523

a. Certain adjustments had to be made to make figures comparable with current figures, which are presented in terms of the Eskom Act of 1987. b. Capacity hours available x 100/total capacity hours in year. c. kWh sent out x 100/(average assigned sent-out rating x hours in year). d. Electricity sent out by Eskom, some industries and municipalities which generate all or part of their electricity requirements. e. Includes Eskom electricity sent out to neighbouring countries.

f. In respect of pumped-storage facilities and synchronous condenser mode of operation. See Note g, Table 6. g. Difference between electricity available for distribution and electricity sold is due to transmission losses. h. Base-load stations, except in the case of older, uneconomical plant, which are used only for peak demands or in emergencies. i. Used only for peaking or in emergencies. j. Use restricted to peaking and emergencies and availability of water in Hendrik Verwoerd and P.K. le Roux dams. k. Pumped-storage facilities are net users of electricity and are used for peaking. Water is pumped during off-peak periods to generate electricity during peak periods. l. Revised figures.

ESKOM: Highlights of the year

Table 2

	1991	1990	% Change 1990-91	% Average yearly increase 1987-91
Financial				
Turnover, R million	11 726	10 736	9,2	14,9
Net income, R million	988	845	16,9	4,8
Fixed assets in commission at cost, R million	39 990	35 753	11,9	14,4
Works under construction ¹ , R million	3 668	5 771	-36,4	-13,9
Net capital expenditure, R million	3 335	3 662	-8,9	-2,3
Net interest-bearing debt, R million	27 266	26 590	2,5	7,0
Average price per KWh sold, cents	8,47	7,89	7,2	11,2
Average cost of coal burnt, rand per ton	25,70	23,91	7,5	11,6
Operations				
Electricity sold, GWh	138 658	136 155	1,8	3,4
Coal burnt in power stations, Mt	70,5	70,9	-0,5	3,7
Water consumed by power stations, Mℓ	237 660	257 000	-7,5	-2,0
Peak demand on integrated system, MW	22 342	21 863	2,2	4,1
	(21.06.91)	(29.06.90)		
Assets in commission				
at 31 December				
Installed capacity, MW	38 396	35 673	7,6	6,5
Assigned sent-out rating, MW	36 228	33 843	7,0	6,3
Power lines, km	226 817	220 112	3,0	5,9
Staff employed				
at 31 December	46 637	50 000	-6,7	-5,2

1. Includes construction materials.

ESKOM: Financial statistics

Table 3

	1991	1990	1989
Energy sold, thousand GWh	138	136	134
Annual increase, thousand GWh	2	2	5
Annual increase, %	1,8	1,36	3,75
Electricity turnover (R million)	11 726	10 736	9 271
Annual increase, %	9,2	15,8	13,63
Cents per kWh	8,46	7,88	6,90
Annual increase, %	7,36	14,20	9,52
Charges against revenue (R million)			
Total operating expenditure	7 173	6 366	5 644
Annual increase, %	12,68	12,79	16,18
Depreciation	1 630	1 441	1 364
Annual increase, %	13,12	5,65	18,61
Interest and finance charges	3 240	3 302	2 899
Annual increase, %	-1,88	13,90	16,66
Net income	988	845	728
Assets (R million)			
Total fixed assets	35 405	34 030	31 728
Assets in commission	30 661^a	28 047 ^a	25 090
Works under construction and construction materials	3 668	5 771	6 638
Non-current assets	2 387	2 501	2 185
Stores, material and fuel	1 433	1 312	1 259
Debtors	1 020	874	920
Financing (R million)			
Net loans and debt	27 266	26 590	24 630
Other liabilities	2 014	2 196	2 405
Reserves and provisions	10 965	9 931	9 057
Debt/equity ratio	2,5	2,7	2,8

a. Excluding plant at mothballed power stations.

ESKOM: Summary of operations

Table 4

Year	Coal-fired power stations					Coal cost	
	Coal used					Average R/ton	c/kWh sent out
	Thousands of tons	Average heat content (as received) MJ/kg	Consumption sent-out basis kg/kWh	Average heat rate sent-out basis MJ/kWh	Overall thermal efficiency sent-out basis %		
1952	7 113,4	22,75	0,865	19,68	18,3	1,20	0,1037
1953	7 393,9	23,08	0,837	19,32	18,6	1,33	0,1116
1954	8 024,9	23,06	0,805	18,56	19,4	1,41	0,1136
1955	8 999,7	22,89	0,788	18,04	20,0	1,52	0,1201
1956	9 688,5	22,96	0,765	17,56	20,5	1,62	0,1236
1957	10 220,6	22,79	0,750	17,09	21,1	1,69	0,1266
1958	10 784,1	22,73	0,743	16,89	21,3	1,77	0,1312
1959	11 548,7	22,44	0,732	16,43	21,9	1,82	0,1329
1960	12 512,6	22,52	0,723	16,28	22,1	2,03	0,1466
1961	13 194,9	22,39	0,722	16,17	22,3	2,10	0,1516
1962	13 955,5	22,22	0,719	15,98	22,5	2,09	0,1507
1963	14 721,1	22,15	0,708	15,68	23,0	2,11	0,1492
1964	15 654,7	22,15	0,692	15,33	23,5	2,07	0,1430
1965	16 726,7	22,39	0,680	15,23	23,6	2,09	0,1423
1966	16 982,3	22,20	0,666	14,79	24,4	2,23	0,1486
1967	18 307,7	22,44	0,645	14,47	24,9	2,30	0,1482
1968	19 133,9	22,63	0,620	14,03	25,6	2,33	0,1446
1969	19 982,9	22,73	0,595	13,52	26,6	2,37	0,1412
1970	21 630,6	22,97	0,580	13,32	27,0	2,26	0,1308
1971	23 416,2	23,30	0,576	13,42	26,8	2,25	0,1297
1972	24 952,8	22,89	0,571	13,07	27,5	2,25	0,1285
1973	27 907,9	22,47	0,563	12,65	28,5	2,39	0,1348
1974	30 891,4	22,42	0,560	12,56	28,7	2,92	0,1637
1975	34 231,7	22,21	0,567	12,59	28,6	4,05	0,2295
1976	37 257,4	21,87	0,579	12,66	28,4	5,39	0,3122
1977	37 505,6	21,78	0,576	12,55	28,7	6,22	0,3582
1978	39 589,5	21,61	0,574	12,44	28,9	6,67	0,3824
1979	43 264,9	21,22	0,580	12,33	29,2	6,96	0,4045
1980	46 755,0	21,34	0,568	12,16	29,6	8,12	0,4614
1981	53 903,7	21,25	0,563	12,01	30,0	9,71	0,5473
1982	55 198,4	21,39	0,551	11,82	30,5	11,75	0,6471
1983	55 010,2	21,11	0,546	11,57	31,1	12,44	0,6793
1984	58 703,6	21,38	0,533	11,45	31,4	12,55	0,6692
1985	59 488,6	21,52	0,522	11,26	32,0	13,25	0,6916
1986	58 915,9	21,19	0,515	10,95	32,9	14,87	0,7665
1987	65 787,0	20,48	0,535	11,00	32,7	17,11	0,9155
1988	64 489,6	20,44	0,521	10,71	33,6	18,67	0,9727
1989	67 529,3	20,20	0,523	10,72	33,6	20,94	1,1023
1990	70 861,2	20,26	0,526	10,66	33,7	23,91	1,2575 ^c
1991	70 523,2	20,21	0,520	10,49	34,3	25,70	1,3354

^a GWh sent out x 100/(average assigned sent-out rating x hours in year)

^b After excess capacity management.

^c Revised figure.

Power station output (sent-out basis)

Coal-fired stations GWh	Hydro-electric stations GWh	Pumped-storage stations GWh	Diesel and gas-turbine stations GWh	Nuclear station GWh	Total power station output GWh	Total power station capacity assigned sent-out rating at 31 December MW	Average power station plant load factor sent-out basis ^a %
8 220	6	–	1	–	8 227	1 454	66,9
8 838	7	–	–	–	8 845	1 635	65,5
9 971	6	–	–	–	9 977	1 846	66,4
11 419	6	–	–	–	11 425	2 145	65,9
12 663	7	–	–	–	12 670	2 498	61,2
13 634	6	–	–	–	13 640	2 555	61,1
14 511	5	–	–	–	14 516	2 748	62,0
15 774	3	–	–	–	15 777	2 983	62,6
17 306	2	–	–	–	17 308	3 091	65,2
18 282	2	–	–	–	18 284	3 226	66,2
19 401	3	–	–	–	19 404	3 406	65,8
20 789	4	–	–	–	20 793	3 788	65,7
22 634	5	–	–	–	22 639	4 077	65,2
24 583	–	–	–	–	24 583	4 181	67,4
25 504	–	–	–	–	25 504	4 377	67,1
28 371	–	–	–	–	28 371	5 328	66,8
30 843	–	–	–	–	30 843	5 800	62,9
33 598	–	–	–	–	33 598	6 441	62,1
37 321	–	–	–	–	37 321	7 060	62,9
40 645	94	–	–	–	40 739	8 373	61,3
43 662	813	–	–	–	44 475	8 849	59,6
49 570	189	–	–	–	49 759	9 482	62,5
55 141	1 110	–	–	–	56 251	10 002	66,3
60 400	1 098	–	–	–	61 498	10 522	68,6
64 309	1 853	–	26	–	66 188	11 688	66,8
65 114	1 924	–	12	–	67 050	12 756	61,9
69 004	1 887	–	11	–	70 902	13 595	60,7
74 485	1 144	–	14	–	75 643	15 056	60,9
82 342	992	–	28	–	83 362	17 339	57,8
95 675	1 653	415	81	–	97 824	18 989	62,2
100 217	1 016	1 519	17	–	102 769	20 523	59,3
100 738	595	1 957	5	–	103 295	21 673	55,6
110 094	560	1 994	8	3 925	116 581	23 168	58,1
113 941	624	2 107	0	5 315	121 987	24 359	58,0
114 298	1 623	1 785	2	8 803	126 511	26 682	55,5
122 947	1 617	1 774	2	6 167	132 507	29 618	54,3
123 777	3 162	1 403	2	10 493	138 837	31 465	52,3
128 304	2 759	1 039	3	11 099	143 204	32 403	51,1
134 744	1 010	1 841	3	8 449	146 047	33 843	57,3 ^b
135 743	1 980	1 804	0	9 144	148 671	36 228	58,5 ^b

ESKOM: Power station operating statistics

for the year ended 31 December 1991

Table 5

Power station	Sent-out rating Jan to Dec 1991 MW	Energy sent out GWh	Maximum demand 1 hour sent out MW	Station load factor ^a %
Coal-fired stations				
Amot	1 955	10 839	1 939	63,3
Camden ^h				
Duvha	3 450	20 220	3 435	66,7
Grootvlei ^h				
Hendrina	1 900	10 196	1 822	61,3
Highveld ^h				
Ingagane ^h				
Kendal ⁱ	2 560	7 986	2 312	42,7
Komati ^h				
Kriel	2 700	13 408	2 630	56,7
Lethabo	3 558	16 684	3 726	53,4
Matimba ^b	3 690	19 964	3 355	71,5
Matla	3 450	20 408	3 536	67,5
Salt River	114	7		0,7
Taaibos ^h				
Tutuka	3 510	16 033	3 500	52,1
Wilge	110	69		7,2
Subtotal for coal-fired stations	26 997	135 743^f		57,4
Gas-turbine stations				
Acacia	171	0	91	0
Port Rex	171	-1 ^e	126	0
Paratus	48	1	-	0,1
Subtotal for gas-turbine stations	390	0		0
Hydro-electric stations				
Hendrik Verwoerd	320	952	367	33,9
Vanderkloof	220	1 028	254	53,4
Subtotal for hydro-electric stations	540	1 980		41,9
Pumped storage stations				
Drakensberg	1 000	1 098	1 220	12,5
Palmiet	400	706	415	20,1
Subtotal for pumped storage stations	1 400	1 804		14,7
Nuclear station				
Koeberg	1 840	9 144	1 851	56,7
Subtotal for nuclear station	1 840	9 144		56,7
Total/weighted average all Eskom	31 167	148 671		54,5
Other power sources				
Cahora Bassa (Apollo)		-11 ^d		
SWAWEK		186	104	
Tescor		9		
Other		79		
Subtotal for other power sources	0	263		
Total/weighted average	31 167	148 934		54,5

^a Station load factor = $\frac{\text{kWh sent out} \times 100}{(\text{assigned sent-out rating}) \times \text{hours in year}}$

^b Operating statistics are based on average capacity during the year.

^c Availability = $\frac{\text{capacity hours available} \times 100}{\text{total capacity hours in year}}$

^d Auxiliary consumption of Apollo.

^e Auxiliary consumption exceeded energy generated.

^f Includes 71 GWh (negative), imported by mothballed stations.

^g Efficiency based on adjusted heat content.

^h Mothballed stations.

ⁱ Kendal units 3 and 4 non-commercial energy included and capacity used for load factor.

Specific water consumption £/kWh	Availability ^c %	Overall thermal efficiency % sent out	Fuel burnt tons	kg of coal/kWh sent out	Heat content of coal (as received) MJ/kg	Station heat rate MJ/kWh sent out
2,13	76,6	33,4	5 308 496	0,49	21,94	10,79
2,13	79,3	35,2	9 476 708	0,47	21,79	10,23
1,96	75,4	32,1	5 252 803	0,52	21,73	11,22
0,40	58,5	32,2	4 502 492	0,56	19,51 ^g	11,18
2,02	77,2	33,7	7 006 000	0,52	20,39	10,67
1,82	70,9	35,2	11 129 889	0,67	15,30	10,23
0,15	77,6	33,3	10 501 557	0,53	20,55 ^g	10,85
2,03	76,9	35,2	9 779 106	0,48	21,32	10,24
8,60	80,9	8,0	11 869	1,73	26,20	45,34
2,05	83,3	35,7	7 498 222	0,47	21,51	10,08
19,25	89,1	20,0	56 058	0,86	21,50	17,95
1,74	76,6	34,3	70 523 200	0,52	20,21	10,49
	76,5		307			
	98,0		236			
			200			
	87,3		743			
	94,4					
	95,4					
	94,8					
	73,0					
	95,2					
	79,3					
0,16	58,4	32,0				
0,16	58,4	32,0				
	76,1	34,2				

ESKOM: Power stations in commission

at 31 December 1991

Table 6

Name of station	Location	Number and rating of generator sets, MW	Total installed rating MW	Total assigned sent-out rating, MW ^a	Turbo generators in reserve storage Number	Total rating MW
Coal-fired stations						
Arnot ^b ⁱ	Middelburg, Tvl	6 x 350	2 100	1 955	–	–
Camden ^c	Ermelo	8 x 200	1 600	1 520	8	1 520
Duvha ^b	Witbank	6 x 600	3 600	3 450	–	–
Grootvlei ^c	Balfour	6 x 200	1 200	1 130	6	1 130
Hendrina ^b	Hendrina	10 x 200	2 000	1 900	–	–
Highveld ^d	Sasolburg	8 x 60	480	412	8	412
Ingagane ^c	Newcastle	5 x 100	500	465	5	465
Kendal ^b ^g	Witbank	4 x 686	2 744	2 560	–	–
Komati ^c	Middelburg, Tvl	5 x 100	500	473	5	473
		4 x 125	500	418	4	418
Kriel ^b	Bethal	6 x 500	3 000	2 850	–	–
Lethabo ^b	Sasolburg	6 x 618	3 708	3 558	–	–
Matimba ^b ^g	Ellisras	6 x 665	3 990	3 690	–	–
Matla ^b	Bethal	6 x 600	3 600	3 450	–	–
Salt River ^d	Cape Town	4 x 30	120	114	4	114
		2 x 60	120	114	–	–
Taaibos ^d	Sasolburg	8 x 60	480	440	8	440
Tutuka ^b	Standerton	6 x 609	3 654	3 510	–	–
Wilge ^d ^e	Witbank	2 x 30	60	56	–	–
		3 x 60	180	143	2	89
Subtotal coal-fired stations (17)			34 136	32 058	50	5 061
Gas-turbine and diesel stations^d						
Acacia	Cape Town	3 x 57	171	171	–	–
Port Rex	East London	3 x 57	171	171	–	–
Paratus	Walvis Bay	1 x 22,4	22,4	22,4	–	–
		4 x 6,4	25,6	25,6	–	–
Subtotal gas-turbine and diesel stations (3)			390	390	–	–
Hydro-electric stations^f						
Hendrik Verwoerd	Norvalspont	4 x 80	320	320	–	–
Vanderkloof	Petrusville	2 x 110	220	220	–	–
Subtotal hydro-electric stations (2)			540	540	–	–
Pumped storage stations^g						
Drakensberg	Bergville	4 x 250	1 000	1 000	–	–
Palmiet	Grabouw	2 x 200	400	400	–	–
Subtotal pumped storage stations (2)			1 400	1 400	–	–
Nuclear station						
Koeberg	Cape Town	2 x 965	1 930	1 840	–	–
Total in service, 25 Eskom stations			38 396	36 228	50	5 061

^a Difference between installed capacity and sent-out rating reflects auxiliary power consumption and reduced capacity caused by age of plant and/or low coal quality.

^b Base-load station.

^c Mothballed.

^d Stations used for peaking or emergency supplies.

^e Training.

^f Use restricted to peaking and emergencies and availability of water in Hendrik Verwoerd and P.K. le Roux dams.

^g Pumped storage facilities are net users of electricity and are used for peaking. Water is pumped during off-peak periods to generate electricity during peak periods.

^h Dry cooled unit specifications are based on design back-pressure and ambient air temperature.

ⁱ Since 31 December 1991 three units at Arnot Power Station have been mothballed.

ESKOM: Generating sets taken into service during 1991

Table 7

Station	Total installed rating, MW	Total sent-out rating, MW
Kendal, set 2	686	640
Kendal, set 3	686	640
Kendal, set 4	686	640
Matimba, set 6	665	615
Total	2 723	2 535

ESKOM: Generating sets on order

at 31 December 1991

Table 8

Name, type and location of power station	No. and installed rating of set MW	Sent-out rating of set MW	Total installed rating of station MW	Total sent-out rating of station MW	No. of sets in service (on order)	Total installed rating of sets on order	Total sent-out rating of sets on order	Year of completion first (last) set
Kendal, coal fired, Kendal	6 x 686	640	4 116	3 840	4 (2)	1 372	1 280	1988 (1993)
Majuba, coal fired, Volksrust	3 x 657 3 x 711	3 x 612 3 x 667	4 104	3 837	0 (6)	4 104	3 837	1996 (2001)
Total generating sets on order						5 476	5 117	

Dates on which sets on order will be taken into commercial service may change, depending on growth in electricity demand.

ESKOM: Generating sets taken into service during 1991

Table 7

Station	Total installed rating, MW	Total sent-out rating, MW
Kendal, set 2	686	640
Kendal, set 3	686	640
Kendal, set 4	686	640
Matimba, set 6	665	615
Total	2 723	2 535

ESKOM: Generating sets on order

at 31 December 1991

Table 8

Name, type and location of power station	No. and installed rating of set MW	Sent-out rating of set MW	Total installed rating of station MW	Total sent-out rating of station MW	No. of sets in service (on order)	Total installed rating of sets on order	Total sent-out rating of sets on order	Year of completion first (last) set
Kendal, coal fired, Kendal	6 x 686	640	4 116	3 840	4 (2)	1 372	1 280	1988 (1993)
Majuba, coal fired, Volksrust	3 x 657 3 x 711	3 x 612 3 x 667	4 104	3 837	0 (6)	4 104	3 837	1996 (2001)
Total generating sets on order						5 476	5 117	

Dates on which sets on order will be taken into commercial service may change, depending on growth in electricity demand.

ESKOM: Power stations with highest thermal efficiency 1991

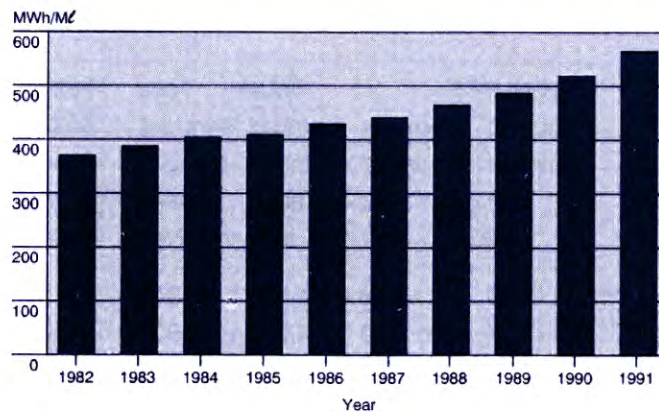
Table 9

Station	Steam conditions at turbine inlet		Assigned sent-out rating MW	Energy sent out KWh	Station load factor %	Gross calorific value ^b of coal MJ/kg	Overall thermal efficiency sent-out basis %	Date of commercial operation	Type of steam supply
	Pressure MPa (abs)	Temperature °C							
Tutuka	16,1	535	3 510	16 033	52,1	21,51	35,7	1985-90	Reheat
Matla	16,1	535	3 450	20 408	67,5	21,32	35,2	1979-83	Reheat
Lethabo	16,1	535	3 558	16 684	53,4	15,30	35,2	1986-90	Reheat
Duvha	16,1	535	3 450	20 220	66,7	21,79	35,2	1980-84	Reheat
Kriel	16,0	510	2 700	13 408	56,7	20,39	33,7	1976-79	Reheat
Arnot	15,9	510	1 955	10 839	63,3	21,94	33,4	1971-75	Reheat
Matimba	16,1	535	3 690	19 964	71,5	20,55	33,3	1987-91	Reheat
Kendal ^a	16,1	535	2 560	7 986	42,7	19,51	32,2	1988-93	Reheat
Hendrina	10,3	538	1 900	10 196	61,3	21,73	32,1	1970-77	Non-reheat

^a Operating statistics are based on average capacity during the year.

^b As received basis, except Kendal and Matimba, which are moisture-free basis.

Water consumption for power generation



ESKOM: Maximum one-hour demand

Table 10

	1991	1990	1989	1988	1987	1986	Increase 1990-91 %	Average yearly increase 1987-91 %
Maximum simultaneous one-hour demand on total Eskom system, MW	22 342	21 863	21 871	20 589	20 001	18 278	2,2	4,2
Date	21.06.91	29.06.90	21.07.989	24.06.88	26.06.87	20.06.86		
Time	09:00	09:00	09:00	09:00	09:00	09:00		

ESKOM: Transmission and distribution equipment in service

at 31 December 1991

Table 11

Circuit kilometres (excluding service connections on reticulation systems) of lines and cables and capacity of transformers in service

		1991	1990	Change
Main transmission system	765 kV	871	871	0
	533 kV DC (monopolar)	1 030	1 030	0
	400 kV	13 187	12 344	843
	275 kV	6 992	6 994	-2
	220 kV	1 239	1 239	0
Distribution lines	165 – 132 kV	17 011	16 358	653
	88 – 33 kV	21 063	20 996	67
Reticulation lines	22 kV and lower	165 424	160 280	5 144
Total all lines		226 818	220 112	6 706
Cables	165 – 132 kV	67	67	0
	88 – 33 kV	330	341	-11
	22 kV and lower	4 126	4 371	-245
Total all cables		4 523	4 779	-256
Transformers	Capacity MVA	148 439	146 697	1 742
	Number	135 316	129 394	5 922

Although two lines are constructed at 765 kV, only one runs at this voltage and the other at 400 kV.

ESKOM: Transmission and distribution equipment in service

at 31 December 1991

Table 11

Circuit kilometres (excluding service connections on reticulation systems) of lines and cables and capacity of transformers in service

		1991	1990	Change
Main transmission system	765 kV	871	871	0
	533 kV DC (monopolar)	1 030	1 030	0
	400 kV	13 187	12 344	843
	275 kV	6 992	6 994	-2
	220 kV	1 239	1 239	0
Distribution lines	165 – 132 kV	17 011	16 358	653
	88 – 33 kV	21 063	20 996	67
Reticulation lines	22 kV and lower	165 424	160 280	5 144
Total all lines		226 818	220 112	6 706
Cables	165 – 132 kV	67	67	0
	88 – 33 kV	330	341	-11
	22 kV and lower	4 126	4 371	-245
Total all cables		4 523	4 779	-256
Transformers	Capacity MVA	148 439	146 697	1 742
	Number	135 316	129 394	5 922

Although two lines are constructed at 765 kV, only one runs at this voltage and the other at 400 kV.

ESKOM: Transmission and distribution equipment by region

at 31 December 1991

Table 12

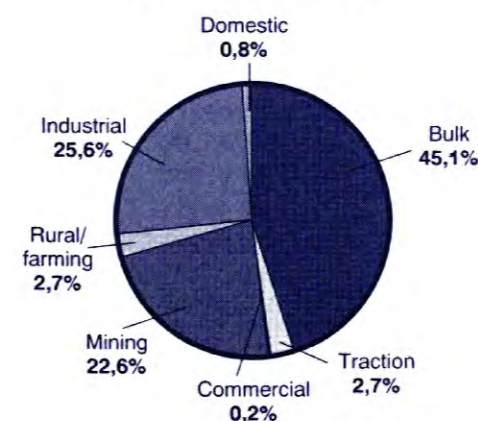
Circuit kilometres (excluding service connections on reticulation systems) of lines and cables and capacity of transformers in service

Transmission lines							
Region	765 kV ^a	533 kV DC (monopolar)	400 kV	275 kV	220 kV	165 kV to 132 kV	88 kV to 33 kV
Southern Transvaal			584	1 059		906	3 786
Western Transvaal		52	1 360	781		2 077	2 695
Eastern Natal			254	626		853	1 205
Eastern Transvaal	76	227	1 755	736		1 758	1 411
Central Transvaal		119	331	622		203	1 654
Orange Free State	795		1 164	692		2 074	2 247
Western Cape			704			666	1 142
North-Eastern Transvaal		632	276	731		2 122	413
Western Natal			1 672	966		415	2 275
Eastern Cape			2 675		822	1 809	1 369
Northern Cape			918	779	417	2 564	1 450
Southern Cape			1 494			1 565	1 415
Total	871	1 030	13 187	6 992	1 239	17 011	21 063

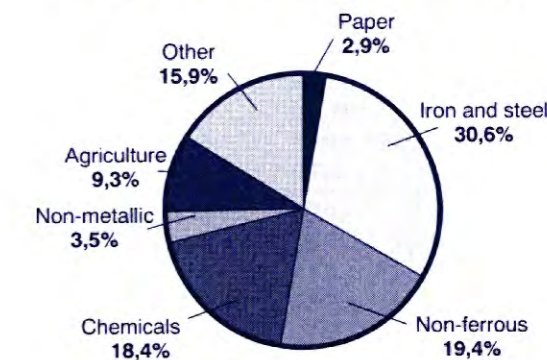
^aAlthough two lines are constructed at 765 kV, only one runs at this voltage at present, and the other at 400 kV.

		Underground cables				Transformers	
22 kV and lower	Total	165 kV to 132 kV	88 kV to 33 kV	22 kV and lower	Total	Capacity MVA	Number in service
5 278	11 612	30	52	243	325	29 593	6 979
25 516	32 481		0	16	16	20 687	18 863
8 962	11 899			741	741	7 223	10 575
13 298	19 261			43	43	17 915	9 235
5 791	8 720	13	194	547	754	16 542	10 881
25 528	32 499		2	29	31	13 347	15 305
7 236	9 748	24	78	2 050	2 152	9 106	8 807
9 945	14 119		0	25	25	7 552	8 781
15 160	20 489			150	150	9 407	13 790
21 856	28 532			223	223	7 280	11 592
15 836	21 964		0	3	3	5 192	9 318
11 021	15 494		4	56	61	4 595	11 190
165 424	226 818	67	330	4 126	4 523	148 439	135 316

Sales per category (excluding own use)



Sales to sectors of industry



ESKOM: Electricity sent out and sold

Table 13

Year	Electricity sent out							Peak demand on integrated Eskom system MW
	South Africa total sent out GWh	Eskom electricity sent out as % of South African total ^a	Electricity sent out from Eskom power stations GWh	Electricity purchased from other sources GWh	Own consumption GWh	Available for distribution GWh		
1952	11 678 ^b	74,1	8 227	424	–	8 651	1 265 ^b	
1953	12 823 ^b	73,3	8 845	550	–	9 395	1 394 ^b	
1954	14 167 ^b	73,5	9 977	437	–	10 414	1 570 ^b	
1955	16 021 ^b	73,4	11 425	339	–	11 764	1 806 ^b	
1956	17 293 ^b	74,8	12 670	257	–	12 927	2 001 ^b	
1957	18 720	73,7	13 640	163	–	13 803	2 151 ^b	
1958	19 765	74,3	14 516	164	–	14 680	2 249 ^b	
1959	21 051	75,4	15 777	94	–	15 871	2 429 ^b	
1960	22 717	76,3	17 308	15	–	17 323	2 605 ^b	
1961	23 760	77,0	18 284	8	–	18 292	2 733 ^b	
1962	25 599	75,8	19 404	13	–	19 417	2 925 ^b	
1963	27 335	76,1	20 793	19	–	20 812	3 183 ^b	
1964	29 547 ^b	76,8	22 639	41	–	22 680	3 460 ^b	
1965	31 939	77,4	24 583	126	–	24 709	3 669	
1966	33 929 ^b	77,0	25 504	630 ^c	–	26 134	3 906	
1967	36 897	77,1	28 371	70	–	28 441	4 227	
1968	39 761	77,6	30 843	8	–	30 851	4 658	
1969	42 847	78,4	33 598	8	–	33 606	5 055	
1970	47 456	77,7	37 321	7	–	37 328	5 622	
1971	51 081	79,8	40 739	8	–	40 747	6 115	
1972	55 332	80,4	44 475	10	–	44 485	6 630	
1973	60 700	82,0	49 759	11	–	49 770	7 350	
1974	66 412 ^b	84,7	56 251	8	–	56 259	8 552	
1975	70 111	87,8	61 498	35	–	61 533	9 185	
1976	75 381	89,4	66 188	1 226	–	67 414	10 085	
1977	79 352	89,8	67 050	4 241	27	71 264	10 735	
1978	84 812	91,7	70 902	6 924	52	77 774	11 490	
1979	92 615	92,8	75 643	10 394	58	85 979	12 855	
1980	99 905	93,0	83 362	9 659	71	92 950	13 668	
1981	106 135	93,9	97 824	2 601	712	99 713	14 674	
1982	109 536	93,6	102 769	2 151	2 404	102 516	15 532	
1983	112 366	93,8	103 295	5 026	2 917	105 404	15 639	
1984	120 835	94,3	116 581	505	3 188	113 898	17 296	
1985	126 207 ^e	94,5	121 987	507	3 265	119 229	17 852	
1986	130 055 ^e	95,2 ^e	126 511	255	3 018	123 748	18 278	
1987	134 751	96,1	132 507	267	3 229	129 545	20 001	
1988	140 802	97,0	138 837	360	2 567	136 630	20 589	
1989	146 162 ^e	96,7	143 204	344	2 265	141 283	21 871	
1990	147 069 ^e	97,5	146 046	273	2 953	143 367	21 863	
1991	148 919	98,0	148 671	263	2 933	146 001	22 342	

^aIncludes Eskom electricity sent out to neighbouring territories.

^bEstimates based on limited information.

^cIncludes purchases from City of Johannesburg during serious drought.

^dAir and steam production now excluded.

^eRevised figures.

Integrated Eskom system load factor %	Electricity sales				Employees	
	Ratio GWh sold/available for distribution	Electricity sold GWh	Growth for the year %	Average selling price c/kWh	Total number at 31 December	Ratio GWh sold/employee
77,9	0,903 ^d	7 815,8 ^d	8,7 ^d	0,3055 ^d	10 889	0,718 ^d
76,9	0,904 ^d	8 498,0 ^d	8,7 ^d	0,3492 ^d	11 518	0,738 ^d
75,7	0,908 ^d	9 457,1 ^d	11,3 ^d	0,3763 ^d	12 317	0,768 ^d
74,4	0,914 ^d	10 751,8 ^d	13,7 ^d	0,4099 ^d	12 490	0,861 ^d
73,5	0,915 ^d	11 828,3 ^d	10,0 ^d	0,4209 ^d	12 977	0,911 ^d
73,3	0,913 ^d	12 603,5 ^d	6,6 ^d	0,4409 ^d	13 421	0,939 ^d
74,5	0,916 ^d	13 448,6 ^d	6,7 ^d	0,4664 ^d	14 312	0,940 ^d
74,6	0,919 ^d	14 586,3 ^d	8,5 ^d	0,4863 ^d	13 947	1,046 ^d
75,7	0,922 ^d	15 968,4 ^d	9,5 ^d	0,4987 ^d	14 654	1,090 ^d
76,4	0,923 ^d	16 889,4 ^d	5,8 ^d	0,5096 ^d	15 441	1,094 ^d
75,3	0,927 ^d	18 005,3 ^d	6,6 ^d	0,5109 ^d	16 467	1,093 ^d
74,6	0,931 ^d	19 384,8 ^d	7,7 ^d	0,5125 ^d	16 804	1,154 ^d
74,6	0,933 ^d	21 153,6 ^d	9,1 ^d	0,5073 ^d	17 172	1,232 ^d
76,9	0,933 ^d	23 056,1 ^d	9,0 ^d	0,5051 ^d	17 851	1,292 ^d
76,4	0,938 ^d	24 514,9 ^d	6,3 ^d	0,5218 ^d	18 579	1,319 ^d
76,8	0,937	26 657,1	8,7 ^d	0,5466 ^d	19 817	1,345
75,4	0,936	28 885,0	8,4	0,5550	20 893	1,383
75,9	0,937	31 505,6	9,1	0,5565	21 644	1,456
75,8	0,935	34 890,6	10,7	0,5545	22 700	1,537
76,1	0,934	38 040,0	9,0	0,5772	25 050	1,519
76,4	0,936	41 648,9	9,5	0,6108	26 937	1,546
77,3	0,936	46 578,4	11,8	0,6484	28 559	1,631
75,1	0,935	52 585,1	12,9	0,6822	29 891	1,759
76,5	0,940	57 869,2	10,0	0,7950	33 999	1,702
76,1	0,940	63 355,7	9,5	1,0360	36 915	1,716
75,8	0,942	67 125,4	5,9	1,5353	39 112	1,716
77,3	0,936	72 780,4	8,4	1,7887	41 040	1,773
76,4	0,937	80 582,8	10,7	1,8980	43 690	1,844
77,5	0,942	87 539,3	8,6	2,0242	47 490	1,843
77,6	0,941	93 844,0	7,2	2,2811	52 080	1,802
75,3	0,938	96 135,9	2,4	2,8038	58 850	1,634
76,9	0,932	98 251,1	2,2	3,3606	62 420	1,574
75,0	0,939	106 904,1	8,8	3,5842	64 560	1,656
76,2	0,942	112 305,9	5,1	4,1179	66 000	1,702
77,3	0,948	117 353,0	4,5	4,9803	60 800	1,930
73,9	0,946	122 523,6	4,4	5,7512	56 830	2,156
75,5	0,948	129 492,6	5,7	6,3004	56 726	2,283
73,7	0,951	134 347,4	3,7	6,9012	51 554	2,606
74,9	0,950	136 155,0	1,3	7,8908	50 000	2,723
74,6	0,950	138 658,4	1,8	8,4737	46 637	2,973

ESKOM: Customer categories by distribution region

in order of sales volume

Table 14 (a)

Electricity sold by a distribution region is purchased from the Generation Group. The cost of a region's own usage is allocated to working costs. A region's sales to other Eskom business units are charged out. Usage on Eskom's distribution premises and sales to rural/farming customers, previously included under industrial sales, are now listed separately.

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Southern Transvaal								
Bulk sales ^a	68	15 144,6	48,9	3,0	1 306 275	50,6	8,625	7,921
Domestic and street lighting	9 157	103,5	0,3	5,3	15 532	0,6	15,004	13,857
Commercial	621	22,5	0,1	-7,4	3 065	0,1	13,632	12,406
Industrial	181	9 520,3	30,7	-0,4	738 891	28,6	7,761	7,290
Mining	70	5 431,2	17,5	-5,9	436 160	16,9	8,031	7,487
Rural/farming	3 509	116,2	0,4	-2,2	18 354	0,7	15,801	14,415
Traction	2	562,9	1,8	-1,8	56 315	2,2	10,004	9,207
Own usage ^b	27	79,6	0,3	15,7	6 744	0,3	8,478	4,094
Total	13 635	30 980,7	100,0	0,2	2 581 336	100,0	8,332	7,708
Western Transvaal								
Bulk sales ^a	69	5 819,5	30,0	23,0	479 108	29,9	8,233	7,793
Domestic and street lighting	4 423	5,8	0,0	62,7	972	0,1	16,902	15,455
Commercial	88	2,6	0,0	-33,4	385	0,0	14,897	13,012
Industrial	130	709,8	3,7	-5,6	60 338	3,8	8,500	7,830
Mining	75	12 200,0	62,9	-5,8	954 186	59,6	7,821	7,356
Rural/farming	17 231	448,4	2,3	10,3	76 165	4,8	16,985	16,011
Traction	5	209,5	1,1	-8,9	28 083	1,8	13,402	11,978
Own usage ^b	18	8,1	0,0	-7,7	639	0,0	7,875	6,946
Total	22 039	19 403,8	100,0	1,6	1 599 878	100,0	8,245	7,725
Eastern Natal								
Bulk sales ^a	35	9 436,6	57,2	4,1	767 746	56,9	8,136	7,560
Domestic and street lighting	30 957	184,4	1,1	7,0	29 481	2,2	15,991	14,742
Commercial	1 994	69,0	0,4	2,0	9 255	0,7	13,403	12,322
Industrial	316	6 062,1	36,7	5,2	450 571	33,4	7,433	6,965
Mining	15	45,1	0,3	11,5	4 902	0,4	10,859	10,836
Rural/farming	9 365	356,6	2,2	-0,2	51 724	3,8	14,504	13,104
Traction	3	342,8	2,1	-0,8	35 964	2,7	10,492	9,663
Own usage ^b	5	0,2	0,0	-43,6	9	0,0	4,220	9,826
Total	42 690	16 496,9	100,0	4,3	1 349 651	100,0	8,181	7,622
Eastern Transvaal								
Bulk sales ^a	58	1 930,4	12,1	0,9	176 077	13,6	9,121	8,381
Domestic and street lighting	5 746	15,9	0,1	21,9	2 518	0,2	15,880	14,525
Commercial	299	7,0	0,0	5,4	1 017	0,1	14,531	13,476
Industrial	255	10 444,5	65,5	-1,9	765 569	59,1	7,330	6,921
Mining	149	2 590,4	16,2	-0,2	237 857	18,4	9,182	8,494
Rural/farming	8 179	271,8	1,7	2,2	43 059	3,3	15,839	14,531
Traction	3	402,9	2,5	1,8	44 010	3,4	10,924	10,411
Own usage ^b	39	295,0	1,8	-21,2	25 080	1,9	8,501	7,693
Total	14 728	15 957,9	100,0	-1,6	1 295 186	100,0	8,116	7,582
Central Transvaal								
Bulk sales ^a	37	8 733,8	68,3	6,6	682 016	62,4	7,809	7,241
Domestic and street lighting	16 295	382,4	3,0	3,1	54 173	5,0	14,165	12,984
Commercial	4 911	122,8	1,0	-0,6	17 802	1,6	14,491	12,521
Industrial	487	2 341,9	18,3	46,1	207 704	19,0	8,869	8,921
Mining	38	535,2	4,2	5,5	47 104	4,3	8,801	8,277
Rural/farming	7 441	280,2	2,2	-6,1	42 162	3,9	15,048	12,757
Traction	0	324,5	2,5	-3,8	35 954	3,3	11,081	10,108
Own usage ^b	12	69,1	0,5	4,9	5 780	0,5	8,361	7,568
Total	29 221	12 789,9	100,0	11,3	1 092 695	100,0	8,543	7,992

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

^b Own usage consists of electricity used on a region's distribution premises and its internal sales to other Eskom business units.

Table 14 (a) continued

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Orange Free State								
Bulk sales ^a	95	2 705,5	26,1	3,7	222 556	25,9	8,226	7,770
Domestic and street lighting	444	2,3	0,0	-13,8	417	0,0	17,867	14,296
Commercial	99	2,3	0,0	-11,2	335	0,0	14,476	12,166
Industrial	142	197,7	1,9	-3,1	21 029	2,4	10,635	9,944
Mining	26	7 056,9	68,0	-6,7	550 329	64,0	7,798	7,382
Rural/farming	13 590	268,0	2,6	2,9	50 010	5,8	18,660	17,119
Traction	1	142,8	1,4	-18,3	14 845	1,7	10,397	9,037
Own usage ^b	21	0,8	0,0	65,2	54	0,0	6,909	0,000
Total	14 418	10 376,4	100,0	-4,1	859 575	100,0	8,284	7,788
Western Cape								
Bulk sales ^a	56	7 287,7	77,6	2,4	555 388	68,1	7,621	6,972
Domestic and street lighting	51 442	337,3	3,6	4,7	58 969	7,2	17,484	16,106
Commercial	2 013	53,4	0,6	7,7	7 970	1,0	14,933	13,491
Industrial	403	1 119,4	11,9	2,2	107 875	13,2	9,636	8,925
Mining	17	11,8	0,1	-13,1	2 138	0,3	18,101	16,164
Rural/farming	7 788	263,3	2,8	-1,3	40 737	5,0	15,472	14,027
Traction	3	309,0	3,3	-11,7	41 469	5,1	13,422	11,776
Own usage ^b	20	5,9	0,1	-5,1	472	0,1	7,954	7,009
Total	61 742	9 387,8	100,0	1,8	815 017	100,0	8,682	7,958
North-Eastern Transvaal								
Bulk sales ^a	55	2 224,5	30,1	7,7	205 834	32,1	9,253	8,665
Domestic and street lighting	2 634	8,4	0,1	-10,5	1 308	0,2	15,593	14,356
Commercial	184	7,8	0,1	-9,8	1 052	0,2	13,424	12,390
Industrial	186	3 241,3	43,9	20,6	240 666	37,5	7,425	7,403
Mining	69	1 340,4	18,2	-21,1	115 265	18,0	8,599	7,897
Rural/farming	8 260	479,1	6,5	11,8	66 375	10,4	13,854	13,000
Traction	2	78,9	1,1	-15,0	10 479	1,6	13,280	12,112
Own usage ^b	2	0,1	0,0	0,0	13	0,0	22,258	0,000
Total	11 392	7 380,5	100,0	5,6	640 991	100,0	8,685	8,317
Western Natal								
Bulk sales ^a	24	2 301,5	44,0	-4,0	204 451	41,1	8,883	8,162
Domestic and street lighting	10 321	56,0	1,1	7,7	8 996	1,8	16,065	14,860
Commercial	1 168	32,6	0,6	7,1	4 518	0,9	13,864	12,938
Industrial	200	1 457,9	27,9	-2,6	118 922	23,9	8,157	7,416
Mining	44	320,9	6,1	-5,1	33 317	6,7	10,383	9,704
Rural/farming	12 226	342,6	6,6	9,0	54 302	10,9	15,849	14,857
Traction	5	690,0	13,2	-4,4	70 480	14,2	10,215	9,265
Own usage ^b	29	25,3	0,5	-	2 110	0,4	8,345	7,909
Total	24 017	5 226,7	100,0	-2,8	497 097	100,0	9,511	8,681
Eastern Cape								
Bulk sales ^a	84	4 250,1	88,2	3,9	323 583	76,3	7,614	7,076
Domestic and street lighting	4 990	17,6	0,4	12,7	3 862	0,9	21,994	20,870
Commercial	443	11,8	0,2	4,1	1 814	0,4	15,370	14,252
Industrial	136	62,2	1,3	-2,5	9 205	2,2	14,791	14,133
Mining	-	-	-	-	-	-	-	-
Rural/farming	10 726	248,7	5,2	5,0	46 049	10,9	18,512	16,782
Traction	5	225,1	4,7	-20,9	39 151	9,2	17,394	14,821
Own usage ^b	51	4,2	0,1	4,4	264	0,1	6,229	6,178
Total	16 435	4 819,8	100,0	2,4	423 928	100,0	8,796	8,191

ESKOM: Customer categories by distribution region

in order of sales volume

Table 14 (a)

Electricity sold by a distribution region is purchased from the Generation Group. The cost of a region's own usage is allocated to working costs. A region's sales to other Eskom business units are charged out. Usage on Eskom's distribution premises and sales to rural/farming customers, previously included under industrial sales, are now listed separately.

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Southern Transvaal								
Bulk sales ^a	68	15 144,6	48,9	3,0	1 306 275	50,6	8,625	7,921
Domestic and street lighting	9 157	103,5	0,3	5,3	15 532	0,6	15,004	13,857
Commercial	621	22,5	0,1	-7,4	3 065	0,1	13,632	12,406
Industrial	181	9 520,3	30,7	-0,4	738 891	28,6	7,761	7,290
Mining	70	5 431,2	17,5	-5,9	436 160	16,9	8,031	7,487
Rural/farming	3 509	116,2	0,4	-2,2	18 354	0,7	15,801	14,415
Traction	2	562,9	1,8	-1,8	56 315	2,2	10,004	9,207
Own usage ^b	27	79,6	0,3	15,7	6 744	0,3	8,478	4,094
Total	13 635	30 980,7	100,0	0,2	2 581 336	100,0	8,332	7,708
Western Transvaal								
Bulk sales ^a	69	5 819,5	30,0	23,0	479 108	29,9	8,233	7,793
Domestic and street lighting	4 423	5,8	0,0	62,7	972	0,1	16,902	15,455
Commercial	88	2,6	0,0	-33,4	385	0,0	14,897	13,012
Industrial	130	709,8	3,7	-5,6	60 338	3,8	8,500	7,830
Mining	75	12 200,0	62,9	-5,8	954 186	59,6	7,821	7,356
Rural/farming	17 231	448,4	2,3	10,3	76 165	4,8	16,985	16,011
Traction	5	209,5	1,1	-8,9	28 083	1,8	13,402	11,978
Own usage ^b	18	8,1	0,0	-7,7	639	0,0	7,875	6,946
Total	22 039	19 403,8	100,0	1,6	1 599 878	100,0	8,245	7,725
Eastern Natal								
Bulk sales ^a	35	9 436,6	57,2	4,1	767 746	56,9	8,136	7,560
Domestic and street lighting	30 957	184,4	1,1	7,0	29 481	2,2	15,991	14,742
Commercial	1 994	69,0	0,4	2,0	9 255	0,7	13,403	12,322
Industrial	316	6 062,1	36,7	5,2	450 571	33,4	7,433	6,965
Mining	15	45,1	0,3	11,5	4 902	0,4	10,859	10,836
Rural/farming	9 365	356,6	2,2	-0,2	51 724	3,8	14,504	13,104
Traction	3	342,8	2,1	-0,8	35 964	2,7	10,492	9,663
Own usage ^b	5	0,2	0,0	-43,6	9	0,0	4,220	9,826
Total	42 690	16 496,9	100,0	4,3	1 349 651	100,0	8,181	7,622
Eastern Transvaal								
Bulk sales ^a	58	1 930,4	12,1	0,9	176 077	13,6	9,121	8,381
Domestic and street lighting	5 746	15,9	0,1	21,9	2 518	0,2	15,880	14,525
Commercial	299	7,0	0,0	5,4	1 017	0,1	14,531	13,476
Industrial	255	10 444,5	65,5	-1,9	765 569	59,1	7,330	6,921
Mining	149	2 590,4	16,2	-0,2	237 857	18,4	9,182	8,494
Rural/farming	8 179	271,8	1,7	2,2	43 059	3,3	15,839	14,531
Traction	3	402,9	2,5	1,8	44 010	3,4	10,924	10,411
Own usage ^b	39	295,0	1,8	-21,2	25 080	1,9	8,501	7,693
Total	14 728	15 957,9	100,0	-1,6	1 295 186	100,0	8,116	7,582
Central Transvaal								
Bulk sales ^a	37	8 733,8	68,3	6,6	682 016	62,4	7,809	7,241
Domestic and street lighting	16 295	382,4	3,0	3,1	54 173	5,0	14,165	12,984
Commercial	4 911	122,8	1,0	-0,6	17 802	1,6	14,491	12,521
Industrial	487	2 341,9	18,3	46,1	207 704	19,0	8,869	8,921
Mining	38	535,2	4,2	5,5	47 104	4,3	8,801	8,277
Rural/farming	7 441	280,2	2,2	-6,1	42 162	3,9	15,048	12,757
Traction	0	324,5	2,5	-3,8	35 954	3,3	11,081	10,108
Own usage ^b	12	69,1	0,5	4,9	5 780	0,5	8,361	7,568
Total	29 221	12 789,9	100,0	11,3	1 092 695	100,0	8,543	7,992

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

^b Own usage consists of electricity used on a region's distribution premises and its internal sales to other Eskom business units.

Table 14 (a) continued

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Orange Free State								
Bulk sales ^a	95	2 705,5	26,1	3,7	222 556	25,9	8,226	7,770
Domestic and street lighting	444	2,3	0,0	-13,8	417	0,0	17,867	14,296
Commercial	99	2,3	0,0	-11,2	335	0,0	14,476	12,166
Industrial	142	197,7	1,9	-3,1	21 029	2,4	10,635	9,944
Mining	26	7 056,9	68,0	-6,7	550 329	64,0	7,798	7,382
Rural/farming	13 590	268,0	2,6	2,9	50 010	5,8	18,660	17,119
Traction	1	142,8	1,4	-18,3	14 845	1,7	10,397	9,037
Own usage ^b	21	0,8	0,0	65,2	54	0,0	6,909	0,000
Total	14 418	10 376,4	100,0	-4,1	859 575	100,0	8,284	7,788
Western Cape								
Bulk sales ^a	56	7 287,7	77,6	2,4	555 388	68,1	7,621	6,972
Domestic and street lighting	51 442	337,3	3,6	4,7	58 969	7,2	17,484	16,106
Commercial	2 013	53,4	0,6	7,7	7 970	1,0	14,933	13,491
Industrial	403	1 119,4	11,9	2,2	107 875	13,2	9,636	8,925
Mining	17	11,8	0,1	-13,1	2 138	0,3	18,101	16,164
Rural/farming	7 788	263,3	2,8	-1,3	40 737	5,0	15,472	14,027
Traction	3	309,0	3,3	-11,7	41 469	5,1	13,422	11,776
Own usage ^b	20	5,9	0,1	-5,1	472	0,1	7,954	7,009
Total	61 742	9 387,8	100,0	1,8	815 017	100,0	8,682	7,958
North-Eastern Transvaal								
Bulk sales ^a	55	2 224,5	30,1	7,7	205 834	32,1	9,253	8,665
Domestic and street lighting	2 634	8,4	0,1	-10,5	1 308	0,2	15,593	14,356
Commercial	184	7,8	0,1	-9,8	1 052	0,2	13,424	12,390
Industrial	186	3 241,3	43,9	20,6	240 666	37,5	7,425	7,403
Mining	69	1 340,4	18,2	-21,1	115 265	18,0	8,599	7,897
Rural/farming	8 260	479,1	6,5	11,8	66 375	10,4	13,854	13,000
Traction	2	78,9	1,1	-15,0	10 479	1,6	13,280	12,112
Own usage ^b	2	0,1	0,0	0,0	13	0,0	22,258	0,000
Total	11 392	7 380,5	100,0	5,6	640 991	100,0	8,685	8,317
Western Natal								
Bulk sales ^a	24	2 301,5	44,0	-4,0	204 451	41,1	8,883	8,162
Domestic and street lighting	10 321	56,0	1,1	7,7	8 996	1,8	16,065	14,860
Commercial	1 168	32,6	0,6	7,1	4 518	0,9	13,864	12,938
Industrial	200	1 457,9	27,9	-2,6	118 922	23,9	8,157	7,416
Mining	44	320,9	6,1	-5,1	33 317	6,7	10,383	9,704
Rural/farming	12 226	342,6	6,6	9,0	54 302	10,9	15,849	14,857
Traction	5	690,0	13,2	-4,4	70 480	14,2	10,215	9,265
Own usage ^b	29	25,3	0,5	-	2 110	0,4	8,345	7,909
Total	24 017	5 226,7	100,0	-2,8	497 097	100,0	9,511	8,681
Eastern Cape								
Bulk sales ^a	84	4 250,1	88,2	3,9	323 583	76,3	7,614	7,076
Domestic and street lighting	4 990	17,6	0,4	12,7	3 862	0,9	21,994	20,870
Commercial	443	11,8	0,2	4,1	1 814	0,4	15,370	14,252
Industrial	136	62,2	1,3	-2,5	9 205	2,2	14,791	14,133
Mining	-	-	-	-	-	-	-	-
Rural/farming	10 726	248,7	5,2	5,0	46 049	10,9	18,512	16,782
Traction	5	225,1	4,7	-20,9	39 151	9,2	17,394	14,821
Own usage ^b	51	4,2	0,1	4,4	264	0,1	6,229	6,178
Total	16 435	4 819,8	100,0	2,4	423 928	100,0	8,796	8,191

Table 14 (a) continued

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Northern Cape								
Bulk sales ^a	61	1 541,1	39,3	21,7	132 388	34,9	8,590	8,181
Domestic and street lighting	1 665	6,0	0,2	13,5	1 071	0,3	17,993	16,791
Commercial	271	4,4	0,1	1,2	786	0,2	17,898	16,147
Industrial	70	228,8	5,8	0,3	20 919	5,5	9,144	8,310
Mining	80	1 615,7	41,2	-2,4	149 104	39,3	9,229	8,695
Rural/farming	9 240	247,1	6,3	-6,6	43 850	11,6	17,746	15,500
Traction	3	276,4	7,1	-12,2	30 897	8,2	11,177	10,287
Own usage ^b	1	1,4	0,0	1,0	0	0,0	0,000	0,000
Total	11 391	3 920,9	100,0	4,8	379 015	100,0	9,667	9,129
Southern Cape								
Bulk sales ^a	62	1 140,5	59,5	7,6	104 749	48,7	9,184	8,521
Domestic and street lighting	4 672	18,8	1,0	14,8	3 463	1,6	18,450	17,124
Commercial	325	7,5	0,4	3,0	1 102	0,5	14,723	13,613
Industrial	159	207,0	10,8	38,0	30 754	14,3	14,857	12,858
Mining	2	2,4	0,1	3,9	450	0,2	18,502	18,137
Rural/farming	11 070	419,5	21,9	4,6	61 959	28,8	14,771	13,588
Traction	0	119,7	6,2	-13,1	12 691	5,9	10,607	9,623
Own usage ^b	35	1,8	0,1	-30,0	-	0,0	0,000	0,000
Total	16 325	1 917,1	100,0	7,9	215 168	100,0	11,223	10,216
Eskom total								
Bulk sales ^a	704	62 515,9	45,1	5,6	5 160 172	43,9	8,254	7,649
Domestic and street lighting	142 746	1 138,2	0,8	5,3	180 763	1,5	15,882	14,600
Commercial	12 416	343,7	0,2	1,0	49 100	0,4	14,284	12,797
Industrial	2 665	35 593,0	25,7	3,9	2 772 443	23,6	7,789	7,335
Mining	585	31 150,0	22,5	-6,0	2 530 812	21,5	8,125	7,615
Rural/farming	118 625	3 741,6	2,7	3,4	594 745	5,1	15,896	14,516
Traction	32	3 684,4	2,7	-6,9	420 339	3,6	11,409	10,407
Own usage ^b	260	491,6	0,4	-11,7	41 165	0,4	8,374	7,153
Total	278 033	138 658,4	100,0	1,8	11 749 537	100,0	8,474	7,891

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

^b Own usage consists of electricity used on a region's distribution premises and its internal sales to other Eskom business units.

Table 14 (a) continued

Distribution region and category	Number of customers	GWh sold 1991	% of total GWh	% growth 1990-91	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991	Average price cents per kWh 1990
Northern Cape								
Bulk sales ^a	61	1 541,1	39,3	21,7	132 388	34,9	8,590	8,181
Domestic and street lighting	1 665	6,0	0,2	13,5	1 071	0,3	17,993	16,791
Commercial	271	4,4	0,1	1,2	786	0,2	17,898	16,147
Industrial	70	228,8	5,8	0,3	20 919	5,5	9,144	8,310
Mining	80	1 615,7	41,2	-2,4	149 104	39,3	9,229	8,695
Rural/farming	9 240	247,1	6,3	-6,6	43 850	11,6	17,746	15,500
Traction	3	276,4	7,1	-12,2	30 897	8,2	11,177	10,287
Own usage ^b	1	1,4	0,0	1,0	0	0,0	0,000	0,000
Total	11 391	3 920,9	100,0	4,8	379 015	100,0	9,667	9,129
Southern Cape								
Bulk sales ^a	62	1 140,5	59,5	7,6	104 749	48,7	9,184	8,521
Domestic and street lighting	4 672	18,8	1,0	14,8	3 463	1,6	18,450	17,124
Commercial	325	7,5	0,4	3,0	1 102	0,5	14,723	13,613
Industrial	159	207,0	10,8	38,0	30 754	14,3	14,857	12,858
Mining	2	2,4	0,1	3,9	450	0,2	18,502	18,137
Rural/farming	11 070	419,5	21,9	4,6	61 959	28,8	14,771	13,588
Traction	0	119,7	6,2	-13,1	12 691	5,9	10,607	9,623
Own usage ^b	35	1,8	0,1	-30,0	-	0,0	0,000	0,000
Total	16 325	1 917,1	100,0	7,9	215 168	100,0	11,223	10,216
Eskom total								
Bulk sales ^a	704	62 515,9	45,1	5,6	5 160 172	43,9	8,254	7,649
Domestic and street lighting	142 746	1 138,2	0,8	5,3	180 763	1,5	15,882	14,600
Commercial	12 416	343,7	0,2	1,0	49 100	0,4	14,284	12,797
Industrial	2 665	35 593,0	25,7	3,9	2 772 443	23,6	7,789	7,335
Mining	585	31 150,0	22,5	-6,0	2 530 812	21,5	8,125	7,615
Rural/farming	11 8625	3 741,6	2,7	3,4	594 745	5,1	15,896	14,516
Traction	32	3 684,4	2,7	-6,9	420 339	3,6	11,409	10,407
Own usage ^b	260	491,6	0,4	-11,7	41 165	0,4	8,374	7,153
Total	278 033	138 658,4	100,0	1,8	11 749 537	100,0	8,474	7,891

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

^b Own usage consists of electricity used on a region's distribution premises and its internal sales to other Eskom business units.

ESKOM: Customer categories by distributor

in order of sales volume

Table 14 (b)

Electricity sold by a distributor is purchased from the Generation Group. The cost of a distributor's own usage is allocated to working costs. A distributor's sales to other business units are charged out. Usage on Eskom's distribution premises and sales to rural/farming customers, previously included under industrial sales, are now listed separately. 1991 sales as per distributor areas that were established during the restructuring at the end of the year. E & OE.

Distributor and categories	Number of customers	GWh sold 1991	% of total GWh	Revenue 1991 R000	% of total revenue	Average price cents per kWh 1991
Distributor – Pretoria						
Bulk sales ^a	167	13 498,8	35,6	1 084 785	34,8	8,036
Domestic and street lighting	12 803	27,8	0,1	4 691	0,2	16,877
Commercial	582	18,0	0,0	2 542	0,1	14,145
Industrial	554	15 612,6	41,2	1 166 565	37,4	7,472
Mining	272	6 966,1	18,4	601 643	19,3	8,637
Rural/farming	32 845	999,6	2,6	173 631	5,6	17,370
Traction	7	479,2	1,3	58 507	1,9	12,209
Own usage ^b	61	303,2	0,8	25 728	0,8	8,487
Total	47 291	37 905,3	100,0	3 118 093	100,0	8,226
Distributor – Johannesburg						
Bulk sales ^a	89	19 001,2	52,0	1 641 294	52,6	8,638
Domestic and street lighting	25 452	485,4	1,3	69 360	2,2	14,289
Commercial	5 521	143,4	0,4	20 580	0,7	14,347
Industrial	620	10 145,9	27,8	804 798	25,8	7,932
Mining	89	5 455,9	14,9	439 751	14,1	8,060
Rural/farming	10 603	270,8	0,7	37 219	1,2	13,742
Traction	2	887,4	2,4	92 269	3,0	10,398
Own usage ^b	35	148,7	0,4	12 524	0,4	8,423
Total	42 411	36 538,7	100,0	3 117 794	100,0	8,533
Distributor – Bloemfontein						
Bulk sales ^a	187	5 599,5	21,2	478 175	21,6	8,540
Domestic and street lighting	2 109	11,0	0,0	1 940	0,1	17,572
Commercial	370	8,0	0,0	1 320	0,1	16,426
Industrial	277	925,8	3,5	83 754	3,8	9,047
Mining	146	18 347,8	69,6	1 448 610	65,5	7,895
Rural/farming	24 002	840,4	3,2	129 125	5,8	15,365
Traction	7	631,3	2,4	69 806	3,2	11,057
Own usage ^b	24	2,3	0,0	58	0,0	2,560
Total	27 122	26 366,1	100,0	2 212 788	100,0	8,393
Distributor – Durban						
Bulk sales ^a	59	11 738,0	54,0	972 197	52,6	8,282
Domestic and street lighting	41 278	240,4	1,1	38 477	2,1	16,008
Commercial	3 162	101,6	0,5	13 772	0,7	13,551
Industrial	516	7 520,0	34,6	569 493	30,8	7,573
Mining	59	366,0	1,7	38 219	2,1	10,442
Rural/farming	21 591	699,3	3,2	106 026	5,7	15,163
Traction	8	1 032,8	4,8	106 444	5,8	10,307
Own usage ^b	34	25,5	0,1	2 119	0,1	8,309
Total	66 707	21 723,6	100,0	1 846 748	100,0	8,501
Distributor – Cape Town						
Bulk sales ^a	202	12 678,4	78,6	983 720	67,7	7,759
Domestic and street lighting	61 104	373,6	2,3	66 294	4,6	17,745
Commercial	2 781	72,7	0,5	10 885	0,7	14,982
Industrial	698	1 388,7	8,6	147 834	10,2	10,646
Mining	19	14,2	0,1	2 588	0,2	18,170
Rural/farming	29 584	931,5	5,8	148 744	10,2	15,968
Traction	8	653,7	4,1	93 312	6,4	14,274
Own usage ^b	106	12,0	0,1	736	0,1	6,153
Total	94 502	16 124,7	100,0	1 454 113	100,0	9,018
Distributors – total						
Bulk sales ^a	704	62 515,9	45,1	5 160 172	43,9	8,254
Domestic and street lighting	142 746	1 138,2	0,8	180 763	1,5	15,881
Commercial	12 416	343,7	0,2	49 099	0,4	14,284
Industrial	2 665	35 593,0	25,7	2 772 443	23,6	7,789
Mining	585	31 150,0	22,5	2 530 812	21,5	8,125
Rural/farming	118 625	3 741,6	2,7	594 744	5,1	15,896
Traction	32	3 684,4	2,7	420 339	3,6	11,409
Own usage ^b	260	491,6	0,4	41 165	0,4	8,374
Total	278 033	138 658,4	100,0	11 749 536	100,0	8,474

ESKOM: Total electricity sold

Table 15

Sales to rural/farming and commercial customers, previously included under industrial sales, are now listed separately.

Year	Sales in GWh, per category							
	Bulk ^a	Domestic and street lighting	Commercial	Industrial	Mining	Rural/farming	Traction	Own ^b usage
1952	1 459	131	–	1 338	4 333	–	555	–
1953	1 640	135	–	1 402	4 736	–	584	–
1954	1 839	142	–	1 540	5 317	–	619	–
1955	2 048	157	–	1 881	5 977	–	690	–
1956	2 282	174	–	2 187	6 445	–	740	–
1957	2 540	190	–	2 331	6 790	–	753	–
1958	2 838	206	–	2 480	7 136	–	789	–
1959	3 058	228	–	2 737	7 676	–	887	–
1960	3 243	253	–	3 169	8 259	–	1 045	–
1961	3 368	279	–	3 437	8 626	–	1 178	–
1962	3 570	303	–	3 692	9 143	–	1 296	–
1963	3 998	329	–	4 253	9 416	–	1 389	–
1964	4 494	381	–	4 873	9 847	–	1 559	–
1965	4 921	439	–	5 663	10 271	–	1 763	–
1966	5 344	492	–	6 069	10 775	–	1 836	–
1967	5 966	563	–	6 729	11 441	–	1 958	–
1968	6 628	642	–	7 439	11 995	–	2 181	–
1969	7 264	719	–	8 574	12 642	–	2 307	–
1970	8 108	817	–	9 608	13 948	–	2 410	–
1971	9 265	918	–	11 014	14 227	–	2 616	–
1972	10 716	1 000	–	12 642	14 509	–	2 782	–
1973	12 752	1 105	–	14 026	15 800	–	2 896	–
1974	15 522	909	–	16 106	16 941	–	3 108	–
1975	18 055	1 013	–	18 050	17 444	–	3 307	–
1976	20 096	1 093	–	19 946	18 746	–	3 475	–
1977	20 862	1 030	–	21 586	20 139	–	3 508	–
1978	21 834	960	–	24 181	22 219	–	3 586	–
1979	24 133	940	–	27 475	24 000	–	4 035	–
1980	26 923	906	–	29 373	25 882	–	4 455	–
1981	29 961	1 002	–	31 091	27 131	–	4 660	–
1982	32 349	1 020	–	30 959	27 372	–	4 436	–
1983	32 729	1 078	–	32 286	28 021	–	4 137	–
1984	35 541	1 144	–	36 119	29 506	–	4 595	–
1985	37 451	1 204	–	38 215	30 849	–	4 587	–
1986	40 570	1 252	–	39 170	31 860	–	4 501	–
1987	45 418	1 279	–	35 262	32 849	3 022	4 049	645
1988	49 433	1 341	–	36 575	34 341	3 163	4 120	520
1989	54 423	1 221	368	35 452	34 661	3 438	4 229	556
1990	59 204	1 081	340	34 250	33 145	3 620	3 958	557
1991	62 516	1 138	344	35 593	31 150	3 742	3 684	492

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

^b Own usage consists of electricity used on distribution premises and its internal sales to other Eskom business units.

Total sold during year	Sales as a percentage of total GWh sold							
	Bulk ^a	Domestic and street lighting	Commercial	Industrial	Mining	Rural/farming	Traction	Own usage ^b
7 816	18,7	1,7	–	17,1	55,4	–	7,1	–
8 498	19,3	1,6	–	16,5	55,7	–	6,9	–
9 457	19,4	1,5	–	16,3	56,2	–	6,5	–
10 752	19,0	1,5	–	17,5	55,6	–	6,4	–
11 828	19,3	1,5	–	18,5	54,5	–	6,3	–
12 603	20,2	1,5	–	18,5	53,9	–	6,0	–
13 449	21,1	1,5	–	18,4	53,1	–	5,9	–
14 586	21,0	1,6	–	18,8	52,6	–	6,1	–
15 968	20,3	1,6	–	19,8	51,7	–	6,5	–
16 889	19,9	1,7	–	20,4	51,1	–	7,0	–
18 005	19,8	1,7	–	20,5	50,8	–	7,2	–
19 385	20,6	1,7	–	21,9	48,6	–	7,2	–
21 154	21,2	1,8	–	23,0	46,6	–	7,4	–
23 056	21,3	1,9	–	24,6	44,5	–	7,6	–
24 515	21,8	2,0	–	24,8	44,0	–	7,5	–
26 657	22,4	2,1	–	25,2	42,9	–	7,3	–
28 885	22,9	2,2	–	25,8	41,5	–	7,5	–
31 506	23,1	2,3	–	27,2	40,1	–	7,3	–
34 891	23,2	2,3	–	27,5	40,0	–	6,9	–
38 040	24,4	2,4	–	29,0	37,4	–	6,9	–
41 649	25,7	2,4	–	30,4	34,8	–	6,7	–
46 578	27,4	2,4	–	30,1	33,9	–	6,2	–
52 585	29,5	1,7	–	30,6	32,2	–	5,9	–
57 869	31,2	1,8	–	31,2	30,1	–	5,7	–
63 356	31,7	1,7	–	31,5	29,6	–	5,5	–
67 125	31,1	1,5	–	32,2	30,0	–	5,2	–
72 780	30,0	1,3	–	33,2	30,5	–	4,9	–
80 583	29,9	1,2	–	34,1	29,8	–	5,0	–
87 540	30,8	1,0	–	33,6	29,6	–	5,1	–
93 844	31,9	1,1	–	33,1	28,9	–	5,0	–
96 136	33,6	1,1	–	32,2	28,5	–	4,6	–
98 251	33,3	1,1	–	32,9	28,5	–	4,2	–
106 904	33,2	1,1	–	33,8	27,6	–	4,3	–
112 306	33,3	1,1	–	34,0	27,5	–	4,1	–
117 353	34,6	1,1	–	33,4	27,1	–	3,8	–
122 524	37,1	1,0	–	28,8	26,8	2,5	3,3	0,5
129 493	36,8	1,0	–	27,2	25,6	2,4	3,1	0,4
134 348	40,5	0,9	0,3	26,4	25,8	2,6	3,1	0,4
136 155	43,5	0,8	0,2	25,2	24,3	2,7	2,9	0,4
138 658	45,1	0,8	0,2	25,7	22,5	2,7	2,7	0,4

ESKOM: Revenue per kWh by category of customer

Table 16

Sales to rural/farming and commercial customers, previously included under industrial sales, are now listed separately.

Year	Actual price (in c/kWh)								
	Bulk ^a	Domestic and street lighting	Commercial	Industrial	Mining	Rural/farming	Traction	Average for all categories	Change %
1952	0,3807	1,0630	–	0,3128	0,2454	–	0,3811	0,3055	6,2
1953	0,4199	1,2083	–	0,3604	0,2829	–	0,4618	0,3492	14,3
1954	0,4638	1,3247	–	0,3881	0,2992	–	0,5318	0,3763	7,8
1955	0,5225	1,3485	–	0,3991	0,3262	–	0,6177	0,4099	8,9
1956	0,5448	1,3625	–	0,3992	0,3344	–	0,6349	0,4209	2,7
1957	0,5694	1,3847	–	0,4150	0,3527	–	0,6448	0,4409	4,8
1958	0,5861	1,4294	–	0,4407	0,3790	–	0,6557	0,4664	5,8
1959	0,6049	1,4411	–	0,4682	0,3963	–	0,6671	0,4863	4,3
1960	0,6009	1,4492	–	0,4833	0,4144	–	0,6644	0,4987	2,5
1961	0,6127	1,4843	–	0,4943	0,4216	–	0,6727	0,5096	2,2
1962	0,6094	1,4784	–	0,4874	0,4174	–	0,7398	0,5109	0,3
1963	0,6044	1,4761	–	0,4878	0,4192	–	0,7283	0,5125	0,3
1964	0,5912	1,4429	–	0,4902	0,4121	–	0,6910	0,5073	-1,0
1965	0,5912	1,3983	–	0,4819	0,4057	–	0,6963	0,5051	-0,4
1966	0,5969	1,3851	–	0,5108	0,4182	–	0,7172	0,5218	3,3
1967	0,6063	1,3931	–	0,5368	0,4444	–	0,7524	0,5466	4,8
1968	0,6037	1,3911	–	0,5513	0,4493	–	0,7553	0,5550	1,5
1969	0,5988	1,3695	–	0,5496	0,4545	–	0,7550	0,5565	0,3
1970	0,6001	1,3453	–	0,5498	0,4501	–	0,7562	0,5545	-0,4
1971	0,6139	1,3608	–	0,5734	0,4716	–	0,7630	0,5772	4,1
1972	0,6366	1,4156	–	0,6008	0,5104	–	0,7913	0,6108	5,8
1973	0,6741	1,5049	–	0,6377	0,5418	–	0,8424	0,6484	6,2
1974	0,7036	1,5480	–	0,7057	0,5572	–	0,8828	0,6823	5,2
1975	0,8079	1,7079	–	0,8219	0,6590	–	1,0162	0,7950	16,5
1976	1,0529	2,0915	–	1,0641	0,8726	–	1,3264	1,0360	30,3
1977	1,5779	3,1778	–	1,5641	1,2946	–	2,0040	1,5353	48,2
1978	1,7789	3,7875	–	1,7989	1,6044	–	2,3868	1,7887	16,5
1979	1,8715	3,9826	–	1,8924	1,7311	–	2,6018	1,8980	6,1
1980	2,0027	4,2754	–	2,0256	1,8540	–	2,6762	2,0242	6,6
1981	2,2697	4,7314	–	2,2837	2,0787	–	2,9888	2,2811	12,7
1982	2,8078	5,4182	–	2,8250	2,5405	–	3,6495	2,8038	22,9
1983	3,3671	6,2323	–	3,3769	3,0483	–	4,5506	3,3607	19,9
1984	3,5934	6,6614	–	3,5947	3,2681	–	4,6955	3,5842	6,7
1985	4,1243	7,5074	–	4,1198	3,7889	–	5,3734	4,1179	14,9
1986	4,8706	9,1951	–	5,0250	4,7218	–	6,2367	4,9803	20,9
1987	5,5795	10,9537	–	5,4697	5,5404	10,4398	7,6119	5,7512	15,5
1988	6,1181	11,9144	–	5,9678	6,0348	11,6716	8,1715	6,3004	9,5
1989	6,6752	12,3759	11,2224	6,5018	6,6634	12,5615	9,0758	6,9012	9,5
1990	7,6493	14,5998	12,7971	7,3352	7,6152	14,5162	10,4073	7,8908	14,3
1991	8,2542	15,8816	14,2838	7,7893	8,1246	15,8956	11,4087	8,4737	7,4

^a Sales to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

Production Price Index 1985 = 100	Real price (in c/KWh)									
	Bulk ^a	Domestic and street lighting	Commercial	Industrial	Mining	Rural/farming	Traction	Average for all categories	Change %	
11,9	3,1936	8,9174	–	2,6240	2,0586	–	3,1970	2,5628	-7,6	
12,0	3,4902	10,0433	–	2,9956	2,3514	–	3,8384	2,9025	13,3	
12,1	3,8200	10,9107	–	3,1965	2,4643	–	4,3801	3,0993	6,8	
12,5	4,1892	10,8119	–	3,1999	2,6154	–	4,9525	3,2865	6,0	
12,7	4,2921	10,7341	–	3,1450	2,6345	–	5,0019	3,3160	0,9	
12,9	4,4281	10,7686	–	3,2274	2,7429	–	5,0145	3,4288	3,4	
12,9	4,5385	11,0687	–	3,4126	2,9348	–	5,0775	3,6116	5,3	
12,9	4,7042	11,2072	–	3,6411	3,0820	–	5,1879	3,7819	4,7	
13,0	4,6137	11,1269	–	3,7108	3,1817	–	5,1012	3,8290	1,2	
13,2	4,6259	11,2065	–	3,7320	3,1831	–	5,0789	3,8475	0,5	
13,4	4,5629	11,0697	–	3,6495	3,1253	–	5,5393	3,8254	-0,6	
13,5	4,4701	10,9171	–	3,6077	3,1004	–	5,3864	3,7904	-0,9	
13,9	4,2679	10,4165	–	3,5388	2,9750	–	4,9884	3,6623	-3,4	
14,3	4,1361	9,7827	–	3,3714	2,8383	–	4,8714	3,5337	-3,5	
14,8	4,0208	9,3301	–	3,4408	2,8170	–	4,8311	3,5149	-0,5	
15,2	3,9950	9,1793	–	3,5370	2,9282	–	4,9576	3,6016	2,5	
15,4	3,9208	9,0347	–	3,5805	2,9180	–	4,9054	3,6045	0,1	
15,7	3,8071	8,7071	–	3,4943	2,8897	–	4,8002	3,5382	-1,8	
16,2	3,6986	8,2914	–	3,3886	2,7741	–	4,6607	3,4175	-3,4	
17,0	3,6116	8,0057	–	3,3734	2,7745	–	4,4888	3,3957	-0,6	
18,4	3,4640	7,7029	–	3,2692	2,7773	–	4,3058	3,3236	-2,1	
20,8	3,2486	7,2523	–	3,0732	2,6110	–	4,0597	3,1247	-6,0	
24,5	2,8714	6,3175	–	2,8800	2,2740	–	3,6028	2,7845	-10,9	
28,8	2,8098	5,9400	–	2,8585	2,2920	–	3,5343	2,7650	-0,7	
33,1	3,1851	6,3269	–	3,2189	2,6397	–	4,0124	3,1339	13,3	
37,4	4,2233	8,5054	–	4,1863	3,4650	–	5,3637	4,1093	31,1	
41,0	4,3383	9,2368	–	4,3871	3,9127	–	5,8208	4,3622	6,2	
47,2	3,9616	8,4305	–	4,0059	3,6644	–	5,5075	4,0177	-7,9	
55,2	3,6289	7,7470	–	3,6704	3,3594	–	4,8493	3,6679	-8,7	
62,7	3,6203	7,5469	–	3,6427	3,3157	–	4,7673	3,6385	-0,8	
71,5	3,9288	7,5813	–	3,9528	3,5547	–	5,1065	3,9232	7,8	
79,0	4,2636	7,8916	–	4,2760	3,8599	–	5,7622	4,2555	8,5	
85,6	4,1981	7,7824	–	4,1996	3,8181	–	5,4857	4,1873	-1,6	
100,0	4,1243	7,5074	–	4,1198	3,7889	–	5,3734	4,1179	-1,7	
119,5	4,0746	7,6923	–	4,2037	3,9501	–	5,2174	4,1663	1,2	
136,2	4,0965	8,0422	–	4,0158	4,0677	7,6649	5,5886	4,2225	1,3	
154,1	3,9692	7,7296	–	3,8717	3,9152	7,5721	5,3014	4,0875	-3,2	
177,6	3,7586	6,9684	6,3189	3,6609	3,7519	7,0729	5,1102	3,8858	-4,9	
198,9	3,8458	7,3403	6,4340	3,6879	3,8287	7,2982	5,2324	3,9672	2,1	
221,6	3,7248	7,1668	6,4457	3,5150	3,6663	7,1731	5,1483	3,8239	-3,6	

ESKOM: Number of customers by category (excluding traction and own use)

Table 17

Sales to rural/farming and commercial customers, previously included under industrial sales, are now listed separately.

Year	Bulk ^a	Domestic and street lighting	Commercial	Industrial	Mining	Rural/farming	Total for all categories	% Change
1952	96	30 691	—	2 839	141	—	33 767	-18,0
1953	100	33 063	—	3 015	144	—	36 322	7,6
1954	108	33 877	—	3 089	145	—	37 219	2,5
1955	115	36 452	—	3 274	151	—	39 992	7,5
1956	125	38 944	—	3 490	166	—	42 725	6,8
1957	134	41 113	—	3 551	170	—	44 968	5,2
1958	137	43 665	—	4 216	174	—	48 192	7,2
1959	146	46 437	—	4 593	177	—	51 353	6,6
1960	155	49 968	—	5 039	183	—	55 345	7,8
1961	168	53 908	—	5 453	192	—	59 721	7,9
1962	179	56 456	—	6 410	209	—	63 254	5,9
1963	186	61 093	—	7 128	230	—	68 637	8,5
1964	187	66 397	—	7 782	240	—	74 606	8,7
1965	203	71 517	—	9 051	251	—	81 022	8,6
1966	208	77 121	—	10 278	259	—	87 866	8,4
1967	220	83 189	—	11 435	267	—	95 111	8,2
1968	233	85 227	—	13 540	276	—	99 276	4,4
1969	249	91 999	—	14 978	289	—	107 515	8,3
1970	265	98 155	—	16 336	294	—	115 050	7,0
1971	289	106 684	—	16 927	297	—	124 197	8,0
1972	310	108 517	—	18 500	299	—	127 626	2,8
1973	326	117 034	—	20 049	302	—	137 711	7,9
1974	332	106 857	—	41 647	314	—	149 150	8,3
1975	353	109 029	—	43 598	325	—	153 305	2,8
1976	365	105 482	—	61 142	333	—	167 322	9,1
1977	368	106 743	—	62 507	340	—	169 958	1,6
1978	386	109 317	—	65 797	354	—	175 854	3,5
1979	404	101 792	—	65 656	357	—	168 209	-4,3
1980	419	109 558	—	69 479	386	—	179 842	6,9
1981	434	113 552	—	77 722	403	—	192 111	6,8
1982	453	119 889	—	82 801	418	—	203 561	6,0
1983	468	124 433	—	89 439	421	—	214 761	5,5
1984	487	130 471	—	94 863	410	—	226 231	5,3
1985	528	135 770	—	101 246	524	—	238 068	5,2
1986	571	137 820	—	108 386	546	—	247 323	3,9
1987	562	142 050	—	116 067	544	—	259 223	4,8
1988	595	153 577	—	18 903	555	101 749	275 379	6,2
1989	625	103 098	—	14 526	565	110 121	228 935	-16,9
1990	673	111 696	11 948	2 599	592	114 746	242 254	5,8
1991	704	142 746	12 416	2 665	585	118 625	277 741	14,6

^a Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

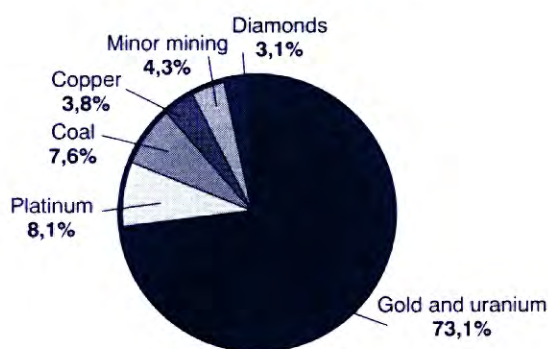
^b Reduction in number of customers due to the sale of circuits to municipalities.

ESKOM: Sales to mining sector, GWh

Table 18

Year	Gold and uranium	Diamond	Coal	Platinum	Copper	Chrome
1967	9 946	264	453	308	235	11
1968	10 339	281	480	378	256	14
1969	10 647	282	495	653	282	17
1970	11 504	288	535	941	343	20
1971	11 662	297	563	962	374	25
1972	11 773	325	589	990	422	31
1973	12 263	334	620	1 581	565	33
1974	12 803	338	648	1 978	653	52
1975	13 108	346	705	2 001	679	42
1976	13 918	343	812	2 184	728	61
1977	14 708	342	941	2 287	874	84
1978	16 241	497	1 078	2 388	1 023	106
1979	17 201	596	1 248	2 772	1 042	126
1980	18 477	678	1 426	2 973	1 117	127
1981	19 406	714	1 522	3 014	1 131	117
1982	20 069	656	1 691	2 466	1 178	105
1983	20 724	649	1 686	2 552	1 178	99
1984	21 427	634	1 873	3 023	1 160	106
1985	22 088	652	2 142	3 402	1 304	175
1986	22 756	700	2 052	3 438	1 385	189
1987	23 422	735	2 193	3 565	1 439	135
1988	24 469	808	2 288	3 891	1 355	139
1989	24 249	870	2 321	4 105	1 326	144
1990	24 033	917	2 364	2 886	1 296	138
1991	22 778	969	2 381	2 522	1 187	150

Major mining sales

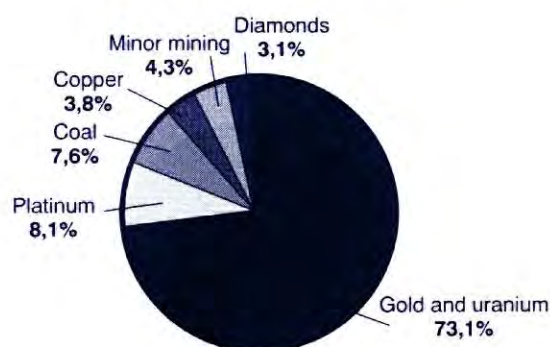


ESKOM: Sales to mining sector, GWh

Table 18

Year	Gold and uranium	Diamond	Coal	Platinum	Copper	Chrome
1967	9 946	264	453	308	235	11
1968	10 339	281	480	378	256	14
1969	10 647	282	495	653	282	17
1970	11 504	288	535	941	343	20
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1972	11 773	325	589	990	422	31
1973	12 263	334	620	1 581	565	33
1974	12 803	338	648	1 978	653	52
1975	13 108	346	705	2 001	679	42
1976	13 918	343	812	2 184	728	61
1977	14 708	342	941	2 287	874	84
1978	16 241	497	1 078	2 388	1 023	106
1979	17 201	596	1 248	2 772	1 042	126
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1988	24 469	808	2 288	3 891	1 355	139
1989	24 249	870	2 321	4 105	1 326	144
1990	24 033	917	2 364	2 886	1 296	138
1991	22 778	969	2 381	2 522	1 187	150

Major mining sales



ESKOM: Sales to mining sector, GWh

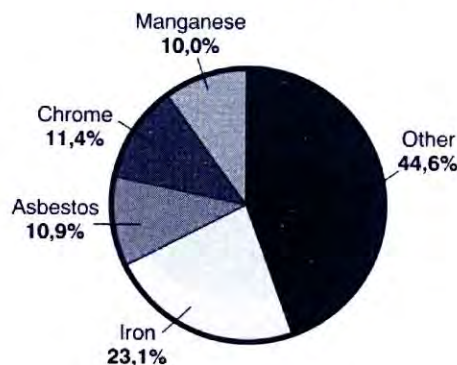
Table 18 continued

Year	Asbestos	Iron	Manga- nese	Other ^a	Total	Growth %
1967	91		74 ^b	59	11 441	5,8
1968	107		81 ^b	59	11 995	4,8
1969	118		80 ^b	68	12 642	5,4
1970	137		88 ^b	92	13 948	10,3
1971	152		92 ^b	100	14 227	2,0
1972	161		101 ^b	117	14 509	2,0
1973	168	86	27	123	15 800	8,9
1974	193	104	30	142	16 941	7,2
1975	238	121	37	167	17 444	3,0
1976	266	180	49	205	18 746	7,5
1977	275	271	62	295	20 139	7,4
1978	223	272	72	319	22 219	10,3
1979	233	334	83	365	24 000	8,0
1980	242	361	94	387	25 882	7,8
1981	240	335	104	548	27 131	4,8
1982	235	305	113	554	27 372	0,9
1983	225	215	77	616	28 021	2,4
1984	186	286	73	738	29 506	5,3
1985	184	306	84	512	30 849	4,5
1986	162	294	88	796	31 860	3,3
1987	129	255	88	889	32 849	3,1
1988	118	284	104	1 081	34 536	5,1
1989	126	310	129	1 130	34 709	0,5
1990	141	313	140	1 137	33 364	-3,9
1991	143	303	131	586	31 150	-6,6

^a Includes stone quarrying, clay and sand pits, chemicals and fertilizers, mineral mining, salt mining and evaporating, precious and semi-precious stone mining (except diamond mining) and other non-metallic mineral mining.

^b Up to 1972, iron and manganese figures were combined.

Minor mining sales



ESKOM: Sales to mining sector, GWh

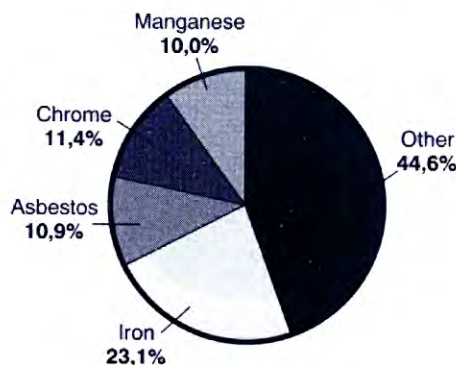
Table 18 continued

Year	Asbestos	Iron	Manga- nese	Other ^a	Total	Growth %
1967	91		74 ^b	59	11 441	5,8
1968	107		81 ^b	59	11 995	4,8
1969	118		80 ^b	68	12 642	5,4
1970	137		88 ^b	92	13 948	10,3
1971	152		92 ^b	100	14 227	2,0
1972	161		101 ^b	117	14 509	2,0
1973	168	86	27	123	15 800	8,9
1974	193	104	30	142	16 941	7,2
1975	238	121	37	167	17 444	3,0
1976	266	180	49	205	18 746	7,5
1977	275	271	62	295	20 139	7,4
1978	223	272	72	319	22 219	10,3
1979	233	334	83	365	24 000	8,0
1980	242	361	94	387	25 882	7,8
1981	240	335	104	548	27 131	4,8
1982	235	305	113	554	27 372	0,9
1983	225	215	77	616	28 021	2,4
1984	186	286	73	738	29 506	5,3
1985	184	306	84	512	30 849	4,5
1986	162	294	88	796	31 860	3,3
1987	129	255	88	889	32 849	3,1
1988	118	284	104	1 081	34 536	5,1
1989	126	310	129	1 130	34 709	0,5
1990	141	313	140	1 137	33 364	-3,9
1991	143	303	131	586	31 150	-6,6

^a Includes stone quarrying, clay and sand pits, chemicals and fertilizers, mineral mining, salt mining and evaporating, precious and semi-precious stone mining (except diamond mining) and other non-metallic mineral mining.

^b Up to 1972, iron and manganese figures were combined.

Minor mining sales



ESKOM: Sales to industry, ^{GWh}

Table 19 (a)

Year	Building, cement and quarrying	Chemical	Engineering, iron, steel and base metals	Foodstuffs, cons. goods, commercial and other	Paper and paper products	Other	Total	Growth %
1966	530	1 098	2 850	935	416	240	6 069	
1967	562	1 214	3 224	1 022	469	238	6 729	10,9
1968	646	1 241	3 529	1 111	493	419	7 439	10,6
1969	716	1 272	4 207	1 088	542	749	8 574	15,3
1970	782	1 376	4 683	1 407	485	875	9 608	12,1
1971	824	1 444	5 652	1 673	494	927	11 014	14,6
1972	878	1 639	6 864	1 852	520	889	12 642	14,8
1973	1 096	1 921	7 687	2 747	575		14 026	10,9
1974	1 148	2 160	8 835	3 359	604		16 106	14,8
1975	1 115	2 382	10 180	3 790	583		18 050	12,1
1976	1 068	2 655	11 173	4 350	661		19 907	10,3
1977	1 087	3 103	11 927	4 819	650		21 586	8,2
1978	1 198	4 117	13 338	4 916	612		24 181	12,1
1979	1 121	4 657	15 600	5 378	719		27 475	13,6
1980	1 194	5 751	15 900	5 688	840		29 373	6,9
1981	1 353	7 215	15 316	6 341	866		31 091	5,8
1982	1 413	7 258	14 754	6 688	846		30 959	-0,4

Note: Figures not available for years prior to 1966

Table 19 (b)

By Standard Industrial Classification of selected economic activities (SIC)

Year	Division												Growth %
	11	31	32	33	34	35	36	371	372	38	Other ^a	Total	
1983	2 051	397	380	175	1 056	7 046	1 231	7 754	6 935	440	4 822	32 286	4,3
1984	2 295	407	400	181	1 288	7 389	1 342	8 793	8 654	441	4 929	36 119	11,9
1985	2 665	422	410	186	1 550	7 511	1 232	9 939	8 779	434	5 088	38 215	5,8
1986	2 863	382	430	189	1 500	7 758	1 206	10 302	9 030	484	5 026	39 170	2,5
1987	2 833	355	412	186	1 239	7 283	1 224	10 522	9 078	340	4 812	38 284	-2,3
1988	3 163	371	415	212	1 263	7 089	1 342	11 876	8 702	198	5 107	39 738	3,8
1989	3 438	350	402	214	1 057	6 376	1 219	11 994	8 559	165	5 485	39 258	-1,2
1990	3 620	360	369	211	1 122	6 884	1 557	11 809	8 170	154	4 511	38 766	-3,0
1991	3 742	367	368	201	1 151	7 402	1 400	12 291	7 784	136	5 330	40 170	3,6

Standard Industrial Classification Divisions

- 11 Agriculture, hunting, forestry and logging, and other rural supplies
- 31 Manufacture of food, beverages and tobacco
- 32 Manufacture of textiles, wearing apparel and leather goods
- 33 Manufacture of wood and wood products, including furniture
- 34 Manufacture of paper and paper products, including printing and publishing

- 35 Manufacture of chemicals and of chemical petroleum, coal, rubber and plastic products
- 36 Manufacture of non-metallic mineral products
- 371 Iron and steel basic industries
- 372 Non-ferrous metal basic industries
- 38 Manufacture of fabricated metal products, machinery and equipment

^a Includes other manufacturing and commercial enterprises.

ESKOM: Sales to industry, ^{GWh}

Table 19 (a)

Year	Building, cement and quarrying	Chemical	Engineering, iron, steel and base metals	Foodstuffs, cons. goods, commercial and other	Paper and paper products	Other	Total	Growth %
1966	530	1 098	2 850	935	416	240	6 069	
1967	562	1 214	3 224	1 022	469	238	6 729	10,9
1968	646	1 241	3 529	1 111	493	419	7 439	10,6
1969	716	1 272	4 207	1 088	542	749	8 574	15,3
1970	782	1 376	4 683	1 407	485	875	9 608	12,1
1971	824	1 444	5 652	1 673	494	927	11 014	14,6
1972	878	1 639	6 864	1 852	520	889	12 642	14,8
1973	1 096	1 921	7 687	2 747	575		14 026	10,9
1974	1 148	2 160	8 835	3 359	604		16 106	14,8
1975	1 115	2 382	10 180	3 790	583		18 050	12,1
1976	1 068	2 655	11 173	4 350	661		19 907	10,3
1977	1 087	3 103	11 927	4 819	650		21 586	8,2
1978	1 198	4 117	13 338	4 916	612		24 181	12,1
1979	1 121	4 657	15 600	5 378	719		27 475	13,6
1980	1 194	5 751	15 900	5 688	840		29 373	6,9
1981	1 353	7 215	15 316	6 341	866		31 091	5,8
1982	1 413	7 258	14 754	6 688	846		30 959	-0,4

Note: Figures not available for years prior to 1966

Table 19 (b)

By Standard Industrial Classification of selected economic activities (SIC)

Year	Division												Growth %
	11	31	32	33	34	35	36	371	372	38	Other ^a	Total	
1983	2 051	397	380	175	1 056	7 046	1 231	7 754	6 935	440	4 822	32 286	4,3
1984	2 295	407	400	181	1 288	7 389	1 342	8 793	8 654	441	4 929	36 119	11,9
1985	2 665	422	410	186	1 550	7 511	1 232	9 939	8 779	434	5 088	38 215	5,8
1986	2 863	382	430	189	1 500	7 758	1 206	10 302	9 030	484	5 026	39 170	2,5
1987	2 833	355	412	186	1 239	7 283	1 224	10 522	9 078	340	4 812	38 284	-2,3
1988	3 163	371	415	212	1 263	7 089	1 342	11 876	8 702	198	5 107	39 738	3,8
1989	3 438	350	402	214	1 057	6 376	1 219	11 994	8 559	165	5 485	39 258	-1,2
1990	3 620	360	369	211	1 122	6 884	1 557	11 809	8 170	154	4 511	38 766	-3,0
1991	3 742	367	368	201	1 151	7 402	1 400	12 291	7 784	136	5 330	40 170	3,6

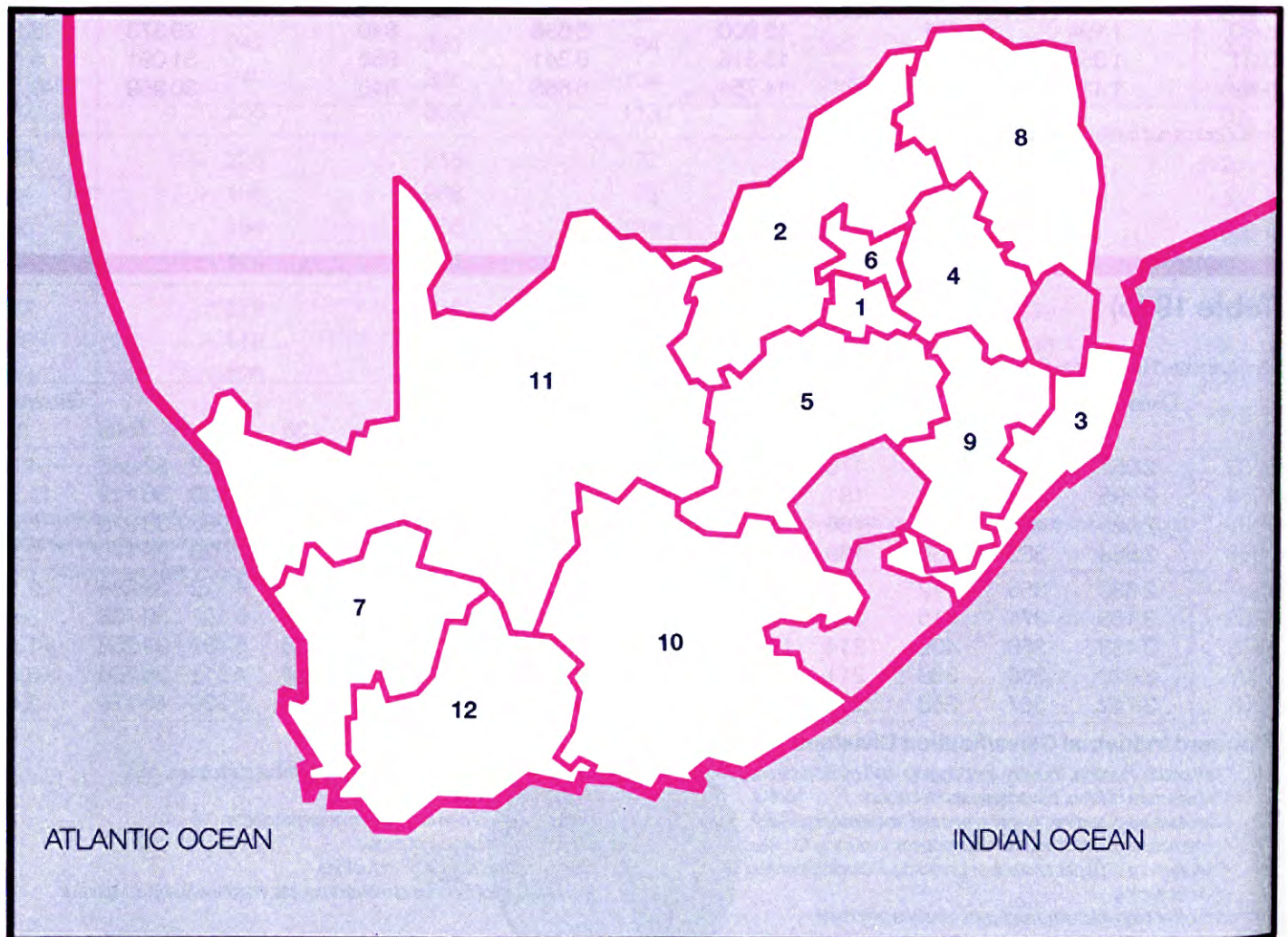
Standard Industrial Classification Divisions11 *Agriculture, hunting, forestry and logging, and other rural supplies*31 *Manufacture of food, beverages and tobacco*32 *Manufacture of textiles, wearing apparel and leather goods*33 *Manufacture of wood and wood products, including furniture*34 *Manufacture of paper and paper products, including printing and publishing*^a *Includes other manufacturing and commercial enterprises.*35 *Manufacture of chemicals and of chemical petroleum, coal, rubber and plastic products*36 *Manufacture of non-metallic mineral products*371 *Iron and steel basic industries*372 *Non-ferrous metal basic industries*38 *Manufacture of fabricated metal products, machinery and equipment*

ESKOM: Distribution regions in the RSA

as at 31 December 1991

Map 1

- 1: **Southern Transvaal** – Johannesburg
- 2: **Western Transvaal** – Johannesburg
- 3: **Eastern Natal** – Durban
- 4: **Eastern Transvaal** – Witbank
- 5: **Orange Free State** – Bloemfontein
- 6: **Central Transvaal** – Johannesburg
- 7: **Western Cape** – Bellville
- 8: **North-Eastern Transvaal** – Nelspruit
- 9: **Western Natal** – Pietermaritzburg
- 10: **Eastern Cape** – East London
- 11: **Northern Cape** – Kimberley
- 12: **Southern Cape** – George

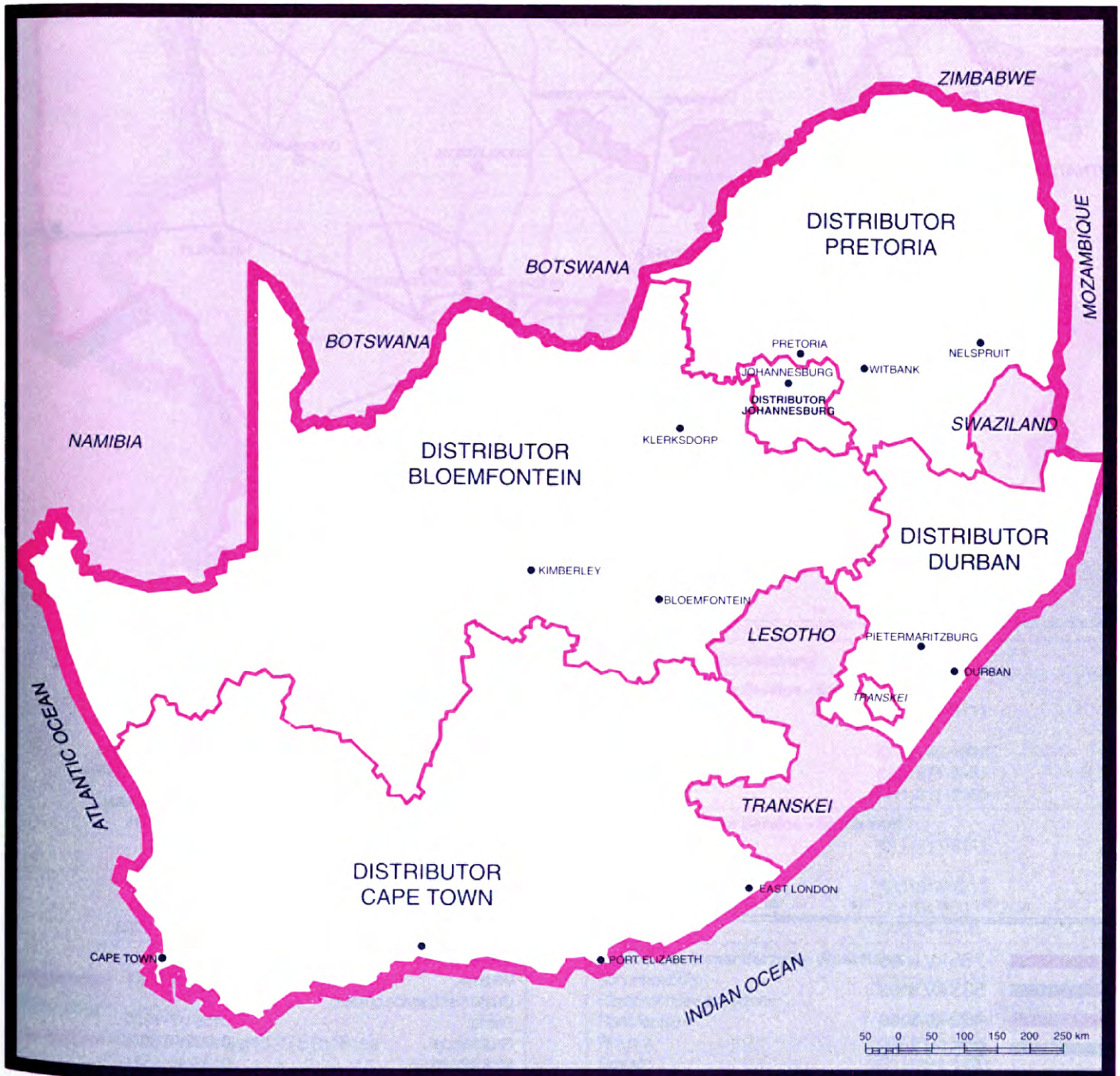


ESKOM: Distributors

as from 1 January 1992

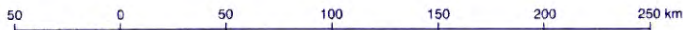
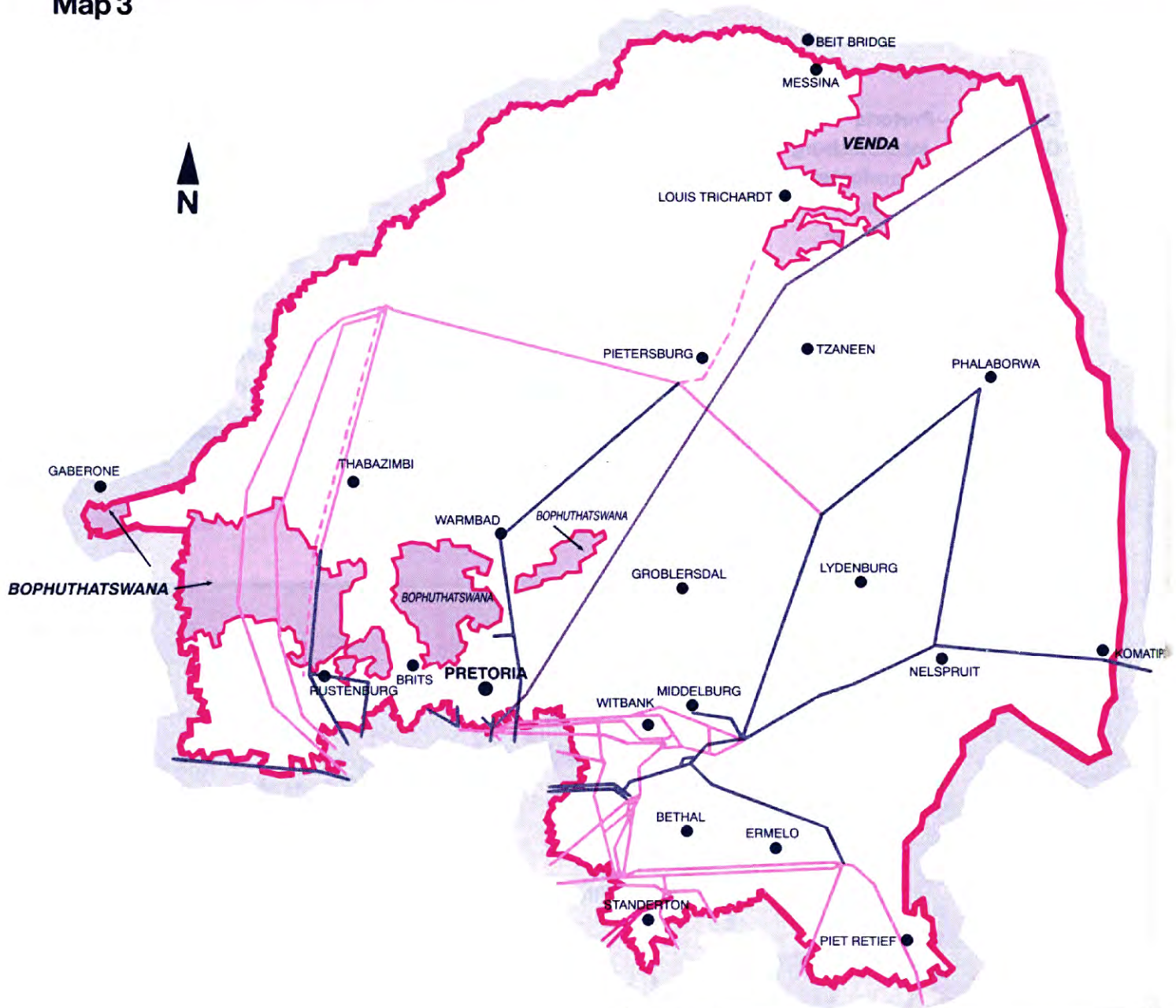
Map 2

- Map 3: Distributor – Pretoria
- Map 4: Distributor – Johannesburg
- Map 5: Distributor – Bloemfontein
- Map 6: Distributor – Durban
- Map 7: Distributor – Cape Town



ESKOM: Distributor – Pretoria

Map 3

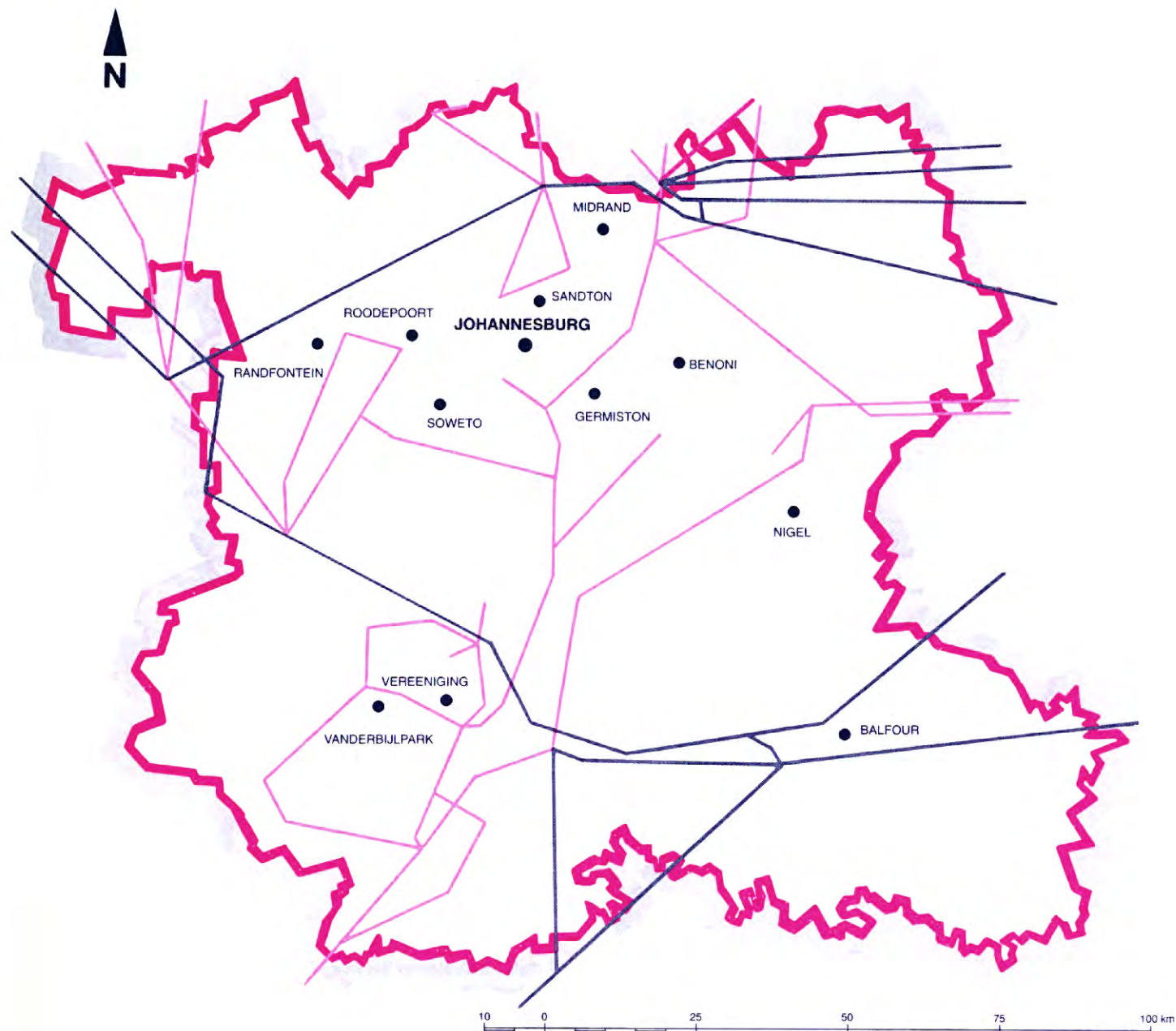






- 765 kV lines
- 533 kV lines
- 400 kV lines
- 275 kV lines
- Lines under construction

Distributor – Pretoria	
Sales & Customer Service – North-Western Transvaal	
Pretoria	(012) 47-1100
Customer Service offices:	
Brits	(01211) 2-0438
Rustenburg	(0142) 2-0217/8/9
Thabazimbi	(01537) 2-1291/2/3
Warmbad	(015331) 2140/50/60
Sales & Customer Service – North-Eastern Transvaal	
Nelspruit	(01311) 5-2001
Customer Service offices:	
Lydenburg	(01323) 2314
Nelspruit	(01311) 5-2001
Phalaborwa	(01524) 5888
Pietersburg	(01521) 93-2703
Sales & Customer Service – Eastern Transvaal	
Witbank	(0135) 67-9111
Customer Service offices:	
Bethal	(01361) 7-1200
Groblersdal	(01202) 4039/4041
Middelburg	(0132) 46-1631-7

ESKOM: Distributor – Johannesburg

Map 4

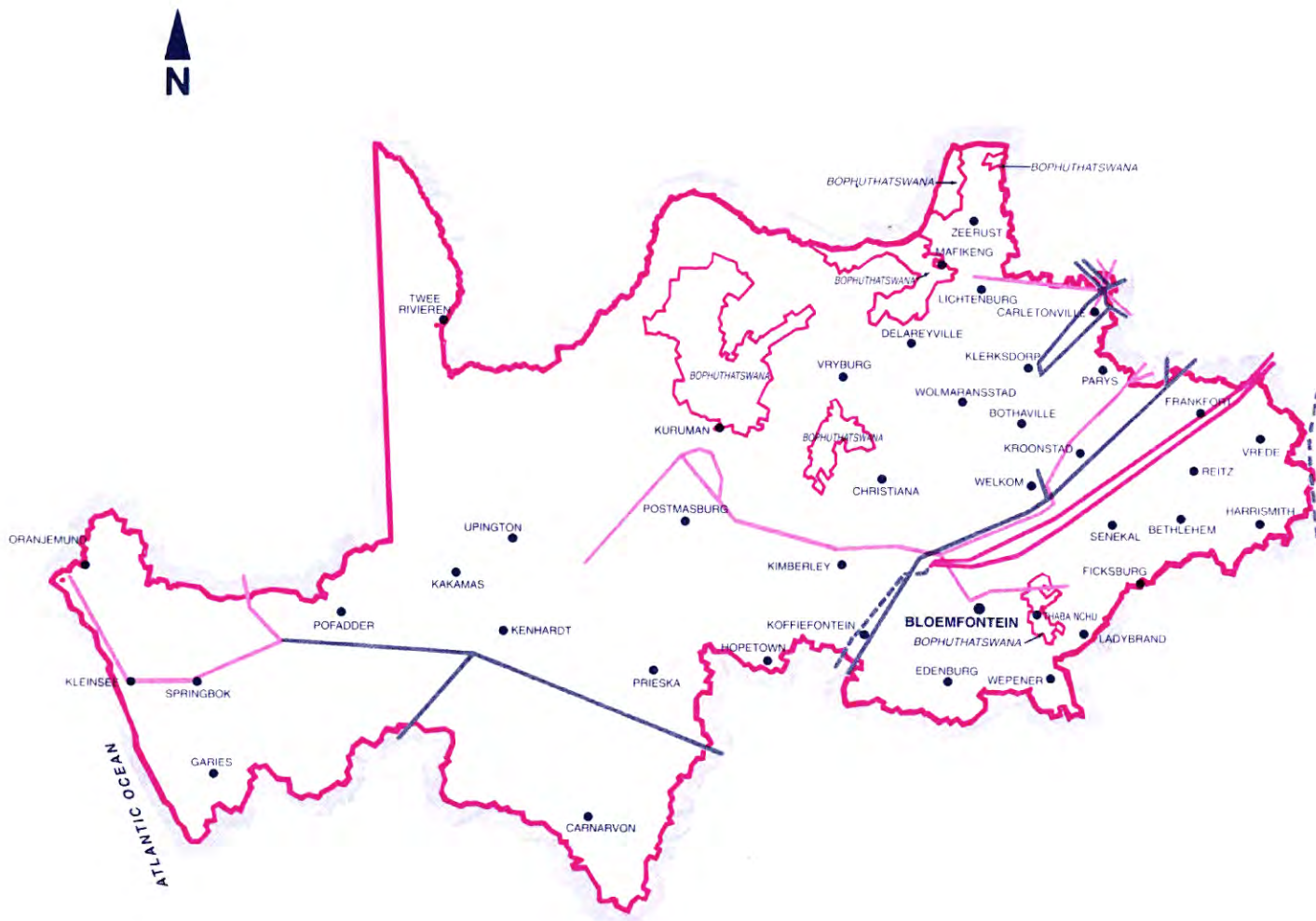


-  533 kV lines
-  400 kV lines
-  220 kV lines and 275 kV lines
-  Lines under construction

Distributor – Johannesburg	
Sales & Customer Service – East Rand	
Johannesburg	(011) 711-9111
Customer Service offices:	
Benoni	(011) 740-1622
Germiston	(011) 871-3481
Midrand	(011) 315-2060
Sales & Customer Service – South Vaal	
Johannesburg	(011) 711-9111
Customer Service offices:	
Nigel	(011) 814-1212
Vanderbijlpark	(016) 81-4030/1/2/3
Vereeniging	(016) 21-3410
Sales & Customer Service – West Rand	
Johannesburg	(011) 711-9111
Customer Service offices:	
Randfontein	(011) 693-5348
Rivonia	(011) 803-5464
Soweto	(011) 494-4320

ESKOM: Distributor – Bloemfontein

Map 5



50 0 50 100 150 200 250 km

- 765 kV lines
- 400 kV lines
- 220 kV lines and 275 kV lines
- Lines under construction

Distributor – Bloemfontein

Sales & Customer Service – Orange Free State

Bloemfontein	(051) 30-2300
Customer Service offices:	
Bethlehem	(01431) 3-5133
Harrismith	(01436) 2-1090/2-1109
Kroonstad	(01411) 3-2757
Parys	(01601) 3241
Senekal	(014351) 3080/4355

Sales & Customer Service – Northern Cape

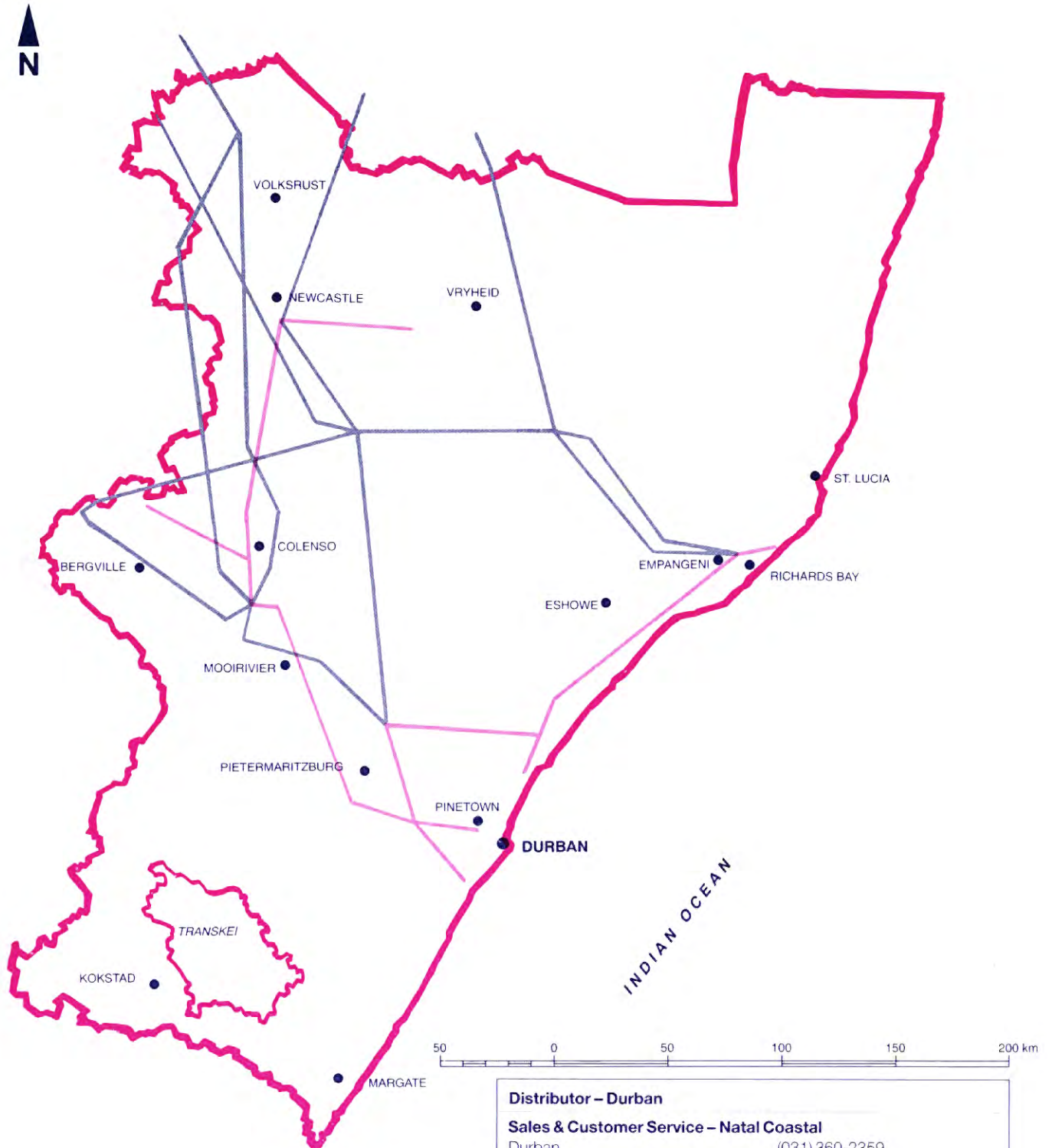
Kimberley	(0531) 80-5911
Customer Service offices:	
Kimberley	(0531) 80-5876
Kuruman	(01471) 2-2151
Upington	(054) 2-6941
Vryburg	(01451) 5741

Sales & Customer Service – Goldfields

Klerksdorp	(018) 64-2340
Customer Service offices:	
Bothaville	(01414) 2117/8
Carletonville	(01491) 7-2064
Delareyville	(01453) 48-1617
Lichtenburg	(01441) 2-6284/5/6/7
Welkom	(0171) 92-2962
Wolmaransstad	(01811) 2-2515

ESKOM: Distributor – Durban

Map 6

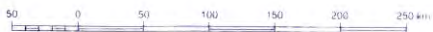
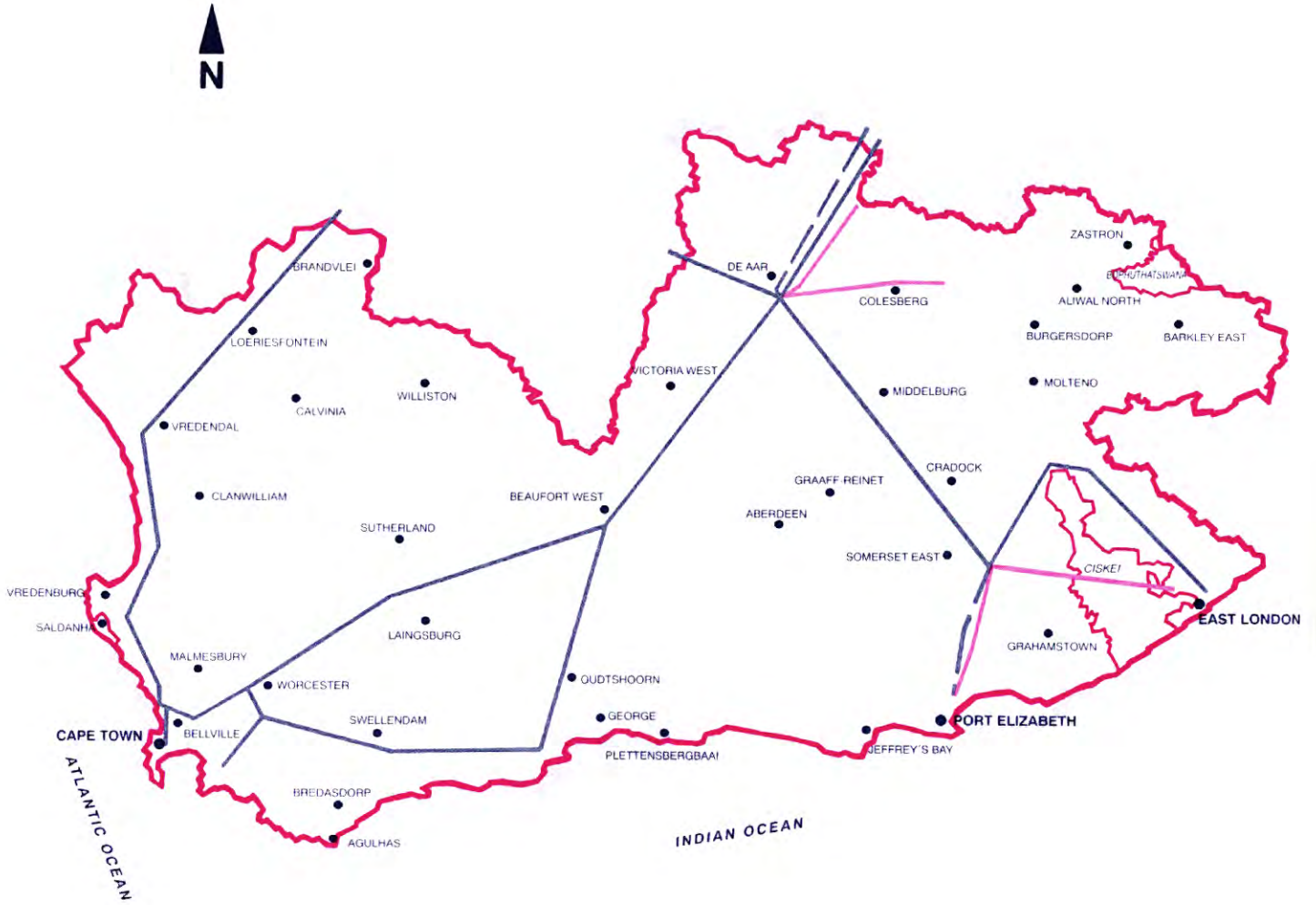


- 400 kV lines
- 275 kV lines
- Lines under construction

Distributor – Durban	
Sales & Customer Service – Natal Coastal	
Durban	(031) 360-2359
Customer Service offices:	
Empangeni	(0351) 2-6931
Margate	(03931) 5-1325
Pinetown	(031) 701-7691
Sales & Customer Service – Natal Inland	
Pietermaritzburg	(0331) 95-7002
Customer Service offices:	
Ladysmith	(0361) 31-0370
Newcastle	(03431) 5-1274/5
Pietermaritzburg	(0331) 94-7351

ESKOM: Distributor – Cape Town

Map 7



- 400 kV lines
- 220 kV lines
- Lines under construction

Distributor – Cape Town	
Sales & Customer Service – West	
Bellville	(021) 915-9111
Customer Service offices:	
Grabouw	(024) 53-1140
Vredenburg	(02281) 3-1154
Bellville	(021) 915-9111
Sales & Customer Service – East	
East London	(0431) 39-2111
Customer Service offices:	
Colesberg	(05852) 363
Grahamstown	(0461) 2-7031
Port Elizabeth	(041) 34-3424
Sales & Customer Service – South	
George	(0441) 76-2911
Customer Service offices:	
George	(0441) 76-2911
Oudtshoorn	(044) 329-1667
Worcester	(0231) 2-2394

SOUTH AFRICA: Motive power employed – electricity

Table 20

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1989)

Ownership and group	Nuclear and steam turbines MW	Gas turbines MW	Steam reciprocating engines MW	Diesel and heavy oil engines MW	Petrol, paraffin and other light oil engines MW	Water turbines and water wheels MW	Total MW
Public supply undertakings							
Electricity generating stations							
Private undertakings and Eskom	31 811,0	365,6	–	38,2	–	1 940,0	34 154,8
Local authorities	1 944,0	342,5	–	3,0	–	185,0	2 474,5
Electricity distributing stations							
Local authorities	0,0	–	–	1,9	–	0,6	2,5
Total undertakings, MW	33 755,0	708,1	0,0	43,1	0,0	2 125,6	36 631,8
Self-producers, MW	1 062,0	–	1,2	10,0	1,7	2,7	1 077,6
Total all undertakings, MW	34 817,0	708,1	1,2	53,1	1,7	2 128,3	37 709,4

SOUTH AFRICA: Electricity available for consumption

Table 21

Source: Central Statistical Service Census of Electricity, Gas and Steam, Report No. 41-01-01 (1989)

Undertaking	Gross production of electricity	Purchases outside South Africa	Units consumed by auxiliary installations and lost in station transformers	Units lost in transmission and transformers	Sales outside South Africa	Supply available for consumption in South Africa
	GWh	GWh	GWh	GWh	GWh	GWh
Public supply undertakings						
Private undertakings and Eskom	151 559	344	10 608	7 044	4 283	129 968
Local authorities	4 471	–	556	2 686	106	1 123
Total, GWh	156 030	344	11 164	9 730	4 389	131 091
Self-producers						
Mining ^a	75	–	6	270	–	–201
Manufacturing	7 327	–	1 804	145	–	5 378
Transnet	–	–	–	74	–	–74
Other	44	–	0	1	–	43
Total, GWh	7 446	–	1 810	490	0	5 146
Total undertakings	163 476	344	12 974	10 220	4 389	136 237

^a Negative number of units for mining is caused by transmission losses in the total number of units generated and the number of units bought exceeding units generated.

SOUTH AFRICA: Monthly data on electricity available for consumption

Table 22

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1989).

Month	1983	1984	1985	1986	1987	1988	1989
Actual data	GWh	GWh	GWh	GWh	GWh	GWh	GWh
January	8 745	9 326	9 801	10 371	10 618	11 163	11 893
February	8 217	9 131	9 443	9 703	10 093	10 891	10 946
March	9 103	9 901	10 417	10 861	11 213	11 330	11 773
April	8 871	9 491	10 015	10 379	10 684	11 073	11 881
May	9 546	10 415	10 801	11 053	11 345	11 058	12 259
June	9 661	10 686	11 053	11 432	11 763	12 271	12 649
July	10 271	11 139	11 547	11 836	12 409	12 914	13 363
August	10 202	10 794	11 230	11 621	11 945	12 543	12 861
September	9 489	10 167	10 525	10 772	11 211	11 917	12 316
October	9 772	10 164	10 736	11 106	11 410	12 278	12 508
November	9 382	9 984	10 521	10 753	11 204	11 772	11 930
December	9 107	9 637	10 118	10 168	10 856	11 592	11 783
Annual data	112 366	120 835	126 207	130 055	134 751	140 802	146 162
Seasonal variation eliminated							
January	9 172	9 791	10 295	10 866	10 965	11 473	12 176
February	9 129	10 121	10 460	10 751	11 131	12 029	12 114
March	9 110	9 920	10 439	10 848	11 265	11 423	11 909
April	9 251	9 854	10 397	10 780	11 096	11 479	12 294
May	9 181	10 043	10 422	10 710	11 132	10 884	12 074
June	9 179	10 137	10 484	10 820	11 211	11 737	12 123
July	9 309	10 107	10 482	10 785	11 328	11 811	12 238
August	9 500	10 074	10 485	10 881	11 256	11 816	12 085
September	9 468	10 177	10 543	10 836	11 275	11 973	12 385
October	9 671	10 035	10 601	10 963	11 227	12 038	12 234
November	9 650	10 257	10 803	10 984	11 429	12 017	12 202
December	9 741	10 309	10 821	10 852	11 398	12 132	12 314

Estimates obtained from a monthly sample survey.

SOUTH AFRICA: Production and consumption of electricity

Table 23

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1989)

Census year	Production					Electricity supplied for consumption							
	Gross production of electricity	Purchases outside Republic	Used in power stations and lost in distribution	Sales outside Republic	Total no. of units consumed in South Africa	In mining	Transnet			For domestic purposes	Manufacturing, commerce, etc ^a	For other purposes ^b	Consumption per capita
							Traction	Other purposes	GWh				
GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	kWh	
1961	24 299	—	3 401	—	20 902	8 796	1 033	214	3 538	6 764	557	1 189	
1962	25 699	—	3 633	—	22 066	9 121	1 181	223	3 469	7 087	985	1 223	
1963	27 457	—	3 263	—	24 194	9 524	1 296	249	3 724	8 316	1 085	1 304	
1964	29 399	—	4 142	—	25 213	9 758	1 389	277	4 221	8 617	951	1 322	
1965	34 423	—	5 346	—	29 077	10 482	1 676	347	4 960	10 251	1 428	1 483	
1967	39 636	—	5 599	—	34 037	11 759	1 913	409	5 682	12 464	1 810	1 642	
1969	45 968	—	6 359	—	39 610	12 882	2 142	535	6 714	15 246	2 091	1 810	
1971	54 647	—	7 417	14	47 216	14 457	2 676	602	8 088	19 282	2 111	2 086	
1973	64 390	—	8 441	194	55 755	16 102	2 904	616	9 265	24 408	2 461	2 327	
1975	74 894	25	10 121	283	64 514	17 749	3 159	696	9 991	29 784	3 136	2 546	
1976	79 358	1 214	10 559	327	69 686	18 994	3 356	735	10 474	32 558	3 569	2 920	
1977	80 323	4 288	10 547	417	73 648	20 318	3 538	775	11 302	33 615	4 099	3 000	
1978	84 496	6 973	11 837	1 441	78 190	22 400	3 517	796	11 718	35 427	4 332	3 256	
1979	89 748	10 356	12 571	1 795	85 739	23 939	3 730	915	12 330	40 101	4 723	3 524	
1980	98 951	9 645	14 079	1 871	92 646	25 260	4 323	989	13 522	43 049	5 502	3 689	
1981	113 656	2 660	15 894	2 232	98 190	26 311	4 652	999	14 738	45 735	5 755	3 771	
1982	119 012	2 167	18 542	2 406	100 230	27 166	4 883	1 115	14 618	45 691	6 757	3 715	
1983	121 122	5 084	20 367	2 875	102 965	27 806	4 339	921	14 490	49 232	6 177	3 867	
1986	146 521	312	22 850	3 634	120 348	29 942	3 903	828	17 644	60 858	7 174	4 238	
1989	163 476	344	23 194	4 389	136 238	33 909		4 915	20 780	68 181	8 452	4 512	

^a Private businesses

^b Rand Water Board, regional water supply commissions, government departments, provincial administrations, local authorities, etc.

SOUTH AFRICA: Consumption of electricity

Table 24

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1989).

Units consumed by	GWh
Mining	
Gold and uranium mines	24 684
Coal mines	2 662
Other mines	6 564
Traction, station lighting, etc.	4 915
Own local authority departments	
Water departments	455
Public lighting (street, etc)	748
Other purposes	856
Rand Water Board & Regional Water Supply Commissions	1 680
Commercial and construction	13 823
Manufacturing	54 358
Domestic use	20 780
Other	4 713
Total	136 238

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Transvaal continued</i>									
Tonga	1991	-	-	-	-	-	-	-	-
Trichardt	6/91	550	345	50	5	950	629	-	629
Tsakane	1991	3 262	-	-	-	3 262	14 000	10 738	3 262
Tshing	1991	133	-	-	-	133	680	547	133
Tswelelang	1991	53	-	-	-	53	1 081	1 028	53
Turfloop/Mankweng	1991	-	-	-	-	-	-	-	-
Tutuka	6/91	1 500	388	-	-	1 888	-	-	-
Tweefontein	6/90	142	4	2	2	150	-	-	-
Tzaneen	6/91	1 898	516	106	102	2 622	1 898	-	1 898
Vaalbank	6/90	272	11	2	2	287	-	-	-
Vaalwater	1991	-	-	-	-	-	-	-	-
Valencia Park	1991	161	-	-	-	161	161	-	161
Vanderbijlpark	6/89	17 603	1 170	156	43	18 972	17 539	58	17 481
Ventersdorp	6/90	1 001	40	51	-	1 092	890	393	497
Venterspos	1991	-	-	-	-	-	-	-	-
Vereeniging	6/89	19 100	1 913	170	390	21 573	17 620	465	17 155
Verwoerdburg	6/90	16 768	286	71	714	17 839	19 036	-	19 036
Volksrust	6/91	1 639	227	8	-	1 874	1 592	20	1 572
Vosloorus	1991	14 790	60	5	45	14 900	16 694	4 273	12 421
Vrede	1991	800	55	-	-	855	700	41	659
Vukuzakhe	6/91	783	-	-	-	783	1 635	852	783
Wakkerstroom	1991	307	-	-	-	307	327	20	307
Warmbaths	6/90	1 940	198	49	456	2 643	1 451	19	1 432
Waterval Boven	6/91	450	60	1	-	511	488	34	454
Wattville	6/89	2 553	45	-	6	2 604	2 592	-	2 592
Welgedacht	1991	-	-	-	-	-	-	-	-
Wesselton	6/91	2 120	30	-	-	2 150	3 259	1 618	1 641
Westonaria	1991	4 420	711	22	-	5 153	3 560	12	3 548
White River	6/91	2 550	495	105	22	3 172	2 550	-	2 550
Witbank	6/91	11 479	979	37	34	12 529	11 176	-	11 176
Wolmaransstad	6/90	714	112	15	63	904	897	65	832
Wonderkop (Boph.)	1991	-	-	-	-	-	-	-	-
Zakkariya Park	6/89	145	-	-	-	145	-	-	-
Zamdela	6/89	2 853	-	-	-	2 853	2 853	-	2 853
Zeerust	6/90	1 064	172	100	18	1 354	1 403	271	1 132
Zenele	1991	-	-	-	-	-	-	-	-
Zithobeni	6/91	528	4	-	11	543	528	-	528
TOTAL TRANSCVAAL		1 212 741	54 231	14 098	24 340	1 305 410	1 336 398	182 795	1 153 603

^aSource: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
-	-	-	1 077	1 077	0,44	28,1	-	-
5 395	10 019	-	-	15 414	5,00	40,0	5,8	3 140
16 262	-	-	15 680	31 942	8,36	43,6	-	115 300
-	-	-	-	-	-	-	-	5 000
-	-	-	-	-	-	-	-	-
-	-	-	37 912	37 912	8,01	54,0	-	-
4 684	8 699	-	-	13 383	7,50	55,0	-	2 800
1 555	1 071	72	54	2 752	0,48	50,2	-	123 211
22 008	318 156	51 651	4 066	395 881	55,00	60,0	12,0	15 756
961	21	63	-	1 045	0,37	48,6	-	13 056
-	-	-	2 704	2 704	0,51	60,2	-	-
-	-	-	-	-	-	-	-	-
167 415	27 947	529 799	6	725 167	129,62	63,0	2,3	72 438
5 067	867	4 255	6 588	16 777	4,80	59,6	17,7	9 000
-	-	-	3 066	3 066	0,62	56,7	-	-
205 240	193 633	1 742 998	20 131	2 162 002	223,66	47,0	6,3	134 900
213 928	24 772	186 805	31 960	457 465	92,17	67,0	2,6	86 144
18 200	7 700	4 700	-	30 600	5,92	61,2	4,6	75 000
99 541	6 924	2 398	6 261	115 125	38,78	35,3	5,0	150 000
6 007	2 821	-	2 098	10 926	2,47	50,6	-	14 023
3 760	-	-	-	3 760	-	-	-	12 000
-	-	-	-	-	-	-	-	4 217
12 262	18 419	673	2 387	33 741	6,53	75,0	7,7	17 239
4 026	1 598	224	365	6 213	1,22	81,9	5,1	1 500
14 138	-	-	-	14 138	-	-	10,1	32 000
-	-	-	5 882	5 882	1,25	53,7	-	-
-	-	-	20 401	20 401	5,70	40,9	-	43 100
50 700	8 876	3 817	2 553	65 946	12,00	52,0	4,9	121 469
24 000	-	-	48 377	72 377	14,00	65,0	9,5	7 000
124 791	39 205	55 365	91 358	310 719	80,82	60,2	7,9	45 000
5 500	3 567	2 918	634	12 619	4,40	80,0	15,1	23 648
-	-	-	929	929	0,22	47,7	-	-
310	-	-	-	310	-	-	-	-
31 715	-	-	-	31 715	-	-	-	35 000
8 361	1 676	2 302	2 302	14 641	5,15	48,0	10,6	6 000
-	-	-	3 656	3 656	1,01	41,5	-	-
1 666	-	-	-	1 666	0,54	45,4	7,5	3 025
11 140 128	2 881 594	15 414 642	3 735 868	33 172 231	-	-	-	12 418 086

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Orange Free State continued</i>									
Soutpan	1991	41	—	—	—	41	44	3	41
Springfontein	6/91	173	6	1	—	180	228	56	172
Steynsrus	6/90	228	39	2	1	270	231	—	231
Teisesville	1991	91	—	—	—	91	300	209	91
Thabong	1991	4 725	—	—	—	4 725	9 469	4 744	4 725
Thapelang	1991	22	—	—	—	22	150	128	22
Thembaile	6/90	303	—	11	—	314	1 914	1 611	303
Theunissen	6/90	617	125	9	2	753	503	—	503
Tikwana	6/90	7	3	—	5	15	510	503	7
Tlholong	6/90	43	—	—	—	43	—	—	—
Trompsburg	1991	213	—	—	—	213	213	—	213
Tshepong	6/90	34	—	—	1	35	230	196	34
Tswaraganang	6/90	35	3	—	—	38	378	343	35
Tumahole	6/90	623	27	—	23	673	7 589	6 966	623
Tweeling	6/90	173	34	—	—	207	174	1	173
Tweespruit	6/90	111	43	3	5	162	225	5	220
Van Stadensrus	6/90	35	11	—	—	46	40	16	24
Ventersburg	6/90	345	24	4	—	373	430	—	430
Verkeerdevlei	6/90	36	21	1	—	58	44	8	36
Viljoenskroon	1991	610	120	13	19	762	710	100	610
Villiers	6/90	345	75	6	—	426	382	37	345
Virginia	1991	5 263	650	47	3	5 963	5 263	—	5 263
Vredefort	1991	429	55	4	—	488	468	299	169
Warden	1991	341	69	14	—	424	364	23	341
Waterkloof (Philippolis)	1991	4	—	—	—	4	14	10	4
Welkom	6/89	16 767	1 664	194	22	18 647	17 036	269	16 767
Wepener	1991	317	—	—	—	317	394	77	317
Wesselsbron	6/90	405	96	9	—	510	405	—	405
Winburg	6/90	765	61	—	—	826	813	48	765
Witqwa	1991	—	—	—	—	—	—	—	—
Zamani	1991	24	—	—	—	24	162	138	24
Zastron	1991	700	13	—	—	713	412	—	412
TOTAL ORANGE FREE STATE		136 705	14 284	1 320	1 800	154 109	212 415	85 114	127 301

^a Source: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
—	—	—	—	—	—	—	—	—
1 334	66	447	465	2 313	0,50	55,1	—	4 870
1 522	427	112	305	2 366	0,90	—	4,4	700
—	—	—	—	—	—	—	—	—
—	—	—	69 610	69 610	16,19	49,1	—	—
10	—	—	—	10	0,01	21,1	—	—
635	—	69	—	704	—	—	—	14 000
2 828	170	418	1	3 417	0,92	42,3	7,0	1 500
35	47	—	30	112	—	—	—	7 000
139	—	—	133	272	0,08	39,8	—	3 265
—	—	—	3 392	3 392	0,86	45,2	—	1 500
—	—	—	7	7	—	—	—	2 000
188	4	—	—	192	—	—	—	4 000
4 666	207	—	167	5 040	—	—	—	46 000
1 523	713	—	—	2 236	0,71	48,6	—	2 700
1 055	675	599	18	2 347	0,80	53,0	17,8	350
186	42	—	—	228	—	—	6,0	60
—	—	—	51 503	51 503	11,58	65,0	12,9	1 200
159	147	1	—	307	0,04	87,5	13,6	88
4 697	2 319	1 828	6 555	15 399	3,13	56,9	13,7	18 580
3 908	2 828	244	—	6 980	1,74	40,1	5,2	1 000
57 115	11 154	18 744	—	87 013	15,41	64,5	7,7	10 200
4 276	1 169	1 048	—	6 493	1,08	58,1	8,0	1 476
3 249	1 351	587	—	5 187	1,36	43,6	1,0	9 270
—	—	—	—	—	—	—	—	—
165 193	49 556	86 170	6 473	307 392	84,79	58,7	8,2	61 831
—	—	—	4 928	4 928	0,96	58,5	—	15 000
2 162	1 499	3 697	—	7 358	2,83	57,4	6,0	1 250
4 200	1 900	2 300	—	8 400	2,08	50,6	7,0	1 200
—	—	—	70 317	70 317	16,73	48,0	—	—
—	—	—	—	—	—	—	—	—
4 057	1 781	—	1 445	7 284	1,68	49,6	8,7	5 000
943 716	335 748	692 071	392 906	2 364 441				1 666 224

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^c (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Natal continued</i>									
Umlazi ^a	12/90	15 956	--	--	--	15 956	--	--	--
Umtentweni	1991	936	--	--	--	936	1 014	78	936
Underberg	1991	70	--	--	--	70	151	81	70
Utrecht	6/90	680	56	2	1	739	--	--	--
Uvongo	1991	2 300	--	--	--	2 300	2 491	191	2 300
Valley View	1991	37	--	--	--	37	40	3	37
Verulam	1991	4 580	--	--	--	4 580	4 580	--	4 580
Vryheid	6/91	3 324	98	--	79	3 501	3 118	445	2 673
Vulindlela ^b	12/90	198	--	--	--	198	--	--	--
Wartburg	6/91	205	21	9	211	446	223	24	199
Wembezi ^d	12/90	986	--	--	--	986	1 830	844	986
Westville ^a	1991	6 160	--	--	--	6 160	6 160	--	6 160
Widenham	1991	238	--	--	--	238	258	20	238
Winterton	12/91	75	38	2	136	251	81	--	81
Yellowwood Park	1991	1 073	--	--	--	1 073	1 162	89	1 073
Zinkwazi Beach	1991	332	--	--	--	332	360	28	332
TOTAL NATAL		498 640	44 646	1 118	1 883	546 287	359 929	34 035	325 894

^a Supplied by Durban Corporation.
^b KwaZulu Government electrification projects.
^c Source: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
--	--	--	--	--	--	--	--	176 393
--	--	--	--	--	--	--	--	3 670
--	--	--	--	--	--	--	--	10 000
10 199	1 104	13	444	11 760	3,00	48,2	16,7	4 196
--	--	--	--	--	--	--	--	6 560
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	20 000
37 022	42 169	--	1 402	80 593	18,88	53,8	9,1	23 700
3 292	--	--	--	3 292	0,80	47,1	--	1 153
2 244	957	2 546	5 515	11 261	--	--	--	1 000
7 192	--	--	--	7 192	2,08	39,6	--	25 989
--	--	--	--	--	--	--	--	28 021
--	--	--	--	--	--	--	--	--
894	1 308	757	7 645	10 603	--	--	--	297
--	--	--	--	--	--	--	--	4 500
--	--	--	--	--	--	--	--	--
3 173 463	2 279 284	4 972 578	236 624	10 661 949				3 612 094

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Cape and Walvis Bay continued</i>									
Vroolsdrif	1991	38	—	—	—	38	39	1	38
Vleesbaai	1991	—	—	—	—	—	—	—	—
Vosburg	6/91	63	15	2	30	110	213	—	213
Vredenburg-Saldanha	12/90	3 780	416	74	38	4 308	6 398	2 459	3 939
Vredendal	6/90	1 323	205	34	—	1 562	1 805	131	1 674
Vryburg	6/91	2 377	432	83	7	2 899	2 512	129	2 383
Vuyolwethu	1991	73	—	—	—	73	189	116	73
Waenhuiskraal	6/88	176	2	—	—	183	—	—	—
Walvis Bay	6/91	2 536	218	62	11	2 827	2 829	—	2 829
Warrenton	6/90	931	134	8	26	1 099	909	—	909
Wegdraai	1991	1	—	—	—	1	133	132	1
Wellington	6/90	4 045	386	54	15	4 500	4 226	492	3 734
Wilderness	6/90	766	33	—	—	799	—	—	—
Williston	6/90	260	23	—	36	319	644	381	263
Willowmore	6/90	324	62	1	147	534	975	644	331
Witsand	1991	198	5	—	—	203	83	8	75
Wittedrif	6/88	32	4	—	6	42	—	—	—
Witwater	1991	64	—	—	—	64	103	39	64
Wolseley	6/90	476	47	3	—	526	999	517	482
Wongalethu	1991	135	—	—	—	135	350	215	135
Worcester	6/90	9 561	16 389	1 384	—	27 334	8 940	888	8 052
Yzerfontein	12/90	453	2	—	—	455	472	9	463
Zola	1991	297	—	—	—	297	770	473	297
Zolani	1991	149	—	—	—	149	386	237	149
Zweletemba	6/89	12	17	—	13	42	1 233	1 221	12
Zwelihle	6/88	22	2	—	—	24	152	130	22
TOTAL CAPE AND WALVIS BAY		738 265	68 894	6 834	11 904	825 897	841 567	168 739	672 828
TOTAL SOUTH AFRICA		2 586 351	182 055	23 370	39 927	2 831 703	2 750 310	470 684	2 279 626

^a Source: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
—	—	—	—	—	—	—	—	—
—	—	—	337	337	0,11	35,5	—	—
313	116	7	179	615	0,19	41,9	11,0	945
—	—	—	—	—	—	—	—	—
25 037	10 392	43 935	3 650	83 014	19,20	59,9	6,0	38 755
7 170	4 815	3 000	1 029	16 014	3,60	48,0	6,3	8 198
20 280	6 158	18 043	7 962	52 443	13,20	63,2	12,4	34 547
2 630	2 410	—	960	6 000	4,00	17,1	—	726
15 995	5 085	34 159	19 209	74 448	16,90	66,0	4,3	30 452
12 000	6 500	8 100	700	27 300	25,90	18,1	10,0	21 500
—	—	—	—	—	—	—	—	—
23 679	7 246	32 076	883	63 884	14,54	59,0	3,0	27 000
3 976	4 657	—	—	8 633	2,16	57,8	11,1	6 000
1 101	259	—	343	1 703	0,58	56,0	19,0	2 671
1 666	1 026	86	—	2 778	0,90	39,0	10,0	5 500
830	180	—	—	1 010	0,04	41,0	—	151
190	32	—	71	293	0,10	33,4	—	—
—	—	—	—	—	—	—	—	—
1 210	2 942	1 671	—	5 823	1,57	62,5	8,0	5 800
—	—	—	—	—	—	—	—	—
58 366	15 167	67 713	4 258	145 504	33,94	62,4	7,1	63 900
2 774	53	—	21	2 848	1,00	32,5	11,0	212
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
79	28	—	—	107	0,03	40,7	—	12 500
—	—	—	—	—	—	—	—	1 390
4 607 823	1 512 838	4 877 338	1 459 528	12 417 481	—	—	—	7 579 517
19 865 130	7 009 463	25 956 629	5 824 926	58 616 103	—	—	—	25 275 921

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total	Those not electrified	Those electrified
<i>Transvaal continued</i>									
Tonga	1991	–	–	–	–	–	–	–	
Trichardt	6/91	550	345	50	5	950	629	629	
Tsakane	1991	3 262	–	–	–	3 262	14 000	10 738	
Tshing	1991	133	–	–	–	133	680	547	
Tswelelang	1991	53	–	–	–	53	1 081	1 028	
Turfloop/Mankweng	1991	–	–	–	–	–	–	–	
Tutuka	6/91	1 500	388	–	–	1 888	–	–	
Twefontein	6/90	142	4	2	2	150	–	–	
Tzaneen	6/91	1 898	516	106	102	2 622	1 898	1 898	
Vaalbank	6/90	272	11	2	2	287	–	–	
Vaalwater	1991	–	–	–	–	–	–	–	
Valencia Park	1991	161	–	–	–	161	161	161	
Vanderbijlpark	6/89	17 603	1 170	156	43	18 972	17 539	58	
Ventersdorp	6/90	1 001	40	51	–	1 092	890	393	
Venterspos	1991	–	–	–	–	–	–	–	
Vereeniging	6/89	19 100	1 913	170	390	21 573	17 620	465	
Verwoerdburg	6/90	16 768	286	71	714	17 839	19 036	–	
Volksrust	6/91	1 639	227	8	–	1 874	1 592	20	
Vosloorus	1991	14 790	60	5	45	14 900	16 694	4 273	
Vrede	1991	800	55	–	–	855	700	41	
Vukuzakhe	6/91	783	–	–	–	783	1 635	852	
Wakkerstroom	1991	307	–	–	–	307	327	20	
Warmbaths	6/90	1 940	198	49	456	2 643	1 451	19	
Waterval Boven	6/91	450	60	1	–	511	488	34	
Wattville	6/89	2 553	45	–	6	2 604	2 592	–	
Welgedacht	1991	–	–	–	–	–	–	–	
Wesselton	6/91	2 120	30	–	–	2 150	3 259	1 618	
Westonaria	1991	4 420	711	22	–	5 153	3 560	12	
White River	6/91	2 550	495	105	22	3 172	2 550	–	
Witbank	6/91	11 479	979	37	34	12 529	11 176	–	
Wolmaransstad	6/90	714	112	15	63	904	897	65	
Wonderkop (Boph.)	1991	–	–	–	–	–	–	–	
Zakkariya Park	6/89	145	–	–	–	145	–	–	
Zamdela	6/89	2 853	–	–	–	2 853	2 853	–	
Zeerust	6/90	1 064	172	100	18	1 354	1 403	271	
Zenele	1991	–	–	–	–	–	–	–	
Zithobeni	6/91	528	4	–	11	543	528	–	
TOTAL TRANSVAAL		1 212 741	54 231	14 098	24 340	1 305 410	1 336 398	182 795	1 153 603

^aSource: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
–	–	–	1 077	1 077	0,44	28,1	–	–
5 395	10 019	–	–	15 414	5,00	40,0	5,8	3 140
16 262	–	–	15 680	31 942	8,36	43,6	–	115 300
–	–	–	–	–	–	–	–	5 000
–	–	–	–	–	–	–	–	–
–	–	–	37 912	37 912	8,01	54,0	–	–
4 684	8 699	–	–	13 383	7,50	55,0	–	2 800
1 555	1 071	72	54	2 752	0,48	50,2	–	123 211
22 008	318 156	51 651	4 066	395 881	55,00	60,0	12,0	15 756
961	21	63	–	1 045	0,37	48,6	–	13 056
–	–	–	2 704	2 704	0,51	60,2	–	–
–	–	–	–	–	–	–	–	–
167 415	27 947	529 799	6	725 167	129,62	63,0	2,3	72 438
5 067	867	4 255	6 588	16 777	4,80	59,6	17,7	9 000
–	–	–	3 066	3 066	0,62	56,7	–	–
205 240	193 633	1 742 998	20 131	2 162 002	223,66	47,0	6,3	134 900
213 928	24 772	186 805	31 960	457 465	92,17	67,0	2,6	86 144
18 200	7 700	4 700	–	30 600	5,92	61,2	4,6	75 000
99 541	6 924	2 398	6 261	115 125	38,78	35,3	5,0	150 000
6 007	2 821	–	2 098	10 926	2,47	50,6	–	14 023
3 760	–	–	–	3 760	–	–	–	12 000
–	–	–	–	–	–	–	–	4 217
12 262	18 419	673	2 387	33 741	6,53	75,0	7,7	17 239
4 026	1 598	224	365	6 213	1,22	81,9	5,1	1 500
14 138	–	–	–	14 138	–	–	10,1	32 000
–	–	–	5 882	5 882	1,25	53,7	–	–
–	–	–	20 401	20 401	5,70	40,9	–	43 100
50 700	8 876	3 817	2 553	65 946	12,00	52,0	4,9	121 469
24 000	–	–	48 377	72 377	14,00	65,0	9,5	7 000
124 791	39 205	55 365	91 358	310 719	80,82	60,2	7,9	45 000
5 500	3 567	2 918	634	12 619	4,40	80,0	15,1	23 648
–	–	–	929	929	0,22	47,7	–	–
310	–	–	–	310	–	–	–	–
31 715	–	–	–	31 715	–	–	–	35 000
8 361	1 676	2 302	2 302	14 641	5,15	48,0	10,6	6 000
–	–	–	3 656	3 656	1,01	41,5	–	–
1 666	–	–	–	1 666	0,54	45,4	7,5	3 025
11 140 128	2 881 594	15 414 642	3 735 868	33 172 231	–	–	–	12 418 086

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Orange Free State continued</i>									
Soutpan	1991	41	—	—	—	41	44	3	41
Springfontein	6/91	173	6	1	—	180	228	56	172
Steynsrus	6/90	228	39	2	1	270	231	—	231
Teisesville	1991	91	—	—	—	91	300	209	91
Thabong	1991	4 725	—	—	—	4 725	9 469	4 744	4 725
Thapelang	1991	22	—	—	—	22	150	128	22
Thembalihle	6/90	303	—	11	—	314	1 914	1 611	303
Theunissen	6/90	617	125	9	2	753	503	—	503
Tikwana	6/90	7	3	—	5	15	510	503	7
Tlholong	6/90	43	—	—	—	43	—	—	—
Trompsburg	1991	213	—	—	—	213	213	—	213
Tshepong	6/90	34	—	—	1	35	230	196	34
Tswaraganang	6/90	35	3	—	—	38	378	343	35
Tumahole	6/90	623	27	—	23	673	7 589	6 966	623
Tweeling	6/90	173	34	—	—	207	174	1	173
Tweespruit	6/90	111	43	3	5	162	225	5	220
Van Stadensrus	6/90	35	11	—	—	46	40	16	24
Ventersburg	6/90	345	24	4	—	373	430	—	430
Verkeerdevlei	6/90	36	21	1	—	58	44	8	36
Viljoenskroon	1991	610	120	13	19	762	710	100	610
Villiers	6/90	345	75	6	—	426	382	37	345
Virginia	1991	5 263	650	47	3	5 963	5 263	—	5 263
Vredefort	1991	429	55	4	—	488	468	299	169
Warden	1991	341	69	14	—	424	364	23	341
Waterkloof (Philippolis)	1991	4	—	—	—	4	14	10	4
Welkom	6/89	16 767	1 664	194	22	18 647	17 036	269	16 767
Wepener	1991	317	—	—	—	317	394	77	317
Wesselsbron	6/90	405	96	9	—	510	405	—	405
Winburg	6/90	765	61	—	—	826	813	48	765
Witqwa	1991	—	—	—	—	—	—	—	—
Zamani	1991	24	—	—	—	24	162	138	24
Zastron	1991	700	13	—	—	713	412	—	412
TOTAL ORANGE FREE STATE		136 705	14 284	1 320	1 800	154 109	212 415	85 114	127 301

^a Source: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
—	—	—	—	—	—	—	—	—
1 334	66	447	465	2 313	0,50	55,1	—	4 870
1 522	427	112	305	2 366	0,90	—	4,4	700
—	—	—	—	—	—	—	—	—
—	—	—	69 610	69 610	16,19	49,1	—	—
10	—	—	—	10	0,01	21,1	—	—
635	—	69	—	704	—	—	—	14 000
2 828	170	418	1	3 417	0,92	42,3	7,0	1 500
35	47	—	30	112	—	—	—	7 000
139	—	—	133	272	0,08	39,8	—	3 265
—	—	—	3 392	3 392	0,86	45,2	—	1 500
—	—	—	7	7	—	—	—	2 000
188	4	—	—	192	—	—	—	4 000
4 666	207	—	167	5 040	—	—	—	46 000
1 523	713	—	—	2 236	0,71	48,6	—	2 700
1 055	675	599	18	2 347	0,80	53,0	17,8	350
186	42	—	—	228	—	—	6,0	60
—	—	—	51 503	51 503	11,58	65,0	12,9	1 200
159	147	1	—	307	0,04	87,5	13,6	88
4 697	2 319	1 828	6 555	15 399	3,13	56,9	13,7	18 580
3 908	2 828	244	—	6 980	1,74	40,1	5,2	1 000
57 115	11 154	18 744	—	87 013	15,41	64,5	7,7	10 200
4 276	1 169	1 048	—	6 493	1,08	58,1	8,0	1 476
3 249	1 351	587	—	5 187	1,36	43,6	1,0	9 270
—	—	—	—	—	—	—	—	—
165 193	49 556	86 170	6 473	307 392	84,79	58,7	8,2	61 831
—	—	—	4 928	4 928	0,96	58,5	—	15 000
2 162	1 499	3 697	—	7 358	2,83	57,4	6,0	1 250
4 200	1 900	2 300	—	8 400	2,08	50,6	7,0	1 200
—	—	—	70 317	70 317	16,73	48,0	—	—
—	—	—	—	—	—	—	—	—
4 057	1 781	—	1 445	7 284	1,68	49,6	8,7	5 000
943 716	335 748	692 071	392 906	2 364 441				1 666 224

SOUTH AFRICA: Municipal statistics

Table 25 continued

Town	Financial year ended	Number of customers					Formal housing units ^c (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other	Total	Total houses	Those not electrified	Those electrified
<i>Natal continued</i>									
Umlazi ^a	12/90	15 956	--	--	--	15 956	--	--	--
Umtentweni	1991	936	--	--	--	936	1 014	78	936
Underberg	1991	70	--	--	--	70	151	81	70
Utrecht	6/90	680	56	2	1	739	--	--	--
Uvongo	1991	2 300	--	--	--	2 300	2 491	191	2 300
Valley View	1991	37	--	--	--	37	40	3	37
Verulam	1991	4 580	--	--	--	4 580	4 580	--	4 580
Vryheid	6/91	3 324	98	--	79	3 501	3 118	445	2 673
Vulindlela ^b	12/90	198	--	--	--	198	--	--	--
Wartburg	6/91	205	21	9	211	446	223	24	199
Wembezi ^d	12/90	986	--	--	--	986	1 830	844	986
Westville ^a	1991	6 160	--	--	--	6 160	6 160	--	6 160
Widenham	1991	238	--	--	--	238	258	20	238
Winterton	12/91	75	38	2	136	251	81	--	81
Yellowwood Park	1991	1 073	--	--	--	1 073	1 162	89	1 073
Zinkwazi Beach	1991	332	--	--	--	332	360	28	332
TOTAL NATAL		498 640	44 646	1 118	1 883	546 287	359 929	34 035	325 894

^a Supplied by Durban Corporation.
^b KwaZulu Government electrification projects.
^c Source: CSIR

MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
--	--	--	--	--	--	--	--	176 393
--	--	--	--	--	--	--	--	3 670
--	--	--	--	--	--	--	--	10 000
10 199	1 104	13	444	11 760	3,00	48,2	16,7	4 196
--	--	--	--	--	--	--	--	6 560
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	20 000
37 022	42 169	--	1 402	80 593	18,88	53,8	9,1	23 700
3 292	--	--	--	3 292	0,80	47,1	--	1 153
2 244	957	2 546	5 515	11 261	--	--	--	1 000
7 192	--	--	--	7 192	2,08	39,6	--	25 989
--	--	--	--	--	--	--	--	28 021
--	--	--	--	--	--	--	--	--
894	1 308	757	7 645	10 603	--	--	--	297
--	--	--	--	--	--	--	--	4 500
--	--	--	--	--	--	--	--	--
3 173 463	2 279 284	4 972 578	236 624	10 661 949				3 612 094

SOUTH AFRICA: Municipal statistics

Table 25 continued

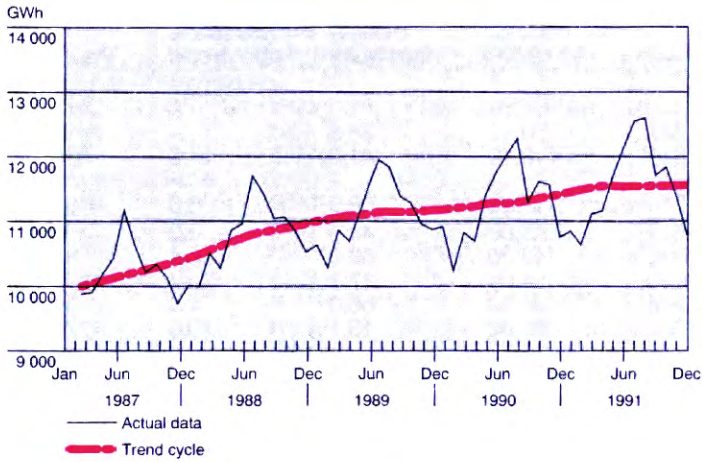
Town	Financial year ended	Number of customers				Total	Formal housing units ^a (formal houses and flats)		
		Domestic	Business	Industry	Not defined and other		Total houses	Those not electrified	Those electrified
<i>Cape and Walvis Bay continued</i>									
Vioolsdrif	1991	38	-	-	-	38	39	1	38
Vleesbaai	1991	-	-	-	-	-	-	-	-
Vosburg	6/91	63	15	2	30	110	213	-	213
Vredenburg-Saldanha	12/90	3 780	416	74	38	4 308	6 398	2 459	3 939
Vredendal	6/90	1 323	205	34	-	1 562	1 805	131	1 674
Vryburg	6/91	2 377	432	83	7	2 899	2 512	129	2 383
Vuyolwethu	1991	73	-	-	-	73	189	116	73
Waenhuiskraal	6/88	176	2	-	-	183	-	-	-
Walvis Bay	6/91	2 536	218	62	11	2 827	2 829	-	2 829
Warrenton	6/90	931	134	8	26	1 099	909	-	909
Wegdraai	1991	1	-	-	-	1	133	132	1
Wellington	6/90	4 045	386	54	15	4 500	4 226	492	3 734
Wilderness	6/90	766	33	-	-	799	-	-	-
Williston	6/90	260	23	-	36	319	644	381	263
Willowmore	6/90	324	62	1	147	534	975	644	331
Witsand	1991	198	5	-	-	203	83	8	75
Wittedrif	6/88	32	4	-	6	42	-	-	-
Witwater	1991	64	-	-	-	64	103	39	64
Wolseley	6/90	476	47	3	-	526	999	517	482
Wongalethu	1991	135	-	-	-	135	350	215	135
Worcester	6/90	9 561	16 389	1 384	-	27 334	8 940	888	8 052
Yzerfontein	12/90	453	2	-	-	455	472	9	463
Zola	1991	297	-	-	-	297	770	473	297
Zolani	1991	149	-	-	-	149	386	237	149
Zweletemba	6/89	12	17	-	13	42	1 233	1 221	12
Zwelihle	6/88	22	2	-	-	24	152	130	22
TOTAL CAPE AND WALVIS BAY		738 265	68 894	6 834	11 904	825 897	841 567	168 739	672 828
TOTAL SOUTH AFRICA		2 586 351	182 055	23 370	39 927	2 831 703	2 750 310	470 684	2 279 626

^a Source: CSIR

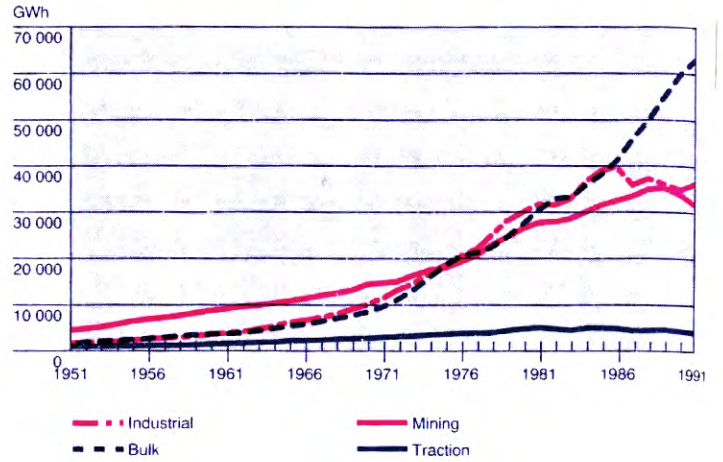
MWh sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kWh sold	Population
Domestic	Business	Industry	Not defined and other	Total				
-	-	-	-	-	-	-	-	-
-	-	-	337	337	0,11	35,5	-	-
313	116	7	179	615	0,19	41,9	11,0	945
25 037	10 392	43 935	3 650	83 014	19,20	59,9	6,0	38 755
7 170	4 815	3 000	1 029	16 014	3,60	48,0	6,3	8 198
20 280	6 158	18 043	7 962	52 443	13,20	63,2	12,4	34 547
2 630	2 410	-	960	6 000	4,00	17,1	-	726
15 995	5 085	34 159	19 209	74 448	16,90	66,0	4,3	30 452
12 000	6 500	8 100	700	27 300	25,90	18,1	10,0	21 500
-	-	-	-	-	-	-	-	-
23 679	7 246	32 076	883	63 884	14,54	59,0	3,0	27 000
3 976	4 657	-	-	8 633	2,16	57,8	11,1	6 000
1 101	259	-	343	1 703	0,58	56,0	19,0	2 671
1 666	1 026	86	-	2 778	0,90	39,0	10,0	5 500
830	180	-	-	1 010	0,04	41,0	-	151
190	32	-	71	293	0,10	33,4	-	-
-	-	-	-	-	-	-	-	-
1 210	2 942	1 671	-	5 823	1,57	62,5	8,0	5 800
-	-	-	-	-	-	-	-	-
58 366	15 167	67 713	4 258	145 504	33,94	62,4	7,1	63 900
2 774	53	-	21	2 848	1,00	32,5	11,0	212
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
79	28	-	-	107	0,03	40,7	-	12 500 1 390
4 607 823	1 512 838	4 877 338	1 459 528	12 417 481				7 579 517
19 865 130	7 009 463	25 956 629	5 824 926	58 616 103				25 275 921

At a glance

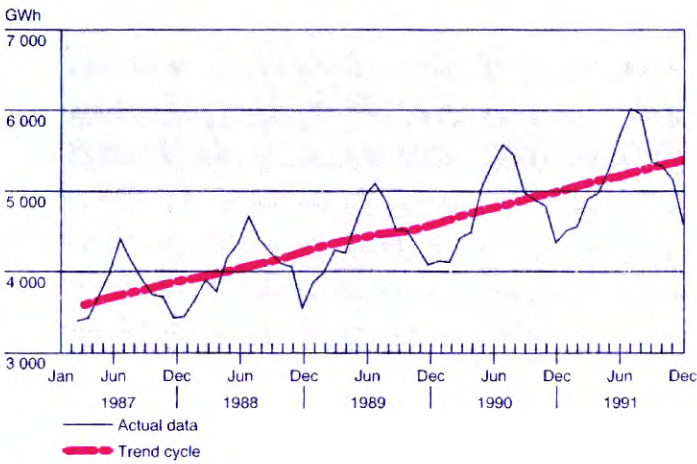
Eskom total sales



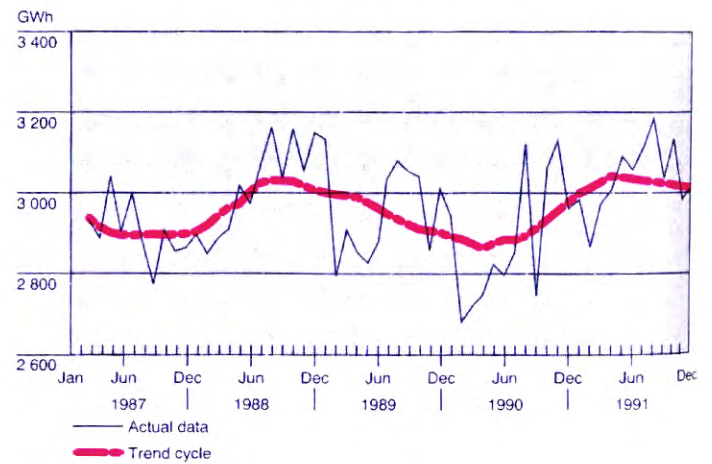
Sales growth by category



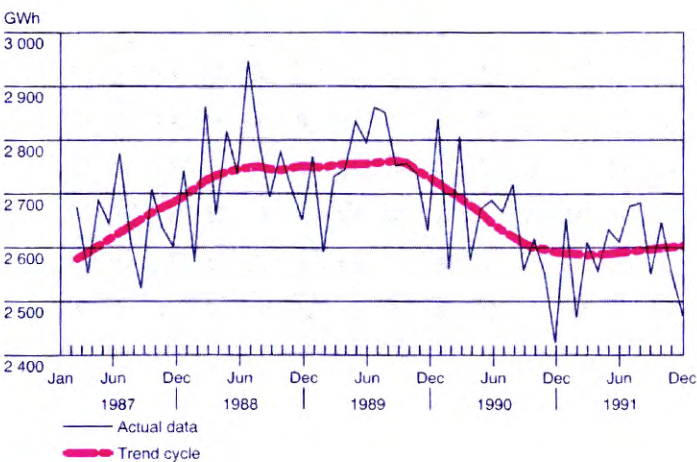
Bulk sales



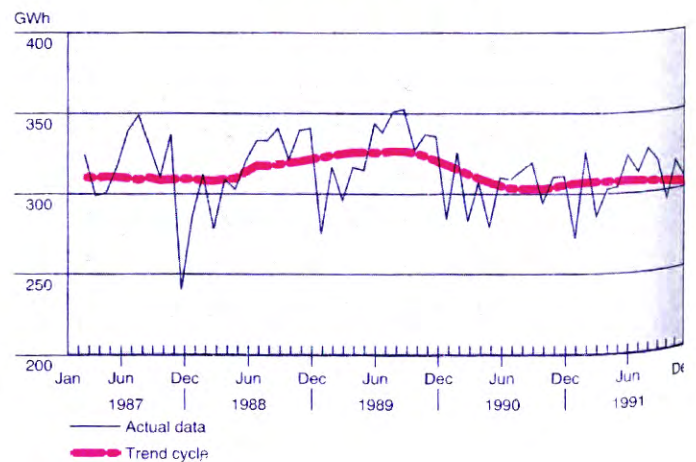
Industrial sales



Mining sales



Traction sales



SUB-SAHARAN AFRICA: Net installed generating capacity, MW

Table 26

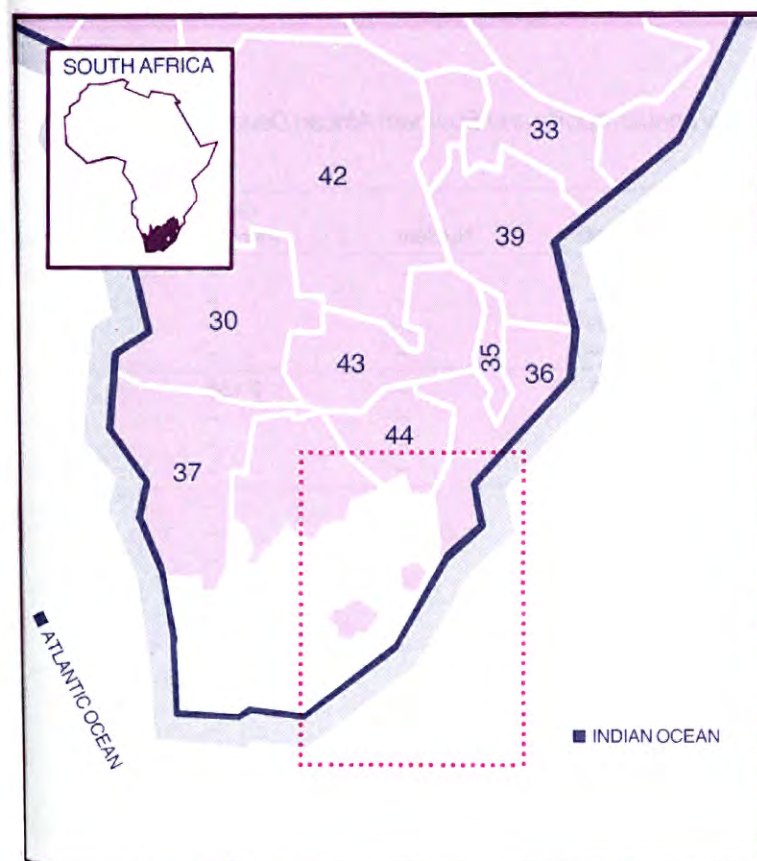
Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total	% of total
Angola ^a	287,0	176,0	—	—	463,0	1,02
Bophuthatswana ^b	—	—	—	—	—	—
Botswana ^{a, b}	—	219,0	—	—	219,0	0,48
Ciskei ^b	—	—	—	—	—	—
Kenia	492,5	168,1	—	45,0	705,6	1,56
Lesotho ^{a, b}	3,3	1,4	—	—	4,6	0,01
Malawi ^a	144,6	23,9	—	—	168,5	0,37
Mozambique ^{a, c}	2 101,0	181,5	—	—	2 282,5	5,03
Namibië ^{a, b}	240,0	120,0	—	—	360,0	0,79
South Africa ^{b, d}	545,6	32 071,0	1 840,0	—	34 456,6	75,96
Swaziland ^{a, b}	40,5	9,5	—	—	50,0	0,11
Tanzanië ^a	330,0	60,0	—	—	390,0	0,86
Transkei ^d	61,4	—	—	—	61,4	0,14
Venda ^b	—	—	—	—	—	—
Zaire	2 551,3	51,0	—	—	2 602,3	5,74
Zambië ^a	1 631,8	0,0	—	—	1 631,8	3,60
Zimbabwe ^a	666,0	1 299,5	—	—	1 965,5	4,33
Total, MW	9 094,9	34 380,9	1 840,0	45,0	45 360,8	100,00
^a SADCC	5 444,1	2 090,8	—	—	7 534,9	16,61
^b South African Customs Union, MW	890,8	32 420,9	1 840,0	—	35 151,6	77,49

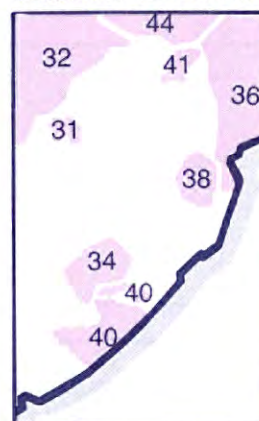
^c Includes Cahora Bassa

^d Excludes pumped storage of 1 580 MW

Electricity in Sub-Saharan Africa:



- Table 30: Angola
- Table 31: Bophuthatswana
- Table 32: Botswana
- Table 33: Kenya
- Table 34: Lesotho
- Table 35: Malawi
- Table 36: Mozambique
- Table 37: Namibia
- Table 38: Swaziland
- Table 39: Tanzania
- Table 40: Transkei
- Table 41: Venda
- Table 42: Zaire
- Table 43: Zambia
- Table 44: Zimbabwe



SUB-SAHARAN AFRICA: Net installed generating capacity, MW

Table 26

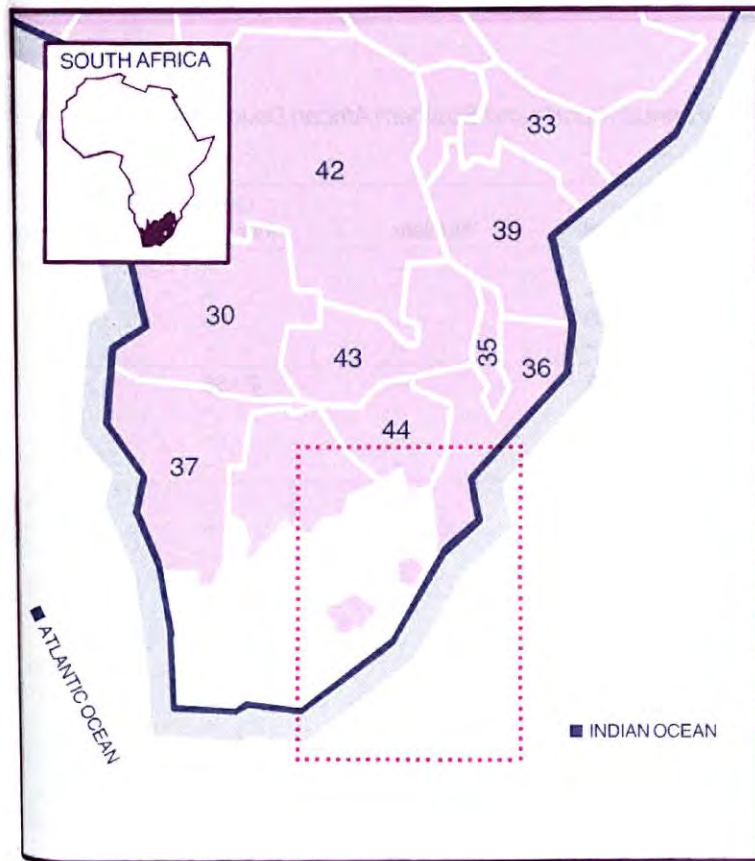
Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total	% of total
Angola ^a	287,0	176,0	—	—	463,0	1,02
Bophuthatswana ^b	—	—	—	—	—	—
Botswana ^{a, b}	—	219,0	—	—	219,0	0,48
Ciskei ^b	—	—	—	—	—	—
Kenia	492,5	168,1	—	45,0	705,6	1,56
Lesotho ^{a, b}	3,3	1,4	—	—	4,6	0,01
Malawi ^a	144,6	23,9	—	—	168,5	0,37
Mozambique ^{a, c}	2 101,0	181,5	—	—	2 282,5	5,03
Namibië ^{a, b}	240,0	120,0	—	—	360,0	0,79
South Africa ^{b, d}	545,6	32 071,0	1 840,0	—	34 456,6	75,96
Swaziland ^{a, b}	40,5	9,5	—	—	50,0	0,11
Tanzanië ^a	330,0	60,0	—	—	390,0	0,86
Transkei ^b	61,4	—	—	—	61,4	0,14
Venda ^b	—	—	—	—	—	—
Zaire	2 551,3	51,0	—	—	2 602,3	5,74
Zambië ^a	1 631,8	0,0	—	—	1 631,8	3,60
Zimbabwe ^a	666,0	1 299,5	—	—	1 965,5	4,33
Total, MW	9 094,9	34 380,9	1 840,0	45,0	45 360,8	100,00
^a SADCC	5 444,1	2 090,8	—	—	7 534,9	16,61
^b South African Customs Union, MW	890,8	32 420,9	1 840,0	—	35 151,6	77,49

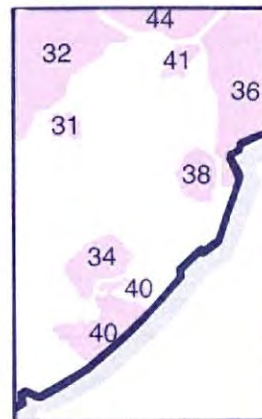
^c Includes Cahora Bassa

^d Excludes pumped storage of 1 580 MW

Electricity in Sub-Saharan Africa:



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- Table 41: Venda
- Table 42: Zaire
- Table 43: Zambia
- Table 44: Zimbabwe



SUB-SAHARAN AFRICA: Gross production of electricity, GWh

Table 27

Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total	% of total
Angola ^a	840,0	107,0	–	–	947,0	0,49
Bophuthatswana ^b	–	–	–	–	–	–
Botswana ^{a, b}	–	803,5	–	–	803,5	0,41
Ciskei ^b	–	–	–	–	–	–
Kenya	2 449,0	59,0	–	322,0	2 830,0	1,46
Lesotho ^{a, b}	2,0	–	–	–	2,0	0,00
Malawi ^a	627,8	1,0	–	–	628,8	0,32
Mozambique ^{a, c}	247,1	187,7	–	–	434,8	0,22
Namibia ^{a, b}	1 308,0	90,0	–	–	1 398,0	0,72
South Africa ^{b, d}	2 976,7	147 782,0	11 690,8	–	162 449,5	83,59
Swaziland ^{a, b}	209,9	0,8	–	–	210,7	0,11
Tanzania ^a	1 419,0	86,0	–	–	1 505,0	0,77
Transkei ^b	290,03	–	–	–	290,3	0,15
Venda ^b	–	–	–	–	–	–
Zaire	5 997,7	144,0	–	–	6 141,7	3,16
Zambia ^a	8 118,0	–	–	–	8 118,0	4,18
Zimbabwe ^a	3 195,8	5 374,3	–	–	8 570,1	4,41
Total, GWh	27 681,3	154 635,3	11 690,8	322,0	194 329,4	100,00
^a SADCC, GWh	15 967,6	6 650,3	–	–	22 617,9	11,64
^b South African Customs Union, GWh	4 786,9	148 676,3	11 690,8	–	165 154,0	84,99
^c Includes Cahora Bassa						
^d Excludes pumped storage of 1 329 GWh						

SUB-SAHARAN AFRICA: Utilisation of installed generating capacity

(Quantities in kilowatt-hours produced per kilowatt)

Table 28

Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total
Angola ^a	2 927	608	–	–	2 045
Bophuthatswana ^b	–	–	–	–	–
Botswana ^{a, b}	–	3 669	–	–	3 669
Ciskei ^b	–	–	–	–	–
Kenya	4 973	351	–	7 156	4 011
Lesotho ^{a, b}	612	0	–	–	430
Malawi ^a	4 341	42	–	–	3 731
Mozambique ^{a, c}	118	1 034	–	–	190
Namibia ^{a, b}	5 450	750	–	–	3 883
South Africa ^{b, d}	5 456	4 608	6 354	–	4 715
Swaziland ^{a, b}	5 183	84	–	–	4 214
Tanzania ^a	4 300	1 433	–	–	3 859
Transkei ^b	4 728	–	–	–	4 728
Venda ^b	–	–	–	–	–
Zaire	2 351	2 824	–	–	2 360
Zambia ^a	4 975	–	–	–	4 975
Zimbabwe ^a	4 798	4 136	–	–	4 360
Total	3 044	4 498	6 354	7 156	4 284
^a SADCC, GWh	2 933	3 181	–	–	3 002
^b South African Customs Union	5 374	4 586	6 354	–	4 698
^c Includes Cahora Bassa					
^d Excludes pumped storage of 841.					

SUB-SAHARAN AFRICA: Gross production of electricity, GWh

Table 27

Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total	% of total
Angola ^a	840,0	107,0	—	—	947,0	0,49
Bophuthatswana ^b	—	—	—	—	—	—
Botswana ^{a, b}	—	803,5	—	—	803,5	0,41
Ciskei ^b	—	—	—	—	—	—
Kenya	2 449,0	59,0	—	322,0	2 830,0	1,46
Lesotho ^{a, b}	2,0	—	—	—	2,0	0,00
Malawi ^a	627,8	1,0	—	—	628,8	0,32
Mozambique ^{a, c}	247,1	187,7	—	—	434,8	0,22
Namibia ^{a, b}	1 308,0	90,0	—	—	1 398,0	0,72
South Africa ^{b, d}	2 976,7	147 782,0	11 690,8	—	162 449,5	83,59
Swaziland ^{a, b}	209,9	0,8	—	—	210,7	0,11
Tanzania ^a	1 419,0	86,0	—	—	1 505,0	0,77
Transkei ^b	290,03	—	—	—	290,3	0,15
Venda ^b	—	—	—	—	—	—
Zaire	5 997,7	144,0	—	—	6 141,7	3,16
Zambia ^a	8 118,0	—	—	—	8 118,0	4,18
Zimbabwe ^a	3 195,8	5 374,3	—	—	8 570,1	4,41
Total, GWh	27 681,3	154 635,3	11 690,8	322,0	194 329,4	100,00
^a SADCC, GWh	15 967,6	6 650,3	—	—	22 617,9	11,64
^b South African Customs Union, GWh	4 786,9	148 676,3	11 690,8	—	165 154,0	84,99
^c Includes Cahora Bassa						
^d Excludes pumped storage of 1 329 GWh						

SUB-SAHARAN AFRICA: Utilisation of installed generating capacity

(Quantities in kilowatt-hours produced per kilowatt)

Table 28

Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Hydro	Thermal	Nuclear	Geo-thermal	Total
Angola ^a	2 927	608	—	—	2 045
Bophuthatswana ^b	—	—	—	—	—
Botswana ^{a, b}	—	3 669	—	—	3 669
Ciskei ^b	—	—	—	—	—
Kenya	4 973	351	—	7 156	4 011
Lesotho ^{a, b}	612	0	—	—	430
Malawi ^a	4 341	42	—	—	3 731
Mozambique ^{a, c}	118	1 034	—	—	190
Namibia ^{a, b}	5 450	750	—	—	3 883
South Africa ^{b, d}	5 456	4 608	6 354	—	4 715
Swaziland ^{a, b}	5 183	84	—	—	4 214
Tanzania ^a	4 300	1 433	—	—	3 859
Transkei ^b	4 728	—	—	—	4 728
Venda ^b	—	—	—	—	—
Zaire	2 351	2 824	—	—	2 360
Zambia ^a	4 975	—	—	—	4 975
Zimbabwe ^a	4 798	4 136	—	—	4 360
Total	3 044	4 498	6 354	7 156	4 284
^a SADCC, GWh	2 933	3 181	—	—	3 002
^b South African Customs Union	5 374	4 586	6 354	—	4 698

^c Includes Cahora Bassa

^d Excludes pumped storage of 841.

SUB-SAHARAN AFRICA: Production, trade and consumption of electricity

(Quantities in gigawatt-hours and in kilowatt-hours per capita)

Table 29

Sources: United Nations Energy Statistics Yearbook 1989, utility annual reports and Southern African Development Coordination Conference (SADCC) Yearbook 1989

Country	Gross Production	Imports	Exports	Total	% of total	Per capita
Angola ^a	947,0	–	–	947,0	0,49	97
Bophuthatswana ^b	–	2 205,2	–	2 205,2	1,14	1 019
Botswana ^{a, b}	803,5	59,2	–	862,7	0,44	664
Ciskei ^b	–	353,8	–	353,8	0,18	459
Kenya	2 830,0	112	–	2 942,0	1,51	127
Lesotho ^{a, b}	2,0	185,0	–	187,0	0,10	108
Malawi ^a	628,8	–	–	628,8	0,32	73
Mozambique ^{a, c}	434,8	307,0	19,6	722,2	0,37	47
Namibia ^{a, b}	1 398,0	437,0	366,7	1 468,3	0,76	1 138
South Africa ^b	162 449,5	349,5	4 401,1	158 397,9	81,53	4 352
Swaziland ^{a, b}	210,7	254,6	–	465,3	0,24	612
Tanzania ^a	1 505,0	–	–	1 505,0	0,77	63
Transkei ^b	290,3	103,1	39,9	353,5	0,18	108
Venda ^b	–	93,8	–	93,8	0,05	189
Zaire	6 141,7	15,3	548,0	5 609,0	2,89	167
Zambia ^a	8 118,0	320,0	313,0	8 125,0	4,18	1 039
Zimbabwe ^a	8 570,1	891,8	55,8	9 406,1	4,84	1 030
Total	194 329,4	5 687,3	5 744,1	194 272,6	100,0	1 082
^a SADCC	22 617,9	2 454,6	755,1	24 317,4	12,52	305
^b South African Customs Union	165 154,0	4 041,2	4 807,7	164 387,5	84,62	3 411
^c Includes Cahora Bassa						

SUB-SAHARAN AFRICA: Angola

Table 30

Source: Empresa Nacional de Electricidade, August 1992

Installed generating capacity	Type	Number of units and capacity MW	Installed capacity MW	Firm energy GWh/year
Independent electricity systems				
Northern system				
Cambambe	Hydro	4 x 45,0	180,0	690,0
Mabubas	Hydro	2 x 5,9 2 x 3,0	17,8	58,0
Capanda ^a	Hydro			
Luanda I	Gas turbine	1 x 25,6	25,6	179,4
Luanda II	Gas turbine	1 x 30,4	30,4	213,0
Luanda III	Gas turbine	1 x 45,0	45,0	320,0
Refinery	Gas turbine	1 x 10,0	10,0	70,0
Central system				
Lomaum ^b	Hydro	2 x 10,0 3 x 15,0	65,00	157,0
Biopio	Hydro	4 x 3,65 3 x 0,46	15,98	23,0
Quando I	Hydro	1 x 0,5 3 x 0,25	1,25	8,0
Quando II	Hydro	3 x 0,4 1 x 0,6	1,80	
Cunje ^c	Hydro	3 x 0,54	1,62	
TG Biopio	Gas turbine	1 x 22,8	22,80	159,8
Huambo II	Gas turbine	1 x 10,0	10,00	70,0
CT Lobito	Diesel	4 x 5,0	20,00	140,2
Lobito	Diesel	2 x 0,6 1 x 0,86 1 x 1,4	3,46	24,2
Benguela	Diesel	2 x 0,6	1,20	8,4
Huambo I	Diesel	2 x 0,8 1 x 0,86 3 x 1,1 1 x 0,5	6,26	43,0
Kuito	Diesel	1 x 1,1 1 x 0,9 2 x 0,2	2,40	16,8
Southern system				
Matala	Hydro	3 x 13,6	40,80	165,0
Xitoto	Diesel	2 x 5,67	11,34	79,2
Tombwa	Diesel	1 x 1,4	1,40	9,8
Jamba	Diesel	3 x 1,88	5,64	39,2
Tchamutete	Diesel	2 x 1,68	3,36	23,8
Eastern system (no detail available)				
Total			523,11	2 497,8
Future hydro potential (provisionally planned)				
River		Number	Capacity MW	Firm energy GWh/year
Kwanza ^d		37	7 489	31 317
Longa		7	1 190	6 040
Queve-Catumbela		46	5 887	27 915
Cunene		25	1 590	6 746
Cubango		10	349	1 566
Total		125	16 505	73 584

SUB-SAHARAN AFRICA: Angola

Table 30 continued

Source: Empresa Nacional de Electricidade, August 1992

Transmission and distribution equipment				
From	To	Circuits	Voltage	Length km
Northern system				
Cambambe	Luanda	1	220	176,0
Cambambe	Viana	1	220	175,0
Cambambe	NDalatando	1	220	73,0
Cambambe ^e	Gabela	1	220	125,0
Cacuso	Malange	1	100	66,0
NDalatando	Cacuso	1	100	93,0
Mabubas	Quibaxe	1	60	106,5
Mabubas	Luanda	2	60	56,5
Central system				
A. Catumbela	Huambo	1	150	118,5
Biopio	Lomaum	1	150	96,5
Biopio	Quileva	1	150	20,0
Lomaum	A. Catumbela	1	150	48,5
Biopio	Catumbela	1	60	20,0
Huambo ^f	Catchiungo	1	60	65,0
Southern system				
Matala	Lubango	1	150	168,0
Matala	Jamba	1	150	120,0
Lubango	Namibe	1	60	162,0
Lubango	Namibe	1	60	162,0
Jamba	Tchamutete	1	60	68,0
Namibe	Tombwa	1	60	93,0
Total, km				2 012,5
Population (estimated)				9 million

^a Under construction - 1st set operational 1993

^b Station under reconstruction - 1st set to restart 1994

^c Out of operation

^d Excludes Capanda hydro station

^e At present operated at 60 kV

^f At present operated at 30 kV

SUB-SAHARAN AFRICA: Bophuthatswana

Table 31

Source: Bophuthatswana Electricity Corporation (BECOR) for the year ended 31 March 1992

	1991/92	1990/91	Change %
System load factor, %	66,0	67,8	-2,7
Non-coincident maximum demand, MW	567,3	514,2	10,3
Transmission efficiency, %	95,3	96,1	-0,8
Consumption of electricity by region, GWh			
(bulk imports from Eskom for redistribution)			
Tlhabane	-	2 348,9	-
Molopo	-	226,8	-
Ga-Rankuwa	-	387,5	-
Taung	-	44,0	-
Selosesha	-	51,5	-
Total bulk imports, GWh	3 290,0	3 058,6	7,6
Total bulk sales, GWh	3 135,4	2 934,6	6,8
Distribution losses on bulk sales, %	4,9	4,2	16,7
Number of customers supplied by BECOR	54 257	42 302	28,3
Power lines added to system, km	385	415	-7,3
Staff employed	939	861	9,1
Major substation installations			
as at 31 March 1989	Capacity MVA	Voltage kV	Commissioned year
Sun City	50	88,22,11	1977
Mogwase	20	88,11	1985
Mmabatho Main	100	88,33,11	1986
Batlhako Ferro Chrome*	14	88	1987
Mmabatho (Mafikeng)	60	88,33,11	1989
Ga-Rankuwa	110	132,33,11	1989
Kudube	45	132,33,11	1989
Babalegi	60	132,11	1989
Rhovan Mining	10	88,11	1989
Eastern Platinum (standby)*	20	88	1988
Eastern Platinum (main)*	50	88	1990

* Bulk supply provided at 88 kV.

SUB-SAHARAN AFRICA: Botswana

Table 32

Source: Botswana Power Corporation (BPC) for the year ended 31 March 1991

Source of power	Type	MW	
Installed generating capacity			
Morupule	Coal	132	
Selebi-Phikwe	Coal	80	
Gaborone (standby)	Diesel	7	
Total installed generating capacity, MW		219	
Other sources			
Eskom		75	
Zimbabwe		100	
Total source of power, MW		394	
Energy sources	1990/91 GWh	1989/90 GWh	Change %
Morupule Phase 1	884,2	772,6	16,8
Selebi-Phikwe	79,5	142,3	-44,1
Gaborone	-	-	-
Imports	97,4	56,0	73,9
Total sent out, GWh	1 021,1	920,9	10,9
Transmission and distribution equipment in service	1989 km	1988 km	Change km
Overhead lines			
66 kV	120,0	120,0	0,0
33 kV	215,0	215,5	-0,5
11 kV*	4 66,1	435,3	30,8
Low voltage	584,3	541,6	42,7
Total line length, km	1 385,4	1 312,4	73,0
Underground cable			
11 kV	142,0	117,6	24,4
Low voltage	66,5	59,6	6,9
Total cable length, km	208,5	177,2	31,3
Substations	MVA 1989	MVA 1988	Change MVA
66/11 kV	22,50	22,50	0,00
33/11 kV	44,59	41,75	2,84
11/0,4 kV	154,79	133,91	20,88
Total, MVA	221,87	198,15	23,72
Electricity sales by category	1990/91 GWh	1989/90 GWh	Change %
Mining	540,1	505,1	6,9
Commercial	167,0	147,1	13,5
Domestic	78,1	65,2	19,8
Government	63,2	54,8	15,3
Total sales	848,4	772,2	9,9
Station usage	108,6	98,7	10,0
Distribution and other losses	64,1	50,0	28,2
Total, GWh	1 021,1	920,9	10,9
Number of customers	1990/91	1989/90	Change %
Commercial/mining	3 033	2 700	12,3
Domestic	18 990	15 906	19,4
Government	967	967	0,0
Total	22 990	19 573	17,5
System maximum demand, MW	159,60	145	10,1
Number of employees	1 649	1 614	2,2
GWh sold per employee	0,514	0,478	7,5
Average selling price, thebe/kWh	16,6	14,8	12,2

SUB-SAHARAN AFRICA: Kenya

Table 33

Source: Kenya Power and Lighting Company Ltd for the year ended 30 June 1991

Source of power	Type	Installed	Sent-out	
Generating capacity, MW				
Tana (KPC)	Hydro	14,4	12,4	
Wanjii (KPC)	Hydro	7,4	7,4	
Kamburu (TRDC)	Hydro	91,5	84,0	
Gitaru (TRDC)	Hydro	145,0	145,0	
Kindaruma (TRDC)	Hydro	44,0	44,0	
KP & LC	Hydro	6,2	6,2	
UEB (imports)	Hydro	30,0	0,0	
Masinga (TARDA)	Hydro	40,0	40,0	
Kiambere (TARDA)	Hydro	144,0	140,0	
Turkwell (KVDA)	Hydro	106,0	106,0	
Kipevu	Thermal	98,0	26,0	
Olkaria	Geothermal	45,0	43,0	
Nbi South	Gas turbine	17,9	13,8	
Kipevu	Gas turbine	30,0	30,0	
Diesel stations (interconnected)	Diesel	18,3	8,0	
Total interconnected system, MW		837,7	705,8	
Isolated diesel stations	Diesel	3,9	3,9	
Gross generation, MW		841,6	709,7	
Energy generated		1990/91 GWh	1989/90 GWh	Change %
Hydro		2 884,0	2 691,0	7,2
Thermal		74,0	97,0	-23,7
Geothermal		298,0	336,0	-11,3
Gas turbine		21,0	10,0	110,0
Diesel (interconnected)		0,3	2,0	-85,0
Diesel (isolated system)		14,0	12,0	16,7
Gross generation, GWh		3 291,3	3 148,0	4,6
Auxiliary consumption		33,0	33,0	0,0
System losses		474,0	453,0	4,6
Total sales, GWh		2 784,3	2 662,0	4,6
System peak demand, MW		550	520	5,8
System load factor, %		68,0	68,9	0,0
Transmission and distribution lines in service		1990/91 km	1989/90 km	Change km
220 kV		877	657	220
132 kV		1 980	1 980	0
66 kV		451	444	7
40 kV		113	113	0
33 kV		3 342	3 300	42
11 kV		7 870	7 627	243
Total, km		14 633	14 121	512

SUB-SAHARAN AFRICA: Kenya

Table 33 continued

Source: Kenya Power and Lighting Company Ltd for the year ended 30 June 1991

Sales of electricity	1990/91 GWh	1989/90 GWh	Change %
Domestic	508,0	488,0	4,1
Small commercial	315,0	292,0	7,9
Irrigation	39,8	27,5	44,7
Medium and large commercial	884,0	842,0	5,0
Medium and large industrial	839,0	815,0	2,9
Off-peak	108,5	116,6	-6,9
Street lighting	14,1	13,0	8,5
Rural electrification	76,3	66,5	14,8
Total sales, GWh	2 784,7	2 660,6	4,7
Number of customers*	1990/91	1989/80	Change %
Domestic	224 612	209 023	7,5
Small commercial	58 179	52 668	10,5
Irrigation	293	283	3,5
Medium commercial and industrial	1 840	1 760	4,5
Large commercial and industrial	339	281	20,6
Off-peak	1 446	1 301	11,1
Street lighting	104	101	3,0
Total, customers	286 813	265 417	8,1

* Includes rural electrification

SUB-SAHARAN AFRICA: Lesotho

Table 34

Source: Lesotho Electricity Corporation (LEC) for the year ended 31 March 1991

Source of power				MW
Installed hydro generating capacity				
Mants'onyane				2,000
Semonkong				0,180
Qacha's Nek				0,432
Mokhotlong				0,656
Total hydro, MW				3,268
Installed diesel generating capacity				
Mohale's Hoek (standby)				0,400
Mafeteng (standby)				0,000
Qacha's Nek (back-up to hydro)				0,600
LEC headquarters (standby)				0,186
88/33 kV substation (standby)				0,024
Mants'onyane (back-up to hydro)				0,048
Semonkong (back-up to hydro)				0,120
Total diesel (including workshop standby), MW				1,378
Other sources – Eskom (registered peak at intake points)				
Maseru		88 kV		43,240
Maputsoe		11 kV		3,690
Hololo		88 kV		0,990
Peka		11 kV		0,130
Total from Eskom, MW				48,050
Total sources of power, MW				52,696
Transmission and distribution equipment	1990/91	1989/90	Change	
	km	km	km	
Overhead lines				
88 kV	86,0	86,0	0,0	
33 kV	604,7	559,0	45,7	
11 kV*	794,0	732,5	61,5	
Total, km	1 484,7	1 377,5	107,2	
Transformers	Number	Number	Change	
88/33 kV	2	2	0	
88/11 kV	1	1	0	
33/11 kV	18	16	2	
33/0,66 kV	1	1	0	
33/0,4 kV	39	27	12	
11/0,4 kV	540	499	41	
Total, MVA	601	546	55	
Sales of electricity by category	1990/91	1989/90	Change	
	GWh	GWh	%	
Domestic	57,98	55,4	4,7	
General purpose	43,92	42,0	4,6	
Commercial	42,17	40,3	4,6	
Industrial	31,63	30,7	3,0	
Total, GWh	175,70	168,4	4,3	
Number of customers	1990/91	1989/90	Change	
			%	
Domestic	7 832	7 252	8,0	
General purpose	2 310	2 256	2,4	
Commercial	84	78	7,7	
Industrial	74	70	5,7	
Total	10 300	9 656	6,7	

SUB-SAHARAN AFRICA: Malawi

Table 35

Source: Electricity Supply Commission of Malawi for the year ended 31 December 1991

Source of power			
Installed generating capacity	Type	MW	
Tedzani Falls	Hydro	40,00	
Nkula Falls "A"	Hydro	24,00	
Nkula Falls "B"	Hydro	80,00	
Zomba	Hydro	0,60	
Chichiri	Gas turbine	15,00	
Lilongwe	Diesel	5,34	
Kasungu	Diesel	0,36	
Mtunthama	Diesel	0,65	
Mzuzu	Diesel	1,95	
Karonga	Diesel	0,32	
Chitipa	Diesel	0,30	
Total source of power, MW		168,52	
Energy generated			
	1991 GWh	1990 GWh	Change %
Hydro	747,986	702,557	6,5
Diesel	3,800	0,903	320,8
Gas turbine	0,005	0,163	-96,9
Total generated, GWh	751,791	703,623	6,8
System losses, GWh	4,707	3,792	24,1
Available for distribution, GWh	747,084	699,831	6,8
Transmission and distribution lines in service (1991 figures not available)			
	1990 km	1989 km	Change km
132 kV lines (wooden poles)	303,00	303,00	0,00
132 kV lines (steel tower)	113,00	113,00	0,00
66 kV lines	1 018,00	1 018,00	0,00
33 kV lines	1 574,00	1 513,54	60,46
11 kV lines	1 837,00	1 739,42	97,58
400/230 V lines	1 825,00	1 629,39	195,61
33 kV underground cables	2,80	2,69	0,11
11 kV underground cables	81,00	78,66	2,34
400/230 V underground cables	149,30	138,15	11,15
Total, km	6 903,10	6 535,85	367,25
Sales of electricity			
	1991 GWh	1990 GWh	Change %
Domestic (in low-density areas)	98,493	87,129	13,0
Domestic (in high-density areas)	17,405	15,827	10,0
Non-domestic (demand less than 25 kVA)	100,291	90,365	11,0
Non-domestic (demand more than 25 kVA)	363,953	339,776	7,1
Largest industrial customer	60,652	62,271	-2,6
Total, GWh	640,794	595,368	7,6
Number of customers			
	1991	1990	Change %
Domestic (in low-density areas)	20 566	18 575	10,7
Domestic (in high-density areas)	14 442	13 957	3,5
Non-domestic (demand less than 25 kVA)	9 735	8 862	9,9
Non-domestic (demand more than 25 kVA)	535	486	10,1
Largest industrial customer	1	1	0,0
Total, customers	45 279	41 881	8,1

SUB-SAHARAN AFRICA: Mozambique

Table 36

Source: *Electricidade de Moçambique for the year ended 31 December 1991*

Source of power	Type	Number of sets	Installed rating MW	Sent-out rating MW
Interconnected stations				
Chicamba	Hydro	2	38,40	35,00
Corumana	Hydro	2	15,00	14,50
Mavuzi	Hydro	5	46,00	37,00
Maputo	Thermal	5	57,50	46,00
Lionde	Diesel	6	4,00	2,80
Mocuba	Diesel	2	1,00	0,75
Nacala	Diesel	8	21,54	17,00
Nampula	Diesel	5	8,00	2,80
Quelimane	Diesel	3	7,00	6,00
Tete	Diesel	2	0,80	0,60
Xai-Xai	Diesel	4	2,60	1,70
Beira	Gas turbine	1	12,00	12,00
Maputo	Gas turbine	2	78,50	63,00
Total interconnected, MW			292,34	239,15
Isolated stations				
Cuamba	Hydro	2	1,00	1,00
Lichinga	Hydro	1	0,75	0,60
Angoche	Diesel	3	1,60	1,30
Inhambane	Diesel	5	3,88	1,40
Lichinga	Diesel	4	1,60	1,00
Pemba	Diesel	6	7,00	4,50
Total isolated, MW			15,83	9,80
Import facilities				
Eskom			200,00	200,00
Zimbabwe			30,00	30,00
Malawi			—	—
Total import facilities, MW			230,00	230,00
Total source of power, MW			538,17	478,95
Energy available for distribution				
		1991 GWh	1990 GWh	Change %
Energy generated				
Hydro		177,90	152,70	16,5
Thermal		78,50	62,60	25,4
Gas turbine		0,10	0,40	-75,0
Diesel		69,40	106,40	-34,8
Total generated, GWh			325,90	1,2
Import from Eskom		373,10	321,63	16,0
Import from Zimbabwe		—	0,11	—
Import from Malawi		—	0,07	—
Purchased from Hidroeléctrica de Cahora Bassa		98,70	94,24	4,7
Total generated and purchased, GWh			797,70	8,1
Export to Zimbabwe and transmission losses		26,00	18,90	37,5
Total available for distribution, GWh			771,70	7,3

SUB-SAHARAN AFRICA: Mozambique

Table 36 continued

Source: *Electricidade de Moçambique for the year ended 31 December 1991*

Transmission and distribution lines in service* (1989 subject to adjustment)	1989 km	1988 km	Change km
275 kV	75	75	—
220 kV	910	910	—
110 kV	862	754	108
66/60 kV	175	175	—
33/22 kV	1 950	1 900	50
11/6,6 kV	850	800	50
Total, km	4 822	4 614	208
	1991 GWh	1990 GWh	Change %
Sales of electricity by category			
General (low voltage)	126,00	93,10	35,3
Domestic	257,70	222,40	15,9
Medium/high voltage	311,00	276,90	12,3
Other	1,60	3,10	-48,4
Total sales, GWh	696,30	595,50	16,9
	1990	1989	Change %
Number of customers (1991 figures not available)			
General (low voltage)	17 996	17 453	3,1
Domestic	100 028	97 611	2,5
Medium and high voltage	882	986	-10,5
Public lighting	3	14	-78,6
Total	118 909	116 064	2,5

*Data for 1990-1991 not available

SUB-SAHARAN AFRICA: Namibia

Table 37

Source: SWA Water and Electricity Corporation (Pty) Ltd (SWAWEK) annual report for the year ended 30 June 1991

Source of power			
Installed generating capacity (SWAWEK)		Type	MW
Ruacana		Hydro	240
Van Eck		Thermal	120
Total, MW			360
Import facility (from Eskom)			
Paratus*, MW		Diesel	24,0
Paratus*, MW		Gas turbine	22,0
Eskom at Aggeneys, MVA			200,0
Eskom at Lower Orange River, MVA			38,5
ZESCO for Caprivi region			2,0
	1991	1990	Change
Energy available for distribution	GWh	GWh	%
Energy generated			
Ruacana (hydro)	1 322,0	1 054,0	25,4
Van Eck (thermal)	46,3	96,0	-51,8
Eskom – purchases	550,7	641,0	-14,1
Caprivi region (84% ZESCO, 16% local generation)	6,9	–	–
Total energy into system, GWh	1 925,9	1 791,0	7,5
Transmission losses	208,4	179,0	16,4
Transmission losses, %	10,8	10,0	8,1
	1991	1990	Change
Transmission and distribution lines in service	km	km	km
330 kV	521	521	–
220 kV	1 495	1 495	–
132 kV	946	790	156
66 kV and less	5 688	5 420	268
Total, km	8 650	8 226	424
	1991	1990	Change
Sales of electricity	GWh	GWh	%
Namibia			
Local authorities	574,2	543,6	5,6
Mining	757,2	735,6	2,9
Business/manufacturing	4,4	4,5	-2,2
Government departments (including Caprivi)	89,1	73,1	21,9
Rural supplies	15,4	14,1	9,2
Subtotal, GWh	1 440,3	1 370,9	5,1
Export to Eskom			
Walvis Bay enclave	76,2	75,0	1,6
Eskom at Aggeneys	201,0	166,0	21,1
Subtotal, GWh	277,2	241,0	15,0
Total energy sold, GWh	1 717,5	1 611,9	6,6
Number of SWAWEK customers	958	866	10,6

*Paratus Power Station is situated in Walvis Bay enclave.

SUB-SAHARAN AFRICA: Swaziland

Table 38

Source: Swaziland Electricity Board (SEB) for year ended 31 March 1991

	1991	1990	Change %
Installed generating capacity, MW			
Hydro	40,5	40,5	–
Diesel	9,5	9,5	–
Capacity of Eskom link	96,0	60,0	60,0
Total installed capacity, MW	146,0	110,0	32,7
System maximum demand, MW	100	92	8,7
Energy sources, GWh			
Own generation – hydro	163,3	198,7	–17,8
– diesel	1,7	0,8	112,5
Energy purchased from Eskom	387,0	298,0	29,9
Total generated and purchased, GWh	552,0	497,5	11,0
Energy sold, GWh	493,6	444,1	11,1
Own use and system losses, GWh	57,4	53,4	7,5
Own use and system losses, %	10,4	10,7	–3,1
Annual sent-out load factor %	65,0	62,0	4,8
Transmission and distribution equipment in service			
	1991	1990	Change
Overhead line lengths	km	km	km
132 kV	96	87	9
66 kV	898	895	3
33 kV	65	65	–
11 kV	2 080	2 220	–140
Total, km	3 139	3 267	–128
Substations ^a	MVA	MVA	Change
132/66 kV	98	78	20
Number	3	2	1
66/11 kV	169	149	20
Number	26	26	0
66/33, 6,6 or 0,4 kV	11 + 10	11 + 10	0
Number	6	6	0
33 or 11/0,4 kV	173	179	–6
Number	1 963	1 600	363
Sales of electricity by category	1991	1990	Change
	GWh	GWh	%
Domestic	99,0	92,9	6,6
Commercial	47,6	46,7	1,9
Industrial ^b	228,2	198,3	15,1
Irrigation	118,8	106,2	11,9
Total, GWh	493,6	444,1	11,1
Number of customers	1991	1990	Change %
Domestic ^c	16 043	14 971	7,2
Commercial	3 754	3 566	5,3
Industrial	516	472	9,3
Irrigation ^c	98	121	–19,0
Total, customers	20 411	19 130	6,7
Average selling price, cents/kWh	14,57	13,02	11,9

^a Redefinition of sales of sections of the distribution system makes comparison with March 1990 figures unreliable.

^b Includes sales to customers whose generating plants were temporarily not in use, 26 GWh and 13 GWh in 1990/91 and 1989/90 respectively.

^c Transfer of ownership to two sugar estates reduced domestic supply points by 300 and irrigation pump stations by 25.

SUB-SAHARAN AFRICA: Tanzania

Table 39

Source: Tanzania Electric Supply Co Ltd (TANESCO) for the year ended 30 June 1992

Installed generating capacity		Type	MW
Interconnected system			
Kidatu		Hydro	204,00
Mtera		Hydro	80,00
Pangani system		Hydro	41,50
Total interconnected system, MW			325,50
Isolated system			
Uwemba		Hydro	0,72
Total installed capacity, MW			326,22
	1991	1990	Change
Generation of electricity	GWh	GWh	%
Interconnected system	1 750,4	1 565,0	11,8
Isolated system	71,6	64,3	11,4
Total generation, GWh	1 822,0	1 629,3	11,8
Total sent out			
Interconnected system	n/a	1 555,3	–
Isolated system	n/a	60,4	–
Total sent out, GWh		1 615,7	–
Sales of electricity by category (1991 figures not available)		1990 GWh	
Domestic		418,3	
Agricultural		60,7	
Commercial		139,2	
Light industrial		58,6	
Low-voltage industrial & commercial		138,6	
High-voltage industrial		180,4	
Energy-intensive consumers		184,3	
Public lighting		6,9	
National Urban Water Authority		64,9	
Bulk sales to Zanzibar		52,0	
Total, GWh		1 303,9	
Number of customers (1991 figures not available)		1990	
Domestic		132 303	
Agricultural		107	
Commercial		35 780	
Light industrial		4 305	
Low-voltage industrial & commercial		466	
High-voltage industrial		84	
Energy-intensive consumers		7	
Public lighting		1 920	
National Urban Water Authority		32	
Total		175 004	

SUB-SAHARAN AFRICA: Transkei

Table 40

Source: Transkei Electricity Supply Corporation for the year ended 31 March 1991

Installed generating capacity		Type	MW
Collywobbles		Hydro	42,0
First and Second Falls		Hydro	17,0
Ncora		Hydro	2,4
Total, MW			61,4
	1991	1989	Change
Energy sources	GWh	GWh	%
Own generation	181,4	290,3	-37,5
Purchased from Eskom	199,8	103,1	93,8
Total, GWh	381,1	393,4	-3,1
Sold to Eskom, GWh	10,0	39,9	-75,0
System losses, GWh	44,1	51,5	-14,4
Sales of electricity, GWh	327,1	302,0	8,3
Non-coincident demand, MW	77,8	73,1	6,4
Transmission and distribution equipment in service			1989
Line lengths (as at 31 December 1989)			
132 kV			133,0
66 kV			309,0
33 kV and lower			1 135,2
Total, km			1 577,2
Substations		Number	MVA
132/66 kV		4	160,0
66/22/(11) kV		17	148,5
22/11 kV		25	60,5
22 (11)/0,4 kV		612	124,7
Total		658	493,7
	1991	1990	Change
Sales of electricity by category	GWh	GW	%
Domestic	22,0	26,0	-15,4
Commercial	72,6	29,4	147,2
Industrial	82,4	45,0	83,2
Bulk*	150,1	201,7	-25,6
Total sales, GWh	327,1	302,0	8,3
	1991	1989	Change %
Number of customers			
Domestic	5 205	3 498	48,8
Commercial	1 459	1 258	16,0
Industrial	128	55	132,7
Bulk	2	11	-81,8
Total	6 794	4 822	40,9

*Includes sales to Eskom

SUB-SAHARAN AFRICA: Venda

Table 41

Source: Venda Electricity Corporation for the year ended 31 March 1992

	1991/92 GWh	1990/91 GWh	Change %
Energy available for distribution			
Electricity purchases			
Eskom	133,48	112,79	18,3
Louis Trichardt Municipality	3,01	2,43	23,9
Total, GWh	136,49	115,22	18,5
Distribution losses, %	7,88	13,07	-39,7
Annual load factor (Eskom supply), %	62,9	65,3	-3,7
Average monthly load factor (Eskom supply), %	69,6	69,5	0,1
System maximum demand (Eskom supply), MVA	26,9	21,2	26,9
	1991/92 km	1990/91 km	Change km
Transmission and distribution lines in service			
132 kV	95	95	0
66 kV	14	14	0
22 and 11 kV	639	570	69
380/220 volts	583	426	157
Total, km	1 331	1 105	226
	1991/92 GWh	1990/91 GWh	Change %
Sales of electricity by category			
Large power users	72,99	62,21	17,3
Small power users	15,91	11,76	35,3
Domestic users*	35,27	24,65	43,1
Other (street lighting, robot supplies, etc)	1,57	1,54	1,9
Total, GWh	125,74	100,16	25,5
	1991/92	1990/91	Change %
Number of customers			
Large power users	133	125	6,4
Small power users	1 265	1 086	16,5
Domestic users*	9 579	7 298	31,3
Other (street lighting, robot supplies, etc)	149	23	547,8
Total, customers	11 126	8 532	30,4
Total, population (1989 figure)	504 911	-	-

* Dramatic increase due to Government subsidies.

SUB-SAHARAN AFRICA: Zaire

Table 42

Source: Soci t  Nationale d'Electricit  (SNEL) for year ended 31 December 1990

Source of power

For purposes of generation and transmission the country is divided into four systems which are operated independently from one another. In each system the main power stations are interconnected but there are still some small power stations operating on an isolated local grid. The systems are not interconnected except for the Western and Southern systems which are interconnected by a 500 kV DC line of 1 740 km – the so-called Inga-Shaba line.

Installed generating capacity (SNEL)	Number of units	Unit capacity MW	Total MW
Western system			
Inga 1	6	58,5	351,0
Inga 2	8	178,0	1 424,0
Zongo	2 + 3	18 & 13	75,0
Sanga	6	2,0	12,0
Mpozo (isolated)	2	1,1	2,2
Southern system			
Mwandingusha	3 + 3	11 & 12,5	70,5
Koni	3	14,0	42,0
Nzilo	4	27,0	108,0
Nseke	4	65,5	262,0
Kiyimbi (isolated)	2 + 2	6,3 & 7,8	28,2
Kilubi (isolated)	3	3,3	9,9
Lungudi (isolated)	2	0,78	1,56
Eastern system			
Ruzizi 1	2 + 2	6,3 & 7,8	28,2
Ruzizi 2 (SINELAC power station)*	2	13,3	26,6
Northern system			
Tshopo (isolated)	2 + 1	6,15 & 6,5	18,8
Mobayi (isolated)	3	3,5	10,5
Total hydro, MW			2 470,5
28 diesel stations and 1 natural gas power station (isolated)			51,0
Total generating capacity (SNEL), MW			2 521,5
Privately owned power stations (all hydro)			
	Company	Town	
Budana	Kilomto	Bunia	13,5
Soleniama 1	Kilomto	Bunia	13,8
Soleniama 2	Kilomto	Bunia	1,6
Nzoro	Kilomto	Watsa	1,4
Ambwe/Kailo	Sominki	Kalima	2,2
Lutshurukuru	Sominki	Kalima	5,1
Moga	Sominki	Kalima	0,4
Belia	Sominki	Punia	2,2
Lulingu	Sominki	Shabunda	0,7
Mangembe	Sominki	Kamitusa	1,8
Tshala & Lubilanji 1	Miba	Mbuji Mayi	8,6
Zaire Etain	Piana Mwanga	Manono	29,5
Total privately owned, MW			80,8
Total generating capacity (Zaire), MW			2 602,3
Transmission and distribution equipment in service			
			1990 km
Overhead lines for three systems (Northern system has no transmission lines over long distances)			
500 kV DC			1 700,0
220 kV			1 207,3
132 kV			185,3
120 kV			1 198,8
70 kV			504,5
50 kV			144,4
Total, km			4 940,3

SUB-SAHARAN AFRICA: Zaire

Table 42

Source: Societé Nationale d'Electricité (SNEL) for year ended 31 December 1990

Source of power

For purposes of generation and transmission the country is divided into four systems which are operated independently from one another. In each system the main power stations are interconnected but there are still some small power stations operating on an isolated local grid. The systems are not interconnected except for the Western and Southern systems which are interconnected by a 500 kV DC line of 1 740 km – the so-called Inga-Shaba line.

Installed generating capacity (SNEL)	Number of units	Unit capacity MW	Total MW
Western system			
Inga 1	6	58,5	351,0
Inga 2	8	178,0	1 424,0
Zongo	2 + 3	18 & 13	75,0
Sanga	6	2,0	12,0
Mpozo (isolated)	2	1,1	2,2
Southern system			
Mwandingusha	3 + 3	11 & 12,5	70,5
Koni	3	14,0	42,0
Nzilo	4	27,0	108,0
Nseke	4	65,5	262,0
Kiyimbi (isolated)	2 + 2	6,3 & 7,8	28,2
Kilubi (isolated)	3	3,3	9,9
Lungudi (isolated)	2	0,78	1,56
Eastern system			
Ruzizi 1	2 + 2	6,3 & 7,8	28,2
Ruzizi 2 (SINELAC power station)*	2	13,3	26,6
Northern system			
Tshopo (isolated)	2 + 1	6,15 & 6,5	18,8
Mobayi (isolated)	3	3,5	10,5
Total hydro, MW			2 470,5
28 diesel stations and 1 natural gas power station (isolated)			51,0
Total generating capacity (SNEL), MW			2 521,5
Privately owned power stations (all hydro)			
	Company	Town	
Budana	Kilomto	Bunia	13,5
Soleniama 1	Kilomto	Bunia	13,8
Soleniama 2	Kilomto	Bunia	1,6
Nzoro	Kilomto	Watsa	1,4
Ambwe/Kailo	Sominki	Kalima	2,2
Lutshurukuru	Sominki	Kalima	5,1
Moga	Sominki	Kalima	0,4
Belia	Sominki	Punia	2,2
Lulingu	Sominki	Shabunda	0,7
Mangembe	Sominki	Kamitusa	1,8
Tshala & Lubilanji 1	Miba	Mbuji Mayi	8,6
Zaire Etain	Piana Mwanga	Manono	29,5
Total privately owned, MW			80,8
Total generating capacity (Zaire), MW			2 602,3
Transmission and distribution equipment in service			
			1990 km
Overhead lines for three systems (Northern system has no transmission lines over long distances)			
500 kV DC			1 700,0
220 kV			1 207,3
132 kV			185,3
120 kV			1 198,8
70 kV			504,5
50 kV			144,4
Total, km			4 940,3

SUB-SAHARAN AFRICA: Zaire

Table 42 continued

Source: Société Nationale d'Electricité (SNEL) for year ended 31 December 1990

Links with other countries

- Between Shaba (Southern system) and Zambia, 220 kV
- Between Kinshasa (Western system) and Congo Brazzaville, 220 kV
- Between Kivu (Eastern system) and Rwanda and Burundi via Ruzizi* power station and two direct links with Rwanda, 6,6 kV and 15 kV
- Between Mobayi power station (Northern system) and Central African Republic
- Between Western system and certain border towns in Angola

Energy sources, MWh (interconnected system only)	Peak load			Change %
	1990	1990	1989	
Inga 1	166,00	690,3	1 056,9	-34,7
Inga 2	451,00	2 581,4	2 763,9	-6,6
Zongo	20,00	84,1	113,2	-25,7
Sanga	0,38	2,8	2,5	10,4
Mwadingusha	70,80	218,5	399,9	-45,4
Koni	42,00	94,0	180,5	-47,9
Nzilo	74,74	422,6	375,5	12,5
Nseke	-	1 107,0	1 010,7	9,5
Ruzizi 1	24,90	99,9	94,6	5,6
Total gross production, MWh		5 300,5	5 997,7	-11,6
Consumed by auxiliaries		20,8	21,3	-2,6
Net energy generated		5 279,8	5 976,4	-11,7
Own consumption		1,9	2,5	-22,0
Energy sold locally		0,5	0,4	2,9
Energy sent into the grid		5 277,4	5 973,5	-11,7
Imported from Congo		21,6	1,6	1 269,0
Imported from Zambia		15,0	0,6	2 391,9
Imported from SINELAC		21,5	13,1	63,7
Exported to Congo		14,5	61,3	-76,3
Exported to Angola		0,3	0,3	-9,6
Exported to Rwanda		5,8	11,0	-46,8
Exported to Burundi		19,1	11,6	65,1
Exported to Zambia		20,6	463,8	-95,6
Exported to SINELAC		1,4	0,0	-
Available for distribution, MWh		5 273,6	5 440,8	-3,1

* Ruzizi 2 power station (SINELAC) is jointly owned with Rwanda and Burundi.

SUB-SAHARAN AFRICA: Zaire

Table 42 continued

Source: Société Nationale d'Electricité (SNEL) for year ended 31 December 1990

Links with other countries

Between Shaba (Southern system) and Zambia, 220 kV

Between Kinshasa (Western system) and Congo Brazzaville, 220 kV

Between Kivu (Eastern system) and Rwanda and Burundi via Ruzizi* power station and two direct links with Rwanda, 6,6 kV and 15 kV

Between Mobayi power station (Northern system) and Central African Republic

Between Western system and certain border towns in Angola

Energy sources, MWh (interconnected system only)	Peak load			Change %
	1990	1990	1989	
Inga 1	166,00	690,3	1 056,9	-34,7
Inga 2	451,00	2 581,4	2 763,9	-6,6
Zongo	20,00	84,1	113,2	-25,7
Sanga	0,38	2,8	2,5	10,4
Mwadingusha	70,80	218,5	399,9	-45,4
Koni	42,00	94,0	180,5	-47,9
Nzilo	74,74	422,6	375,5	12,5
Nseke	-	1 107,0	1 010,7	9,5
Ruzizi 1	24,90	99,9	94,6	5,6
Total gross production, MWh		5 300,5	5 997,7	-11,6
Consumed by auxiliaries		20,8	21,3	-2,6
Net energy generated		5 279,8	5 976,4	-11,7
Own consumption		1,9	2,5	-22,0
Energy sold locally		0,5	0,4	2,9
Energy sent into the grid		5 277,4	5 973,5	-11,7
Imported from Congo		21,6	1,6	1 269,0
Imported from Zambia		15,0	0,6	2 391,9
Imported from SINELAC		21,5	13,1	63,7
Exported to Congo		14,5	61,3	-76,3
Exported to Angola		0,3	0,3	-9,6
Exported to Rwanda		5,8	11,0	-46,8
Exported to Burundi		19,1	11,6	65,1
Exported to Zambia		20,6	463,8	-95,6
Exported to SINELAC		1,4	0,0	-
Available for distribution, MWh		5 273,6	5 440,8	-3,1

* Ruzizi 2 power station (SINELAC) is jointly owned with Rwanda and Burundi.

SUB-SAHARAN AFRICA: Zambia

Table 43

Source: Zambia Electricity Supply Corporation for the year ended 30 June 1991

Installed generating capacity	Type	MW	
Interconnected system			
Kariba North	Hydro	600,00	
Kafue Gorge	Hydro	900,00	
Victoria Falls	Hydro	108,00	
Total interconnected system, MW		1 608,00	
Isolated systems			
Lusiwasi	Hydro	12,00	
Chishimba Falls	Hydro	6,00	
Musonda Falls	Hydro	5,00	
Lunzua River	Hydro	0,75	
Total isolated systems, MW		23,75	
Total installed capacity, MW		1 631,75	
	1991	1990	Change
	GWh	GWh	%
Generation of electricity			
Interconnected system			
Kariba North	2 872	4 694	-38,8
Kafue Gorge	4 127	841	390,7
Victoria Falls	669	644	3,9
Total interconnected system, GWh	7 668	6 179	-24,1
Isolated systems			
Lusiwasi	62	57	8,8
Chishimba Falls	32	30	6,7
Musonda Falls	28	23	21,7
Lunzua River	3	2	50,0
Total isolated systems, GWh	125	112	11,6
Total generation, GWh	7 793	6 291	23,9
Trade of electricity (Zaire – Soci�t� Nationale d'Electricit�)	1991	1990	Change
	GWh	GWh	%
Exports	302	85	255,3
Imports	300	571	-47,5
Net Zambia/SNEL	-2	486	-100,4
	1991	1990	Change
	GWh	GWh	%
Total sent out			
Interconnected system	7 658	6 171	24,1
Isolated systems	124	111	11,7
SNEL imports	-2	486	-100,4
Total, GWh	7 780	6 768	15,0
Bulk deliveries (interconnected only)	1991	1990	Change
	GWh	GWh	%
Local	6 412,6	6 303,2	1,7
For export	985,5	148,3	564,5
Total, GWh	7 398,1	6 451,5	14,7

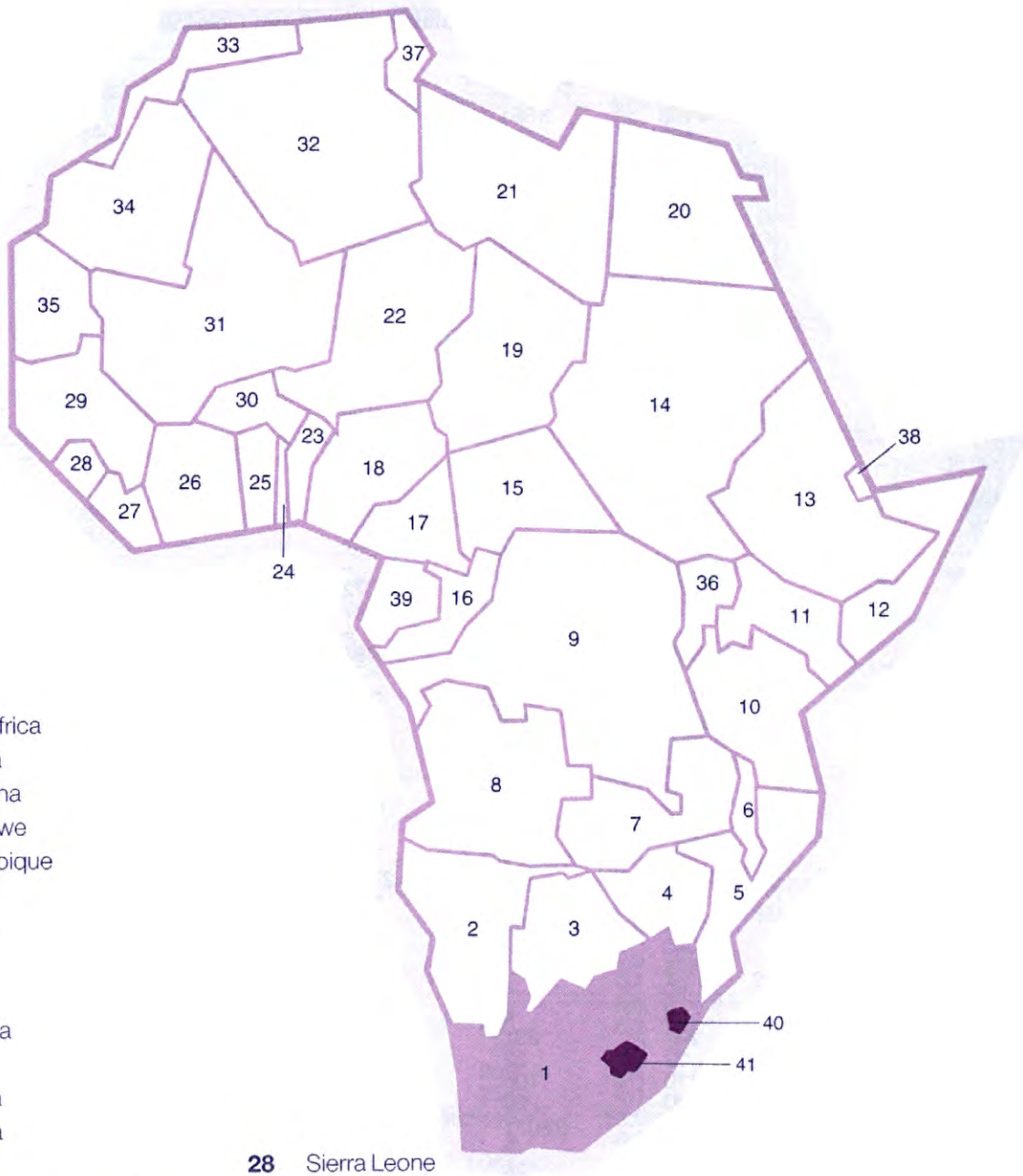
SUB-SAHARAN AFRICA: Zimbabwe

Table 44

Source: Zimbabwe Electricity Supply Authority's annual report for year ended 30 June 1991

Source of power	Type	MW	No. units
Installed generating capacity			
Hwange 1	Thermal	480,0	4
Hwange 2	Thermal	440,0	2
Munyati	Thermal	120,0	7
Harare 2	Thermal	75,0	6
Harare 3	Thermal	60,0	2
Bulawayo	Thermal	120,0	5
Kariba South	Hydro	666,0	6
Beitbridge	Diesel	4,5	3
Total installed generating capacity, MW		1 965,5	
Energy available for distribution	1990/91 GWh	1989/90 GWh	Change %
Energy generated			
Thermal	5 771,7	4 992,9	15,6
Hydro	3 152,5	4 368,5	-27,8
Other	0,0	0,0	-
Total generated, GWh	8 924,2	9 361,4	-4,7
Bulk imports, GWh			
Botswana Power Corporation	0,1	0,0	103,0
Electricidade de Moçambique	0,2	12,7	-98,6
Eskom	10,7	15,3	-30,3
Zesco, Chirundu	1,5	1,1	38,0
Zesco, Victoria Falls	0,0	-	-
Zesco, bulk power imports	1 164,6	355,1	227,9
Bulk exports, GWh	32,8	50,2	-34,6
Total generated and imported, GWh	10 068,4	9 695,5	3,8
Generation and transmission losses, %	4,0	3,0	33,3
Transmission and distribution lines in service (1990/91 figures not available)	1989/90 km	1988/89 km	Change km
330 kV	3 443,9	3 443,9	0,0
132 kV	1 026,9	1 021,0	5,9
88 kV	2 081,9	2 081,9	0,0
66 kV	184,0	178,0	6,0
Other	52 826,3	46 671,6	6 154,7
Total, km	59 563,0	53 396,4	6 166,6
Sales of electricity by category	1990/91 GWh	1989/90 GWh	Change %
Mining	1 518,5	1 473,9	3,0
Industrial	4 052,7	4 278,0	-5,3
Farming	834,1	750,6	11,1
Commercial and lighting	1 044,2	900,1	16,0
Domestic	1 542,9	1 449,2	6,5
Total national sales, GWh	8 992,4	8 851,8	1,6
Exports*	28,4	73,1	-61,1
Total sales, GWh	9 020,8	8 924,9	1,1
Number of customers	1990/91	1989/90	Change %
Mining	666	669	-0,4
Industrial	4 158	4 112	1,1
Farming	8 545	8 285	3,1
Commercial and lighting	29 603	28 486	3,9
Domestic metered	144 402	136 366	5,9
Domestic load limited	131 983	131 505	0,4
Total	319 357	309 423	3,2

* 1989/90 exports to Zambia and 1990/91 exports mainly to Botswana via new 220 kV interconnector which was commissioned in June 1990.

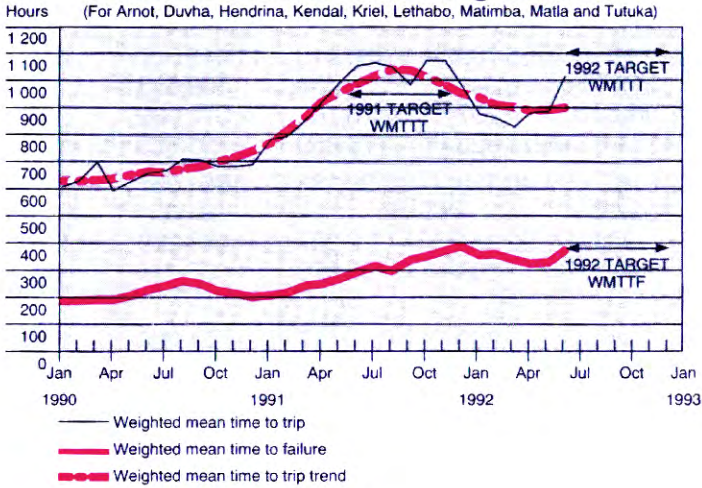


- 1** South Africa
- 2** Namibia
- 3** Botswana
- 4** Zimbabwe
- 5** Mozambique
- 6** Malawi
- 7** Zambia
- 8** Angola
- 9** Zaire
- 10** Tanzania
- 11** Kenya
- 12** Somalia
- 13** Ethiopia
- 14** Sudan
- 15** Central African Republic
- 16** Congo
- 17** Cameroon
- 18** Nigeria
- 19** Chad
- 20** Egypt
- 21** Libya
- 22** Niger
- 23** Benin
- 24** Togo
- 25** Ghana
- 26** Ivory Coast
- 27** Liberia

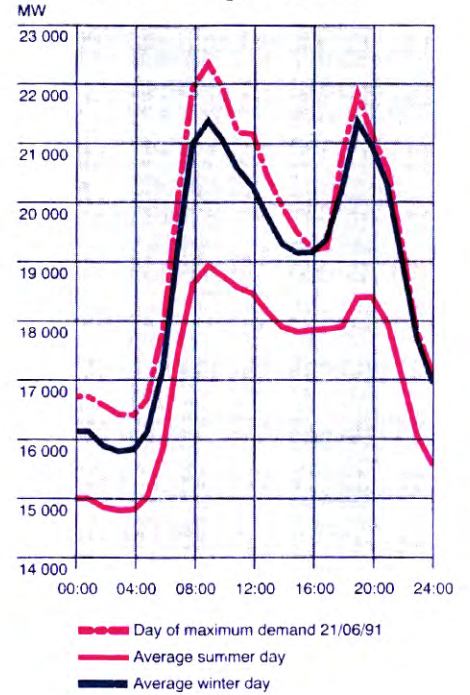
- 28** Sierra Leone
- 29** Guinea
- 30** Burkina Faso
- 31** Mali
- 32** Algeria
- 33** Morocco
- 34** Mauritania
- 35** Senegal
- 36** Uganda
- 37** Tunisia
- 38** Djibouti
- 39** Gabon
- 40** Swaziland
- 41** Lesotho

At a glance

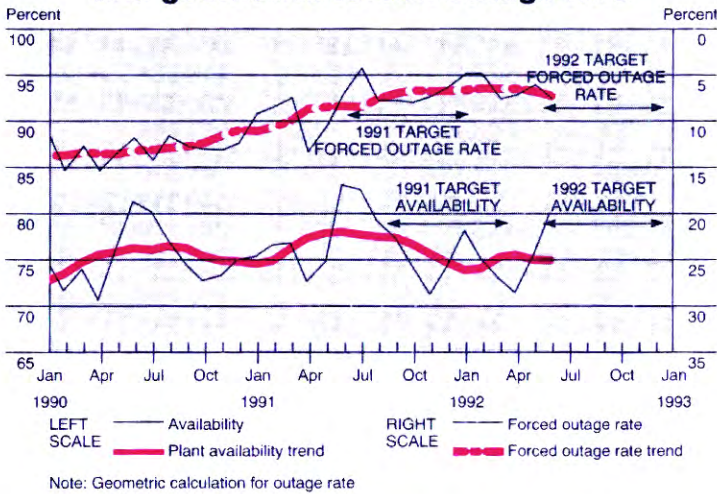
Eskom weighted MTTT and MTTT for 2 200 hours running time



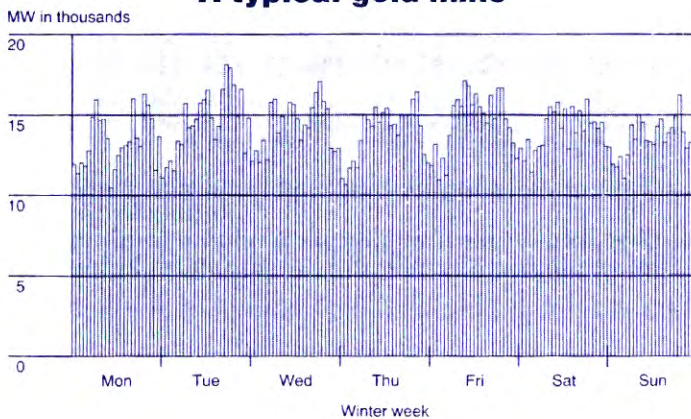
Eskom electricity demand patterns



Eskom trends in plant availability and geometric forced outage rate



Weekly demand profile A typical gold mine



Weekly demand profile A typical residential area

