

## 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. Kimberley's first reticulation system was commissioned in 1890, followed by Johannesburg in 1891, Pretoria in 1892, Cape Town in 1895, East London in 1899, Bloemfontein in 1900 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 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 exploration of Transvaal coal. By 1915 it had four power stations 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 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 1988, Eskom was supplying more than 97% of South Africa's electricity. It now 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. The transmission system today has more than 200 000 km of lines of which 21 000 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 was 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 (Eskom since 1987), controlled and managed by the Electricity Council and Management Board in terms of the Eskom Act.

**1988** Eskom re-enforces the 80-year old VFP vision of harnessing the hydro potential of southern Africa.

## Electricity Council

Dr J.B. Maree, SSAS  
(Chairman)  
P.J. Botes  
Dr J.W.L. de Villiers, OMSG  
A.B. Dickman  
Dr R.A.P. Fockema  
J.F.W. Haak  
Prof. D. Konar  
Prof. I.J. Lambrechts  
B.J. Lessing  
F.J. Malan  
I.C. McRae  
Dr D.C. Neethling  
R.B. Savage  
A.A. Sealey  
Dr C.L. Stals  
Prof. H.C. Viljoen  
R.C. Webb  
Prof. J.L. Weyers

## Management Board

I.C. McRae *Chief Executive and Chairman of the Management Board*  
J.L. Rothman *Senior General Manager*  
M.L. Davis *General Manager, Finance*  
J.S. Els *General Manager, Strategic Planning*  
R.A. Forbes *General Manager, Distribution and Marketing*  
A.J. Ham *General Manager, Engineering*  
Dr G.F. Lindeque *General Manager, Human Resources*  
P.J.T. Oosthuizen *General Manager, Privatisation and Legal*  
E.H. Ralph *General Manager, Strategic Technology*  
P. Semark *General Manager, Generation*  
J.P. van den Bergh *General Manager, Management Services*

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Hierdie publikasie is ook in Afrikaans verkrygbaar.*

## ESKOM: Highlights of the year

	1988	1987	% Change 1987-88	% Average yearly increase 1984-88
<b>Financial</b>				
Revenue (R million)	<b>8 159</b>	7 046	15,8	19,8
Net income (R million)	<b>816</b>	702	16,2	1,9
Fixed assets in commission, at cost (R million)	<b>28 680</b>	24 986	14,8	25,5
Works under construction (R million)	<b>5 512</b>	6 075	-9,3	-3,0
Net capital expenditure (R million)	<b>3 969</b>	3 895	1,9	7,6
Total net borrowings (R million)	<b>24 334</b>	21 475	13,3	17,9
Average price per kW.h sold (cents)	<b>6,30</b>	5,75	9,6	13,4
Average coal cost per ton (rand)	<b>18,67</b>	17,11	9,1	8,5
<b>Operations</b>				
Electricity sold (million kW.h)	<b>129 493</b>	122 524	5,7	5,7
Coal burnt in power stations (Mt)	<b>64,5</b>	65,8	-2,0	3,2
Water consumed by power stations (Mℓ)	<b>262 804</b>	274 804	-4,4	0,6
Peak demand on integrated system (MW)	<b>20 589</b>	20 001	2,9	5,7
	<b>(24.06.88)</b>	(26.06.87)		
<b>Assets in commission</b>				
at 31 December				
Installed capacity (MW)	<b>33 176</b>	31 261	6,1	7,6
Assigned sent-out rating (MW)	<b>31 465</b>	29 618	6,2	7,7
Transmission lines (km)	<b>201 802</b>	187 317	7,7	7,8
<b>Staff employed</b>				
at 31 December	<b>56 726</b>	56 830	-0,2	-1,9



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## Foreword

Statistics is a vital component of planning and Eskom has for many years gathered a wealth of data concerning electricity supply in South Africa. We are also increasingly accumulating statistics from beyond our borders, so that a more comprehensive picture of electricity usage and generation in Africa can be presented.

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. I trust that this publication will prove to be a useful source of information.



I.C. McRAE  
Chief Executive of Eskom and Chairman of the Management Board  
10 May 1989



# ESKOM: Statistical overview

Table 1

	1988	1987
<b>Financial, R million</b>		
Revenue	8 159	7 046
Net income <sup>1</sup>	816	702
Fixed assets in commission, at cost	28 680	24 986
Works under construction	5 512	6 075
Capital expenditure	3 969	3 895
Total net borrowings	24 334	21 475
<b>Plant performance</b>		
Total power station capacity, installed rating, MW	33 176	31 261
Total power station capacity, assigned sent-out rating, MW	31 465	29 618
Peak demand on integrated Eskom system, MW	20 589	20 001
Average station availability <sup>2</sup>	79,1	79,2
Station load factor, % <sup>3</sup>	52,3	54,3
Integrated Eskom system load factor, %	75,5	73,9
Water consumed in Eskom power stations, Mℓ	262 804	274 804
Coal burnt, thousands of tons	64 489,6	65 787,0
Coal burnt, kg/kW.h sent out	0,521	0,535
Average heat rate of coal-fired stations, MJ/kW.h sent out	10,71	11,00
Average heat content of coal (as received), MJ/kg	20,44	20,48
Overall thermal efficiency, sent-out basis	33,6	32,7
Average coal cost, R/ton	18,67	17,11
Average coal cost, c/kW.h sent out	0,9727	0,9155
<b>Electricity output</b>		
Total electricity sent out in South Africa, million kW.h <sup>4</sup>	140 502	134 751
Eskom electricity sent out as percentage of South African total	97,2	96,1
Total electricity sent out on Eskom system (Eskom stations and purchased), million kW.h <sup>5</sup>	139 197	132 774
Total sent out from Eskom stations, million kW.h	138 837	132 507
Subtotal from coal-fired stations, million kW.h	123 777	122 947
Subtotal from hydro-electric stations, million kW.h	3 162	1 617
Subtotal from pumped-storage stations, million kW.h	1 403	1 774
Subtotal from diesel and gas-turbine stations, million kW.h	2	2
Subtotal nuclear power station, million kW.h	10 493	6 167
Total purchased by Eskom and sent out on Eskom system, million kW.h	360	267
Total consumed by Eskom, million kW.h <sup>6</sup>	2 567	3 229
Total available for distribution, million kW.h	136 630	129 545
Total sold, million kW.h <sup>7</sup>	129 493	122 524
Growth in kW.h sales, %	5,7	4,4
<b>Employees</b>		
Total number at 31 December	56 726	56 830
Ratio number/million kW.h sold	0,438	0,464
<b>Power station assigned sent-out rating, MW</b>		
Subtotal coal fired (19 stations) <sup>8</sup>	27 295	25 848
Subtotal gas turbine (3 stations) <sup>9</sup>	390	390
Subtotal hydro-electric (2 stations) <sup>10</sup>	540	540
Subtotal pumped storage (2 stations) <sup>11</sup>	1 400	1 000
Subtotal nuclear (1 station)	1 840	1 840
<b>Total power station assigned sent-out rating, MW</b>	<b>31 465</b>	<b>29 618</b>

1. Certain adjustments had to be made to make figures comparable with current figures, which are presented in terms of the Eskom Act of 1987. 2. Capacity hours available x 100/total capacity hours in year. 3. kW.h sent out x 100/(average assigned sent-out rating x hours in year). 4. Electricity sent out by Eskom, some industries and municipalities which generate all or part of their electricity requirements. 5. Includes Eskom electricity sent out to neighbouring countries.

	1986	1985	1984	1983	1982	1981	1980	1979
Revenue	5 845	4 625	3 832	3 302	2 695	2 141	1 772	1 529
Net income <sup>1</sup>	781	738	732	744	671	507	414	476
Fixed assets in commission, at cost	19 907	15 496	12 058	9 218	7 689	6 323	5 604	4 255
Works under construction	7 753	8 552	7 271	6 434	5 198	3 854	2 644	2 582
Capital expenditure	3 755	4 757	3 719	2 757	2 741	1 951	1 447	1 375
Total net borrowings	19 462	17 621	13 861	10 686	8 534	6 334	5 013	4 187
<b>Plant performance</b>								
Total power station capacity, installed rating, MW	28 086	25 716	24 514	22 949	21 749	20 049	18 349	15 974
Total power station capacity, assigned sent-out rating, MW	26 682	24 359	23 168	21 673	20 523	18 989	17 339	15 056
Peak demand on integrated Eskom system, MW	18 278	17 852	17 296	15 639	15 532	14 674	13 668	12 855
Average station availability <sup>2</sup>	78,5	77,5	74,9	71,9	74,3	74,2	74,7	78,8
Station load factor, % <sup>3</sup>	55,5	58,0	58,1	55,6	59,3	62,2	57,8	60,9
Integrated Eskom system load factor, %	77,3	76,2	75,0	76,9	75,3	77,6	77,5	76,4
Water consumed in Eskom power stations, Mℓ	262 372	275 716	269 868	255 654	265 933	235 138	214 813	206 318
Coal burnt, thousands of tons	58 915,9	59 488,6	58 703,6	55 010,2	55 198,4	53 903,7	46 755,0	43 264,9
Coal burnt, kg/kW.h sent out	0,515	0,522	0,533	0,546	0,551	0,563	0,568	0,580
Average heat rate of coal-fired stations, MJ/kW.h sent out	10,95	11,26	11,45	11,57	11,82	12,01	12,16	12,33
Average heat content of coal (as received), MJ/kg	21,19	21,52	21,38	21,11	21,39	21,25	21,34	21,22
Overall thermal efficiency, sent-out basis	32,9	32,0	31,4	31,1	30,5	30,0	29,6	29,2
Average coal cost, R/ton	14,87	13,25	12,55	12,44	11,75	9,71	8,12	6,96
Average coal cost, c/kW.h sent out	0,7665	0,6916	0,6692	0,6793	0,6471	0,5473	0,4614	0,4045
<b>Electricity output</b>								
Total electricity sent out in South Africa, million kW.h <sup>4</sup>	130 056	126 206	120 835	112 366	109 536	106 135	99 905	92 615
Eskom electricity sent out as percentage of South African total	95,1	94,5	94,3	93,8	93,6	93,9	93,0	92,8
Total electricity sent out on Eskom system (Eskom stations and purchased), million kW.h <sup>5</sup>	126 766	122 494	117 086	108 321	104 920	100 425	93 021	86 037
Total sent out from Eskom stations, million kW.h	126 511	121 987	116 581	103 295	102 769	97 824	83 362	75 643
Subtotal from coal-fired stations, million kW.h	114 298	113 941	110 094	100 738	100 217	95 675	82 342	74 485
Subtotal from hydro-electric stations, million kW.h	1 623	624	560	595	1 016	1 653	992	1 144
Subtotal from pumped-storage stations, million kW.h	1 785	2 107	1 994	1 957	1 519	415	—	—
Subtotal from diesel and gas-turbine stations, million kW.h	2	0	8	5	17	81	28	14
Subtotal nuclear power station, million kW.h	8 803	5 315	3 925	—	—	—	—	—
Total purchased by Eskom and sent out on Eskom system, million kW.h	255	507	505	5 026	2 151	2 601	9 659	10 394
Total consumed by Eskom, million kW.h <sup>6</sup>	3 018	3 265	3 188	2 917	2 404	712	71	58
Total available for distribution, million kW.h	123 748	119 229	113 898	105 404	102 516	99 713	92 950	85 979
Total sold, million kW.h <sup>7</sup>	117 353,0	112 305,9	106 904,1	98 251,1	96 135,9	93 844,0	87 539,3	80 582,8
Growth in kW.h sales, %	4,5	5,1	8,8	2,2	2,4	7,2	8,6	10,7
<b>Employees</b>								
Total number at 31 December	60 800	66 000	64 560	62 420	58 850	52 080	47 490	43 690
Ratio number/million kW.h sold	0,518	0,588	0,604	0,635	0,612	0,555	0,542	0,542
<b>Power station assigned sent-out rating, MW</b>								
Subtotal coal fired (19 stations) <sup>8</sup>	22 912	20 637	20 366	19 791	18 641	17 607	16 475	14 174
Subtotal gas turbine (3 stations) <sup>9</sup>	390	342	342	342	342	342	342	342
Subtotal hydro-electric (2 stations) <sup>10</sup>	540	540	540	540	540	540	540	540
Subtotal pumped storage (2 stations) <sup>11</sup>	1 000	1 000	1 000	1 000	1 000	500	—	—
Subtotal nuclear (1 station)	1 840	1 840	920	—	—	—	—	—
<b>Total power station assigned sent-out rating, MW</b>	<b>26 682</b>	<b>24 359</b>	<b>23 168</b>	<b>21 673</b>	<b>20 523</b>	<b>18 989</b>	<b>17 339</b>	<b>15 056</b>

6. In respect of pumped-storage facilities and synchronous condenser mode of operation. See Note g, Table 6. 7. Difference between electricity available for distribution and electricity sold is due to transmission losses. 8. Base-load stations, except in the case of older, uneconomical plant, which are used only for peak demands or in emergencies. 9. Used only for peaking or in emergencies. 10. Use restricted to peaking and emergencies and availability of water in Hendrik Verwoerd and P.K. le Roux dams. 11. 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.

## ESKOM: Financial statistics

Table 2

	1988	1987	1986
Energy sold, thousand GW.h	<b>129</b>	122	117
Annual increase, thousand GW.h	<b>7</b>	5	5
Annual increase, %	<b>5,69</b>	4,41	4,49
<b>Electricity revenue</b> (R million)	<b>8 159</b>	7 046	5 845
Annual increase, %	<b>15,80</b>	20,55	26,39
Cents per kW.h	<b>6,30</b>	5,75	4,98
Annual increase, %	<b>9,56</b>	15,46	20,95
<b>Charges against revenue</b> (R million)			
Total operating expenditure	<b>4 858</b>	4 207	3 445
Annual increase, %	<b>15,47</b>	22,12	28,74
Depreciation	<b>1 150</b>	963	811
Annual increase, %	<b>19,42</b>	18,74	54,77
Interest and finance charges	<b>2 485</b>	2 137	1 619
Annual increase, %	<b>16,28</b>	32,00	33,69
Net income	<b>816</b>	702	781
<b>Assets</b> (R million)			
Total fixed assets	<b>29 169</b>	26 970	24 363
Assets in commission	<b>23 384</b>	20 649	16 398
Works under construction	<b>5 512</b>	6 075	7 753
Equipment and vehicles	<b>273</b>	246	212
Non-current assets	<b>2 943</b>	2 068	1 780
Stores, material and fuel	<b>1 176</b>	705	730
Debtors	<b>865</b>	729	620
Cash and deposits	<b>787</b>	171	114
<b>Financing</b> (R million)			
Loans and debt	<b>24 334</b>	21 475	19 462
Other liabilities	<b>2 479</b>	1 857	1 536
Reserves	<b>8 127</b>	7 311	6 609
Debt/Equity ratio	<b>3,0</b>	2,9	2,9



# ESKOM: Cash flow statement

for the year ended 31 December 1988

**Table 3**

<i>(Figures in R million)</i>	1988	1987	1986
<b>Cash generated from operations</b>			
Net operating income	3 301	2 839	2 400
Non-cash items	1 328	1 045	892
	<b>4 629</b>	3 884	3 292
Cash released from working capital	304	192	(113)
	<b>4 933</b>	4 076	3 179
Net financing charges	(2 392)	(1 771)	(1 315)
<b>Net cash flow from operations</b>	<b>2 541</b>	2 305	1 864
Capital expenditure	(3 969)	(3 895)	(3 756)
Investments and deposits	(1 315)	(48)	(29)
<b>Financing requirements</b>	<b>(2 743)</b>	(1 638)	(1 921)
<b>Financing activities</b>	<b>2 768</b>	1 647	1 934
Loans and facilities raised			
Local	1 210	1 761	1 282
Foreign	1 011	1 391	375
Net proceeds on maturity of forward cover contracts	1 348	366	768
Total raised	<b>3 569</b>	3 518	2 425
Loans and facilities repaid			
Local	(112)	(1 276)	(117)
Foreign	(689)	(595)	(374)
Total repaid	<b>(801)</b>	(1 871)	(491)
<b>Increase in cash</b>	<b>25</b>	9	13

# ESKOM: Summary of operations

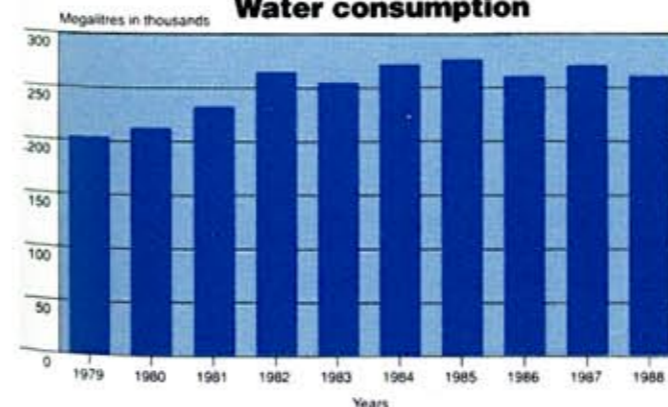
Table 4

Year	Coal-fired power stations						Coal cost	
	Coal used							
	Thousands of tons	Average heat content (as received) MJ/kg	Consumption sent-out basis kg/kW.h	Average heat rate sent-out basis MJ/kW.h	Overall thermal efficiency sent-out basis %	Average R/ton	c/kW.h sent out	
1950	6 323,4	22,72	0,869	19,74	18,2	0,84	0,072 9	
1951	6 662,9	22,72	0,855	19,43	18,5	0,98	0,084 0	
1952	7 113,4	22,75	0,865	19,68	18,3	1,20	0,103 7	
1953	7 393,9	23,08	0,837	19,32	18,6	1,33	0,111 6	
1954	8 024,9	23,06	0,805	18,56	19,4	1,41	0,113 6	
1955	8 999,7	22,89	0,788	18,04	20,0	1,52	0,120 1	
1956	9 688,5	22,96	0,765	17,56	20,5	1,62	0,123 6	
1957	10 220,6	22,79	0,750	17,09	21,1	1,69	0,126 6	
1958	10 784,1	22,73	0,743	16,89	21,3	1,77	0,131 2	
1959	11 548,7	22,44	0,732	16,43	21,9	1,82	0,132 9	
1960	12 512,6	22,52	0,723	16,28	22,1	2,03	0,146 6	
1961	13 194,9	22,39	0,722	16,17	22,3	2,10	0,151 6	
1962	13 955,5	22,22	0,719	15,98	22,5	2,09	0,150 7	
1963	14 721,1	22,15	0,708	15,68	23,0	2,11	0,149 2	
1964	15 654,7	22,15	0,692	15,33	23,5	2,07	0,143 0	
1965	16 726,7	22,39	0,680	15,23	23,6	2,09	0,142 3	
1966	16 982,3	22,20	0,666	14,79	24,4	2,23	0,148 6	
1967	18 307,7	22,44	0,645	14,47	24,9	2,30	0,148 2	
1968	19 133,9	22,63	0,620	14,03	25,6	2,33	0,144 6	
1969	19 982,9	22,73	0,595	13,52	26,6	2,37	0,141 2	
1970	21 630,6	22,97	0,580	13,32	27,0	2,26	0,130 8	
1971	23 416,2	23,30	0,576	13,42	26,8	2,25	0,129 7	
1972	24 952,8	22,89	0,571	13,07	27,5	2,25	0,128 5	
1973	27 907,9	22,47	0,563	12,65	28,5	2,39	0,134 8	
1974	30 891,4	22,42	0,560	12,56	28,7	2,92	0,163 7	
1975	34 231,7	22,21	0,567	12,59	28,6	4,05	0,229 5	
1976	37 257,4	21,87	0,579	12,66	28,4	5,39	0,312 2	
1977	37 505,6	21,78	0,576	12,55	28,7	6,22	0,358 2	
1978	39 589,5	21,61	0,574	12,44	28,9	6,67	0,382 4	
1979	43 264,9	21,22	0,580	12,33	29,2	6,96	0,404 5	
1980	46 755,0	21,34	0,568	12,16	29,6	8,12	0,461 4	
1981	53 903,7	21,25	0,563	12,01	30,0	9,71	0,547 3	
1982	55 198,4	21,39	0,551	11,82	30,5	11,75	0,647 1	
1983	55 010,2	21,11	0,546	11,57	31,1	12,44	0,679 3	
1984	58 703,6	21,38	0,533	11,45	31,4	12,55	0,669 2	
1985	59 488,6	21,52	0,522	11,26	32,0	13,25	0,691 6	
1986	58 915,9	21,19	0,515	10,95	32,9	14,87	0,766 5	
1987	65 787,0	20,48	0,535	11,00	32,7	17,11	0,915 5	
1988	64 489,6	20,44	0,521	10,71	33,6	18,67	0,972 7	

\* kW.h sent out x 100/(average assigned sent-out rating x hours in year)

Power station output (sent-out basis)								Total power station capacity assigned sent-out rating at 31 December MW	Average power station load factor sent-out basis <sup>a</sup> %
Coal-fired stations GW.h	Hydro-electric stations GW.h	Pumped-storage stations GW.h	Diesel and gas-turbine stations GW.h	Nuclear station GW.h	Total power station output GW.h				
7 267	7	—	4	—	7 287	1 290	64,7		
7 797	6	—	3	—	7 806	1 361	66,1		
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		

Water consumption







# ESKOM: Power stations in service

at 31 December 1988

Table 6

Name of Station	Type	Location	No. and rating of generator sets MW	Total installed rating MW	Total sent-out rating MW
Acacia	Gas turbine	Cape Town	3 x 57	171	171
Arnot	Coal fired	Middelburg, Tvl	6 x 350	2 100	1 955
Camden	Coal fired	Ermelo	8 x 200	1 600	1 520
Drakensberg	Pumped storage	Bergville	4 x 250	1 000	1 000
Duvha	Coal fired	Witbank	6 x 600	3 600	3 450
Grootvlei	Coal fired	Balfour	6 x 200	1 200	1 130
Hendrik Verwoerd	Hydro-electric	Norvalspont	4 x 80	320	320
Hendrina	Coal fired	Hendrina	10 x 200	2 000	1 900
Highveld	Coal fired	Sasolburg	8 x 60	480	412
Ingagane	Coal fired	Newcastle	5 x 100	500	465
Kendal	Coal fired	Witbank	1 x 686	686 <sup>a</sup>	640 <sup>a</sup>
Koeberg	Nuclear	Cape Town	2 x 965	1 930	1 840
Komati	Coal fired	Middelburg, Tvl	5 x 100; 4 x 125	1 000	891
Kriel	Coal fired	Bethal	6 x 500	3 000	2 850
Lethabo	Coal fired	Sasolburg	4 x 618	2 472	2 372
Matimba	Coal fired	Ellisras	3 x 665	1 995 <sup>a</sup>	1 845 <sup>a</sup>
Matla	Coal fired	Bethal	6 x 600	3 600	3 450
Palmiet	Pumped storage	Grabouw	2 x 200	400	400
Paratus	Gas turbine/diesel	Walvis Bay	1 x 22; 4 x 6,4	48	48
Port Rex	Gas turbine	East London	3 x 57	171	171
Salt River	Coal fired	Cape Town	4 x 30; 2 x 60	240	228
Taaibos	Coal fired	Sasolburg	8 x 60	480	440
Tutuka	Coal fired	Standerton	5 x 609	3 045	2 925
Vaal	Coal fired	Viljoensdrif	9 x 33	318 <sup>a</sup>	270
Vanderkloof	Hydro-electric	Petrusville	2 x 110	220	220
Vierfontein	Coal fired	Viljoenskroon	12 x 30	360	336
Wilge	Coal fired	Witbank	2 x 30; 3 x 60	240	216
<b>Total in service, 27 Eskom stations<sup>a</sup></b>				<b>33 176</b>	<b>31 465</b>
Subtotal coal fired (19 stations) <sup>a</sup>				28 916	27 295
Subtotal gas turbine (3 stations) <sup>a</sup>				390	390
Subtotal hydro-electric (2 stations) <sup>f</sup>				540	540
Subtotal pumped storage (2 stations) <sup>g</sup>				1 400	1 400
Subtotal nuclear (1 station)				1 930	1 840
<b>Total in service, 27 Eskom stations</b>				<b>33 176</b>	<b>31 465</b>

<sup>a</sup> Differences between generator rating and total station rating, and installed and sent-out rating reflect auxiliary power consumption and reduced capacity caused by age of plant and/or low coal quality.

<sup>b</sup> Dry cooled unit specifications are based on design back-pressure and ambient air temperature.

<sup>c</sup> In addition to its own installed capacity, Eskom also has a firm contractual capacity of 1 355 MW from Cahora Bassa, which was not available during 1988. It also has agreements to purchase electricity from SWAWEK, Tescor and some municipalities.

<sup>d</sup> Base-load stations, except in the case of older, uneconomical plant, which are used only for peak demands or in emergencies.

<sup>e</sup> Used only for peaking or in emergencies.

<sup>f</sup> Use restricted to peaking and emergencies and availability of water in Hendrik Verwoerd and P.K. le Roux dams.

<sup>g</sup> 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.

<sup>h</sup> Includes three 7 MW house sets.



## ESKOM: Generating sets taken into service during 1988

Table 7

	Total installed rating MW	Total sent-out rating MW
Kendal, set 1	686	640
Matimba, set 3	665	615
Palmiet, set 1	200	200
Palmiet, set 2	200	200
Tutuka, set 5	609	585
<b>Total</b>	<b>2 360</b>	<b>2 240</b>

## ESKOM: Generating sets on order

at 31 December 1988

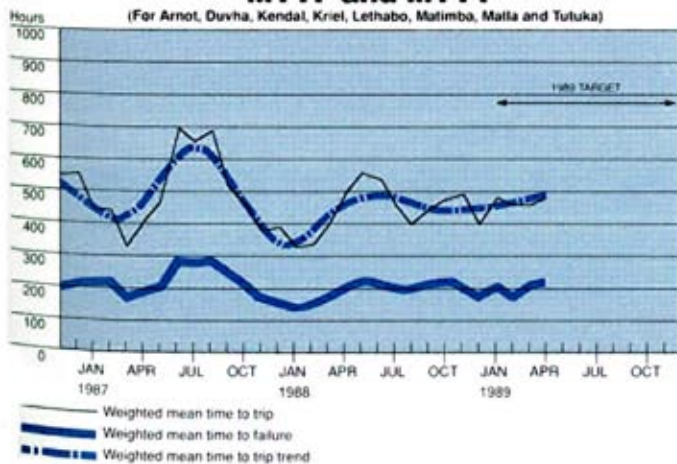
Table 8

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	1 (5)	3 430	3 200	1988 (1993)
Lethabo, coal fired, Vereeniging	6 x 618	593	3 708	3 558	4 (2)	1 236	1 186	1985 (1990)
Majuba, coal fired, Volksrust	3 x 657 3 x 711	3 x 612 3 x 668	4 104	3 840	0 (6)	4 104	3 840	1996 (2001)
Matimba, coal fired, Ellisras	6 x 665	615	3 990	3 690	3 (3)	1 995	1 845	1987 (1991)
Tutuka, coal fired, Standerton	6 x 609	585	3 654	3 510	5 (1)	609	585	1985 (1990)
<b>Total generating sets on order</b>						<b>11 374</b>	<b>10 656</b>	

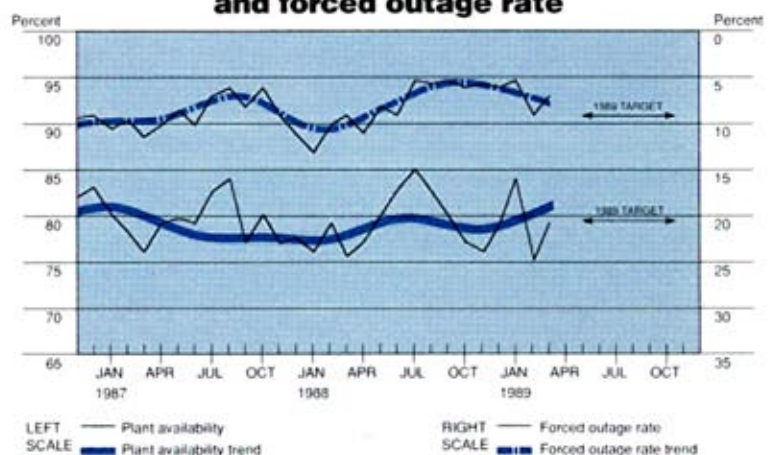
Dates on which sets on order will be taken into commercial service may change, depending on growth in electricity demand.

### Eskom 3-monthly weighted MTF and MTTT

(For Arnot, Duvha, Kendal, Kriel, Lethabo, Matimba, Malla and Tutuka)



### Eskom trends in plant availability and forced outage rate

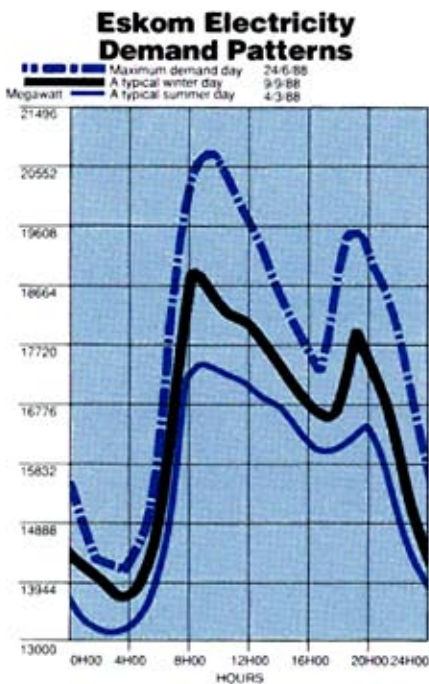


# ESKOM: Power stations with highest thermal efficiency 1988

Table 9

Station	Steam conditions at turbine inlet		Assigned sent-out rating MW	Energy sent out GW.h	Station load factor %	Gross C.V. 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	2 925	12 032	57	21,05	35,8	1985-	Reheat
Lethabo*	16,1	535	2 372	12 879	62	15,50	35,6	1986-	Reheat
Duvha	16,1	535	3 450	20 811	69	21,72	35,3	1980-84	Reheat
Matla	16,1	535	3 450	19 616	65	21,17	35,2	1979-83	Reheat
Kriel	16,0	510	2 850	17 666	71	20,06	35,0	1976-79	Reheat
Kendal*	16,1	535	640	1 166	47	19,20	34,1	1988-	Reheat
Arnot	15,9	510	1 955	10 806	63	21,72	33,6	1971-75	Reheat
Matimba*	16,1	535	1 845	8 234	66	21,12	31,5	1987-	Reheat
Hendrina	10,3	538	1 900	9 450	57	21,42	31,3	1970-77	Non-reheat
Grootvlei	10,3	538	1 130	2 225	22	20,47	28,0	1969-77	Non-reheat
Camden	10,3	538	1 520	3 529	26	22,24	27,8	1967-69	Non-reheat
Ingagane	8,4	510	465	1 069	26	22,00	27,3	1963-69	Non-reheat

\* Operating statistics are based on average capacity during the year.



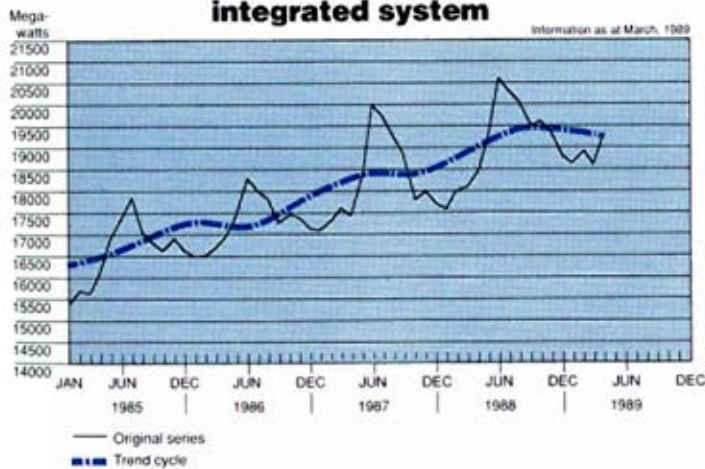


# ESKOM: Maximum one-hour demand

Table 10

	1988	1987	1986	1985	1984	1983	Increase 1987-88 %	Average yearly increase 1984-88 %
Maximum simultaneous one-hour demand on total Eskom system, MW	<b>20 589</b>	20 001	18 278	17 852	17 296	15 639	2,9	5,7
Date	<b>24.06.88</b>	26.06.87	20.06.86	12.07.85	15.06.84	10.08.83		
Time	<b>09h00</b>	09h00	09h00	11h00	09h00	09h00		

**Maximum demand on Eskom total  
integrated system**



## ESKOM: Transmission and distribution equipment in service

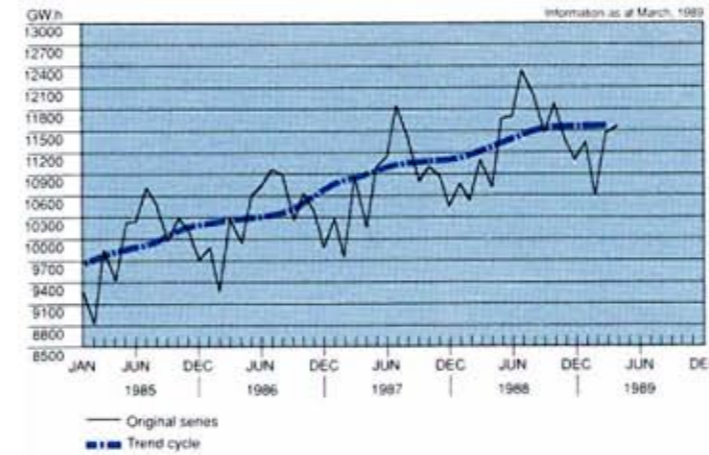
as at 31 December 1988

Table 11

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

		1988	1987	Change
<b>Main transmission system</b>		<b>871</b>	871	0
	765 kV <sup>a</sup>			
	533 kV DC (monopolar)	<b>1 030</b>	1 030	0
	400 kV	<b>11 220</b>	10 696	524
	275 kV	<b>6 718</b>	6 598	120
	220 kV	<b>1 239</b>	1 239	0
<b>Distribution lines</b>		<b>15 923</b>	15 550	373
	165 – 132 kV			
	88 – 33 kV	<b>20 579</b>	20 536	43
<b>Reticulation lines</b>	22 kV – lower	<b>144 222</b>	130 797	13 425
<b>Total all lines</b>		<b>201 802</b>	187 317	14 485
<b>Cables</b>				
	165 – 132 kV	<b>67</b>	67	0
	88 – 33 kV	<b>393</b>	390	3
	22 kV – lower	<b>3 791</b>	3 894	-103
<b>Total all cables</b>		<b>4 251</b>	4 351	-100
<b>Transformers</b>				
	Capacity MVA	<b>141 475</b>	136 673	4 802
	Number	<b>117 496</b>	108 170	9 326

## Energy supplied to Eskom regions



## ESKOM: Transmission and distribution equipment by region

as at 31 December 1988

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 <sup>a</sup>	533 kV DC (monopolar)	400 kV	275 kV	220 kV	165 kV to 132 kV	88 kV to 33 kV
Southern Transvaal			584	1 002		919	3 604
Western Transvaal		52	885	749		1 936	2 941
Eastern Transvaal	76	227	1 685	736		1 745	1 391
Eastern Natal			255	556		779	1 111
Orange Free State	795		1 087	567		1 821	2 425
Central Transvaal		119	331	622		261	1 429
Western Cape			705			678	1 312
North-eastern Transvaal		632	276	731		1 796	438
Western Natal			1 414	976		345	2 194
Eastern Cape			2 327		822	1 719	1 200
Northern Cape			825	779	417	2 469	1 242
Southern Cape			846			1 455	1 291
<b>Total</b>	<b>871</b>	<b>1 030</b>	<b>11 220</b>	<b>6 718</b>	<b>1 239</b>	<b>15 923</b>	<b>20 579</b>

<sup>a</sup>Although two lines are constructed at 765 kV, only one runs at this voltage at present, and the other at 400 kV.

22 kV and lower	Total	Underground cables			Total	Transformers		
		165 kV to 132 kV	88 kV to 33 kV	22 kV and lower		Capacity MVA	Number in service	MVA/No.
4 941	<b>11 049</b>	30	72	255	<b>357</b>	28 570	6 532	4,37
25 857	<b>32 419</b>			14	<b>14</b>	20 068	17 436	1,15
12 654	<b>18 514</b>			43	<b>43</b>	17 419	8 217	2,12
6 965	<b>9 666</b>			341	<b>341</b>	6 625	8 170	0,81
24 091	<b>30 786</b>		2	18	<b>20</b>	12 443	13 714	0,91
5 147	<b>7 910</b>	13	186	803	<b>1 002</b>	16 190	9 407	1,72
6 657	<b>9 352</b>	24	129	1 991	<b>2 144</b>	10 597	9 942	1,07
8 667	<b>12 541</b>			27	<b>27</b>	6 995	7 446	0,94
14 049	<b>18 978</b>			187	<b>187</b>	7 078	11 702	0,60
15 218	<b>21 286</b>			58	<b>58</b>	7 141	8 655	0,83
9 488	<b>15 219</b>			3	<b>3</b>	4 914	6 778	0,72
10 487	<b>14 079</b>		4	51	<b>55</b>	3 435	9 497	0,36
<b>144 222</b>	<b>201 802</b>	67	393	3 791	<b>4 251</b>	141 475	117 496	1,20



# ESKOM: Electricity sent out and sold

Table 13

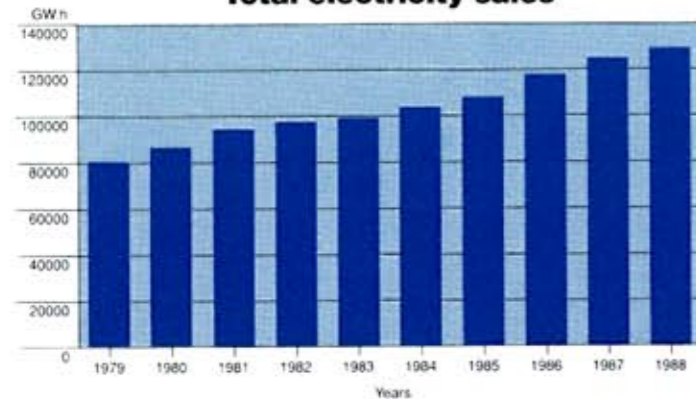
Year	Electricity sent out							Peak demand on integrated Eskom system MW
	South Africa total sent out GW.h	Eskom electricity available for distribution as % of South African total <sup>a</sup>	Electricity sent out from Eskom power stations GW.h	Electricity purchased from other sources GW.h	Own consumption GW.h	Available for distribution GW.h		
1950	10 437 <sup>b</sup>	71,1	7 287	131	—	7 418	1 182 <sup>b</sup>	
1951	11 098 <sup>b</sup>	72,1	7 806	195	—	8 001	1 212 <sup>b</sup>	
1952	11 678 <sup>b</sup>	74,1	8 227	424	—	8 651	1 265 <sup>b</sup>	
1953	12 823 <sup>b</sup>	73,3	8 845	550	—	9 395	1 394 <sup>c</sup>	
1954	14 167 <sup>b</sup>	73,5	9 977	437	—	10 414	1 570 <sup>c</sup>	
1955	16 021 <sup>b</sup>	73,4	11 425	339	—	11 764	1 806 <sup>c</sup>	
1956	17 293 <sup>b</sup>	74,8	12 670	257	—	12 927	2 001 <sup>c</sup>	
1957	18 720	73,7	13 640	163	—	13 803	2 151 <sup>c</sup>	
1958	19 765	74,3	14 516	164	—	14 680	2 249 <sup>c</sup>	
1959	21 051	75,4	15 777	94	—	15 871	2 429 <sup>c</sup>	
1960	22 717	76,3	17 308	15	—	17 323	2 605 <sup>c</sup>	
1961	23 760	77,0	18 284	8	—	18 292	2 733 <sup>c</sup>	
1962	25 599	75,8	19 404	13	—	19 417	2 925 <sup>c</sup>	
1963	27 335	76,1	20 793	19	—	20 812	3 183 <sup>c</sup>	
1964	29 547 <sup>b</sup>	76,8	22 639	41	—	22 680	3 460 <sup>c</sup>	
1965	31 939	77,4	24 583	126	—	24 709	3 669	
1966	33 929 <sup>b</sup>	77,0	25 504	630 <sup>c</sup>	—	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 <sup>b</sup>	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	87 824	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	126 206	94,5	121 987	507	3 265	119 229	17 852	
1986	130 056	95,1	126 511	255	3 018	123 748	18 278	
1987	134 751	96,1	132 507	267	3 229	129 545	20 001	
1988	140 502	97,2	138 837	360	2 567	136 630	20 589	

<sup>a</sup>Includes Eskom electricity sent out to neighbouring territories.

<sup>b</sup>Estimates based on limited information.

<sup>c</sup>Includes purchases from City of Johannesburg during serious drought.

Total electricity sales



Integrated Eskom system load factor %	Electricity sales				Employees	
	Ratio GW.h sold/available for distribution	Electricity sold GW.h	Growth for the year %	Average selling price c/kW.h	Total number at 31 December	Ratio number/GW.h sold
71,6	0,932	6 910,6	11,1	0,274 1	9 352	1,353
75,4	0,932	7 456,5	7,9	0,292 2	10 336	1,386
77,9	0,934	8 080,6	8,4	0,311 5	10 889	1,348
76,9	0,929	8 732,2	8,1	0,354 2	11 518	1,319
75,7	0,929	9 676,6	10,8	0,380 8	12 317	1,273
74,4	0,932	10 964,0	13,3	0,413 9	12 490	1,139
73,5	0,930	12 019,5	9,6	0,428 5	12 977	1,080
73,3	0,925	12 763,1	6,2	0,447 8	13 421	1,052
74,5	0,927	13 602,1	6,6	0,473 3	14 312	1,052
74,6	0,928	14 724,5	8,3	0,495 1	13 947	0,947
75,7	0,929	16 094,1	9,3	0,507 9	14 654	0,911
76,4	0,930	17 013,2	5,7	0,515 5	15 441	0,908
75,3	0,933	18 121,0	6,5	0,516 4	16 467	0,909
74,6	0,937	19 500,0	7,6	0,517 7	16 804	0,862
74,6	0,937	21 247,5	9,0	0,510 1	17 172	0,808
76,9	0,937	23 143,3	8,9	0,507 6	17 851	0,771
76,4	0,940	24 554,3	6,1	0,525 4	18 579	0,757
76,8	0,937	26 657,1	8,6	0,546 7	19 817	0,743
75,4	0,936	28 885,0	8,4	0,555 0	20 893	0,723
75,9	0,937	31 505,6	9,1	0,556 5	21 644	0,687
75,8	0,935	34 890,6	10,7	0,554 5	22 700	0,651
76,1	0,934	38 040,0	9,0	0,577 2	25 050	0,659
76,4	0,936	41 648,9	9,5	0,610 8	26 937	0,647
77,3	0,936	46 578,4	11,8	0,648 4	28 559	0,613
75,1	0,935	52 585,1	12,9	0,682 2	29 891	0,568
76,5	0,940	57 869,2	10,0	0,795 0	33 999	0,588
76,1	0,940	63 355,7	9,5	1,036 0	36 915	0,583
75,8	0,942	67 125,4	5,9	1,535 3	39 112	0,583
77,3	0,936	72 780,4	8,4	1,788 7	41 040	0,564
76,4	0,937	80 582,8	10,7	1,898 0	43 690	0,542
77,5	0,942	87 539,3	8,6	2,024 2	47 490	0,542
77,6	0,941	93 844,0	7,2	2,281 1	52 080	0,555
75,3	0,938	96 135,9	2,4	2,803 8	58 850	0,612
76,9	0,932	98 251,1	2,2	3,360 6	62 420	0,635
75,0	0,939	106 904,1	8,8	3,584 2	64 560	0,604
76,2	0,942	112 305,9	5,1	4,117 9	66 000	0,588
77,3	0,948	117 353,0	4,5	4,980 3	60 800	0,518
73,9	0,946	122 523,6	4,4	5,751 2	56 830	0,464
75,5	0,948	129 492,6	5,7	6,300 4	56 726	0,438



## ESKOM: Customer categories by distribution region

in order of sales volume

Table 14

Electricity sold by a distribution region is purchased from the Generation Group. The cost of a region's own usage is allocated to working cost. A region's sales to other SBUs are charged out.

Usage on Eskom distribution premises and sales to rural/farming customers, previously included under industrial sales, are now listed separately.

Distribution region and category	Number of customers	GW.h sold 1988	% of total GW.h	% growth 1987-88	Revenue 1988 R000	% of total revenue	Average price cents per kW.h 1988	Average price cents per kW.h 1987
<b>Southern Transvaal</b>								
Bulk sales <sup>a</sup>	60	12 915	42,9	9,9	816 698	44,1	6,324	5,740
Domestic and street lighting	6 669	42	0,1	134,7	4 067	0,2	9,631	9,827
Industrial/commercial	919	10 108	33,5	-0,4	597 125	32,2	5,907	5,405
Mining	81	6 287	20,9	2,8	376 807	20,3	5,993	5,477
Rural/farming	3 244	98	0,3	4,6	11 862	0,6	12,055	11,013
Traction	2	624	2,1	-3,4	46 172	2,5	7,405	6,459
Own usage <sup>b</sup>	17	59	0,2	-38,6	658	0,0	—	—
<b>Total</b>	<b>10 992</b>	<b>30 134</b>	<b>100,0</b>	<b>4,4</b>	<b>1 853 389</b>	<b>100,0</b>	<b>6,150</b>	<b>5,583</b>
<b>Western Transvaal</b>								
Bulk sales <sup>a</sup>	57	2 211	12,6	5,2	150 815	14,0	6,821	6,210
Domestic and street lighting	356	3	0,0	0,3	401	0,0	13,196	12,182
Industrial/commercial	240	713	4,1	10,7	47 277	4,4	6,633	5,912
Mining	74	13 893	79,5	4,4	803 749	74,5	5,785	5,331
Rural/farming	14 562	400	2,3	0,4	51 932	4,8	12,976	11,111
Traction	5	255	1,5	-1,9	24 472	2,3	9,588	8,991
Own usage <sup>b</sup>	3	11	0,1	-29,5	0	0,0	—	—
<b>Total</b>	<b>15 297</b>	<b>17 486</b>	<b>100,0</b>	<b>4,5</b>	<b>1 078 646</b>	<b>100,0</b>	<b>6,168</b>	<b>5,655</b>
<b>Eastern Transvaal</b>								
Bulk sales <sup>a</sup>	50	1 676	10,2	13,0	111 416	11,4	6,649	6,055
Domestic and street lighting	1 032	11	0,1	-3,5	1 271	0,1	11,582	10,564
Industrial/commercial	571	10 995	67,2	2,3	614 264	62,7	5,587	5,113
Mining	129	2 603	15,9	6,2	177 646	18,1	6,824	6,257
Rural/farming	7 291	250	1,5	13,9	28 967	3,0	11,599	10,823
Traction	3	452	2,8	3,7	35 361	3,6	7,817	7,804
Own usage <sup>b</sup>	39	366	2,2	-17,5	11 308	1,2	—	—
<b>Total</b>	<b>9 115</b>	<b>16 353</b>	<b>100,0</b>	<b>3,5</b>	<b>980 233</b>	<b>100,0</b>	<b>5,994</b>	<b>5,393</b>
<b>Eastern Natal</b>								
Bulk sales <sup>a</sup>	32	8 460	56,2	8,0	509 346	56,2	6,021	5,553
Domestic and street lighting	18 160	154	1,0	4,0	18 290	2,0	11,845	10,835
Industrial/commercial	2 264	5 816	38,6	6,9	319 995	35,3	5,502	5,158
Mining	12	39	0,3	173,9	3 389	0,4	8,605	8,081
Rural/farming	7 777	309	2,1	2,1	32 915	3,6	10,637	9,374
Traction	3	278	1,8	1,4	21 834	2,4	7,864	8,112
Own usage <sup>b</sup>	0	0	0,0	—	0	0,0	—	—
<b>Total</b>	<b>28 248</b>	<b>15 056</b>	<b>100,0</b>	<b>7,4</b>	<b>905 768</b>	<b>100,0</b>	<b>6,016</b>	<b>5,590</b>
<b>Orange Free State</b>								
Bulk sales <sup>a</sup>	75	2 339	22,0	7,2	143 541	21,9	6,136	5,576
Domestic and street lighting	290	5	0,0	-42,3	522	0,1	10,935	12,644
Industrial/commercial	233	184	1,7	4,3	15 105	2,3	8,195	7,545
Mining	25	7 704	72,5	6,7	454 417	69,2	5,899	5,420
Rural/farming	12 243	204	1,9	6,2	29 010	4,4	14,209	12,373
Traction	1	193	1,8	-10,6	13 764	2,1	7,127	6,320
Own usage <sup>b</sup>	0	0	0,0	-100,0	0	0,0	—	—
<b>Total</b>	<b>12 867</b>	<b>10 629</b>	<b>100,0</b>	<b>6,3</b>	<b>656 358</b>	<b>100,0</b>	<b>6,175</b>	<b>5,649</b>

<sup>a</sup> Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

<sup>b</sup> Own usage consists of electricity used on a region's distribution premises and its internal sales to other SBUs.

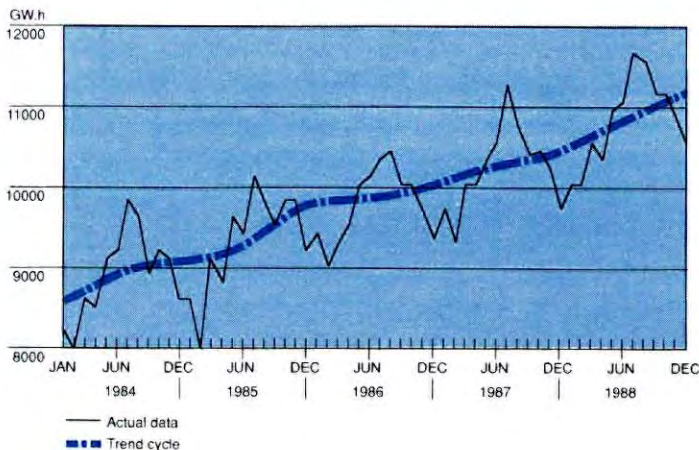
Distribution region and category	Number of customers	GW.h sold 1988	% of total GW.h	% growth 1987-88	Revenue 1988 R000	% of total revenue	Average price cents per kW.h 1988	Average price cents per kW.h 1987
<b>Central Transvaal</b>								
Bulk sales <sup>a</sup>	32	7 002	66,7	13,8	427 834	62,2	6,110	5,587
Domestic and street lighting	13 708	309	2,9	2,7	32 107	4,7	10,405	9,347
Industrial/commercial	4 988	2 274	21,7	24,5	154 118	22,4	6,778	6,320
Mining	18	296	2,8	4,9	19 863	2,9	6,718	6,178
Rural/farming	6 570	238	2,3	7,0	26 420	3,8	11,105	10,063
Traction	0	323	3,1	0,8	26 057	3,8	8,074	7,464
Own usage <sup>b</sup>	3	58	0,6	-3,8	1 554	0,2	—	—
<b>Total</b>	<b>25 319</b>	<b>10 499</b>	<b>100,0</b>	<b>14,5</b>	<b>687 953</b>	<b>100,0</b>	<b>6,552</b>	<b>6,011</b>
<b>Western Cape</b>								
Bulk sales <sup>a</sup>	47	5 166	61,7	6,8	267 653	47,6	5,182	4,674
Domestic and street lighting	100 668	719	8,6	6,0	90 495	16,1	12,587	11,637
Industrial/commercial	6 638	1 884	22,5	5,1	144 100	25,6	7,650	6,980
Mining	21	15	0,2	-19,7	2 113	0,4	13,684	13,625
Rural/farming	7 470	237	2,8	10,7	27 027	4,8	11,392	10,526
Traction	3	336	4,0	10,3	31 179	5,5	9,279	8,697
Own usage <sup>b</sup>	36	16	0,2	23,2	0	0,0	—	—
<b>Total</b>	<b>114 883</b>	<b>8 373</b>	<b>100,0</b>	<b>6,6</b>	<b>562 566</b>	<b>100,0</b>	<b>6,719</b>	<b>6,131</b>
<b>North-eastern Transvaal</b>								
Bulk sales <sup>a</sup>	35	1 615	25,4	8,6	110 950	26,3	6,868	6,278
Domestic and street lighting	724	9	0,1	1,3	1 079	0,3	11,685	10,362
Industrial/commercial	342	2 572	40,4	6,8	155 675	36,9	6,052	5,508
Mining	58	1 628	25,6	1,0	101 229	24,0	6,218	5,636
Rural/farming	7 084	433	6,8	7,6	42 546	10,1	9,817	9,332
Traction	2	109	1,7	6,4	10 381	2,5	9,541	8,662
Own usage <sup>b</sup>	0	0	0,0	0,0	—	0,0	—	—
<b>Total</b>	<b>8 245</b>	<b>6 367</b>	<b>100,0</b>	<b>5,7</b>	<b>421 861</b>	<b>100,0</b>	<b>6,625</b>	<b>6,049</b>
<b>Western Natal</b>								
Bulk sales <sup>a</sup>	15	2 312	42,4	10,0	143 856	38,7	6,221	5,730
Domestic and street lighting	5 008	50	0,9	3,1	5 795	1,6	11,555	10,374
Industrial/commercial	1 319	1 603	29,4	-2,1	98 897	26,6	6,169	5,593
Mining	52	326	6,0	-1,2	25 013	6,7	7,662	6,939
Rural/farming	10 989	275	5,0	8,7	33 311	9,0	12,101	10,823
Traction	5	886	16,2	3,9	65 231	17,5	7,366	7,221
Own usage <sup>b</sup>	3	1	0,0	20,8	0	0,0	—	—
<b>Total</b>	<b>17 391</b>	<b>5 454</b>	<b>100,0</b>	<b>4,4</b>	<b>372 103</b>	<b>100,0</b>	<b>6,823</b>	<b>6,297</b>
<b>Eastern Cape</b>								
Bulk sales <sup>a</sup>	82	3 830	89,2	9,4	213 592	78,3	5,576	5,143
Domestic and street lighting	3 352	14	0,3	-42,6	2 374	0,9	17,274	12,615
Industrial/commercial	542	73	1,7	-19,2	8 090	3,0	11,031	9,530
Mining	0	0	0,0	—	0	0,0	—	—
Rural/farming	7 856	181	4,2	0,5	23 637	8,7	13,080	11,206
Traction	4	192	4,5	13,2	25 012	9,2	13,010	11,101
Own usage <sup>b</sup>	47	5	0,1	8,4	0	0,0	—	—
<b>Total</b>	<b>11 883</b>	<b>4 295</b>	<b>100,0</b>	<b>8,2</b>	<b>272 705</b>	<b>100,0</b>	<b>6,349</b>	<b>5,818</b>



**Table 14 continued**

Distribution region and category	Number of customers	GW.h sold 1988	% of total GW.h	% growth 1987-88	Revenue 1988 R000	% of total revenue	Average price cents per kW.h 1988	Average price cents per kW.h 1987
<b>Northern Cape</b>								
Bulk sales <sup>a</sup>	50	980	30,4	-14,9	65 353	27,6	6,669	5,781
Domestic and street lighting	996	8	0,3	0,0	1 086	0,5	13,071	11,833
Industrial/commercial	378	209	6,5	6,3	14 563	6,2	6,980	6,385
Mining	81	1 547	47,9	3,4	107 953	45,7	6,978	6,407
Rural/farming	7 038	175	5,4	-21,5	22 515	9,5	12,881	10,482
Traction	3	307	9,5	7,6	25 004	10,6	8,142	7,511
Own usage	1	1	0,0	11,6	0	0,0	—	—
<b>Total</b>	<b>8547</b>	<b>3 227</b>	<b>100,0</b>	<b>-4,0</b>	<b>236 474</b>	<b>100,0</b>	<b>7,327</b>	<b>6,568</b>
<b>Southern Cape</b>								
Bulk sales <sup>a</sup>	60	926	57,2	11,4	63 306	48,5	6,835	6,281
Domestic and street lighting	2 614	17	1,0	-22,1	2 296	1,8	13,749	12,375
Industrial/commercial	469	143	8,9	-2,3	13 466	10,3	9,389	8,393
Mining	4	2	0,1	15,0	234	0,2	12,942	11,521
Rural/farming	9 625	362	22,4	13,4	39 065	29,9	10,792	9,854
Traction	0	165	10,2	-9,6	12 165	9,3	7,363	6,639
Own usage <sup>b</sup>	97	3	0,2	-60,5	0	0,0	—	—
<b>Total</b>	<b>12 869</b>	<b>1 618</b>	<b>100,0</b>	<b>7,2</b>	<b>130 532</b>	<b>100,0</b>	<b>8,068</b>	<b>7,349</b>
<b>Eskom total</b>								
Bulk sales <sup>a</sup>	595	49 433	38,2	8,8	3 024 360	37,1	6,118	5,580
Domestic and street lighting	153 577	1 341	1,0	4,8	159 781	2,0	11,914	10,954
Industrial/commercial	18 903	36 574	28,2	3,7	2 182 675	26,8	5,968	5,470
Mining	555	34 341	26,5	4,5	2 072 414	25,4	6,035	5,540
Rural/farming	101 749	3 163	2,4	4,7	369 207	4,5	11,672	10,440
Traction	31	4 120	3,2	1,7	336 632	4,1	8,171	7,612
Own usage <sup>b</sup>	246	520	0,4	-19,4	13 520	0,2	2,599	—
<b>Total</b>	<b>275 656</b>	<b>129 493</b>	<b>100,0</b>	<b>5,7</b>	<b>8 158 588</b>	<b>100,0</b>	<b>6,300</b>	<b>5,751</b>

**Eskom Total Sales**



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

**Table 15**

Sales to rural/farming customers, previously included under industrial sales, are now listed separately from 1988.

Year	Bulk <sup>a</sup>	Domestic and street lighting	Industrial/commercial	Mining	Rural/farming	Total for all categories	% Change
1950	70	35 090	2 759	133	—	38 052	
1951	79	37 937	3 023	138	—	41 177	8,2
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

<sup>a</sup> Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.



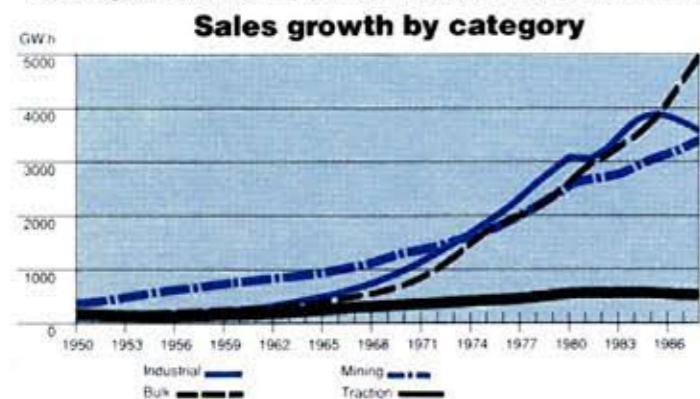
# ESKOM: Total electricity sold

**Table 16**

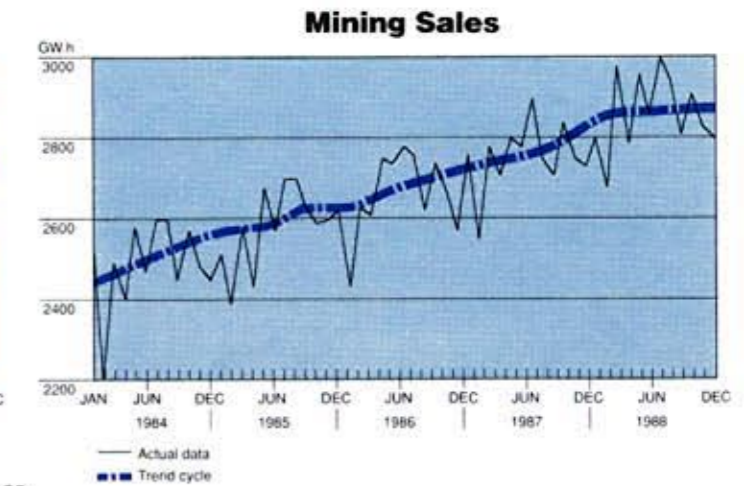
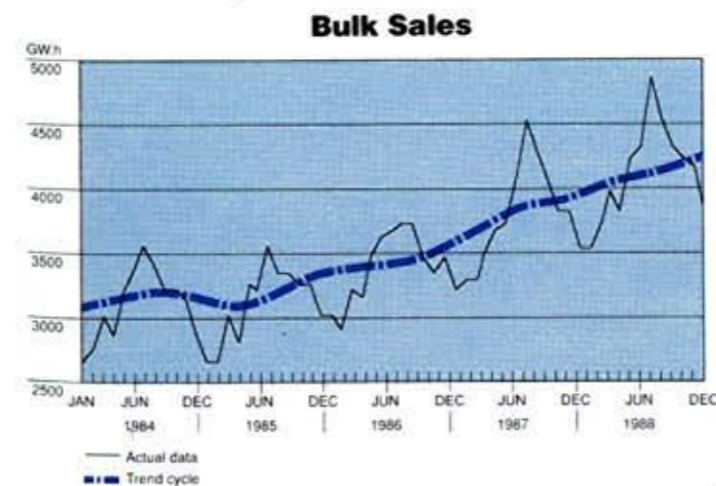
Usage on Eskom distribution premises and sales to rural/farming customers, previously included under industrial sales, are now listed separately.

Year	Sales in GW.h, per category						
	Bulk <sup>a</sup>	Domestic and street lighting	Industrial/commercial	Mining	Rural/farming	Traction	Own <sup>b</sup> usage
1950	1 106	114	991	3 899	—	524	—
1951	1 261	134	1 150	4 105	—	539	—
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	36 574	34 341	3 163	4 120	520

<sup>a</sup> Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.  
<sup>b</sup> Own usage consists of electricity used on region's distribution premises and its internal sales to other SBUs.



Total sold during year	Sales as a percentage of total GW.h sold						
	Bulk <sup>a</sup>	Domestic and street lighting	Industrial/commercial	Mining	Rural/farming	Traction	Own <sup>b</sup> usage <sup>c</sup>
6 634	16,7	1,7	14,9	58,8	—	7,9	—
7 189	17,5	1,9	16,0	57,1	—	7,5	—
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	38,2	1,0	28,2	26,5	2,4	3,2	0,4





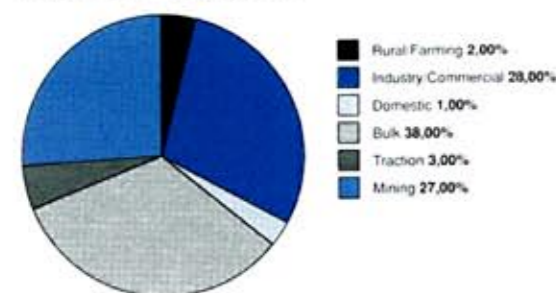
# ESKOM: Revenue per kW.h by category of customer

**Table 17**  
Sales to rural/farming customers, previously included under industrial sales, are now listed separately.

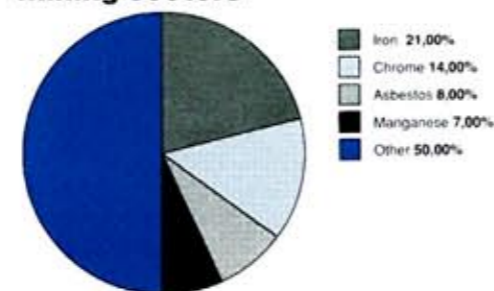
Year	Actual price (in c/kW.h)							Change %
	Bulk <sup>a</sup>	Domestic and street lighting	Industrial/commercial	Mining	Rural/farming	Traction	Average for all categories	
1950	0,353 5	1,087 0	0,286 0	0,206 9	—	0,355 7	0,270 1	
1951	0,360 6	1,032 1	0,303 0	0,227 4	—	0,357 4	0,287 7	6,5
1952	0,380 7	1,063 0	0,312 8	0,245 4	—	0,381 1	0,305 5	6,2
1953	0,419 9	1,208 3	0,360 4	0,282 9	—	0,461 8	0,349 2	14,3
1954	0,463 8	1,324 7	0,388 1	0,299 2	—	0,531 8	0,376 3	7,8
1955	0,522 5	1,348 5	0,399 1	0,326 2	—	0,617 7	0,409 9	8,9
1956	0,544 8	1,362 5	0,399 2	0,334 4	—	0,634 9	0,420 9	2,7
1957	0,569 4	1,384 7	0,415 0	0,352 7	—	0,644 8	0,440 9	4,8
1958	0,586 1	1,429 4	0,440 7	0,379 0	—	0,655 7	0,466 4	5,8
1959	0,604 9	1,441 1	0,468 2	0,396 3	—	0,667 1	0,486 3	4,3
1960	0,600 9	1,449 2	0,483 3	0,414 4	—	0,664 4	0,498 7	2,5
1961	0,612 7	1,484 3	0,494 3	0,421 6	—	0,672 7	0,509 6	2,2
1962	0,609 4	1,478 4	0,487 4	0,417 4	—	0,739 8	0,510 9	0,3
1963	0,604 4	1,476 1	0,487 8	0,419 2	—	0,728 3	0,512 5	0,3
1964	0,591 2	1,442 9	0,490 2	0,412 1	—	0,691 0	0,507 3	-1,0
1965	0,591 2	1,398 3	0,481 9	0,405 7	—	0,696 3	0,505 1	-0,4
1966	0,596 9	1,385 1	0,510 8	0,418 2	—	0,717 2	0,521 8	3,3
1967	0,606 3	1,393 1	0,536 8	0,444 4	—	0,752 4	0,546 6	4,8
1968	0,603 7	1,391 1	0,551 3	0,449 3	—	0,755 3	0,555 0	1,5
1969	0,598 8	1,369 5	0,549 6	0,454 5	—	0,755 0	0,556 5	0,3
1970	0,600 1	1,345 3	0,549 8	0,450 1	—	0,756 2	0,554 5	-0,4
1971	0,613 9	1,360 8	0,573 4	0,471 6	—	0,763 0	0,577 2	4,1
1972	0,636 6	1,415 6	0,600 8	0,510 4	—	0,791 3	0,610 8	5,8
1973	0,674 1	1,504 9	0,637 7	0,541 8	—	0,842 4	0,648 4	6,2
1974	0,703 6	1,548 0	0,705 7	0,557 2	—	0,882 8	0,682 3	5,2
1975	0,807 9	1,707 9	0,821 9	0,659 0	—	1,016 2	0,795 0	16,5
1976	1,052 9	2,091 5	1,064 1	0,872 6	—	1,326 4	1,036 0	30,3
1977	1,577 9	3,177 8	1,564 1	1,294 6	—	2,004 0	1,535 3	48,2
1978	1,778 9	3,787 5	1,798 9	1,604 4	—	2,386 8	1,788 7	16,5
1979	1,871 5	3,982 6	1,892 4	1,731 1	—	2,601 8	1,898 0	6,1
1980	2,002 7	4,275 4	2,025 6	1,854 0	—	2,676 2	2,024 2	6,6
1981	2,269 7	4,731 4	2,283 7	2,078 7	—	2,988 8	2,281 1	12,7
1982	2,807 8	5,418 2	2,825 0	2,540 5	—	3,649 5	2,803 8	22,9
1983	3,367 1	6,232 3	3,376 9	3,048 3	—	4,550 6	3,360 7	19,9
1984	3,593 4	6,661 4	3,594 7	3,268 1	—	4,695 5	3,584 2	6,7
1985	4,124 3	7,507 4	4,119 8	3,788 9	—	5,373 4	4,117 9	14,9
1986	4,870 6	9,195 1	5,025 0	4,721 8	—	6,236 7	4,980 3	20,9
1987	5,579 5	10,953 7	5,469 7	5,540 4	10,439 8	7,611 9	5,751 2	15,5
1988	6,118 1	11,914 4	5,967 8	6,034 8	11,671 6	8,171 5	6,300 4	9,5

<sup>a</sup> Supplies to municipalities, local authorities and electricity undertakings in neighbouring states for redistribution.

**Sales per category**

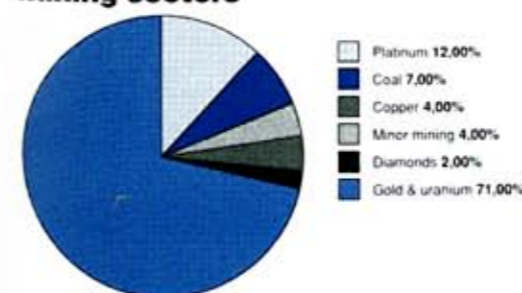


**Sales to minor mining sectors**



Producer Price Index 1980 = 100	Real price (in c/kW.h)							Change %
	Bulk <sup>a</sup>	Domestic and street lighting	Industrial/commercial	Mining	Rural/farming	Traction	Average for all categories	
16,5	2,142 4	6,587 9	1,733 3	1,253 9	—	2,155 8	1,637 0	
18,8	1,918 1	5,489 9	1,611 7	1,209 6	—	1,901 1	1,530 3	-6,5
21,6	1,762 5	4,921 3	1,448 1	1,136 1	—	1,764 4	1,414 4	-7,6
21,8	1,926 1	5,542 7	1,653 2	1,297 7	—	2,118 3	1,601 8	13,3
22,0	2,108 2	6,021 4	1,764 1	1,360 0	—	2,417 3	1,710 5	6,8
22,6	2,311 9	5,966 8	1,765 9	1,443 4	—	2,733 2	1,813 7	6,0
23,0	2,368 7	5,923 9	1,735 7	1,453 9	—	2,760 4	1,830 0	0,9
23,3	2,443 8	5,942 9	1,781 1	1,513 7	—	2,767 4	1,892 3	3,4
23,4	2,504 7	6,108 5	1,883 3	1,619 7	—	2,802 1	1,993 2	5,3
23,3	2,596 1	6,185 0	2,009 4	1,700 9	—	2,863 1	2,087 1	4,7
23,6	2,546 2	6,140 7	2,047 9	1,755 9	—	2,815 3	2,113 1	1,2
24,0	2,552 9	6,184 6	2,059 6	1,756 7	—	2,802 9	2,123 3	0,5
24,2	2,518 2	6,109 1	2,014 0	1,724 8	—	3,057 0	2,111 2	-0,6
24,5	2,466 9	6,024 9	1,991 0	1,711 0	—	2,972 7	2,091 8	-0,9
25,1	2,355 4	5,748 6	1,953 0	1,641 8	—	2,753 0	2,021 1	-3,4
25,9	2,282 6	5,398 8	1,860 6	1,566 4	—	2,688 4	1,950 2	-3,5
26,9	2,219 0	5,149 1	1,898 9	1,554 6	—	2,666 2	1,939 8	-0,5
27,5	2,204 7	5,065 8	1,952 0	1,616 0	—	2,736 0	1,987 6	2,5
27,9	2,163 8	4,986 0	1,976 0	1,610 4	—	2,707 2	1,989 2	0,1
28,5	2,101 1	4,805 3	1,928 4	1,594 7	—	2,649 1	1,952 6	-1,8
29,4	2,041 2	4,575 9	1,870 1	1,531 0	—	2,572 1	1,886 1	-3,4
30,8	1,993 2	4,418 2	1,861 7	1,531 2	—	2,477 3	1,874 0	-0,6
33,3	1,911 7	4,251 1	1,804 2	1,532 7	—	2,376 3	1,834 2	-2,1
37,6	1,792 8	4,002 4	1,696 0	1,441 0	—	2,240 4	1,724 5	-6,0
44,4	1,584 7	3,486 5	1,589 4	1,255 0	—	1,988 3	1,536 7	-10,9
52,1	1,550 7	3,278 1	1,577 5	1,264 9	—	1,950 5	1,525 9	-0,7
59,9	1,757 8	3,491 7	1,776 5	1,456 8	—	2,214 4	1,729 5	13,3
67,7	2,330 7	4,693 9	2,310 3	1,912 3	—	2,960 1	2,267 8	31,1
74,3	2,394 2	5,097 6	2,421 1	2,159 4	—	3,212 4	2,407 4	6,2
85,6	2,186 3	4,652 6	2,210 7	2,022 3	—	3,039 5	2,217 3	-7,9
100,0	2,002 7	4,275 4	2,025 6	1,854 0	—	2,676 2	2,024 2	-8,7
113,6	1,998 0	4,165 0	2,010 3	1,829 8	—	2,631 0	2,008 0	-0,8
129,5	2,168 2	4,183 9	2,181 5	1,961 8	—	2,818 1	2,165 1	7,8
143,1	2,353 0	4,355 2	2,359 8	2,130 2	—	3,180 0	2,348 5	8,5
155,1	2,316 8	4,294 9	2,317 7	2,107 1	—	3,027 4	2,310 9	-1,6
181,2	2,276 1	4,143 2	2,273 6	2,091 0	—	2,965 5	2,272 6	-1,7
216,6	2,248 7	4,245 2	2,319 9	2,180 0	—	2,879 4	2,299 3	1,2
246,8	2,260 7	4,438 3	2,216 3	2,244 9	4,230 1	3,084 2	2,330 3	1,3
279,3	2,190 5	4,265 8	2,136 7	2,160 7	4,178 9	2,925 7	2,255 8	-3,2

**Sales to major mining sectors**





## ESKOM: Sales to mining sector, G.W.h

Table 18

Year	Gold and uranium	Diamond	Coal mines	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	23 421	745	2 064	3 746	1 439	189
1988	24 380	820	2 291	4 084	1 355	195

Year	Asbestos	Iron	Manganese	Other <sup>a</sup>	Total	Growth %
1967	91		74 <sup>b</sup>	59	11 441	5,8
1968	107		81 <sup>b</sup>	59	11 995	4,8
1969	118		80 <sup>b</sup>	68	12 642	5,4
1970	137		88 <sup>b</sup>	92	13 948	10,3
1971	152		92 <sup>b</sup>	100	14 227	2,0
1972	161		101 <sup>b</sup>	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	130	264	89	762	32 849	3,1
1988	118	292	104	702	34 341	4,5

<sup>a</sup> 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.

<sup>b</sup> Up to 1972, iron and manganese figures were combined.

## ESKOM: Sales to industry, GW.h

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

## ESKOM: Sales to industry, GW.h

Table 19 (b)

By Standard Industrial Classification of selected economic activities (SIC)

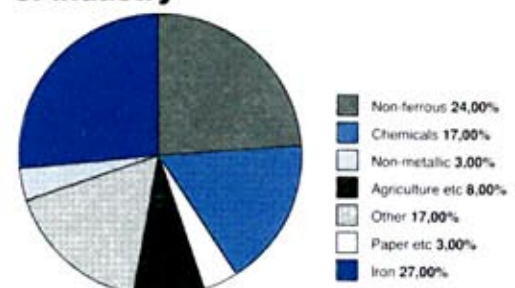
Year	Division 11	31	32	33	34	35	36	371	372	38	Other <sup>a</sup>	Total	Growth %
1983	2 051	397	380	175	1 056	7 046	1 231	7 754	6 935	440	4 822	32 286	4,3
1984	2 295	407	400	181	1 288	7 389	1 342	8 793	8 654	441	4 929	36 119	11,9
1985	2 665	422	410	186	1 550	7 511	1 232	9 939	8 779	434	5 088	38 215	5,8
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	357	422	206	1 268	6 868	1 343	10 603	9 613	355	5 540	39 738	3,8

### 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

<sup>a</sup> Includes other manufacturing and commercial enterprises

### Sales to sectors of industry





## ESKOM: Number of farm supplies

Table 20 (a)

Farm supplies include supplies which are furnished to agriculture and smallholdings and which are primarily used for farming purposes.

Year	1988	1987	1986 <sup>a</sup>	1985	1984	1983	1982	1981	1980	1979
Number	89 897	82 244	73 302	70 364	65 018	59 098	53 467	49 238	45 156	41 605
% growth	9,3	12,2	4,2	8,2	10,0	10,5	8,6	9,0	8,5	4,6
<b>Annual average growth 1979-1988</b>	<b>8,5%</b>									

<sup>a</sup> The 1986 figures have been adjusted due to reclassification of categories within the rural tariff, disconnections and network sales.

## ESKOM: Annual non-cumulative rural and farming supplies

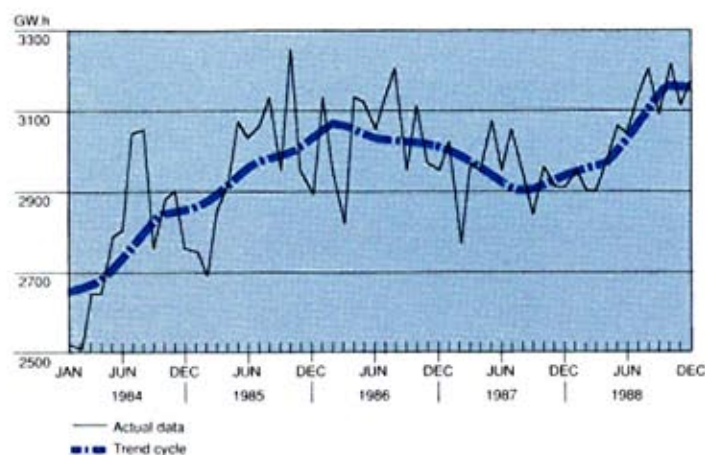
by region \*

Table 20 (b)

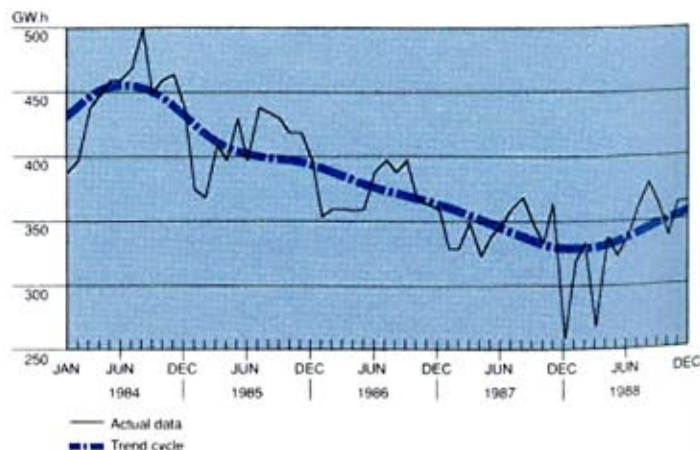
Region	Total connections		
	1988	1987	1986
Southern Tvl	251	224	302
Western Tvl	1 547	2 287	2 222
Eastern Tvl	457	421	476
Eastern Natal	663	361	396
Orange Free State	2 772	1 848	847
Central Tvl	382	396	361
Western Cape	402	350	358
North-eastern Tvl	731	568	446
Western Natal	616	1 168	1 229
Eastern Cape	1 745	978	817
Northern Cape	568	520	429
Southern Cape	880	937	780
	<b>11 014</b>	<b>10 058</b>	<b>8 663</b>

\* Disconnections, network sales, regional border adjustments and reclassifications not taken into account.

### Industrial Sales



### Traction Sales



## ESKOM: Number of farm supplies

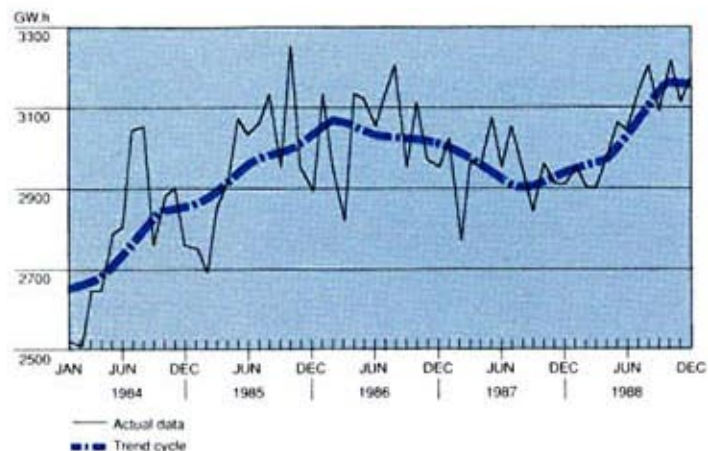
Table 20 (a)

Farm supplies include supplies which are furnished to agriculture and smallholdings and which are primarily used for farming purposes.

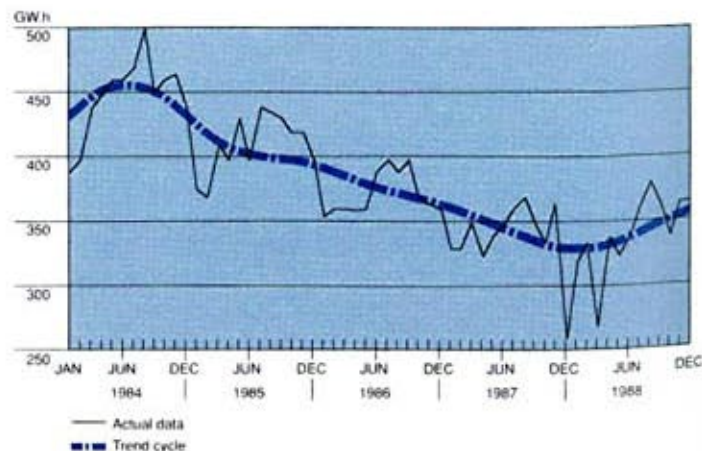
Year	1988	1987	1986 <sup>a</sup>	1985	1984	1983	1982	1981	1980	1979
Number	89 897	82 244	73 302	70 364	65 018	59 098	53 467	49 238	45 156	41 605
% growth	9,3	12,2	4,2	8,2	10,0	10,5	8,6	9,0	8,5	4,6
<b>Annual average growth 1979–1988</b>	<b>8,5%</b>									

<sup>a</sup> The 1986 figures have been adjusted due to reclassification of categories within the rural tariff, disconnections and network sales.

### Industrial Sales



### Traction Sales





# ESKOM: Annual non-cumulative rural and farming supplies

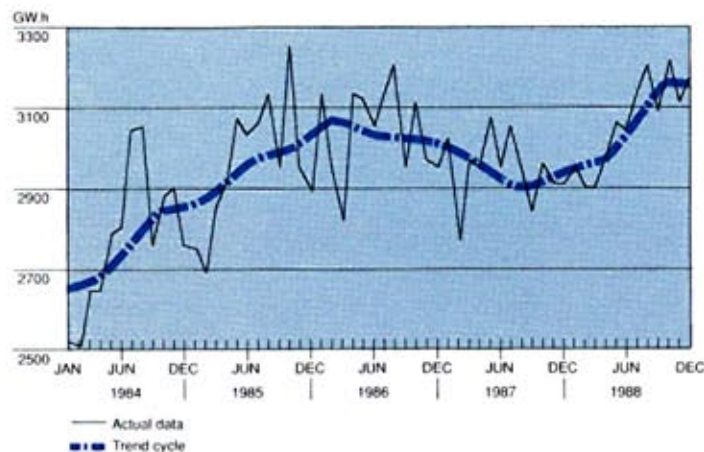
by region \*

Table 20 (b)

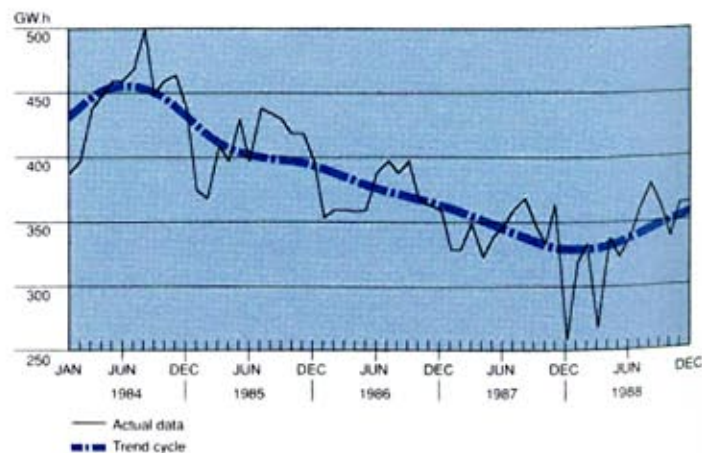
Region	Total connections		
	1988	1987	1986
Southern Tvl	251	224	302
Western Tvl	1 547	2 287	2 222
Eastern Tvl	457	421	476
Eastern Natal	663	361	396
Orange Free State	2 772	1 848	847
Central Tvl	382	396	361
Western Cape	402	350	358
North-eastern Tvl	731	568	446
Western Natal	616	1 168	1 229
Eastern Cape	1 745	978	817
Northern Cape	568	520	429
Southern Cape	880	937	780
	<b>11 014</b>	<b>10 058</b>	<b>8 663</b>

\* Disconnections, network sales, regional border adjustments and reclassifications not taken into account.

## Industrial Sales



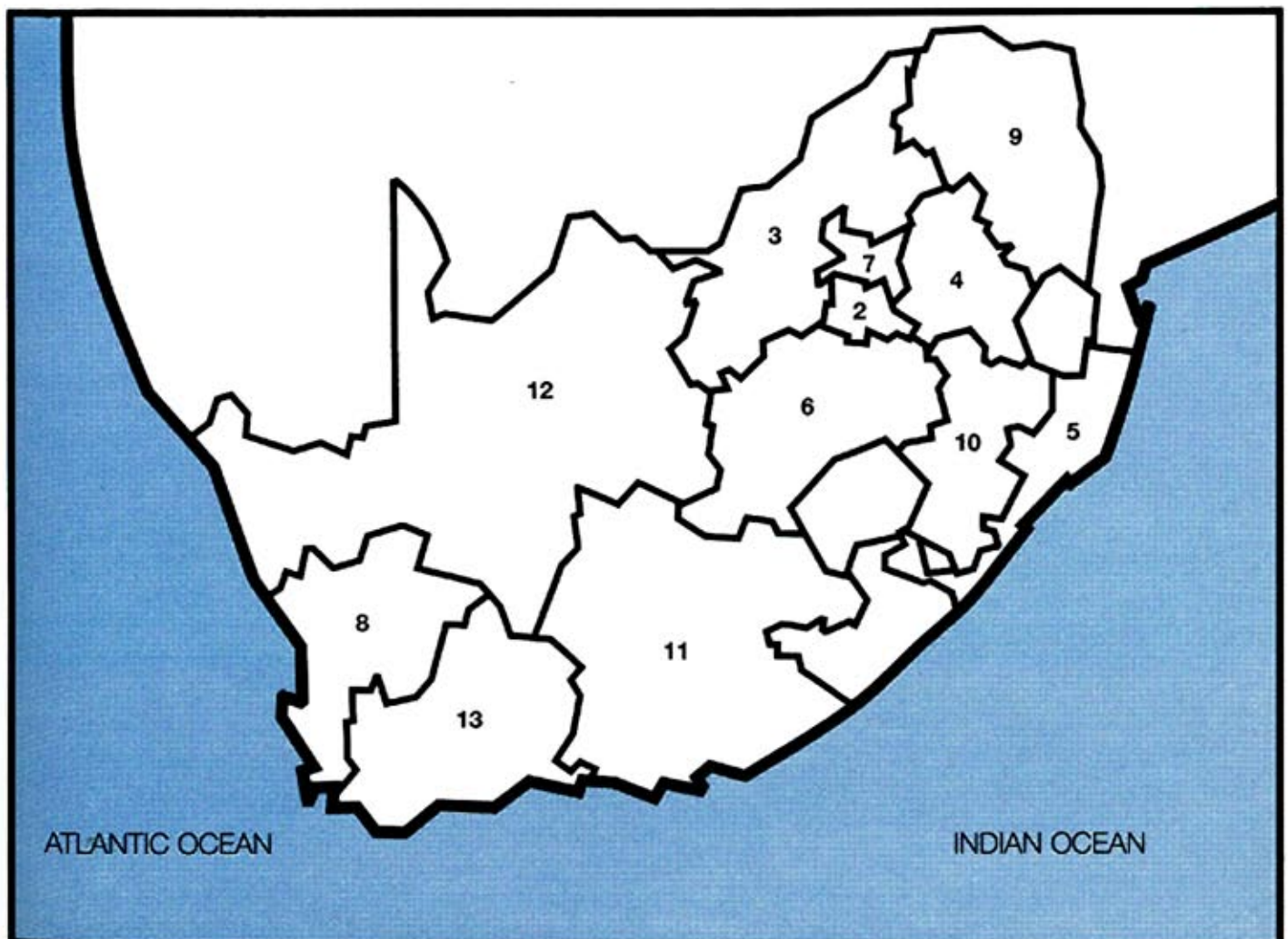
## Traction Sales



## ESKOM: Distribution regions in the RSA

### Map 1

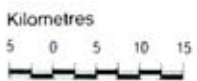
- Map 2: **Southern Transvaal** – Johannesburg
- Map 3: **Western Transvaal** – Johannesburg
- Map 4: **Eastern Transvaal** – Witbank
- Map 5: **Eastern Natal** – Durban
- Map 6: **Orange Free State** – Bloemfontein
- Map 7: **Central Transvaal** – Johannesburg
- Map 8: **Western Cape** – Bellville
- Map 9: **North-eastern Transvaal** – Nelspruit
- Map 10: **Western Natal** – Pietermaritzburg
- Map 11: **Eastern Cape** – East London
- Map 12: **Northern Cape** – Kimberley
- Map 13: **Southern Cape** – George





# ESKOM: Southern Transvaal Distribution Region

Map 2

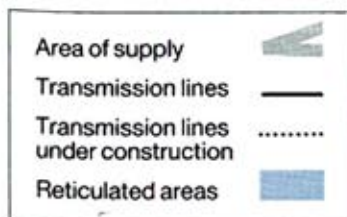
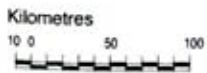
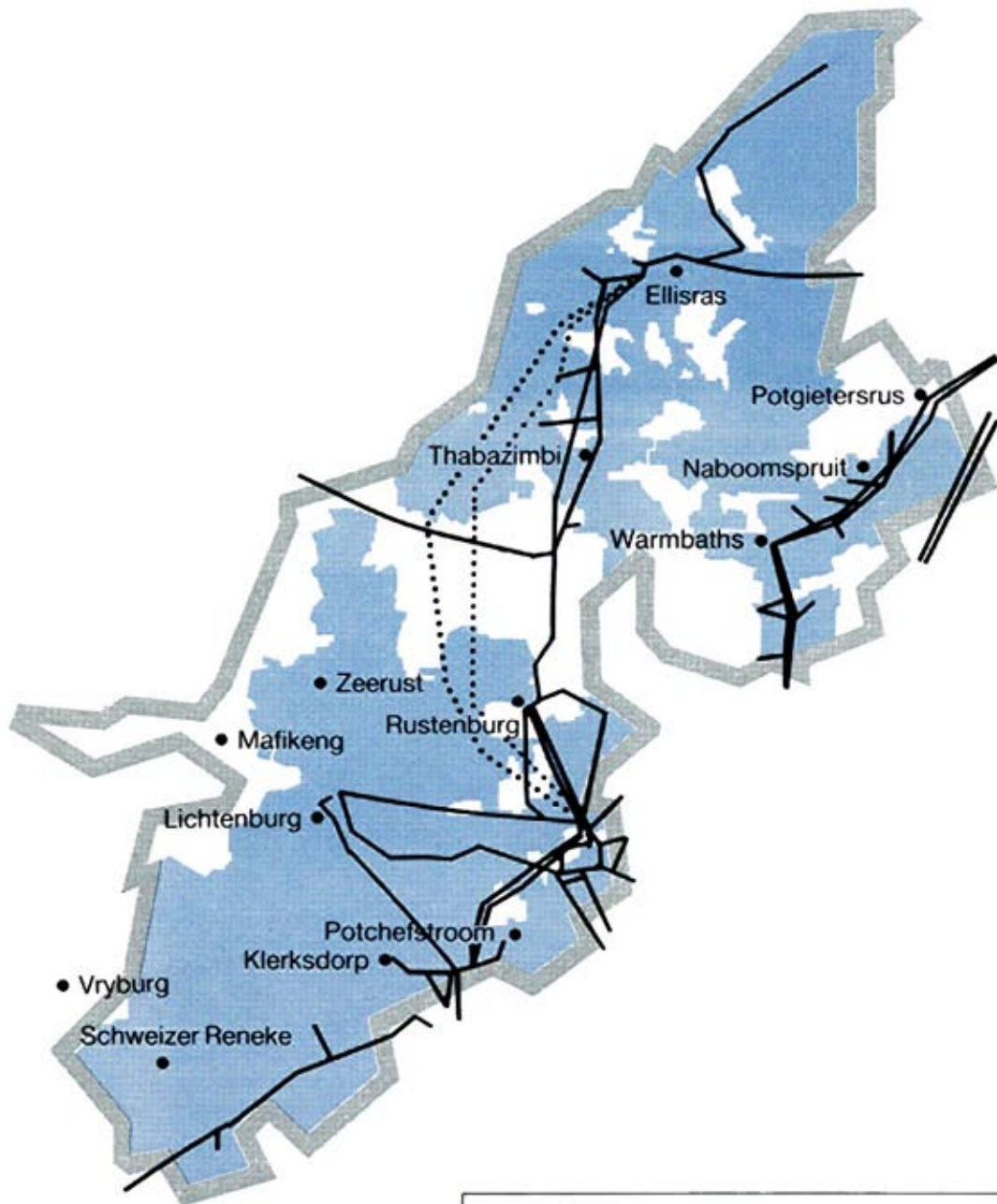


Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

Southern Transvaal Region	
Customers:	10 992
Sales GW.h:	30 134
Line length km:	11 049
Regional Office: Johannesburg	(011) 711-9111
Nigel District	(011) 739-2161
Vereeniging District	(016) 21-3410
Randfontein District	(011) 693-5348/9
Brakpan District	(011) 740-1622
Vanderbijlpark District	(016) 814030/1/2/3

# ESKOM: Western Transvaal Distribution Region

Map 3

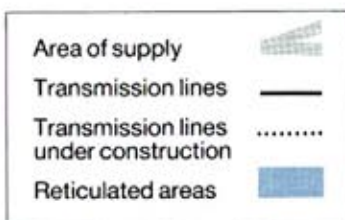


Western Transvaal Region	
Customers:	15 297
Sales GW.h:	17 486
Line length km:	32 419
Regional Office: Johannesburg	(011) 711-9111
Carletonville District	(01491) 7-2064/5
Klerksdorp District	(018) 2-4740/2-9703
Lichtenburg District	(01441) 2-6284/5/6
Rustenburg District	(01421) 2-0217 ext 225
Thabazimbi District	(01537) 2-1291/2/3
Warmbaths District	(015331) 2140



# ESKOM: Eastern Transvaal Distribution Region

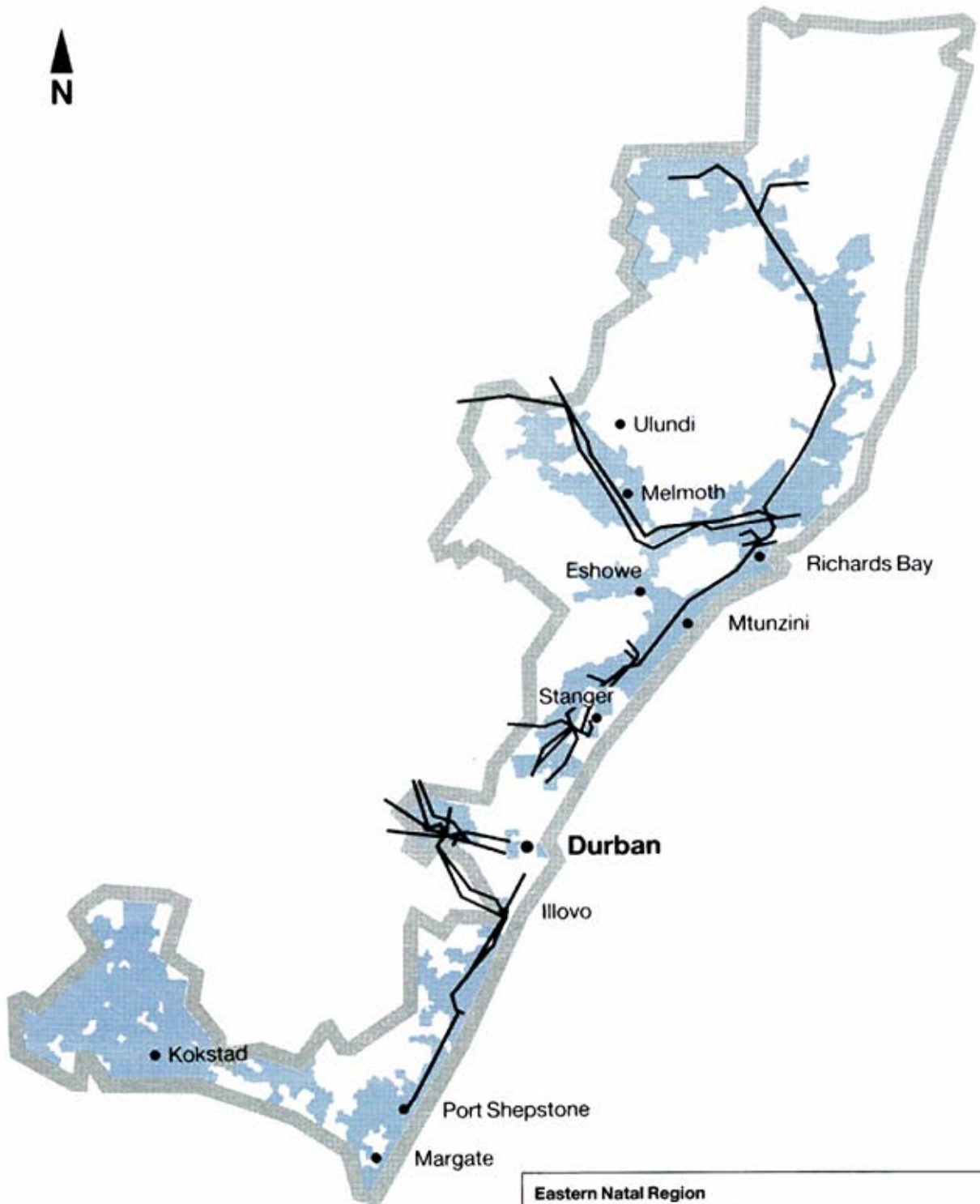
Map 4



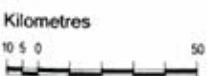
Eastern Transvaal Region	
Customers:	9 115
Sales GW.h:	16 353
Line length km:	18 514
Regional Office: Witbank	(01351) 67-9111
Wildebees District	(01363) 71185/6/7
Ermelo District	(01341) 9-7450/1/2/3/4
Witbank District	(01351) 67-3733
Middelburg District	(01321) 2-7128/9
Groblersdal District	(01202) 4039/4041

# ESKOM: Eastern Natal Distribution Region

Map 5



Eastern Natal Region	
Customers:	28 248
Sales GW.h:	15 056
Line length km:	9 666
Regional Office: Durban	(031) 32-0271
Empangeni District	(0351) 2-6931/2/3
Pinetown District	(031) 701-7691/701-7601
Eshowe District	(0354) 4-1348
Margate District	(03931) 5-1325/5-0686 5-1259/5-0878

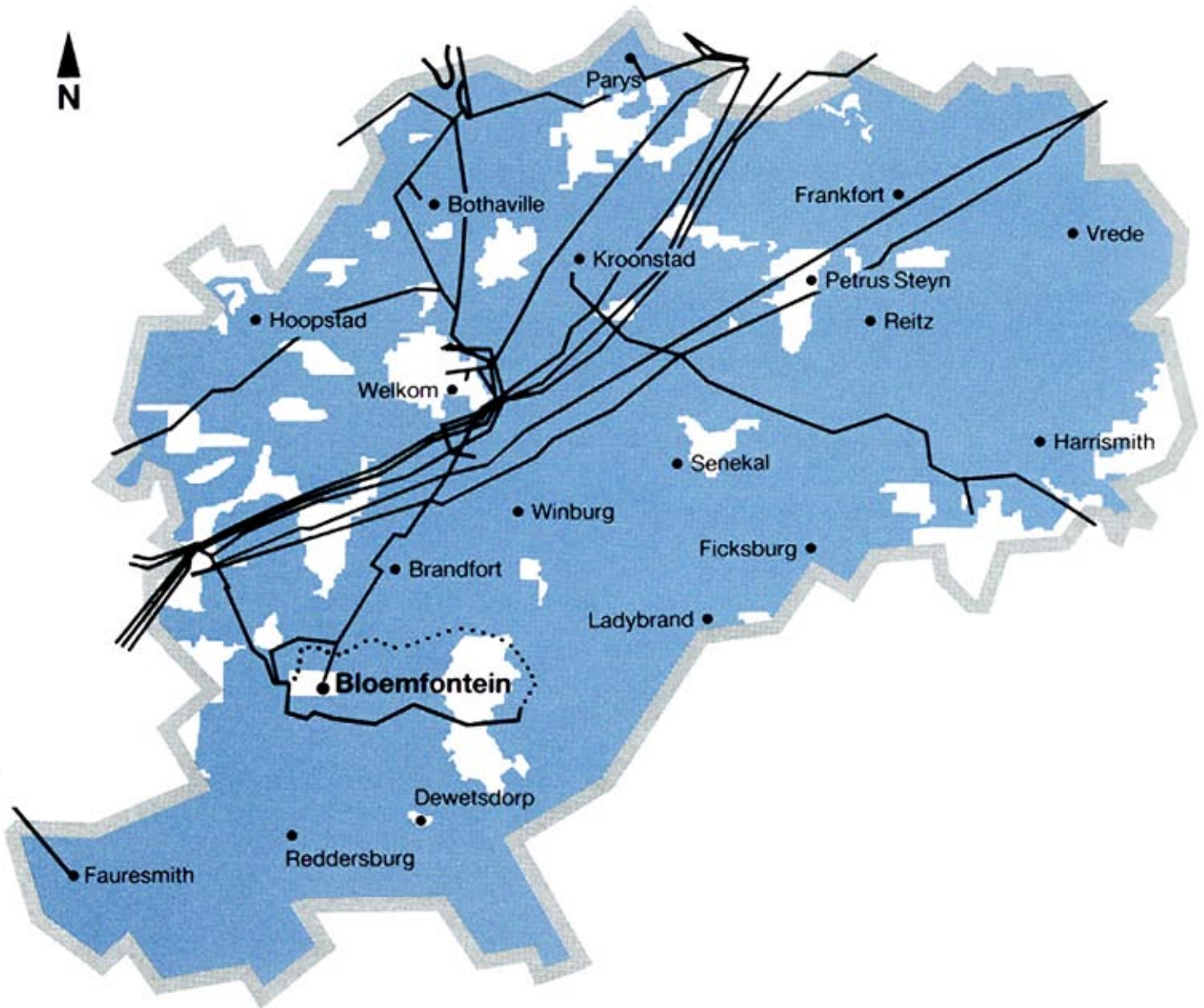


Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	



# ESKOM: Orange Free State Distribution Region

Map 6

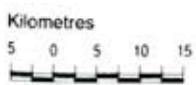
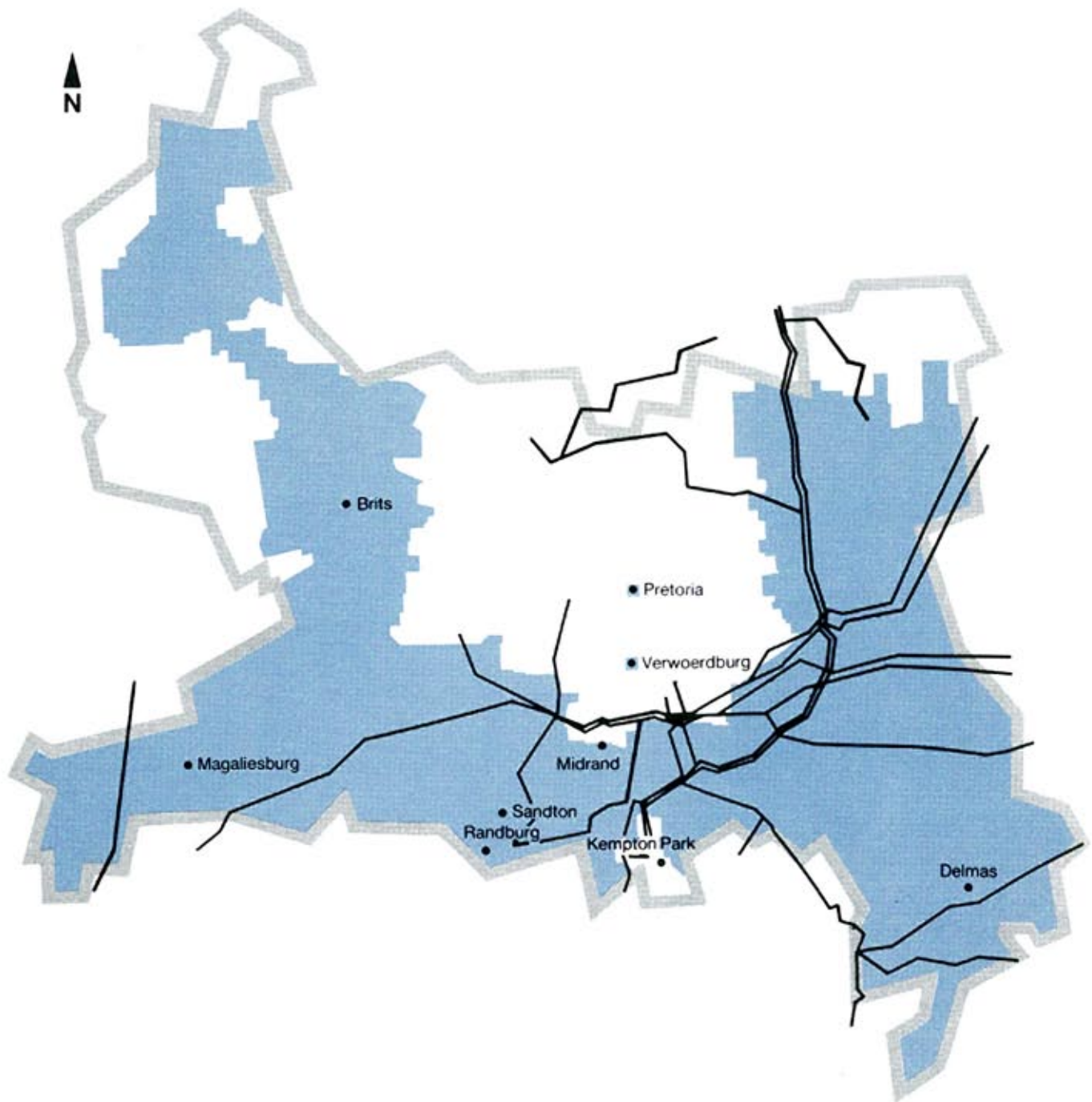


Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

Orange Free State Region	
Customers:	12 867
Sales GW.h:	10 629
Line length km:	30 786
Regional Office: Bloemfontein	(051) 30-2411
Bloemfontein District	(051) 35-2853
Welkom District	(0171) 2-4236
Bethlehem District	(01431) 35-7133
Bothaville District	(01414) 2118/2110
Kroonstad District	(01411) 3-2757/8/9

# ESKOM: Central Transvaal Distribution Region

Map 7



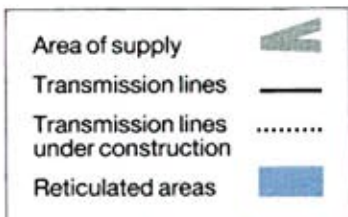
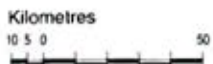
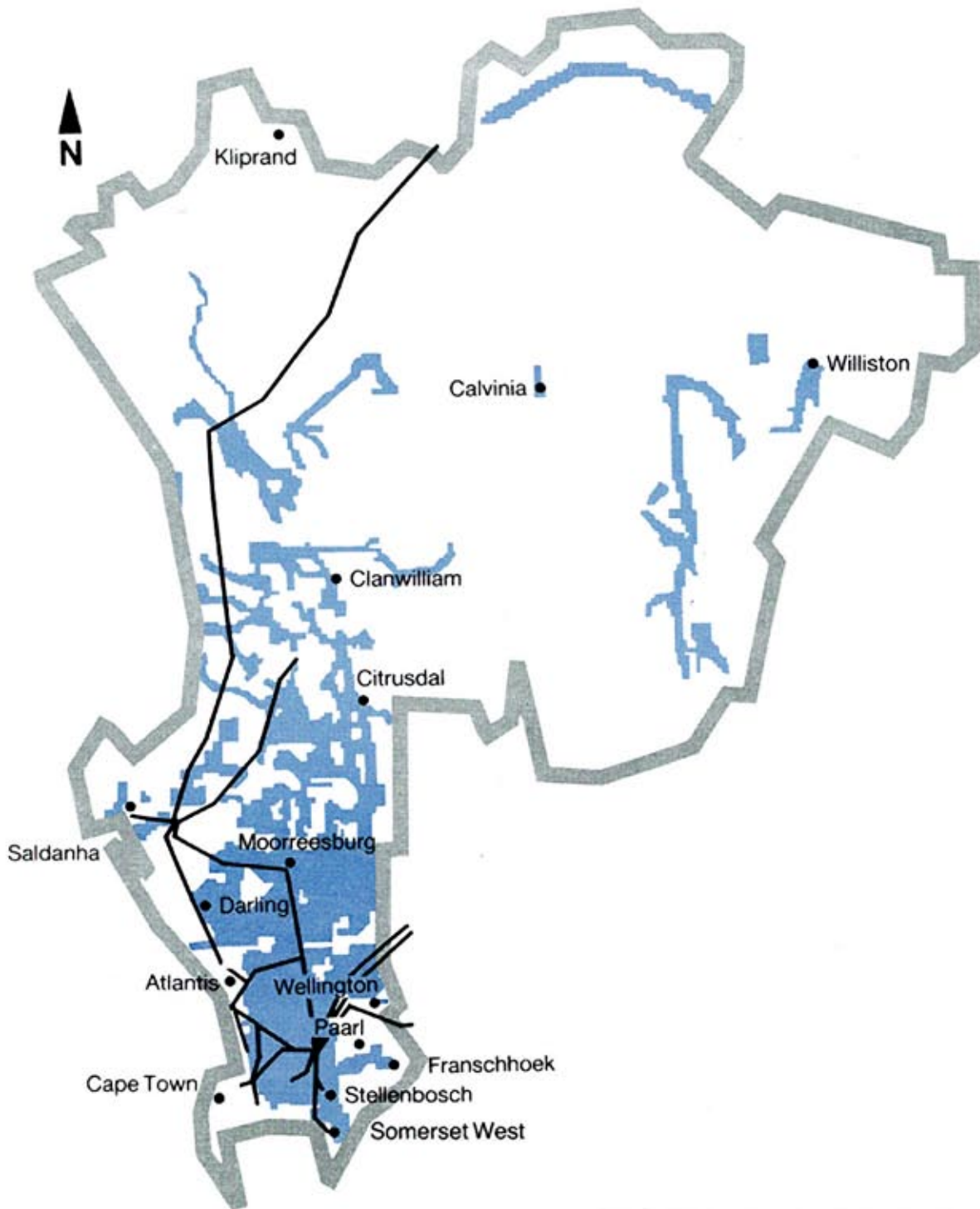
Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

Central Transvaal Region	
Customers:	25 319
Sales GW.h:	10 499
Line length km:	7 910
Regional Office: Johannesburg	(011) 711-9111
Irene District	(012) 61-2236
Sandton District	(011) 786-4746
Midrand District	(011) 702-2307/8/9
Randburg District	(011) 711-2913
Petit District	(011) 54-8356
Brits District	(01211) 20438



# ESKOM: Western Cape Distribution Region

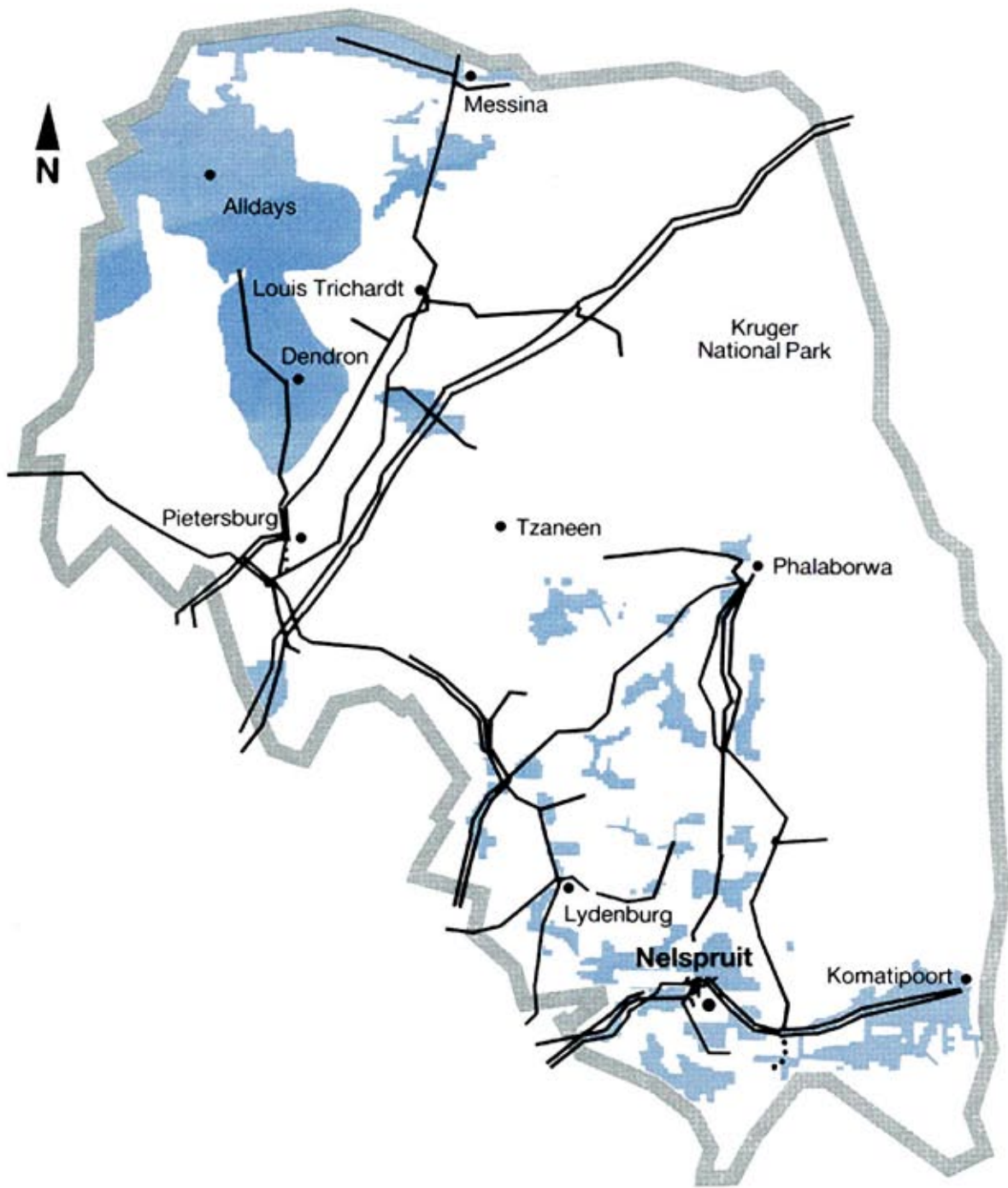
Map 8



Western Cape Region	
Customers:	114 883
Sales GW,h:	8 373
Line length km:	9 352
Regional Office: Bellville	(021) 915-9111
Oakdale District	(021) 99-1160
Kraaifontein District	(021) 902-7457
Vredenburg District	(02281) 3-1155
Vredendal District	(0271) 3-1020

# ESKOM: North-eastern Transvaal Distribution Region

Map 9



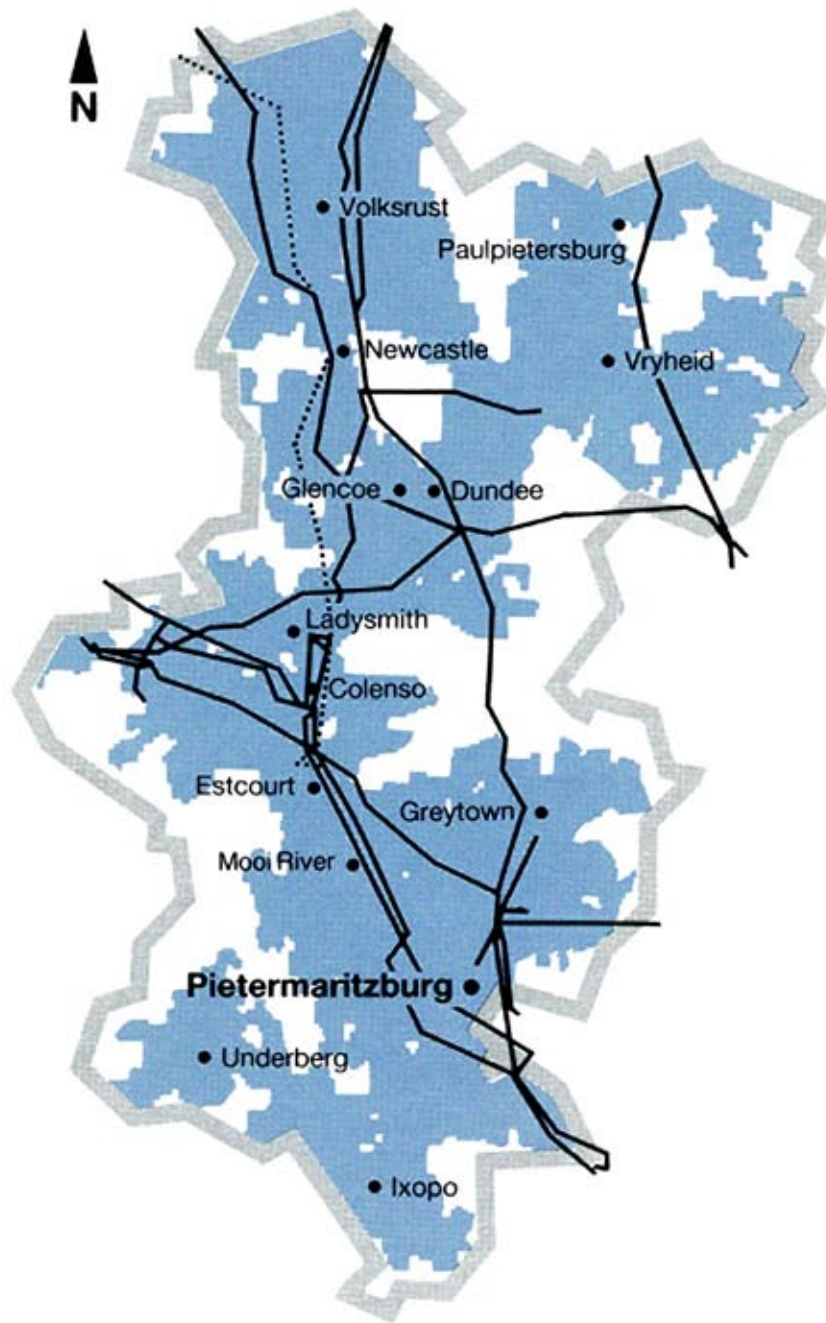
Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

North-eastern Transvaal Region	
Customers:	8 245
Sales GW.h:	6 367
Line length km:	12 541
Regional Office: Nelspruit	(01311) 5-2001
Pietersburg District	(01521) 7-4821/2/3/4
Nelspruit District	(01311) 5-2001
Lydenburg District	(01323) 2314
Phalaborwa District	(01524) 5888



# ESKOM: Western Natal Distribution Region

Map 10

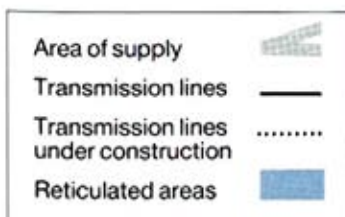
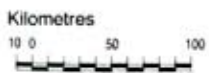
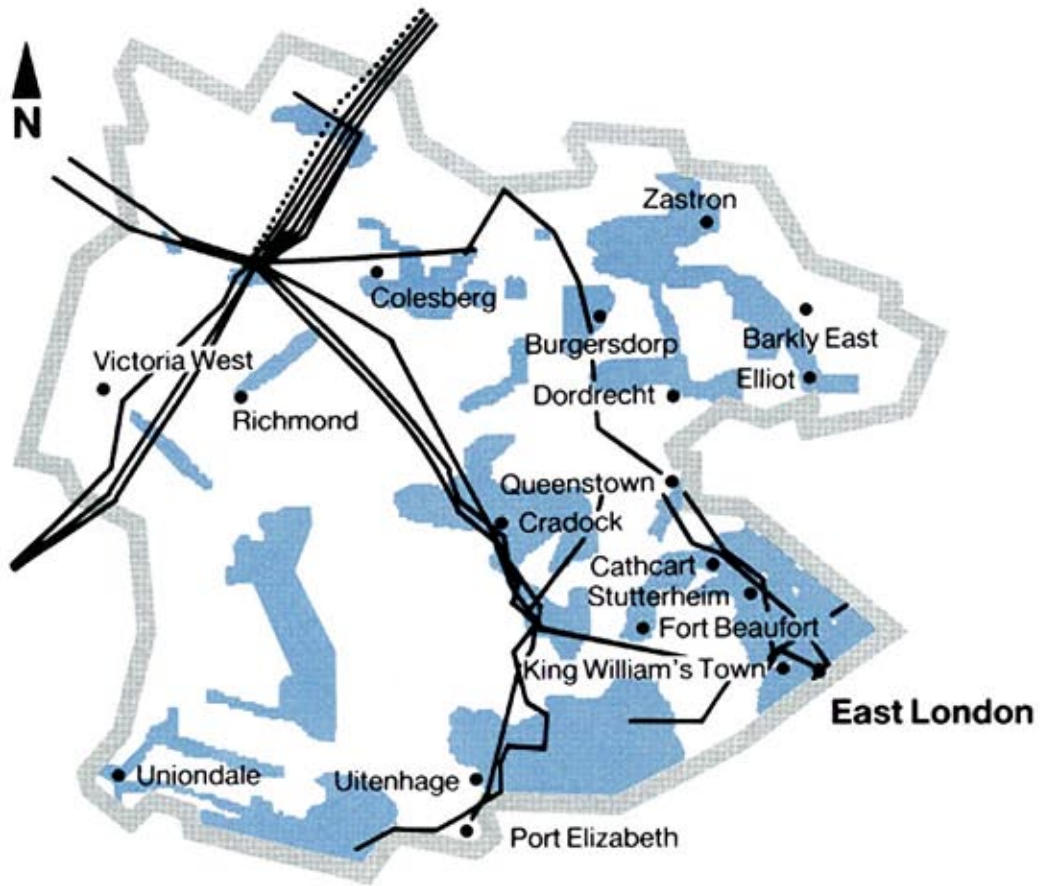


Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

Western Natal Region	
Customers:	17 391
Sales GW.h:	5 454
Line length km:	18 978
Regional Office: Pietermaritzburg	(0331) 94-7245
Newcastle District	(03431) 5-1274/5-1282
Colenso District	(03622) 2232/2101
Pietermaritzburg District	(0331) 94-7351/2/3

# ESKOM: Eastern Cape Distribution Region

Map 11

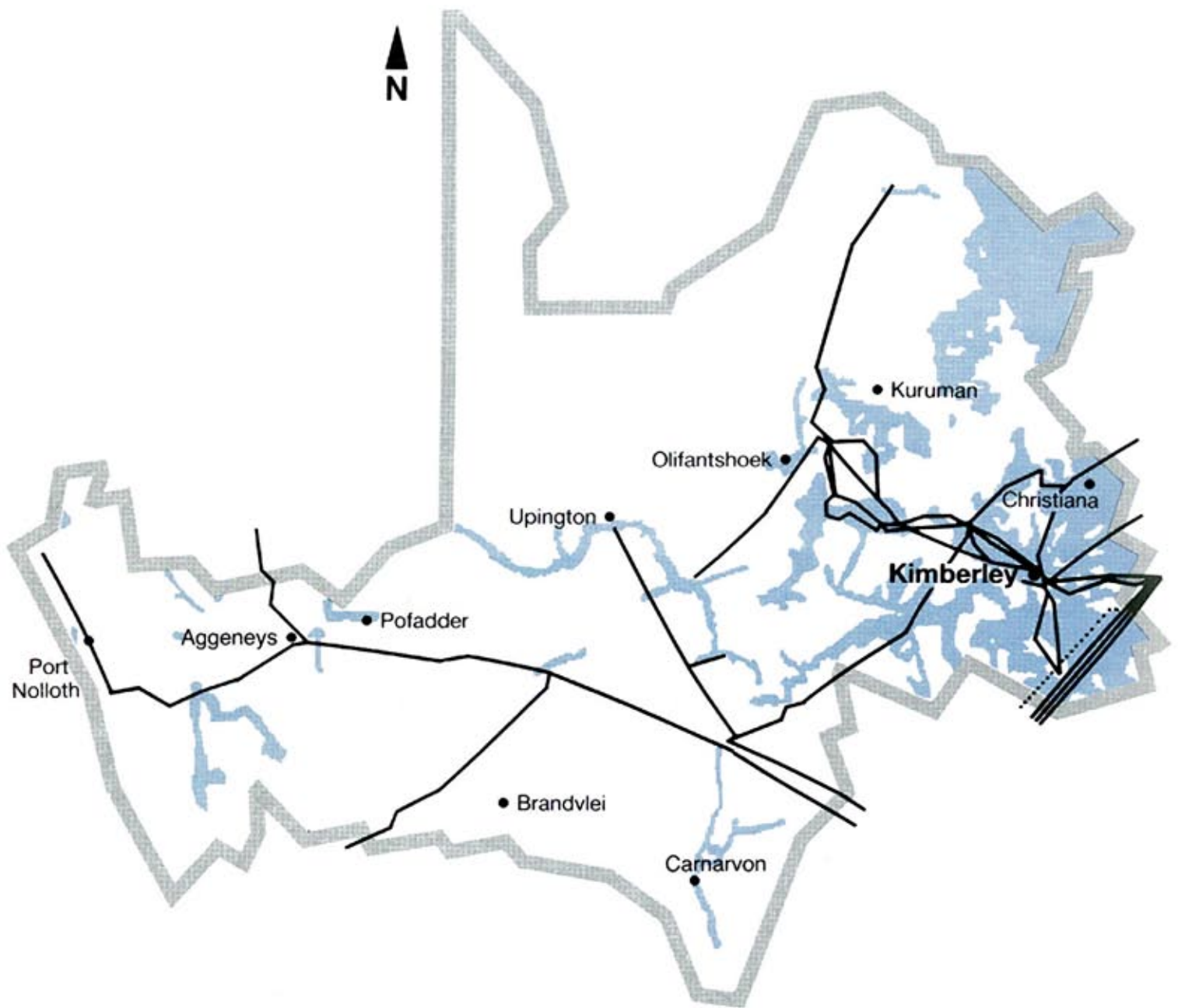


Eastern Cape Region	
Customers:	11 883
Sales GW.h:	4 295
Line length km:	21 286
Regional Office: East London	(0431) 3-9911
Uitenhage District	(0422) 2-5833
Colesberg District	(05852) 363
East London District	(0431) 47-2493
Grahamstown District	(0461) 2-7031



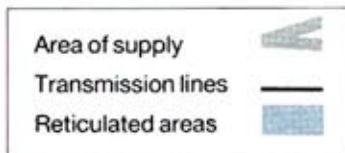
# ESKOM: Northern Cape Distribution Region

Map 12



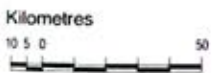
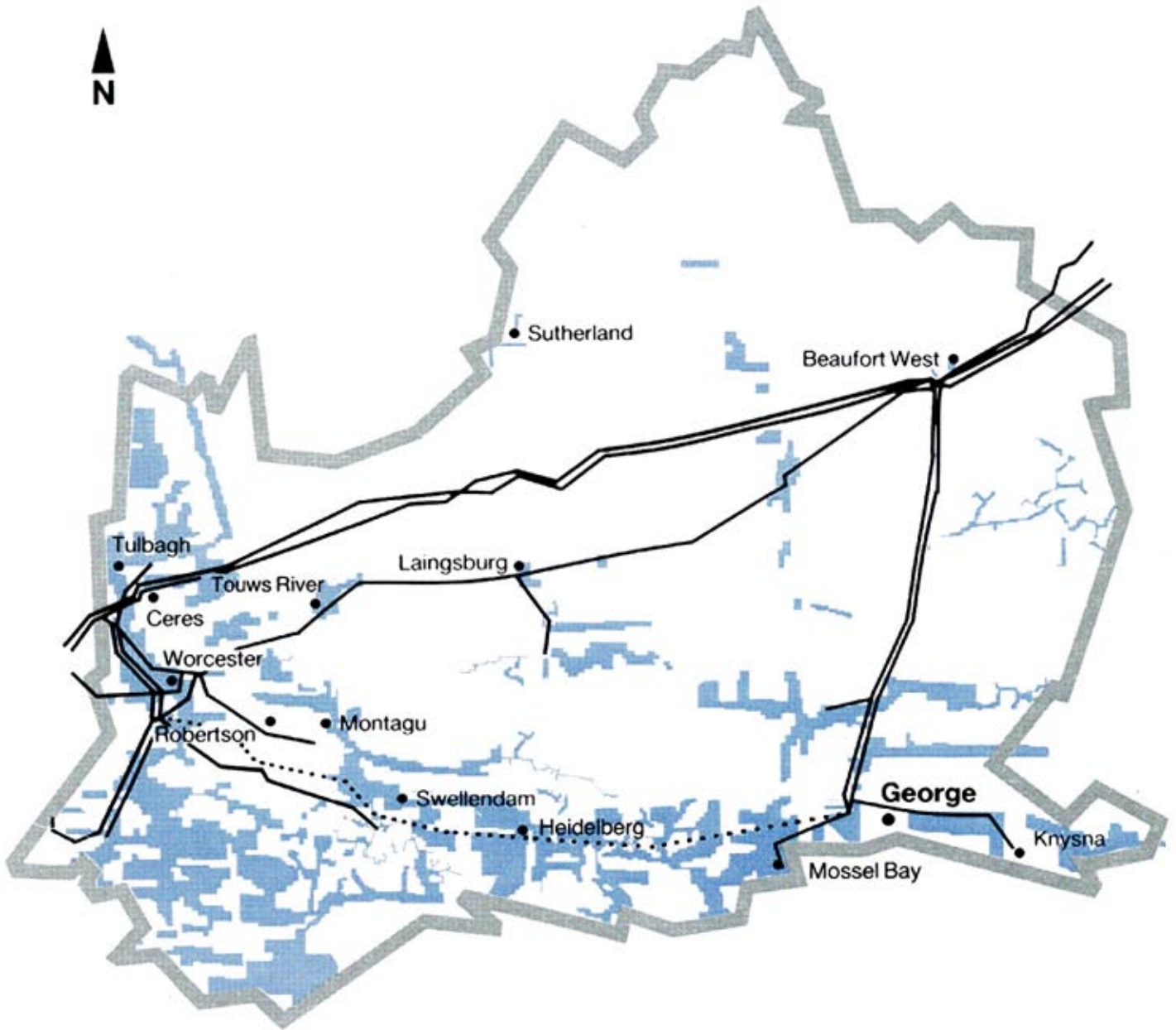
Northern Cape Region	
Customers:	8 547
Sales GW.h:	3 227
Line length km:	15 219
Regional Office: Kimberley	(0531) 80-5911
Upington District	(0541) 5742
Kimberley District	(0531) 80-5911
Kuruman District	(01471) 2-2151
Vryburg District	(01451) 5741/2/3

Kilometres  
10 0 50 100



# ESKOM: Southern Cape Distribution Region

Map 13



Area of supply	
Transmission lines	
Transmission lines under construction	
Reticulated areas	

Southern Cape Region	
Customers:	12 869
Sales GW.h:	1 618
Line length km:	14 079
Regional Office: George	(0441) 76-2911
Worcester District	(0231) 2-2394
Grabouw District	(024) 53-1140
George District	(0441) 74-4123
Swellendam District	(0291) 4-1051



## SOUTH AFRICA: Motive power employed – electricity

**Table 21**

Source: Central Statistical Services Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)<sup>a</sup>.

Ownership and group	Steam turbines MW	Gas turbines MW	Steam reciprocating engines MW	Diesel and heavy oil engines MW	Petrol, paraffin and other light oil engines MW	Gas engines MW	Water turbines and water wheels MW	Total MW
<b>Public supply undertakings</b>								
<b>Electricity generating stations</b>								
Private undertakings and Eskom	26 156,0	364,7	—	38,6	—	0,1	1 550,9	28 110,3
Local authorities	1 482,8	316,0	—	5,1	—	—	184,3	1 988,2
<b>Electricity distributing stations</b>								
Private undertakings and Eskom	—	—	—	1,7	—	—	—	1,7
Local authorities	480,0	24,0	—	14,3	0,4	—	0,6	519,3
<b>Total undertakings</b>	<b>28 118,8</b>	<b>704,7</b>	<b>—</b>	<b>59,7</b>	<b>0,4</b>	<b>0,1</b>	<b>1 735,8</b>	<b>30 619,6</b>
<b>Self-producers</b>								
Electricity generating stations	615,8	—	3,4	14,9	2,2	—	2,2	638,4
Electricity distributing stations	378,1	25,9	0,2	82,0	0,3	—	8,6	495,1
<b>Total undertakings</b>	<b>993,9</b>	<b>25,9</b>	<b>3,6</b>	<b>96,9</b>	<b>2,5</b>	<b>—</b>	<b>10,8</b>	<b>1 133,5</b>
<b>Grand total</b>								
All undertakings	29 112,7	730,6	3,6	156,6	2,8	0,1	1 746,6	31 753,1

## SOUTH AFRICA: Electricity available for consumption and number of undertakings

**Table 22**

Source: Central Statistical Services Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)<sup>a</sup>.

Undertaking	Generating undertakings	Distributing undertakings	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
	No.	No.	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h
<b>Public supply undertakings</b>								
Private undertakings and Eskom	12	105	133 578	256	10 075	6 627	3 506	113 627
Local authorities	9	286	6 354	55	735	2 509	127	3 037
<b>All undertakings</b>	<b>21</b>	<b>391</b>	<b>139 932</b>	<b>311</b>	<b>10 810</b>	<b>9 136</b>	<b>3 634</b>	<b>116 664</b>
<b>Self-producers</b>								
Mining <sup>b</sup>	2	52	93	—	8	251	—	-166
Manufacturing	41	10	6 430	—	2 431	158	—	3 841
S.A. Transport Services	1	—	0	—	0	56	—	-56
Other	3	1	65	—	0	0	—	65
<b>Total</b>	<b>47</b>	<b>63</b>	<b>6 589</b>	<b>—</b>	<b>2 439</b>	<b>465</b>	<b>—</b>	<b>3 684</b>
<b>All undertakings</b>	<b>68</b>	<b>454</b>	<b>146 521</b>	<b>311</b>	<b>13 249</b>	<b>9 601</b>	<b>3 634</b>	<b>120 348</b>

<sup>a</sup> The next census of electricity, gas and steam will be carried out at the end of 1989.

<sup>b</sup> 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: Motive power employed – electricity

**Table 21**

Source: Central Statistical Services Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)\*.

Ownership and group	Steam turbines MW	Gas turbines MW	Steam reciprocating engines MW	Diesel and heavy oil engines MW	Petrol, paraffin and other light oil engines MW	Gas engines MW	Water turbines and water wheels MW	Total MW
Public supply undertakings								
Electricity generating stations								
Private undertakings and Eskom	26 156,0	364,7	—	38,6	—	0,1	1 550,9	28 110,3
Local authorities	1 482,8	316,0	—	5,1	—	—	184,3	1 988,2
Electricity distributing stations								
Private undertakings and Eskom	—	—	—	1,7	—	—	—	1,7
Local authorities	480,0	24,0	—	14,3	0,4	—	0,6	519,3
Total undertakings	28 118,8	704,7	—	59,7	0,4	0,1	1 735,8	30 619,6
Self-producers								
Electricity generating stations	615,8	—	3,4	14,9	2,2	—	2,2	638,4
Electricity distributing stations	378,1	25,9	0,2	82,0	0,3	—	8,6	495,1
Total undertakings	993,9	25,9	3,6	96,9	2,5	—	10,8	1 133,5
Grand total								
All undertakings	29 112,7	730,6	3,6	156,6	2,8	0,1	1 746,6	31 753,1



## SOUTH AFRICA: Electricity available for consumption and number of undertakings

**Table 22**

Source: Central Statistical Services Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)<sup>a</sup>.

Undertaking	Generating undertakings	Distributing undertakings	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
	No.	No.	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h
<b>Public supply undertakings</b>								
Private undertakings and Eskom	12	105	133 578	256	10 075	6 627	3 506	113 627
Local authorities	9	286	6 354	55	735	2 509	127	3 037
All undertakings	21	391	139 932	311	10 810	9 136	3 634	116 664
<b>Self-producers</b>								
Mining <sup>b</sup>	2	52	93	—	8	251	—	-166
Manufacturing	41	10	6 430	—	2 431	158	—	3 841
S.A. Transport Services	1	—	0	—	0	56	—	-56
Other	3	1	65	—	0	0	—	65
Total	47	63	6 589	—	2 439	465	—	3 684
All undertakings	68	454	146 521	311	13 249	9 601	3 634	120 348

<sup>a</sup> The next census of electricity, gas and steam will be carried out at the end of 1989.

<sup>b</sup> 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 23**

Source: Central Statistical Services Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)<sup>a</sup>

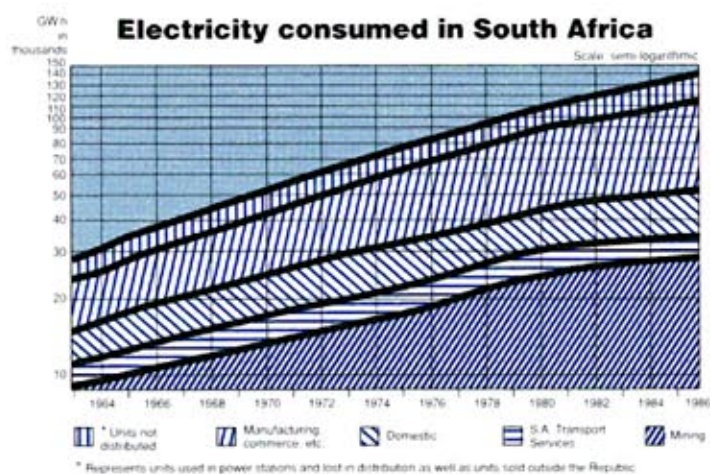
Month	1979	1980	1981	1982	1983	1984	1985	1986
Actual data	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h
January	7 074	7 678	8 201	8 687	8 745	9 326	9 801	10 371
February	6 714	7 598	7 724	8 222	8 217	9 131	9 443	9 703
March	7 541	8 140	8 673	9 171	9 103	9 901	10 417	10 861
April	7 307	7 905	8 167	8 872	8 871	9 491	10 015	10 379
May	7 882	8 756	9 176	9 548	9 546	10 415	10 801	11 053
June	8 004	8 816	9 387	9 609	9 661	10 686	11 053	11 432
July	8 611	9 192	9 662	10 119	10 271 <sup>b</sup>	11 139	11 547	11 836
August	8 411	8 913	9 691	9 776	10 202 <sup>b</sup>	10 794	11 230	11 621
September	7 857	8 394	9 103	8 894	9 489 <sup>b</sup>	10 167	10 525	10 772
October	7 950	8 439	9 198	9 193	9 772 <sup>b</sup>	10 164	10 736	11 106
November	7 728	8 195	8 723	8 891	9 382 <sup>b</sup>	9 984	10 521	10 753
December	7 536	7 879	8 430	8 554	9 107 <sup>b</sup>	9 637	10 118	10 168
Annual data	92 614	99 905	106 135	109 536	112 366 <sup>b</sup>	120 835	126 207	130 055

Seasonal variation eliminated

January	7 423	8 069	8 602	9 112	9 172	9 791	10 295	10 866
February	7 477	8 476	8 602	9 150	9 129	10 121	10 460	10 751
March	7 640	8 186	8 695	9 191	9 110	9 920	10 439	10 848
April	7 635	8 239	8 503	9 238	9 251	9 854	10 397	10 780
May	7 543	8 380	8 809	9 170	9 181	10 043	10 422	10 710
June	7 608	8 372	8 916	9 126	9 179	10 137	10 484	10 820
July	7 751	8 292	8 734	9 159	9 309	10 107	10 482	10 785
August	7 788	8 271	9 014	9 096	9 500	10 074	10 485	10 881
September	7 826	8 388	9 078	8 873	9 468	10 177	10 543	10 836
October	7 871	8 355	9 112	9 098	9 671	10 035	10 601	10 963
November	7 975	8 439	8 998	9 158	9 650	10 257	10 803	10 984
December	8 060	8 452	9 037	9 159	9 741	10 309	10 821	10 852

<sup>a</sup> The next census of electricity, gas and steam will be carried out at the end of 1989.

<sup>b</sup> Estimates obtained from a monthly sample survey.





# SOUTH AFRICA: Production and consumption of electricity

**Table 24**

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)<sup>a</sup>.

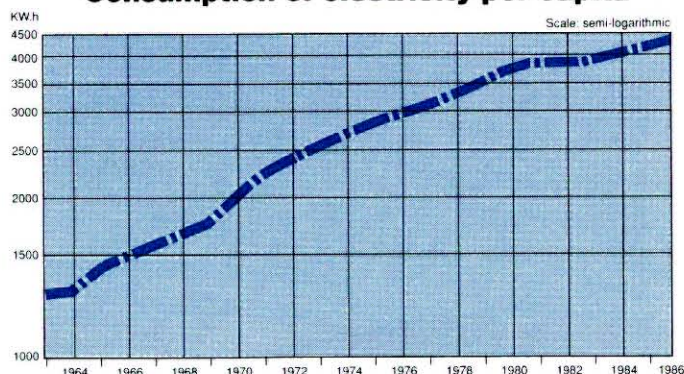
Production						Electricity supplied for consumption						
Census year	Gross production of electricity GW.h	Purchases outside Republic GW.h	Used in power stations and lost in distribution GW.h	Sales outside Republic GW.h	Total no. of units consumed in South Africa GW.h	In mining GW.h	S.A. Transport Services		For domestic purposes GW.h	Manufacturing, commerce, etc <sup>b</sup> GW.h	For other purposes <sup>c</sup> GW.h	Consumption per capita kW.h
							Traction GW.h	Other purposes GW.h				
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

<sup>a</sup> The next census of electricity, gas and steam will be carried out at the end of 1989.

<sup>b</sup> Private businesses

<sup>c</sup> Rand Water Board, regional water supply commissions, government departments, provincial administrations, local authorities etc.

## Consumption of electricity per capita



## SOUTH AFRICA: Consumption of electricity

**Table 25**

Source: Central Statistical Service Census of Electricity, Gas and Steam. Report No. 41-01-01 (1986)\*.

<b>Units consumed by</b>	<b>GW.h</b>
<b>Mining</b>	
Gold and Uranium mines	22 261
Coal mines	2 035
Other mines	5 646
<b>S.A. Transport Services</b>	
Traction	3 903
Other	828
<b>Own local authority departments</b>	
Water departments	314
Public lighting (street etc)	648
Other purposes	835
<b>Rand Water Board &amp; Regional Water Supply Commissions</b>	1 426
<b>Government Departments, provincial administrations, etc</b>	3 949
<b>Other private business (manufacturing, commerce, etc.)</b>	60 858
<b>Domestic use</b>	17 644
<b>Other</b>	2
	<hr/>
	120 348

\* The next census of electricity, gas and steam will be carried out at the end of 1989.



## SOUTH AFRICA: Municipal statistics

Table 26

Source: Municipalities and South African Municipal Yearbook.

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<b>Transvaal</b>						
Alberton	6/88	18 559	611	378	1	19 549
Alexandra	1988	—	—	—	250	250
Amalia	6/86	—	—	—	—	—
Atteridgeville	6/88	—	—	—	10 452	10 452
Barberton	6/88	2 123	121	52	234	2 530
Bedfordview	6/88	2 489	106	19	—	2 614
Belfast	6/88	637	61	9	746	1 453
Benoni	6/88	21 212	1 598	504	2	23 316
Bethal	6/88	2 003	520	14	489	3 026
Bloemhof	6/88	441	92	9	—	542
Boksburg	6/88	21 171	638	260	—	22 069
Brakpan	6/88	12 583	1 015	249	314	14 161
Brits	6/88	2 522	457	92	204	3 275
Bronkhorstspuit	6/88	1 297	160	41	50	1 548
Carletonville	6/88	6 221	735	107	70	7 133
Carolina	6/88	—	—	—	741	741
Christiana	6/88	1 132	100	12	—	1 244
Coligny	6/88	680	37	1	2	720
Delareyville	6/88	503	122	12	24	661
Delmas	6/88	1 362	21	25	—	1 408
Deneysville	6/88	342	30	1	10	383
Duduza	11/88	3 084	717	—	—	3 801
Edenvale	6/88	8 117	403	279	279	9 078
Ellisras	6/88	3 299	291	—	1	3 591
Ermelo	6/88	3 352	525	33	824	4 734
Evander	6/88	2 008	222	68	110	2 408
Fochville	6/88	2 527	190	5	—	2 722
Germiston	6/88	24 143	4 410	—	28 559	57 112
Graskop	6/88	—	—	—	—	—
Groblersdal	6/88	—	—	—	750	750
Hartbeespoortdam	6/88	—	—	—	1 672	1 672
Hartbeesfontein	6/88	458	83	10	—	551
Heidelberg	1988	3 032	306	42	210	3 590
Hertzogville	6/88	182	42	—	3	227
Hoopstad	6/88	295	100	18	18	431
Johannesburg	6/87	115 471	6 720	3 795	—	125 986
Katlehong	6/85	—	—	—	—	—
Kempton Park	6/88	23 330	1 045	753	—	25 128
Kinross	6/88	—	—	—	900	900
Klerksdorp	12/88	13 345	1 228	90	4	14 667
Kosmos	6/88	—	—	—	288	288
Koster	6/88	863	115	18	—	996
Krugersdorp	6/86	15 102	1 290	567	354	17 313
Kwa-Thema	6/88	8 595	372	—	34	9 001
Leeudoringstad	6/88	500	40	15	—	555
Lichtenburg	6/88	3 232	330	131	140	3 833
Louis Trichardt	6/88	1 762	360	100	1 021	3 243
Lydenburg	6/88	1 601	254	47	0	1 902
Makwassie	6/86	256	63	1	1	321
Mamelodi	6/88	17 380	297	—	—	17 677
Marble Hall	6/88	664	105	96	37	902
Messina	6/88	641	153	6	—	800
Meyerton	6/88	2 954	181	138	149	3 422
Mhluzi	6/86	—	—	—	—	—
Middelburg	6/88	11 955	—	—	6 334	18 289

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
219 200	16 940	384 150	45 800	666 090	154,90	61,8	5,0	218 270
—	—	—	—	—	6,20	—	—	120 000
—	—	—	—	—	—	—	—	389
—	—	—	92 148	92 148	28,80	40,6	—	89 442
12 024	5 034	17 347	2 135	36 540	9,76	55,0	21,1	5 209
82 665	4 535	67 125	—	154 325	34,50	68,2	7,5	28 000
5 049	1 914	324	4 151	11 438	2,70	48,4	11,3	10 104
234 825	61 151	358 279	163 932	818 187	179,51	62,7	2,4	244 919
21 982	17 313	7 034	17 249	63 578	10,10	71,9	6,4	25 684
—	—	—	13 931	13 931	2,50	70,0	6,1	3 068
251 177	58 875	456 882	20 520	787 454	175,70	63,3	7,2	244 338
110 366	19 809	347 068	9 480	486 722	85,00	76,0	3,8	107 364
24 832	16 307	110 040	12 041	163 220	37,50	54,0	2,9	10 600
21 456	4 646	52 127	1 054	79 283	18,00	50,3	11,0	10 840
64 105	38 192	2 882	5 474	110 653	25,40	66,0	7,0	39 000
—	—	—	14 388	14 388	3,10	53,0	—	9 020
5 518	5 360	480	—	11 358	4,00	36,0	7,9	2 287
3 472	665	608	372	5 117	1,80	58,8	9,7	7 400
4 518	1 633	1 852	863	8 866	2,70	54,0	12,0	1 235
12 008	11 074	4 704	—	27 786	7,00	62,0	8,8	19 000
2 996	1 395	723	206	5 320	1,40	62,2	7,3	2 000
—	—	—	—	—	0,10	8,7	—	50 000
105 322	8 915	67 872	6 086	188 195	36,60	62,2	5,3	44 125
24 300	15 625	—	2 358	42 284	9,35	59,0	5,6	18 400
38 998	19 535	6 394	10 021	74 948	20,60	41,5	8,9	53 829
23 308	3 636	3 924	3 784	34 652	7,90	50,1	8,0	35 000
—	—	—	—	—	9,20	63,0	6,0	14 000
306 000	728 107	—	31 993	1 066 100	239,00	0,6	2,6	149 000
—	—	—	—	—	—	—	—	2 050
—	—	—	23 364	23 364	4,80	55,6	—	5 017
—	—	—	23 744	23 744	7,05	48,0	15,0	6 800
2 836	1 960	1 137	—	5 932	1,60	52,0	6,0	46
29 162	14 777	49 972	6 103	100 014	23,27	60,0	5,2	12 600
807	1 666	—	132	2 605	0,67	49,4	4,0	2 650
2 226	709	1 488	480	4 903	2,00	28,0	6,2	6 900
2 068 318	211 475	3 449 092	—	5 728 884	1 354,70	61,2	2,4	920 000
—	—	—	—	—	—	48,0	5,0	350 000
351 400	19 520	585 600	19 480	976 000	208,35	69,3	8,2	95 000
—	—	—	16 055	16 055	3,40	53,9	—	3 550
132 753	37 002	68 823	30 571	269 149	57,00	62,0	3,1	121 925
—	—	—	1 835	1 835	—	—	—	—
7 271	1 356	115	—	8 742	2,30	60,0	9,6	5 095
144 268	37 064	216 003	19 809	417 144	98,50	59,0	4,7	133 514
46	37	—	3	86	19,84	0,5	6,0	120 000
—	—	—	7 100	7 100	2,10	49,0	5,0	5 200
25 001	5 490	17 918	7 705	56 114	13,49	62,0	4,2	20 640
17 350	8 485	18 052	52 940	96 827	26,00	92,1	8,6	9 632
18 406	4 188	8 009	39	30 642	8,50	70,0	7,8	21 600
3 100	—	—	—	3 100	1,00	91,0	8,0	4 361
90 805	15 622	—	—	106 427	42,96	35,5	21,0	175 578
7 022	4 455	14 263	1 080	26 820	4,00	76,5	12,0	2 800
5 225	5 100	716	—	11 041	3,68	58,0	14,4	15 006
32 162	10 089	59 232	3 724	105 208	21,62	69,3	5,5	11 827
—	—	—	—	—	5,00	—	—	26 396
92 646	—	—	106 978	199 624	47,20	48,3	8,7	96 638



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<i>Transvaal continued</i>						
Midrand	6/86	2 073	30	47	—	2 150
Modderfontein	6/88	540	14	3	—	557
Naboomspruit	6/88	1 025	168	2	—	1 195
Nelspruit	6/88	5 626	802	183	—	6 611
Nigel	6/88	5 559	478	133	53	6 223
Nylstroom	6/88	1 173	184	50	126	1 533
Oranjeville	6/88	208	20	—	10	238
Orkney	6/88	3 565	327	—	50	3 942
Phalaborwa	6/88	3 169	287	51	123	3 630
Piet Retief	6/88	—	—	—	1 887	1 887
Pietersburg	6/88	8 830	1 067	310	209	10 416
Potchefstroom	6/88	—	—	—	11 002	11 002
Potgietersrus	6/88	3 500	550	70	10	4 130
Pretoria	6/88	1 29 333	4 296	422	4 454	138 505
Randburg	6/88	16 684	1 335	218	—	18 237
Randfontein	6/88	9 227	767	154	1 291	11 439
Rodepoort	6/88	32 246	55	101	1 684	34 086
Rustenburg	6/88	10 461	1 288	71	74	11 894
Sabie	6/88	535	109	10	—	654
Sandton	6/88	4 692	35	—	2	4 729
Sannieshof	6/88	293	80	3	1	377
Schweizer-Reneke	1/89	794	142	15	7	958
Soweto	6/88	79 547	103	—	—	79 650
Springs	6/88	15 853	1 673	295	77	17 898
Standerton	6/88	3 320	515	11	1 512	5 358
Stilfontein	6/88	3 745	360	43	—	4 148
Swartruggens	1987	285	63	4	29	381
Tembisa	6/88	8 000	100	—	—	8 100
Thabazimbi	6/88	1 197	128	5	80	1 410
Trichardt	6/88	—	—	—	540	540
Tzaneen	6/88	2 524	516	90	912	4 042
Vanderbijlpark	6/88	17 102	1 078	136	43	18 359
Ventersdorp	6/88	827	24	3	251	1 105
Vereeniging	6/88	17 616	821	167	2 235	20 839
Verwoerdburg	6/88	14 981	232	56	—	15 269
Volkstrust	6/88	1 449	208	7	85	1 749
Vosloorus	6/86	5 899	100	1	—	6 000
Vrede	6/88	800	55	—	—	855
Wakkerstroom	—	—	—	—	—	—
Warmbaths	6/88	1 371	254	31	880	2 536
Waterval Boven	6/88	460	75	1	4	540
Westonaria	6/88	3 483	1 386	61	47	4 977
White River	6/88	1 760	450	80	10	2 300
Witbank	6/88	15 558	941	33	46	16 578
Wolmaransstad	6/88	643	134	18	28	823
Zeerust	6/88	1 019	375	29	—	1 423
<b>TOTAL TRANSVAAL</b>		<b>800 397</b>	<b>47 891</b>	<b>10 911</b>	<b>83 039</b>	<b>942 238</b>

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
16 232	2 223	94 251	1 228	113 934	261,80	59,6	6,0	21 150
3 715	1 177	520 719	—	525 611	80,14	85,0	7,0	8 030
13 744	5 432	405	—	19 581	4,30	66,0	9,8	6 515
70 791	41 191	18 472	—	130 454	37,50	62,0	9,7	60 045
50 066	15 044	96 768	12 021	173 899	42,68	61,5	5,4	31 350
7 502	3 692	6 570	—	17 764	5,76	63,0	15,0	10 810
724	105	—	116	945	0,27	53,6	13,0	1 230
35 486	10 281	—	4 954	50 721	13,17	65,0	3,8	37 000
32 690	11 247	15 499	4 488	63 924	14,88	67,3	4,1	9 500
—	—	—	35 448	35 448	7,50	54,0	8,0	15 507
84 532	30 181	33 256	84 717	232 686	55,30	65,6	11,0	45 000
—	—	—	262 526	262 526	65,35	63,0	2,0	108 732
53 900	20 650	18 691	5 997	99 238	22,32	62,0	12,0	13 100
1 238 870	472 441	2 855 603	120 315	4 687 229	995,00	67,0	4,4	829 040
258 368	40 521	149 028	2 895	450 812	112,10	66,0	6,0	90 900
85 842	23 953	122 843	12 893	245 531	37,19	82,0	6,6	156 900
386 426	67 759	125 454	91 239	670 878	157,00	68,6	10,5	163 650
109 367	44 968	86 224	7 160	247 718	92,80	60,0	8,5	45 500
7 575	2 500	—	—	10 075	7,50	5,3	9,7	10 000
124 907	26 045	—	—	150 952	45,50	57,9	2,3	121 389
—	—	—	5 399	5 399	1,60	53,0	5,3	1 500
—	—	—	12 982	12 982	3,99	54,0	9,0	13 305
799 000	26 970	—	—	825 970	290,54	45,0	—	819 000
174 312	47 209	341 361	42 368	605 250	133,75	64,4	4,7	206 867
44 200	19 631	40 984	18 807	123 622	24,80	56,9	13,5	48 660
39 240	18 472	2 052	—	59 765	14,42	67,0	2,0	14 700
1 439	1 023	230	968	3 659	1,20	60,0	10,0	2 356
—	—	—	72 000	72 000	20,00	45,0	30,0	350 000
10 709	4 608	411	6 279	22 007	5,90	63,0	5,0	15 500
—	—	—	13 814	13 814	2,90	54,4	—	2 222
30 128	55 533	32 784	52 921	171 366	53,10	60,0	13,2	14 195
151 372	25 269	452 933	12 265	641 839	125,64	70,1	3,5	66 964
—	—	—	16 045	16 045	4,30	60,0	15,0	2 500
162 564	31 070	162 562	62 806	419 002	112,00	62,8	6,3	65 885
184 324	18 596	141 376	—	344 296	83,20	66,0	7,0	60 000
12 147	4 766	5 622	2 527	25 062	7,20	59,6	8,5	4 213
27 867	1 206	120	—	29 193	11,00	50,0	4,0	95 000
6 007	2 821	—	—	8 828	2,83	35,0	—	14 023
—	—	—	—	—	—	—	—	4 217
—	—	—	36 663	36 663	7,60	64,0	5,0	13 484
4 521	496	361	200	5 578	1,60	39,8	8,2	5 889
43 271	17 220	754	587	61 833	17,60	60,0	9,2	19 000
16 902	8 450	19 327	1 356	46 035	9,80	65,0	12,0	5 300
197 833	21 193	76 972	30 627	326 625	59,80	61,2	5,8	96 750
—	—	—	11 872	11 872	4,10	52,0	15,0	16 285
—	—	—	17 713	17 713	4,70	66,0	15,0	6 580
<b>9 091 498</b>	<b>2 543 601</b>	<b>11 801 866</b>	<b>1 874 504</b>	<b>25 311 469</b>				<b>7 487 091</b>



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<b>Natal</b>						
Amanzimtoti	6/86	—	—	—	—	—
Ballito	6/88	3 200	200	—	—	3 400
Camperdown	6/86	—	—	—	—	—
Cedarville	6/86	—	—	—	—	—
Colenso	6/88	480	50	1	—	531
Dalton	6/86	—	—	—	—	—
Dundee	6/88	2 700	378	31	1 350	4 459
Durban	6/88	224 300	26 300	509	—	251 109
Empangeni	6/88	3 415	993	10	1	4 419
Eshowe	1988	915	207	41	—	1 163
Estcourt	6/88	2 350	420	23	44	2 837
Glencoe	6/88	—	—	—	—	—
Greytown	6/88	1 680	300	20	—	2 000
Harding	11/88	300	112	8	—	420
Howick	6/88	1 600	206	9	—	1 815
Isipingo	6/86	—	—	—	—	—
Kingsburgh	6/86	—	—	—	—	—
Kloof	6/86	—	—	—	—	—
Kokstad	11/88	1 055	301	106	45	1 507
Ladysmith	6/88	5 660	810	130	49	6 649
Mandini	6/88	700	32	—	—	732
Matatiele	11/88	475	205	14	—	694
Melmoth	12/88	471	57	—	—	528
Mooi River	6/88	458	153	24	44	679
Mtubatuba	6/88	340	99	5	—	444
Mtunzini	6/88	412	35	—	—	447
New Germany	6/86	—	—	—	—	—
Newcastle	6/88	8 772	858	76	263	9 969
Paulpietersburg	6/88	—	—	—	512	512
Pietermaritzburg	6/88	37 637	2 748	2 678	1 300	44 372
Pinetown	6/86	—	—	—	—	—
Pongola	6/88	179	44	—	—	223
Port Shepstone	6/88	2 493	277	7	57	2 834
Queensburgh	6/86	—	—	—	—	—
Richards Bay	6/88	3 892	210	51	—	4 153
Richmond	6/86	—	—	—	—	—
Scottburgh	6/88	951	134	—	—	1 085
Stanger	6/88	3 116	637	70	—	3 823
Tongaat	6/88	5 200	500	41	—	5 741
Utrecht	6/88	—	—	—	1 112	1 112
Uvongo	6/86	—	—	—	—	—
Verulam	6/86	—	—	—	—	—
Vryheid	6/88	3 198	963	—	304	4 465
Wartburg	6/86	—	—	—	—	—
Westville	6/86	—	—	—	—	—
Winterton	6/86	—	—	—	—	—
<b>TOTAL NATAL</b>		<b>315 949</b>	<b>37 229</b>	<b>3 863</b>	<b>5 081</b>	<b>362 122</b>

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
—	—	—	—	—	—	—	—	26 000
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	1 850
—	—	—	—	—	—	—	—	595
3 751	694	164	—	4 609	0,70	50,7	—	4 300
—	—	—	—	—	—	—	—	1 641
18 838	13 143	9 659	1 322	42 962	11,20	56,1	8,0	17 805
1 859 366	1 215 739	4 076 302	—	7 151 407	1 084,90	73,4	5,3	909 530
30 995	39 670	27 357	—	98 022	20,30	59,0	—	12 000
9 582	3 422	8 898	914	22 816	4,80	46,4	—	10 000
20 473	7 389	121 430	3 938	153 230	26,80	67,0	3,4	10 722
—	—	—	16 404	16 404	—	—	—	5 012
21 210	3 786	254	—	25 250	5,50	57,1	8,2	46 560
—	—	—	4 520	4 520	1,40	62,0	—	3 650
19 221	—	11 192	—	30 413	7,32	53,7	6,5	13 100
—	—	—	—	—	—	—	—	22 500
—	—	—	—	—	—	—	—	16 500
—	—	—	—	—	—	—	—	19 750
—	—	—	—	—	—	—	—	—
58 862	17 045	144 765	99	220 771	43,00	66,4	2,8	41 000
—	—	—	—	—	—	—	—	3 594
—	—	—	—	—	—	—	—	3 700
4 391	1 882	—	—	6 273	1,50	50,0	14,6	2 789
—	—	—	37 256	37 256	7,36	62,5	3,3	9 741
9 716	12 997	14 353	—	37 066	2,00	34,2	—	1 536
10 355	4 910	—	—	15 265	2,00	36,0	—	1 520
—	—	—	—	—	—	—	—	8 200
80 724	20 096	54 739	375 263	530 822	98,80	76,7	0,5	36 000
—	—	—	674	674	—	—	—	1 315
316 386	88 104	529 275	8 215	941 980	202,84	52,9	3,6	174 740
—	—	—	—	—	—	—	—	111 500
963	4 188	3 041	—	8 192	2,00	51,0	—	987
9 700	10 347	7 843	275	28 165	10,50	33,0	15,7	7 100
—	—	—	—	—	—	—	—	27 820
36 320	35 940	385 630	—	457 890	96,00	67,0	—	22 640
—	—	—	—	—	—	—	—	34 500
—	—	—	—	—	—	—	—	6 000
28 215	20 691	109 101	30 096	188 103	28,00	72,3	6,2	22 970
31 886	10 249	71 744	—	113 879	28,00	40,0	5,0	70 000
8 491	730	359	—	9 580	2,80	37,0	8,1	4 196
—	—	—	—	—	—	—	—	7 660
—	—	—	—	—	—	—	—	30 050
25 070	22 490	—	7 400	54 960	20,16	45,0	9,0	12 313
—	—	—	—	—	—	—	—	990
—	—	—	—	—	—	—	—	27 426
—	—	—	—	—	—	—	—	280
<b>2 604 515</b>	<b>1 533 512</b>	<b>5 576 106</b>	<b>486 376</b>	<b>10 200 509</b>				<b>1 792 082</b>



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<b>Orange Free State</b>						
Allanridge	6/88	700	23	1	9	733
Arlington	6/86	—	—	—	—	—
Bethlehem	6/88	3 467	682	49	—	4 198
Bethulie	6/84	365	49	1	20	435
Bloemfontein	6/88	25 909	2 580	326	—	28 815
Bothaville	6/88	1 099	298	18	19	1 434
Brandfort	6/88	616	74	3	—	693
Bultfontein	6/88	636	188	3	15	842
Clarens	6/86	—	—	—	—	—
Clocolan	6/88	412	85	5	—	502
Cornelia	6/88	81	20	—	—	101
Dewetsdorp	6/88	359	52	5	—	416
Edenburg	6/88	334	39	—	—	373
Edenville	6/88	105	64	—	—	169
Excelsior	6/88	180	48	2	—	230
Fauresmith	6/88	185	58	—	—	243
Ficksburg	6/88	1 007	249	24	—	1 280
Fouriesburg	6/88	151	46	—	—	197
Frankfort	6/88	806	140	5	—	951
Harrismith	6/88	1 521	301	32	1	1 855
Heilbron	6/88	805	153	21	9	988
Henneman	6/88	1 125	192	10	—	1 327
Hobhouse	6/88	80	21	—	—	101
Jagersfontein	6/88	327	60	1	—	388
Koffiefontein	6/88	850	65	3	—	918
Koppies	6/88	418	144	2	—	564
Kroonstad	6/88	5 769	925	239	—	6 933
Ladybrand	6/88	728	156	37	—	921
Lindley	6/88	341	35	1	1	378
Marquard	6/88	382	37	1	—	420
Odendaalsrus	6/88	—	—	—	2 748	2 748
Parys	6/88	2 720	300	42	6	3 068
Petrus Steyn	6/88	242	60	—	—	302
Petrusburg	6/88	290	48	6	40	384
Philippolis	6/86	172	16	—	—	188
Reddersburg	6/88	307	19	1	—	327
Reitz	6/88	694	132	13	—	839
Rosendal	6/88	70	20	—	—	90
Sasolburg	6/88	8 150	395	—	855	9 400
Senekal	6/88	848	199	6	—	1 053
Steynsrus	6/88	220	27	4	—	251
Theunissen	6/88	605	107	12	—	724
Tweeling	6/88	169	24	—	—	193
Tweespruit	6/88	140	20	—	—	160
Van Stadensrus	6/88	38	5	—	—	43
Ventersburg	6/88	443	33	2	—	478
Verkeerdelei	6/88	41	5	—	—	46
Viljoenskroon	6/88	569	120	13	19	721
Villiers	6/88	341	58	9	3	411
Virginia	6/88	5 063	594	43	—	5 700
Vrededorf	6/88	429	55	4	—	488
Warden	6/88	341	69	14	—	424
Welkom	6/88	15 446	1 622	185	24	17 277
Wesselsbron	6/88	410	90	9	38	547
Winburg	6/88	389	96	7	—	492
Zastron	6/86	—	—	—	700	700
<b>TOTAL ORANGE FREE STATE</b>		<b>86 895</b>	<b>10 898</b>	<b>1 159</b>	<b>4 507</b>	<b>103 459</b>

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
—	—	—	10 456	10 456	3,34	62,0	9,2	2 300
—	—	—	—	—	—	—	—	3 250
35 148	21 620	38 500	—	95 268	24,67	18,7	5,5	56 698
2 707	147	24	—	2 878	1,00	39,5	5,6	5 550
219 871	91 631	354 003	—	665 505	174,0	60,0	7,2	224 400
9 560	6 232	4 907	66	20 765	6,70	36,6	6,7	3 800
4 310	1 605	2	—	5 917	2,14	31,6	5,5	11 560
3 775	2 303	1 233	552	7 863	2,50	35,9	8,5	12 624
—	—	—	—	—	—	—	—	963
2 613	1 765	433	—	4 811	1,80	43,0	5,1	6 780
409	140	—	—	549	—	—	—	—
2 904	387	581	—	3 872	1,80	52,5	—	8 928
—	—	—	—	—	0,60	—	8,7	3 663
374	552	—	—	926	0,14	51,5	2,3	2 900
1 824	39	89	—	1 952	5,13	43,5	—	4 347
1 380	440	—	—	1 820	0,56	44,0	5,0	3 220
8 433	3 879	6 316	—	18 628	8,00	32,0	10,1	25 800
1 162	846	—	—	2 008	0,77	52,6	—	6 890
5 534	2 345	3 267	—	11 145	4,38	29,0	—	4 542
20 206	10 052	19 495	32 099	81 852	14,56	52,2	—	23 000
6 624	4 020	619	107	11 371	5,43	61,8	—	4 038
12 129	5 418	12 054	—	29 601	6,20	58,1	5,9	17 650
478	318	—	—	796	—	—	—	1 230
2 543	530	115	—	3 188	1,36	37,0	7,0	7 442
6 180	420	120	—	6 720	3,10	42,0	7,8	10 000
2 644	2 231	2 727	—	7 603	2,34	37,1	—	1 959
79 912	11 020	76 704	—	167 636	37,80	58,5	7,5	100 500
11 749	6 584	3 223	—	21 556	4,70	52,4	2,2	4 500
1 538	372	59	190	2 159	1,00	49,4	2,1	5 560
347	928	432	—	1 707	1,32	48,7	2,2	5 774
—	—	—	36 261	36 261	9,80	68,1	9,0	10 365
19 414	5 534	2 956	13 015	40 918	11,72	39,9	—	7 100
1 995	200	—	—	2 195	1,24	20,2	—	11 400
1 753	1 042	8 479	84	11 358	4,00	36,0	7,9	2 287
786	312	—	228	1 326	—	—	—	2 331
2	—	—	—	2	—	—	—	2 750
10 479	1 871	1 263	—	13 613	4,32	48,0	1,9	8 800
749	208	—	—	957	0,21	51,7	2,8	1 231
77 539	17 275	—	11 457	106 271	32,20	67,0	9,8	28 800
7 582	5 897	1 230	1 788	16 497	5,10	36,9	4,5	16 333
1 925	440	390	—	2 755	0,82	45,0	12,0	3 700
907	3 124	8 170	—	12 201	2,60	52,0	12,0	19 500
834	281	—	—	1 115	0,71	48,6	—	2 685
246	34	—	—	280	0,80	47,0	3,0	4 805
—	—	—	—	—	—	—	—	794
—	—	—	—	—	—	—	—	1 230
—	—	—	—	—	—	—	—	1 581
4 697	2 319	1 828	209	9 054	3,78	51,0	13,7	18 580
2 684	1 205	766	103	4 759	1,98	56,6	—	5 700
72 787	14 215	23 887	—	110 889	26,40	48,0	9,0	102 000
4 276	1 169	1 048	—	6 492	1,68	44,1	—	1 476
2 954	1 228	534	—	4 716	1,60	33,6	—	9 270
163 796	50 407	89 424	6 409	310 036	84,79	63,0	8,1	43 174
28 501	10 200	38 063	6 492	83 256	3,02	31,5	13,6	10 260
3 497	1 577	3 245	—	8 319	2,08	50,6	7,0	8 343
—	—	—	5 048	5 048	2,00	—	—	4 877
<b>851 792</b>	<b>294 369</b>	<b>706 187</b>	<b>124 564</b>	<b>1 976 913</b>				<b>899 240</b>



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<b>Cape and Walvis Bay</b>						
Adelaide	6/88	351	76	3	—	430
Agulhas/Struisbaai	6/88	852	11	—	9	872
Albertinia	6/88	—	—	—	—	—
Alexandria	6/82	260	50	3	20	333
Alicedale	6/85	176	1	—	—	177
Aliwal North	6/88	1 500	60	13	—	1 573
Ashton	6/88	339	30	9	21	399
Atlantis	6/88	7 360	156	116	—	7 632
Barkly East	6/88	288	113	—	4	405
Barkly West	6/88	401	40	4	7	452
Barrydale	6/88	267	20	2	—	289
Bathurst	—	—	—	—	—	—
Beacon Bay	6/86	2 248	65	8	—	2 321
Beaufort West	6/88	2 121	—	445	—	2 566
Bellville	12/88	17 325	1 338	236	—	18 899
Berlin	6/88	—	—	—	—	—
Bitterfontein	6/88	36	24	—	1	61
Blue Downs	6/88	300	—	—	2	302
Boichoko	6/88	22	4	—	—	26
Bonnievale	6/88	557	61	84	7	709
Boshof	6/88	395	25	—	—	420
Bot River	6/88	40	—	—	—	40
Brackenfell	6/88	3 650	175	27	3	3 855
Brandvlei	6/88	202	17	—	2	221
Bredasdorp	6/88	1 371	174	14	23	1 582
Britstown	6/88	300	57	—	—	357
Buffels Bay	6/88	180	4	—	6	190
Bull Hill (Boph)	6/88	2	1	—	4	7
Burgersdorp	6/88	652	125	2	10	789
Caledon	6/88	1 042	158	14	23	1 237
Calitzdorp	6/88	488	23	3	26	540
Calvinia	6/88	606	149	3	—	758
Cape Town	6/88	—	—	—	201 338	201 338
Carnarvon	6/88	466	39	3	15	523
Ceres	6/88	2 133	1 117	4	208	3 462
Citrusdal	6/88	313	260	7	2	582
Clanwilliam	6/88	566	34	—	23	623
Cradock	6/88	1 620	157	20	115	1 912
Darling	6/88	468	42	4	—	514
De Aar	6/88	1 892	314	24	58	2 288
De Doorns	6/88	328	63	7	20	418
De Kelders	6/88	213	—	—	—	213
De Rust	6/88	180	11	—	—	191
Delpportshoop	6/88	156	14	—	—	170
Despatch	6/88	3 863	155	2	12	4 032
Dordrecht	6/84	355	31	1	72	459
Douglas	6/88	312	59	12	36	419
Durbanville	—	—	—	—	—	—
Dysselsdorp	6/88	115	10	4	25	154
East London	6/86	20 578	2 352	—	1 464	24 394
Elandsbaai	6/88	42	8	10	—	60
Elliot	6/88	385	26	7	—	418
Fish Hoek	—	—	—	—	—	—
Fort Beaufort	6/88	—	—	—	—	—

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
2 883	1 418	275	—	4 576	1,20	48,0	7,5	10 900
1 287	391	—	561	2 239	1,00	—	—	1 156
—	—	—	—	—	0,75	49,8	—	—
2 473	1 582	984	—	5 039	1,30	53,0	6,3	6 812
—	—	—	—	—	0,20	33,0	—	7 833
13 185	600	12 245	—	26 030	7,20	47,0	12,0	29 800
2 573	731	4 875	4 821	13 000	4,00	52,3	4,0	9 500
35 420	3 368	174 791	—	213 579	46,20	64,1	3,8	45 000
3 177	164	—	31	3 372	0,90	49,0	12,0	7 604
5 010	102	138	554	5 804	1,52	56,0	2,3	7 780
—	—	—	2 313	2 313	0,75	53,4	3,0	1 650
—	—	—	—	—	—	—	—	3 275
21 389	1 651	1 957	890	25 887	7,30	61,0	2,9	11 000
10 441	—	12 808	—	23 249	6,00	56,4	11,9	22 946
144 201	32 489	409 514	—	586 204	120,00	56,0	3,0	115 000
—	—	—	—	—	3,10	54,0	—	—
80	164	—	—	244	0,15	18,1	—	1 200
320	—	—	—	320	0,40	25,8	—	1 500
265	49	—	—	314	0,14	52,0	1,2	6 956
1 336	897	13 416	290	15 939	4,00	58,1	9,0	5 465
3 085	195	—	—	3 280	0,97	65,0	7,9	1 310
314	—	—	—	314	0,15	—	10,0	2 050
24 946	3 953	40 563	152	69 614	16,10	54,0	3,5	14 700
449	244	—	55	748	0,28	30,5	14,0	1 800
—	—	—	14 887	14 887	3,25	58,4	10,0	7 413
2 223	422	—	—	2 645	0,70	44,0	11,3	6 440
280	126	—	40	446	0,50	—	—	—
6	4	—	50	60	0,04	35,0	6,0	110
5 474	3 340	238	970	10 022	3,10	43,0	16,3	14 100
—	—	—	—	—	3,50	—	—	6 965
1 770	158	317	265	2 509	0,75	49,2	2,0	3 380
2 543	1 852	463	—	4 858	1,50	36,5	10,0	8 500
—	—	—	3 642 915	3 642 915	745,20	55,8	6,5	1 242 835
1 751	1 260	29	588	3 628	1,16	43,5	11,0	9 500
34 400	4 400	23 200	4 000	66 000	20,00	55,7	12,4	13 565
1 522	1 110	806	—	3 438	1,30	53,0	10,6	2 852
4 400	269	—	220	4 889	1,30	43,5	23,6	3 880
20 046	1 740	270	1 228	23 284	5,80	57,0	23,0	37 057
2 235	1 421	5 284	—	8 940	1,98	63,8	6,0	4 450
12 058	3 613	5 260	4 720	25 651	7,90	45,0	19,7	5 600
197	107	7 193	83	7 580	1,50	—	—	7 490
675	—	—	—	675	0,40	—	13,0	157
—	—	—	993	993	0,30	—	8,0	1 350
652	137	—	—	789	0,45	47,3	3,8	6 500
29 104	5 018	683	191	34 996	8,50	53,0	12,0	25 000
433	199	146	1 171	1 949	0,70	47,0	—	7 068
5 304	1 298	272	411	7 285	2,84	46,5	5,2	9 660
—	—	—	—	—	—	—	—	17 887
392	240	192	742	1 566	0,50	—	5,0	15 000
145 356	50 664	309 947	137 509	643 476	124,30	61,0	6,1	127 483
663	126	158	—	947	0,40	24,5	—	704
4 150	386	94	—	4 630	1,10	49,0	—	800
—	—	—	—	—	—	—	—	12 300
—	—	—	—	—	3,50	57,0	—	—



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<i>Cape and Walvis Bay continued</i>						
Franschhoek	6/88	516	81	2	—	599
Fraserburg	6/88	700	11	—	—	711
Galeshewe	6/88	8 000	35	3	—	8 038
Gansbaai	6/88	446	34	6	—	486
Garies	6/88	183	25	4	14	226
Gefco-Bretby	6/88	—	—	1	—	1
George	6/88	8 993	1 110	138	46	10 287
Gonubie	6/88	1 954	81	4	—	2 039
Goodwood	—	—	—	—	—	—
Gordons Bay	6/88	1 487	70	—	—	1 557
Gouritsmond	6/88	163	4	—	—	167
Graaff-Reinet	6/88	2 345	334	—	80	2 759
Graafwater	6/88	289	21	—	5	315
Grabouw	6/88	—	—	—	—	—
Grahamstown	6/88	3 932	463	14	493	4 902
Great Brak River	6/88	1 404	17	1	—	1 422
Greyton	6/88	—	—	—	—	—
Griquatown	6/88	351	17	3	—	371
Hartenbos	6/87	865	44	10	61	980
Hartswater	6/88	507	201	14	—	722
Hawston	6/88	230	5	—	1	236
Heidelberg	6/88	—	—	—	—	—
Herbertdale	—	—	—	—	—	—
Hermanus	6/88	3 204	287	17	—	3 508
Hofmeyer	6/84	110	20	—	1	131
Hopefield	6/88	345	15	2	—	362
Hopetown	6/88	421	40	—	—	461
Humansdorp	6/88	719	215	25	91	1 050
Imfuleni	6/88	44	3	—	—	47
Jacobsdal	—	—	—	—	—	—
Jan Kempdorp	6/88	744	87	9	—	840
Jansenville	6/86	215	65	—	—	280
Jeffreys Bay	6/88	2 897	75	3	5	2 980
Jongensfontein	6/88	198	2	—	—	200
Joubertina	—	—	—	—	—	—
Kakamas	6/88	488	51	6	8	553
Kamieskroon	6/88	75	23	—	—	98
Kathu en Dingle	6/86	1 930	98	—	—	2 028
Keimoes	6/88	500	82	11	7	600
Kenhardt	6/88	215	37	—	5	257
Keurboomsstrand	6/88	91	8	—	3	102
Khyelitsha	6/88	259	46	—	23	328
Kimberley	6/88	18 514	774	30	20	19 338
King William's Town	6/86	3 821	466	65	—	4 352
Kirkwood	6/88	401	109	—	6	516
Klawer	6/88	346	40	—	7	393
Kleinmond	6/88	1 300	27	6	20	1 353
Klipplaat	6/88	173	11	—	—	185
Knysna	6/88	3 132	429	—	150	3 711
Kraaifontein	—	—	—	—	—	—
Kuils River	—	—	—	—	—	—
Kuruman	6/88	1 609	260	99	—	1 968
Ladismith	6/88	522	76	3	—	601
Laingsburg	6/88	288	47	—	22	357
Lamberts Bay	6/88	681	21	—	—	702
Langebaan	6/88	826	18	—	—	844

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
2 639	1 315	2	—	3 956	2,20	40,0	58,0	2 819
1 669	—	—	—	1 669	0,75	—	7,0	4 136
28 268	210	24	—	28 502	—	—	—	81 500
2 565	—	2 493	—	5 058	2,50	40,3	11,9	1 031
581	205	9	189	984	0,20	42,0	10,0	1 246
—	—	37	—	37	0,03	56,0	5,0	2
44 550	14 350	46 390	9 840	115 130	22,00	59,2	6,2	72 806
18 685	—	833	—	19 518	5,80	41,0	6,3	7 800
—	—	—	—	—	—	—	—	35 410
7 550	3 384	—	—	10 934	2,96	54,2	5,4	3 358
90	20	—	—	110	0,30	—	—	162
10 961	9 268	—	2 097	22 326	5,80	56,0	26,0	38 000
743	377	—	223	1 343	0,45	34,7	9,0	1 342
—	—	—	—	—	—	—	—	10 300
27 972	12 337	11 886	18 048	70 243	16,50	52,0	5,7	60 700
3 691	288	3 206	—	7 185	2,00	47,8	5,0	7 900
—	—	—	—	—	0,30	—	—	—
1 315	163	100	—	1 578	0,56	49,0	5,0	5 668
—	—	—	3 961	3 961	1,60	—	7,0	2 010
4 207	3 847	4 345	—	12 399	4,50	41,6	9,5	3 226
—	—	—	1 770	1 770	0,75	45,6	12,0	4 857
—	—	—	—	—	1,25	49,8	—	5 098
—	—	—	—	—	0,10	—	—	452
14 160	3 850	5 140	—	23 150	7,50	53,5	—	5 800
429	100	—	50	579	0,30	43,0	—	3 122
1 852	479	1	547	2 879	0,75	57,6	12,0	3 150
1 938	405	—	—	2 343	1,00	50,2	4,3	6 725
4 828	4 348	468	2 669	12 313	7,00	58,0	12,0	1 050
1 610	46	—	—	1 656	0,28	51,4	0,0	6 700
—	—	—	—	—	—	—	—	3 474
4 057	1 923	3 507	—	9 487	3,80	46,5	8,5	7 300
960	387	—	—	1 347	0,40	47,0	15,8	3 268
13 267	1 517	56	112	14 952	5,70	34,0	13,0	3 500
65	10	—	—	75	0,40	—	—	93
—	—	—	—	—	—	—	—	5 543
7 190	2 125	678	72	10 065	2,84	42,8	1,1	1 465
158	317	—	—	475	0,20	45,0	11,5	766
19 686	7 352	—	—	27 038	8,00	72,0	4,0	9 400
3 581	962	1 576	112	6 231	1,96	54,0	8,3	8 320
570	120	—	870	1 560	0,43	42,0	9,7	3 600
40	156	—	10	206	0,75	—	—	—
1 462	1 462	—	2 925	5 849	1,43	65,5	—	150 000
138 505	4 455	114 465	5 778	263 203	71,12	63,9	7,2	68 868
25 469	12 550	22 621	—	60 640	14,20	58,9	8,0	21 568
1 934	2 365	—	1 803	6 102	1,70	45,0	7,5	1 400
1 260	652	—	241	2 153	0,70	35,4	4,0	2 804
4 056	403	187	196	4 842	2,50	47,4	—	1 350
278	92	4	—	374	0,10	54,0	24,0	3 500
15 833	12 831	3 224	—	31 887	9,00	58,4	—	31 500
—	—	—	—	—	—	—	—	37 700
—	—	—	—	—	—	—	—	23 204
14 000	3 000	4 000	—	21 000	6,48	45,0	0,2	8 000
3 068	447	1 507	—	5 022	1,50	56,9	16,8	3 997
1 461	1 013	—	274	2 748	1,00	57,6	—	2 995
4 862	510	—	—	5 372	0,90	69,0	4,0	4 643
3 308	1 814	—	—	5 122	1,72	34,0	4,0	1 800



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<i>Cape and Walvis Bay continued</i>						
Loeriesfontein	6/88	263	35	—	6	304
Loxton	6/88	71	21	—	29	121
Lutsville	6/88	203	21	—	25	249
Malmesbury	6/88	2 212	224	37	72	2 545
Marydale	6/88	112	11	2	14	139
Matlhomola	6/88	9	2	—	6	17
McGregor	—	—	—	—	—	—
Mdantsane	6/88	—	—	—	—	—
Melkbos/Bloubergstrand	6/88	1 762	69	10	—	1 841
Mfuleni	6/88	44	3	—	—	47
Middelburg	6/86	980	140	34	—	1 154
Milnerton	—	—	—	—	—	—
Molteno	6/88	221	19	4	3	247
Montagu	6/88	860	80	25	82	1 047
Moorreesburg	6/88	1 538	115	32	—	1 685
Mossel Bay	6/88	4 483	607	339	—	5 429
Mothibistad	6/88	320	16	3	—	339
Motswedimosa	6/88	—	3	—	3	6
Napier	6/88	311	20	2	16	349
Nature's Valley	6/88	293	1	—	2	296
Niekerkshoop	6/88	62	8	—	—	70
Nieuwoudtville	6/88	119	15	—	16	150
Nouwpoort	6/86	1 248	52	—	—	1 300
Nuwerus	6/88	22	2	—	—	24
Nyanga/Crossroads	6/88	400	—	—	3	403
Olifantshoek	6/88	288	50	4	—	342
Onrusrivier	6/88	—	—	—	—	—
Oudtshoorn	6/88	5 216	—	230	124	5 570
Paarl	6/88	16 183	2 613	226	—	19 022
Pacaltsdorp	6/86	632	9	—	—	641
Parow	—	—	—	—	—	—
Patensie	—	—	—	—	—	—
Pearly Beach	6/88	249	2	—	—	251
Pearston	6/86	—	—	—	210	210
Piketberg	6/88	1 320	104	9	14	1 447
Pinelands	—	—	—	—	—	—
Plettenberg Bay	6/88	2 373	301	—	—	2 674
Pofadder	6/88	173	34	—	25	232
Port Alfred	6/88	1 516	196	—	46	1 758
Port Elizabeth	6/88	58 889	5 821	494	1 664	66 868
Port Nolloth	6/88	600	45	3	5	653
Porterville	6/88	556	61	10	14	641
Postmasburg	6/88	812	186	45	—	1 043
Prieska	6/88	588	74	16	99	777
Prince Albert	6/88	—	—	—	—	—
Queenstown	6/86	—	—	—	4 319	4 319
Ratanang	6/88	1	1	—	7	9
Redelinghuys	6/88	39	3	—	—	42
Reivilo	6/88	282	28	1	14	325
Riversdale	6/86	1 058	254	15	—	1 327
Riviersonderend	6/88	276	60	4	5	345
Robertson	6/88	3 072	249	32	355	3 708
Sandbaai	6/88	527	2	—	—	529
Sedgefield	6/88	—	—	—	—	—
Simon's Town	—	—	—	—	—	—
Sishen Kathu	6/88	1 410	39	8	—	1 457

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
782	260	—	130	1 172	0,36	37,6	9,5	1 895
223	117	—	39	379	0,12	45,0	3,6	850
913	295	—	85	1 293	0,56	26,7	6,0	1 300
14 399	4 113	19 231	947	38 690	9,88	58,0	7,0	16 663
396	146	7	224	773	0,23	56,0	2,0	1 850
31	1	—	4	36	0,03	36,0	4,6	1 458
—	—	—	—	—	—	—	—	2 250
—	—	—	—	—	24,10	46,0	—	—
11 774	2 092	4 184	—	18 050	5,75	38,5	7,0	7 390
1 610	46	—	—	1 656	0,30	51,4	—	6 700
7 911	2 739	4 564	—	15 214	4,40	57,0	12,2	17 005
—	—	—	—	—	—	—	—	35 762
1 379	1 074	581	32	3 066	0,70	53,0	4,6	15 780
4 439	975	7 019	2 588	15 021	4,00	63,0	9,4	6 587
4 850	5 983	87 302	—	98 135	3,15	50,4	7,3	6 791
25 900	15 800	16 800	—	58 500	14,00	56,7	9,1	30 000
612	84	21	—	717	1,64	40,0	0,2	15 000
—	20	—	20	40	0,04	52,0	6,0	1 842
122	21	1	29	173	0,60	—	—	1 700
292	94	—	18	404	0,50	—	—	—
293	37	—	—	330	0,10	85,0	9,2	1 080
497	137	—	96	730	0,20	42,6	2,2	1 256
2 884	1 015	—	—	3 899	1,30	53,0	—	8 640
102	13	—	—	115	0,10	28,7	9,0	557
1 680	12	—	—	1 692	0,49	48,4	—	70 000
2 000	903	385	—	3 288	0,92	44,0	7,0	884
—	—	—	—	—	—	—	—	623
35 231	—	24 161	3 124	62 516	12,50	55,7	—	47 602
—	—	—	327 165	327 165	63,30	65,3	3,3	90 411
—	—	—	5 075	5 075	0,60	50,0	5,0	8 445
—	—	—	—	—	—	—	—	71 000
—	—	—	—	—	—	—	—	2 500
602	88	—	—	690	0,50	—	—	157
—	—	—	108	108	—	—	—	7 231
3 854	2 127	2 238	3	8 222	3,00	55,3	1,4	4 943
—	—	—	—	—	—	—	—	11 510
11 649	11 862	—	—	23 511	7,50	48,7	—	10 158
449	411	—	374	1 234	0,38	43,0	2,8	3 670
6 174	2 973	—	890	10 037	3,50	39,0	15,6	3 500
463 049	115 797	880 800	530 776	1 990 422	403,20	61,0	5,7	290 000
397	101	412	4	914	1,47	48,0	2,3	2 013
1 817	1 363	909	454	4 543	0,10	53,6	15,0	3 718
9 494	4 800	2 226	—	16 520	4,80	38,0	4,0	7 800
14 429	1 634	363	1 736	18 162	6,00	52,0	5,2	12 853
—	—	—	—	—	0,75	54,0	—	1 800
25 935	—	41 727	—	67 662	19,10	58,0	—	—
7	10	—	43	60	0,03	18,6	2,4	1 444
130	9	—	—	139	0,06	25,9	16,0	26
187	45	145	36	413	1,16	48,0	0,2	1 000
8 953	2 413	808	—	12 174	3,00	54,2	6,8	8 600
2 099	125	370	6	2 600	1,00	49,2	12,1	1 800
16 203	5 099	29 182	18 940	69 424	23,00	60,1	15,4	15 000
—	—	—	1 181	1 181	0,75	—	12,0	450
—	—	—	—	—	1,75	46,2	—	—
—	—	—	—	—	—	—	6340,0	—
24 800	13 200	1,392	—	39 392	7,92	36,0	3,6	10 000



# SOUTH AFRICA: Municipal statistics

Table 26 continued

Town	Financial year ended	Number of customers				
		Domestic	Business	Industry	Not defined and other	Total
<i>Cape and Walvis Bay continued</i>						
Somerset East	6/88	896	178	4	451	1 529
Somerset West	6/88	7 401	682	25	—	8 108
Springbok	6/88	927	228	27	91	1 273
Stanford	6/88	213	34	—	—	247
Steinkopf	12/88	178	12	—	17	207
Stella	6/88	123	46	1	—	170
Stellenbosch	6/88	6 784	542	17	270	7 613
Sterkstroom	6/88	210	15	1	1	227
Steynsburg	—	—	—	—	1 303	1 303
Stilbaai	6/88	—	—	—	—	—
Strand	6/88	8 529	867	56	—	9 452
Strandfontein	6/88	136	2	—	—	138
Strydenburg	6/88	157	16	2	—	175
Sutherland	6/88	—	—	—	—	—
Swellendam	6/88	1 203	208	15	20	1 446
Tlhakalatlou	6/88	204	5	—	—	209
Touws River	6/88	778	57	—	—	835
Tulbach	6/88	—	—	—	—	—
Uitenhage	6/88	11 170	827	53	420	12 470
Upington	6/88	5 769	528	—	157	6 454
Utiwanang	6/88	2	5	—	1	8
Vaal-Gamagara	6/88	54	—	—	—	54
Van Dyks Bay	6/88	643	2	1	1	647
Vanrhynsdorp	6/88	374	37	—	6	417
Vanderkloof	6/86	356	15	—	—	371
Vanwyksvlei	6/85	70	7	—	—	77
Velddrif	6/88	652	54	7	36	749
Villiersdorp	6/88	488	72	1	39	600
Vosburg	6/88	60	15	1	29	105
Vredenburg-Saldanha	6/88	3 236	283	117	491	4 127
Vredendal	6/88	1 004	238	34	—	1 276
Vryburg	6/88	2 259	322	91	1	2 673
Waenhuiskraal	6/88	176	2	—	5	183
Walvis Bay	6/88	4 351	205	79	6	4 641
Warrenton	6/88	710	126	7	26	869
Wellington	6/88	3 423	307	35	60	3 825
Wilderness	6/88	688	27	—	7	722
Williston	6/88	250	25	—	36	311
Willowmore	6/88	317	60	1	—	378
Witsand	6/88	198	5	—	—	203
Wittedrif	6/88	32	4	—	6	42
Wolseley	6/88	—	—	—	—	—
Worcester	6/88	8 146	1 389	116	—	9 651
Yzerfontein	6/88	348	2	—	—	350
Zwelihle	6/88	22	2	—	—	24
TOTAL CAPE AND WALVIS BAY		337 879	32 681	3 844	215 282	589 686
TOTAL SOUTH AFRICA		1 541 120	128 699	19 777	307 909	1 997 505

MW.h sold					Maximum demand MW/MVA	Average monthly load factor	Distribution loss as a % of kW.h sold	Population
Domestic	Business	Industry	Not defined and other	Total				
5 088	3 074	2 347	16 338	26 847	6,40	54,0	11,9	21 800
61 058	25 173	2 445	—	88 676	22,40	63,6	4,9	23 192
3 601	2 890	1 361	2 290	10 142	2,80	36,0	10,6	8 000
975	366	—	—	1 341	0,50	—	10,0	1 100
527	221	—	588	1 336	1,80	39,0	26,7	6 100
768	797	2	—	1 567	0,87	46,7	5,0	650
67 432	28 110	37 656	37 620	170 818	41,30	59,4	5,6	54 332
279	90	3	6	378	0,30	45,0	7,4	433
1 130	753	—	253	2 136	1,00	49,0	—	—
—	—	—	—	—	1,50	46,4	—	—
44 471	7 973	17 310	2 383	72 137	17,80	60,0	5,1	35 245
387	102	—	—	489	0,20	21,2	4,0	59
546	252	3	—	801	0,20	50,0	7,7	2 000
—	—	—	—	—	0,40	—	—	—
6 648	2 840	3 827	480	13 795	4,00	51,7	7,5	8 448
670	380	—	—	1 050	0,40	37,0	2,1	2 200
3 546	2 405	—	—	5 951	2,00	53,0	11,0	5 396
—	—	—	—	—	1,75	49,9	—	—
72 977	19 195	265 503	11 969	369 644	77,40	57,0	3,1	213 000
32 816	25 003	—	20 886	78 705	20,16	60,0	9,5	51 608
22	135	—	27	184	0,30	45,0	3,0	6 000
369	—	—	—	369	0,20	28,5	2,3	228
—	—	—	2 881	2 881	1,00	—	13,0	192
1 469	606	—	681	2 756	0,82	39,1	11,8	3 300
903	318	—	—	1 221	0,50	46,0	26,6	846
—	—	—	208	208	—	—	—	1 313
4 558	1 357	6 810	945	13 670	3,90	48,0	8,9	4 200
2 600	1 500	100	300	4 500	2,00	51,2	—	3 163
311	78	6	181	576	0,05	49,0	15,0	1 150
19 645	8 435	36 250	2 709	67 039	16,80	59,6	6,0	26 799
5 976	3 984	2 490	—	12 450	3,50	47,3	6,0	7 500
18 227	5 009	21 402	4 009	48 647	11,65	52,4	12,4	26 200
263	241	—	96	600	0,40	—	—	726
14 179	3 828	39 152	13 750	70 909	17,74	64,0	4,3	22 731
1 090	4 362	2 998	636	9 086	2,59	18,1	10,0	17 500
21 139	5 371	23 056	2 803	52 370	11,68	53,4	2,7	25 615
286	54	—	354	694	2,50	57,3	5,8	—
939	199	—	477	1 615	0,54	55,0	17,0	2 571
1 614	994	84	—	2 692	0,80	43,0	9,8	4 672
83	18	—	—	101	0,30	—	—	151
190	32	—	71	293	0,10	—	—	—
—	—	—	—	—	2,00	61,9	—	5 054
50 684	12 970	65 579	—	129 233	30,00	64,1	—	46 043
926	98	—	—	1 024	0,58	20,0	11,0	198
79	28	—	—	108	0,30	—	—	1 390
2 150 858	604 621	2 906 088	4 889 505	10 551 072				4 212 310
14 698 663	4 976 103	20 990 247	7 374 950	48 039 963				14 390 723



## SOUTHERN AFRICA: Installed generating capacity

**Table 27**

Sources: United Nations Energy Statistics Yearbook 1986 and utility annual reports  
MW

Country	Hydro power	Pumped storage	Coal, oil etc	Nuclear	Total	% of total
Angola	400	—	200	—	600	1,51
Ciskei <sup>a</sup>	—	—	—	—	—	—
Bophuthatswana <sup>a</sup>	—	—	—	—	—	—
Botswana <sup>a</sup>	—	—	87	—	87	0,22
Lesotho <sup>a</sup>	2	—	—	—	2	0,01
Malawi	126	—	34	—	160	0,40
Mozambique	1 523	—	280	—	1 803	4,54
South Africa <sup>a</sup>	556	1 181	27 070	1 930	30 737	77,32
SWA/Namibia <sup>a</sup>	240	—	166	—	406	1,02
Swaziland <sup>a</sup>	41	—	10	—	50	0,13
Tanzania	249	—	164	—	413	1,04
Transkei <sup>a</sup>	61	—	—	—	61	0,15
Venda <sup>a</sup>	—	—	—	—	—	—
Zaire	2 111	—	55	—	2 166	5,45
Zambia	1 538	—	191	—	1 729	4,35
Zimbabwe	633	—	906	—	1 539	3,87
Total, MW	7 480	1 181	29 162	1 930	39 753	100,00
<sup>a</sup> South African Customs Union	900	1 181	27 332	1 930	31 343	78,84

## SOUTHERN AFRICA: Production of electricity

**Table 28**

Sources: United Nations Energy Statistics Yearbook 1986 and utility annual reports  
GW.h

Country	Hydro power	Pumped storage	Coal, oil etc	Nuclear	Total	% of total
Angola	1 335	—	455	—	1 790	1,03
Ciskei <sup>a</sup>	—	—	—	—	—	—
Bophuthatswana <sup>a</sup>	—	—	—	—	—	—
Botswana <sup>a</sup>	—	—	426	—	426	0,25
Lesotho <sup>a</sup>	11	—	—	—	11	0,01
Malawi	515	—	13	—	528	0,30
Mozambique	58	—	439	—	497	0,29
South Africa <sup>a</sup>	1 923	1 785	134 010	8 803	146 521	84,46
SWA/Namibia <sup>a</sup>	1 148	—	128	—	1 276	0,74
Swaziland <sup>a</sup>	172	—	2	—	174	0,10
Tanzania <sup>a</sup>	1 018	—	374	—	1 392	0,80
Transkei <sup>a</sup>	147	—	—	—	147	0,08
Venda <sup>a</sup>	—	—	—	—	—	—
Zaire	4 484	—	135	—	4 619	2,66
Zambia	10 065	—	35	—	10 100	5,82
Zimbabwe	3 155	—	2 833	—	5 988	3,45
Total, GW.h	24 032	1 785	138 850	8 803	173 470	100,00
<sup>a</sup> South African Customs Union	3 402	1 785	134 566	8 803	148 556	85,64

<sup>a</sup> Estimated

## SOUTHERN AFRICA: Installed generating capacity

**Table 27**

Sources: United Nations Energy Statistics Yearbook 1986 and utility annual reports  
MW

Country	Hydro power	Pumped storage	Coal, oil etc	Nuclear	Total	% of total
Angola	400	—	200	—	600	1,51
Ciskei <sup>a</sup>	—	—	—	—	—	—
Bophuthatswana <sup>a</sup>	—	—	—	—	—	—
Botswana <sup>a</sup>	—	—	87	—	87	0,22
Lesotho <sup>a</sup>	2	—	—	—	2	0,01
Malawi	126	—	34	—	160	0,40
Mozambique	1 523	—	280	—	1 803	4,54
South Africa <sup>a</sup>	556	1 181	27 070	1 930	30 737	77,32
SWA/Namibia <sup>a</sup>	240	—	166	—	406	1,02
Swaziland <sup>a</sup>	41	—	10	—	50	0,13
Tanzania	249	—	164	—	413	1,04
Transkei <sup>a</sup>	61	—	—	—	61	0,15
Venda <sup>a</sup>	—	—	—	—	—	—
Zaire	2 111	—	55	—	2 166	5,45
Zambia	1 538	—	191	—	1 729	4,35
Zimbabwe	633	—	906	—	1 539	3,87
Total, MW	7 480	1 181	29 162	1 930	39 753	100,00
<sup>a</sup> South African Customs Union	900	1 181	27 332	1 930	31 343	78,84



## SOUTHERN AFRICA: Production of electricity

**Table 28**

Sources: United Nations Energy Statistics Yearbook 1986 and utility annual reports  
GW.h

Country	Hydro power	Pumped storage	Coal, oil etc	Nuclear	Total	% of total
Angola	1 335	—	455	—	1 790	1,03
Ciskei <sup>a</sup>	—	—	—	—	—	—
Bophuthatswana <sup>a</sup>	—	—	—	—	—	—
Botswana <sup>a</sup>	—	—	426	—	426	0,25
Lesotho <sup>a</sup>	11	—	—	—	11	0,01
Malawi	515	—	13	—	528	0,30
Mozambique	58	—	439	—	497	0,29
South Africa <sup>a</sup>	1 923	1 785	134 010	8 803	146 521	84,46
SWA/Namibia <sup>a</sup>	1 148	—	128	—	1 276	0,74
Swaziland <sup>a</sup>	172	—	2	—	174	0,10
Tanzania <sup>a</sup>	1 018	—	374	—	1 392	0,80
Transkei <sup>a</sup>	147	—	—	—	147	0,08
Venda <sup>a</sup>	—	—	—	—	—	—
Zaire	4 484	—	135	—	4 619	2,66
Zambia	10 065	—	35	—	10 100	5,82
Zimbabwe	3 155	—	2 833	—	5 988	3,45
Total, GW.h	24 032	1 785	138 850	8 803	173 470	100,00
<sup>a</sup> South African Customs Union	3 402	1 785	134 566	8 803	148 556	85,64

<sup>b</sup> Estimated

## SOUTHERN AFRICA: Utilisation of installed generating capacity

(Quantities in kilowatt hours produced per kilowatt)

**Table 29**

Sources: United Nations Energy Statistics Yearbook 1986 and utility annual reports

Country	Hydro power	Pumped storage	Coal, oil etc	Nuclear	Total
Angola	3 338	—	2 275	—	2 983
Ciskei <sup>a</sup>	—	—	—	—	—
Bophuthatswana <sup>a</sup>	—	—	—	—	—
Botswana <sup>a</sup>	—	—	4 901	—	4 901
Lesotho <sup>a</sup>	5 330	—	—	—	5 330
Malawi	4 087	—	382	—	3 300
Mozambique	38	—	1 568	—	276
South Africa <sup>a</sup>	3 456	1 511	4 951	4 561	4 767
SWA/Namibia <sup>a</sup>	4 785	—	770	—	3 143
Swaziland <sup>a</sup>	4 252	—	200	—	3 482
Tanzania	4 090	—	2 280	—	3 371
Transkei <sup>a</sup>	2 401	—	—	—	2 401
Venda <sup>a</sup>	—	—	—	—	—
Zaire	2 124	—	2 455	—	2 133
Zambia	6 544	—	183	—	5 842
Zimbabwe	4 984	—	3 127	—	3 891
Total	3 213	1 511	4 761	4 561	4 364
<sup>a</sup> South African Customs Union	3 778	1 511	4 923	4 561	4 740



## SOUTHERN AFRICA: Bophuthatswana

**Table 30**

Source: Bophuthatswana Electricity Corporation (BECOR) annual report for year ended 31 March 1988 and Eskom.

	1988	1987	Change %
<b>System load factor, %</b>	<b>52,2</b>	50,3	3,8
<b>Non-coincident maximum demand, MW</b>	<b>143,7</b>	109,0	31,8
<b>Consumption of electricity by region</b>			
Bulk imports from Eskom for redistribution			
Tlhabane	<b>221,9</b>	123,9	79,2
Molopo	<b>169,1</b>	131,7	28,4
Ga-Rankuwa	<b>203,8</b>	169,9	20,0
Taung	<b>28,6</b>	24,1	18,7
Selosesha	<b>33,0</b>	30,9	6,8
<b>Total bulk imports</b>	<b>656,5</b>	480,4	36,7
Direct supplies from Eskom	<b>1 528,6</b>	1 418,9	7,7
<b>Total imports from Eskom, GW.h</b>	<b>2 185,1</b>	1 899,3	15,0
<b>Total bulk sales, GW.h</b>	<b>590,7</b>	431,2	37,0
<b>Distribution losses on bulk sales, %</b>	<b>11,1</b>	11,4	-2,5
<b>No. of bulk input points</b>	<b>24</b>	22	9,1
<b>No. of customers supplied by BECOR</b>	<b>32 131</b>	28 778	11,7

## SOUTHERN AFRICA: Botswana

**Table 31**

Source: Botswana Power Corporation (BPC) annual report for year ended 31 March 1988.

<b>Source of power</b>	<b>Type</b>			<b>MW</b>
Installed generating capacity				
Morupule Phase 1	Thermal			99
Morupule Phase 2 (under construction)	Thermal			33
Selebi-Phikwe	Thermal			80
Gaborone (standby)	Diesel			7
Total installed generating capacity, MW				219
<b>Other sources</b>				
Eskom				50
Total sources of power, MW				269
		<b>1988</b>	1987	Change %
<b>Energy sources</b>		<b>GW.h</b>	<b>GW.h</b>	
Morupule Phase 1		<b>466,5</b>	200,4	132,8
Selebi-Phikwe		<b>251,0</b>	337,0	-25,5
Gaborone		<b>4,5</b>	17,7	-74,6
Purchased from Eskom		<b>66,8</b>	185,1	-63,9
Total sent out, GW.h		<b>788,8</b>	740,2	6,6
<b>Electricity sales by category</b>		<b>GW.h</b>	<b>GW.h</b>	Change %
Mining		<b>470,9</b>	482,2	-2,3
Commercial		<b>121,1</b>	102,6	18,0
Domestic		<b>53,1</b>	44,2	20,1
Government		<b>34,0</b>	30,1	13,0
Total sales		<b>679,1</b>	659,1	3,0
Station usage		<b>76,2</b>	54,6	39,6
Distribution and other losses		<b>33,5</b>	26,5	26,4
Total, GW.h		<b>788,8</b>	740,2	6,6
<b>System maximum demand, MW</b>		<b>122,10</b>	114,85	6,3
<b>No. of customers</b>		<b>16 215</b>	13 979	16,0



## SOUTHERN AFRICA: Lesotho

**Table 32**

Source: Lesotho Electricity Corporation annual report for year ended 31 March 1988 and Eskom

<b>Source of power (MW)</b>	Type	MW
Installed generating capacity		
Mantsonyane	Hydro	2,0
Semonkong	Hydro	0,2
Other	—	0,2
Power station installed capacity		2,4
Other sources		
Eskom supplies		
Maseru		44,0
Peka		0,5
Leribe		5,0
Clarens		5,0
Total source of power, MW		56,9
<b>Energy source</b>		GW.h
Own generation		10,66
Purchased from Eskom		159,49
Total, GW.h		170,15
<b>Overhead lines</b>		km
88 kV		81
33 kV		350
11 kV		690
Total, km		1 121
<b>Substations</b>	No. of transformers	MVA
88/33 (11) kV	3	85,0
33/11 kV	15	86,5
11 (33)/0,4 kV	415	79,0
Total	433	250,5
<b>Sales of electricity by category</b>	No. of customers	MW.h
Domestic	6 150	46 630
General purpose	2 300	35 640
Commercial	65	30 910
Industrial	61	22 370
Total	8 576	135 550

## SOUTHERN AFRICA: Malawi

**Table 33**

Source: Electricity Supply Commission of Malawi annual report for year ended 31 December 1986.

<b>Source of power</b>		
Installed generating capacity	Type	MW
Tedzani Falls	Hydro	40,00
Nkula Falls "A"	Hydro	24,00
Nkula Falls "B"	Hydro	80,00
Blantyre	Gas turbine	15,00
Zomba	Hydro	0,60
Lilongwe	Diesel	5,40
Kasungu	Diesel	0,36
Mtunthama	Diesel	0,90
Mzuzu	Diesel	2,20
Karonga	Diesel	0,56
<b>Total source of power</b>		<b>169,02</b>
<b>Energy generated</b>		
		GW.h
Diesel		1,39
Hydro		511,14
Gas turbine		0,02
<b>Total generated</b>		<b>512,55</b>
<b>Total works</b>		<b>2,51</b>
<b>Total sent out, GW.h</b>		<b>510,04</b>
<b>GW.h sold</b>		<b>427,41</b>
<b>Peak load (MW)</b>		<b>94,80</b>
<b>Load factor (sent out) %</b>		<b>61,30</b>
<b>Diesel fuel used, Mℓ</b>		<b>495,07</b>
<b>Gas turbine fuel, Mℓ</b>		<b>17,20</b>
<b>kW.h per litre:</b>		
diesel		2,81
gas turbine		1,42



## SOUTHERN AFRICA: Malawi

**Table 33**

Source: Electricity Supply Commission of Malawi annual report for year ended 31 December 1986.

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
Blantyre	Gas turbine	15,00
Zomba	Hydro	0,60
Lilongwe	Diesel	5,40
Kasungu	Diesel	0,36
Mtunthama	Diesel	0,90
Mzuzu	Diesel	2,20
Karonga	Diesel	0,56
<b>Total source of power</b>		<b>169,02</b>
Energy generated		
		GW.h
Diesel		1,39
Hydro		511,14
Gas turbine		0,02
<b>Total generated</b>		<b>512,55</b>
Total works		2,51
Total sent out, GW.h		510,04
<b>GW.h sold</b>		<b>427,41</b>
<b>Peak load (MW)</b>		<b>94,80</b>
<b>Load factor (sent out) %</b>		<b>61,30</b>
<b>Diesel fuel used, Mℓ</b>		<b>495,07</b>
<b>Gas turbine fuel, Mℓ</b>		<b>17,20</b>
<b>kW.h per litre:</b>		
diesel		2,81
gas turbine		1,42

## SOUTHERN AFRICA: Malawi

**Table 33 continued**

Source: Electricity Supply Commission of Malawi annual report for year ended 31 December 1986.

Transmission and distribution equipment in service	Interconnected system			Isolated	Total
	Southern	Central	Northern	Karonga	
Overhead lines (km)					
132 kV	52,4	175,6	—	—	227,9
66 kV	347,5	502,4	121,3	—	971,2
33 kV	856,3	331,8	111,9	—	1300,0
11/33 kV	783,6	581,4	162,7	85,7	1613,4
400/230 volts	683,1	466,0	140,6	28,9	1318,5
<b>Total line length (km)</b>	<b>2 722,9</b>	<b>2 057,2</b>	<b>536,4</b>	<b>114,5</b>	<b>5 431,0</b>
Underground cable (km)					
33 kV	2,2	0,0	—	—	2,2
11 kV	49,0	19,9	1,9	0,2	71,1
400/230 volts	50,2	58,0	7,8	1,4	117,5
<b>Total cable length (km)</b>	<b>101,4</b>	<b>78,0</b>	<b>9,7</b>	<b>1,7</b>	<b>190,8</b>
Step-up substations					
11/132 kV	50,0	—	—	—	50,0
11/66 kV	126,0	—	—	—	126,0
0,4/3,3/11 kV	—	3,1	3,0	1,0	7,1
Step-down substations					
132/66/11 kV	—	25,0	—	—	25,0
66/33 kV	90,0	5,0	10,0	—	105,0
66/11 kV	64,0	43,0	—	—	107,0
33/11 kV	64,5	3,5	5,5	—	73,5
33/0, 4/0, 23 kV	25,6	4,7	1,2	—	31,5
11/0, 4/0, 23 kV	112,4	61,4	6,0	1,0	180,8
Interbus transformers 132/66 kV	50,0	—	—	—	50,0

Sales of electricity by category	Number of customers			GW.h sales		
	1986	1985	% Change	1986	1985	% Change
Domestic	13 446	12 450	8,0	61,6	55,6	10,7
High density	12 965	12 367	4,8	12,6	11,8	6,4
General	6 700	6 142	9,1	62,6	56,0	11,7
Power	379	372	1,9	164,3	156,6	4,9
Power — large	5	5	0,0	125,6	117,7	6,7
Export	1	1	0,0	0,7	1,1	-35,6
<b>Total sales, GW.h</b>	<b>33 496</b>	<b>31 337</b>	<b>6,9</b>	<b>427,4</b>	<b>398,8</b>	<b>7,2</b>

Interconnected system development										
	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977
No. of customers	33 110	30 987	28 649	26 926	25 453	22 842	21 835	20 460	18 995	17 749
% growth	6,9	8,2	6,4	5,8	11,4	4,6	6,7	7,7	7,0	11,6
Peak load, MW	94,8	81,8	84,6	73,4	70,6	66,6	66,2	60,4	54,2	51,4
% growth	15,9	-3,3	15,3	4,0	6,0	0,6	9,6	11,4	5,5	2,4
GW.h sold	427,4	398,8	405,9	393,9	354,7	338,7	350,2	327,1	285,9	262,8
% growth	7,2	-1,8	3,1	11,0	4,7	-3,3	7,0	14,4	8,8	4,8
Generation plant — installed capacity, MW										
Diesel plant	9,4	6,6	6,7	9,7	9,7	6,5	6,5	5,9	5,9	7,4
Gas turbine	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Hydro plant	144,6	124,6	124,6	124,6	124,6	124,6	104,6	64,6	64,0	64,6
<b>Total, MW</b>	<b>169,0</b>	<b>146,2</b>	<b>146,3</b>	<b>149,3</b>	<b>149,3</b>	<b>146,1</b>	<b>126,1</b>	<b>85,5</b>	<b>84,9</b>	<b>87,0</b>

## SOUTHERN AFRICA: Malawi

**Table 33 continued**

Source: Electricity Supply Commission of Malawi annual report for year ended 31 December 1986.

Transmission and distribution equipment in service	Interconnected system			Isolated	Total
	Southern	Central	Northern	Karonga	
Overhead lines (km)					
132 kV	52,4	175,6	—	—	227,9
66 kV	347,5	502,4	121,3	—	971,2
33 kV	856,3	331,8	111,9	—	1 300,0
11/33 kV	783,6	581,4	162,7	85,7	1 613,4
400/230 volts	683,1	466,0	140,6	28,9	1 318,5
Total line length (km)	2 722,9	2 057,2	536,4	114,5	5 431,0
Underground cable (km)					
33 kV	2,2	0,0	—	—	2,2
11 kV	49,0	19,9	1,9	0,2	71,1
400/230 volts	50,2	58,0	7,8	1,4	117,5
Total cable length (km)	101,4	78,0	9,7	1,7	190,8
Step-up substations					
11/132 kV	50,0	—	—	—	50,0
11/66 kV	126,0	—	—	—	126,0
0,4/3,3/11 kV	—	3,1	3,0	1,0	7,1
Step-down substations					
132/66/11 kV	—	25,0	—	—	25,0
66/33 kV	90,0	5,0	10,0	—	105,0
66/11 kV	64,0	43,0	—	—	107,0
33/11 kV	64,5	3,5	5,5	—	73,5
33/0, 4/0, 23 kV	25,6	4,7	1,2	—	31,5
11/0, 4/0, 23 kV	112,4	61,4	6,0	1,0	180,8
Interbus transformers 132/66 kV	50,0	—	—	—	50,0

Sales of electricity by category	Number of customers			GW.h sales		
	1986	1985	%	1986	1985	%
			Change			Change
Domestic	<b>13 446</b>	12 450	8,0	<b>61,6</b>	55,6	10,7
High density	<b>12 965</b>	12 367	4,8	<b>12,6</b>	11,8	6,4
General	<b>6 700</b>	6 142	9,1	<b>62,6</b>	56,0	11,7
Power	<b>379</b>	372	1,9	<b>164,3</b>	156,6	4,9
Power – large	<b>5</b>	5	0,0	<b>125,6</b>	117,7	6,7
Export	<b>1</b>	1	0,0	<b>0,7</b>	1,1	-35,6
Total sales, GW.h	<b>33 496</b>	31 337	6,9	<b>427,4</b>	398,8	7,2

### Interconnected system development

	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977
No. of customers	<b>33 110</b>	30 987	28 649	26 926	25 453	22 842	21 835	20 460	18 995	17 749
% growth	<b>6,9</b>	8,2	6,4	5,8	11,4	4,6	6,7	7,7	7,0	11,6
Peak load, MW	<b>94,8</b>	81,8	84,6	73,4	70,6	66,6	66,2	60,4	54,2	51,4
% growth	<b>15,9</b>	-3,3	15,3	4,0	6,0	0,6	9,6	11,4	5,5	2,4
GW.h sold	<b>427,4</b>	398,8	405,9	393,9	354,7	338,7	350,2	327,1	285,9	262,8
% growth	<b>7,2</b>	-1,8	3,1	11,0	4,7	-3,3	7,0	14,4	8,8	4,8
Generation plant – installed capacity, MW										
Diesel plant	<b>9,4</b>	6,6	6,7	9,7	9,7	6,5	6,5	5,9	5,9	7,4
Gas turbine	<b>15,0</b>	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Hydro plant	<b>144,6</b>	124,6	124,6	124,6	124,6	124,6	104,6	64,6	64,0	64,6
Total, MW	<b>169,0</b>	146,2	146,3	149,3	149,3	146,1	126,1	85,5	84,9	87,0



## SOUTHERN AFRICA: S.W.A./Namibia

**Table 34**

Source: S.W.A. Water and Electricity Corporation (Pty) Ltd (SWAWEK) annual report for year ended 30 June 1988.

<b>Source of power</b>			
Installed generating capacity (SWAWEK)			
Ruacana (hydro)	240	MW	
Van Eck (thermal)	120	MW	
<b>Total</b>	<b>360</b>	<b>MW</b>	
Import facility (from Eskom)			
Paratus (diesel)	24,0	MW*	
Paratus (gas turbine)	22,0	MW*	
Eskom at Aggeneys	200,0	MW	
Eskom at Lower Orange River	38,5	MVA	
*Paratus Power Station is situated in Walvis Bay enclave.			

	<b>1988</b>	1987	Change
<b>Energy available for distribution</b>	<b>GW.h</b>	GW.h	%
<b>Energy generated</b>			
Ruacana (hydro)	<b>1 085,5</b>	1 021,5	6,3
Van Eck (thermal)	<b>124,2</b>	97,5	27,4
<b>Total energy generation</b>	<b>1 209,7</b>	1 119,0	8,1
<b>Import from Eskom</b>			
Paratus (gas turbine/diesel)	<b>0,3</b>	1,2	-75,0
Eskom at Aggeneys	<b>346,1</b>	293,7	17,8
Eskom at Lower Orange River	<b>207,0</b>	187,4	10,5
<b>Total import from Eskom</b>	<b>553,4</b>	482,3	14,7
<b>Total energy into system, GW.h</b>	<b>1 763,1</b>	1 601,3	10,1

	<b>1988</b>	1987	Change
<b>Transmission and distribution lines in service</b>	<b>km</b>	km	km
330 kV	<b>521,7</b>	521,7	0,0
220 kV	<b>1 495,9</b>	1 495,9	0,0
132 kV	<b>635,0</b>	471,7	163,3
66 kV and less	<b>3 770,0</b>	3 446,0	324,0
<b>Total, km</b>	<b>6 422,6</b>	5 935,3	487,3

	<b>1988</b>	1987	Change
<b>Sales of electricity</b>	<b>GW.h</b>	GW.h	%
<b>South West Africa/Namibia</b>			
Local authorities	<b>484,9</b>	459,6	5,5
Mining	<b>699,5</b>	683,9	2,3
Business/manufacturing	<b>7,9</b>	8,3	-4,8
Government departments	<b>74,0</b>	65,1	13,7
Rural supplies	<b>6,5</b>	5,8	12,1
<b>Subtotal</b>	<b>1 272,8</b>	1 222,7	4,1
<b>Export to Eskom</b>			
Walvis Bay enclave	<b>76,2</b>	45,3	68,2
Eskom at Aggeneys	<b>233,1</b>	172,9	34,8
<b>Subtotal</b>	<b>309,3</b>	218,2	41,8
<b>Total energy sold, GW.h</b>	<b>1 582,1</b>	1 440,9	9,8
<b>Number of SWAWEK customers</b>	<b>583</b>	479	21,7

## SOUTHERN AFRICA: Swaziland

**Table 35**

Source: Swaziland Electricity Board (SEB) annual report for year ended 31 March 1988.

	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979
<b>Installed generating capacity, MW</b>										
– Hydro	40,5	40,5	40,5	40,5	20,5	20,5	20,5	20,5	20,5	20,5
– Diesel	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
Capacity of Eskom link	60,0	60,0	60,0	60,0	67,0	67,0	67,0	67,0	67,0	67,0
Total capacity	110,0	110,0	110,0	110,0	97,0	97,0	97,0	97,0	97,0	97,0
<b>System maximum demand, MW</b>	97	84	81	78	78	70	72	65	57	53
Energy generated, GW.h										
– Hydro	181,1	150,5	172,2	152,1	79,1	70,4	126,6	123,0	114,4	139,6
– Diesel	1,2	2,3	1,9	2,0	1,0	4,8	2,7	2,0	2,9	4,7
<b>Total generated, GW.h</b>	182,3	152,8	174,1	154,1	80,1	75,2	129,3	125,0	117,3	144,3
<b>Energy purchased, GW.h</b>										
– from Eskom	269,7	282,0	243,1	236,5	309,2	330,6	227,2	209,0	187,9	104,2
– from industry		0,2		0,6	0,7					
Total generated and purchased, GW.h	452,0	435,0	417,2	391,2	390,0	405,8	356,5	334,0	305,2	248,5
% Increase on previous year	3,9	4,3	6,6	0,3	-3,9	13,8	6,7	9,4	22,8	10,9
<b>Energy sold, GW.h</b>	396,2	382,0	366,1	345,0	348,5	365,1	323,4	298,3	275,7	222,8
% Increase on previous year	3,7	4,3	6,1	-1,0	-4,5	12,9	8,4	8,2	23,7	10,5
Own use and system losses, GW.h	55,8	52,0	51,1	46,2	41,5	40,7	33,0	35,7	29,5	25,7
Own use and system losses, %	12,3	12,2	12,2	11,8	10,6	10,0	9,3	10,7	9,7	10,3
Annual sent-out load factor, %	53	59	59	57	57	66	56	58	61	53

<b>Transmission and distribution equipment in service</b>	1988	1987	Change in 1988
<b>Overhead line lengths, km</b>			
132 kV	87	87	0
66 kV	825	825	0
11 kV	1 793	1 753	40
Total, km	2 705	2 665	40
<b>Substations, MVA</b>			
132/66 kV	78	78	0
Number	2	2	0
66/11 kV	124	124	0
Number	26	26	0
66/11, 3,3 or 0,4 kV	9 + 10*	9 + 10*	0
Number	5	5	0
11/0,4 kV	155	139	16
Number	1 407	1 333	74

<b>Sales of electricity by category</b>	Points of supply			Energy sales in GW.h		
	1988	1987	% Increase	1988	1987	% Increase
Domestic	13 210	12 654	4,4	80,6	74,9	7,6
Commercial	3 155	2 964	6,4	41,3	37,2	11,0
Industrial	443	429	3,3	155,2	137,9	12,5
Irrigation	103	106	-2,8	119,1	132,0	-9,8
Total	16 911	16 153	4,7	396,2	382,0	3,7

\* Customer-owned transformers



## SOUTHERN AFRICA: Transkei

**Table 36**

Source: Transkei Electricity Supply Corporation (TESCOR) for year ended 31 March 1987

<b>Installed generating capacity</b>		Type	MW
Collywobbles		Hydro	42,0
First and Second falls		Hydro	17,0
Ncora		Hydro	2,4
Total installed generating capacity, MW			61,4

<b>Energy sources</b>	<b>1987 GW.h</b>	1986 GW.h	Change %
Own generation	<b>213,6</b>	147,4	44,9
Purchased from Eskom	<b>88,3</b>	97,1	-9,1
Total, GW.h	<b>301,9</b>	244,5	23,5

<b>Line lengths</b>		km
132 kV		30
66 kV		366
33 kV and lower		546
Total, km		942

<b>Tescor sales of electricity, GW.h</b>	<b>230</b>	205	12,2
<b>System maximum demand, MW</b>	<b>48,0</b>	43,5	10,3

## SOUTHERN AFRICA: Venda

**Table 37**

Source: Venda Electricity Corporation (VEC)

<b>Customer statistics (February 1988 – January 1989)</b>	Number of customers	GW.h sold
Large power users	122	39,2
Small power users	746	8,1
Domestic users	3 795	18,9
Other (street lighting, robot supplies, etc)	12	1,0
<b>Total</b>	<b>4 675</b>	<b>67,2</b>

<b>Line lengths as at 7 November 1988</b>	km
132 kV	95
66 kV	14
22 to 11 kV	393
380 volts	198
<b>Total, km</b>	<b>700</b>

<b>System maximum demand (October 1988)</b>	15,37 MW
<b>Load factor</b>	64,7%
<b>Distribution losses</b>	13,35%
<b>Total population</b>	497 023

The Venda Government has established a separate body for the distribution and reticulation of electricity in Venda, the Venda Electricity Corporation, which came into being on 1 April 1987. Since then the number of customers connected has grown from 3 200 to 4 783 in February 1989 and energy purchased from Eskom from 54,021 GW.h in 1986 to 73,845 GW.h in 1988, equivalent to an average annual growth rate of 16,92%.



## SOUTHERN AFRICA: Zaire/Zambia/Zimbabwe

**Table 38**

Source: Central African Power Corporation annual report for year ended 30 June 1987.  
See also separate entry for Zimbabwe.

Generation of electricity, GW.h	1987	% of total	1986	% of total	Change %
Hydro-electric power stations					
Kariba South	2 700,7	17,4	3 128,7	21,3	-13,7
Kariba North	3 344,8	21,6	3 453,9	23,5	-3,2
Kafue Gorge	5 198,5	33,6	5 400,4	36,7	-3,7
Victoria Falls	603,7	3,9	651,8	4,4	-7,4
Société Nationale d'Electricité (Zaire)	0,0	0,0	0,9	0,0	—
<b>Total hydro generation, GW.h</b>	<b>11 847,7</b>	<b>76,5</b>	<b>12 635,7</b>	<b>85,9</b>	<b>-6,2</b>
Thermal power stations					
Bulawayo	26,0	0,2	37,3	0,3	-30,3
Harare	166,9	1,1	149,0	1,0	12,0
Munyati	8,9	0,1	24,8	0,2	-64,1
Hwange	3 441,8	22,2	1 863,9	12,7	84,7
<b>Total thermal generating, GW.h</b>	<b>3 643,6</b>	<b>23,5</b>	<b>2 075,0</b>	<b>14,1</b>	<b>75,6</b>
<b>Total sent out (hydro &amp; thermal), GW.h</b>	<b>15 491,3</b>	<b>100,0</b>	<b>14 710,7</b>	<b>100,0</b>	<b>5,3</b>
Less: Transmission losses	478,7	3,1	468,6	3,2	2,2
<b>Total sales, GW.h</b>	<b>15 012,6</b>	<b>96,9</b>	<b>14 242,1</b>	<b>96,8</b>	<b>5,4</b>

Bulk sales of electricity	1987			1986			Change %
	Maximum Demand MW	GW.h	Annual Load Factor	Maximum Demand MW	GW.h	Annual Load Factor	
<b>Country</b>							
Zimbabwe							
ZESA/Bulawayo	157,5	827,0	59,9	158,0	818,3	59,1	1,1
ZESA/Harare	298,0	1 587,2	60,8	274,9	1 515,1	62,9	4,8
ZESA/Central	845,0	6 092,6	82,3	844,1	5 838,0	79,0	4,4
ZESA/Kariba	3,6	20,2	63,6	3,4	18,6	62,7	8,6
	<b>1 295,0</b>	<b>8 527,0</b>	<b>75,2</b>	<b>1 273,6</b>	<b>8 190,0</b>	<b>73,4</b>	<b>4,1</b>
Zambia							
Copper Belt Power Co Ltd	675,5	5 166,0	87,3	649,5	4 849,8	85,2	6,5
ZESCO	241,9	1 315,2	62,1	229,4	1 198,8	59,7	9,7
ZESCO (Siavonga)	0,7	3,6	65,6	0,6	3,5	65,8	2,9
	<b>912,4</b>	<b>6 484,8</b>	<b>81,1</b>	<b>872,5</b>	<b>6 052,1</b>	<b>79,2</b>	<b>7,1</b>
<b>Total</b>	<b>2 190,1</b>	<b>15 011,8</b>	<b>78,2</b>		<b>14 242,1</b>	<b>75,9</b>	<b>5,4</b>
Société Nationale d'Electricité (Zaire)		0,8			0,0		—
<b>Total sales, GW.h</b>		<b>15 012,6</b>			<b>14 242,1</b>		<b>5,4</b>

## SOUTHERN AFRICA: Zimbabwe

**Table 39**

Source: Zimbabwe Electricity Supply Commission annual report for year ended 30 June 1984

	MW	Generation voltage kV	Steam pressure MPa
<b>Installed generating capacity</b>			
Hwange	240,000	10,500	8,9
Munyati	120,000	11,000	2,9
Mutare	10,000	11,000	2,9
Mutare	4,000	3,300	1,4
Victoria Falls	0,125	0,380	—
Zvishavane	20,000	11,000	2,9
Zvishavane	7,500	6,600	1,8
<b>Total, MW</b>	<b>401,625</b>		
<b>Energy sources</b>	<b>1983/84</b>	<b>1982/83</b>	<b>% change</b>
<b>Own generation</b>	<b>GW.h</b>	<b>GW.h</b>	
Hwange	385,2	25,4	1 416,3
Munyati	108,9	83,2	30,8
<b>Total own generation, GW.h</b>	<b>494,1</b>	<b>108,6</b>	<b>354,8</b>
<b>Electricity purchased</b>			
Central African Power Corporation	5 094,4	5 144,4	-1,0
Hippo Valley Estates	0,0	0,0	-89,1
Triangle Estates	1,2	0,8	59,8
Eskom	13,2	13,5	-2,3
Zambia Electricity Supply Commission	0,6	2,4	-73,6
<b>Total purchased, GW.h</b>	<b>5 109,5</b>	<b>5 161,2</b>	<b>-1,0</b>
<b>Total energy generated and purchased, GW.h</b>	<b>5 603,6</b>	<b>5 269,8</b>	<b>6,3</b>

## SOUTHERN AFRICA: Zimbabwe

**Table 39 continued**

Source: Zimbabwe Electricity Supply Commission annual report for year ended 30 June 1984

	Transmission and distribution equipment in service by division							Total
	330 kV	132 kV	110 kV	88 kV	66 kV	33 kV	11 kV & below	
Eastern	117,0	373,7	5,0	—	—	707,1	1 924,5	3 127,3
Northern	106,2	240,4	—	566,5	—	1 702,4	11 249,3	13 864,8
Central	241,0	127,9	—	577,4	—	1 011,8	4 679,0	6 637,1
Southern	34,8	120,4	—	38,7	—	583,1	2 091,9	2 868,9
South-eastern	—	72,4	—	—	—	1 138,9	764,2	1 975,5
Western	504,0	—	—	368,2	178,0	671,4	3 229,2	4 950,8
<b>Total, km</b>	<b>1 003,0</b>	<b>934,8</b>	<b>5,0</b>	<b>1 550,8</b>	<b>178,0</b>	<b>5 814,7</b>	<b>23 938,1</b>	<b>33 424,4</b>

<b>Sales of electricity by category</b>	<b>1983/84</b>	<b>1982/83</b>	<b>% change</b>
(Number of customers 71 562)	<b>GW.h</b>	<b>GW.h</b>	
Mining	1 200,0	1 255,5	-4,4
Industrial	2 510,1	2 462,3	1,9
Farming	425,9	523,1	-18,6
Municipal	282,8	288,3	-1,9
Commercial and lighting	193,8	188,6	2,8
Domestic	171,5	157,5	8,9
<b>Total, GW.h</b>	<b>4 784,0</b>	<b>4 875,2</b>	<b>-1,9</b>

<b>Sales of electricity to mining sector</b>	<b>1983/84</b>	<b>1982/83</b>	<b>% change</b>
Gold	269,6	245,6	9,8
Nickel	318,5	378,6	-15,9
Asbestos	253,2	305,9	-17,2
Copper	155,5	156,3	-0,5
Chrome	38,5	40,4	-4,7
Tin	45,3	44,8	1,2
Coal	69,0	40,9	68,8
Phosphates	29,6	26,8	10,5
Other	20,8	16,3	27,5
<b>Total, GW.h</b>	<b>1 200,0</b>	<b>1 255,5</b>	<b>-4,4</b>

<b>Electricity sales on an area basis</b>	<b>1983/84</b>	<b>1982/83</b>	<b>% change</b>
Eastern	260,5	260,2	0,1
South-eastern	143,4	167,7	-14,5
Northern	982,8	1 020,7	-3,7
Central	2 636,5	2 618,7	0,7
Southern	337,0	379,3	-11,2
Western	423,8	428,5	-1,1
<b>Total, GW.h</b>	<b>4 784,0</b>	<b>4 875,2</b>	<b>-1,9</b>



## AFRICA: Electricity Supply Statistics

Table 40

Source: United Nations Energy Statistical Yearbook – 1986

Country	Net installed capacity of generating plant (self-producers and public), MW					
	Total	Thermal	Hydro	Nuclear	Geothermal	% of total
Algeria	3 736	3 451	285	—	—	5,7
Angola	600	200	400	—	—	0,9
Benin	15	15	—	—	—	0,0
Burkina Faso	56	56	—	—	—	0,1
Burundi	9	7	2	—	—	0,0
Cameroon	605	77	528	—	—	0,9
Cape Verde	5	5	—	—	—	0,0
Central African Rep.	43	21	22	—	—	0,1
Chad	31	31	—	—	—	0,0
Comoros	3	2	1	—	—	0,0
Congo	149	29	120	—	—	0,2
Djibouti	40	40	—	—	—	0,1
Egypt	5 850	3 150	2 700	—	—	8,9
Equatorial Guinea	5	4	1	—	—	0,0
Ethiopia	335	113	222	—	—	0,5
Gabon	200	75	125	—	—	0,3
Gambia	11	11	—	—	—	0,0
Ghana	1 185	113	1 072	—	—	1,8
Guinea	176	129	47	—	—	0,3
Guinea-Bissau	7	7	—	—	—	0,0
Cote d'Ivoire	1 163	278	885	—	—	1,8
Kenya	559	160	354	—	45	0,9
Liberia	325	244	81	—	—	0,5
Libyan Arab Jamah.	1 580	1 580	—	—	—	2,4
Madagascar	102	57	45	—	—	0,2
Malawi	160	34	126	—	—	0,2
Mali	82	42	40	—	—	0,1
Mauritania	53	53	—	—	—	0,1
Mauritius	274	220	54	—	—	0,4
Morocco	2 284	1 660	624	—	—	3,5
Mozambique	1 803	280	1 523	—	—	2,8
Niger	63	63	—	—	—	0,1
Nigeria	4 040	2 140	1 900	—	—	6,2
Reunion	151	26	125	—	—	0,2
Rwanda	60	4	56	—	—	0,1
St. Helena & Depend.	2	2	—	—	—	0,0
Sao Tome-Principe	6	4	2	—	—	0,0
Senegal	207	207	—	—	—	0,3
Seychelles	19	19	—	—	—	0,0
Sierra Leone	110	108	2	—	—	0,2
Somalia	60	60	—	—	—	0,1
South African Customs Union	31 343	27 332	2 081	1 930	—	47,8
Sudan	460	235	225	—	—	0,7
Togo	34	30	4	—	—	0,1
Tunisia	1 414	1 350	64	—	—	2,2
Uganda	163	7	156	—	—	0,2
United Republic of Tanzania	439	180	259	—	—	0,7
Western Sahara	56	56	—	—	—	0,1
Zaire	2 166	55	2 111	—	—	3,3
Zambia	1 729	191	1 538	—	—	2,6
Zimbabwe	1 539	906	633	—	—	2,4
Africa	65 507	45 119	18 413	1 930	45	100,0
World	2 460 436	1 614 128	566 823	274 504	4 981	

Production of electricity (self-producers and public), GW.h						Trade of electricity, GW.h			
Thermal	Hydro	Nuclear	Geothermal	Total	% of Total	Imports	Exports	Available GW.h	kW.h per capita
12 080	666	—	—	12 746	4,9	169	85	12 830	572
455	1 335	—	—	1 790	0,7	—	—	1 790	199
5	—	—	—	5	0,0	190	—	195	47
123	—	—	—	123	0,0	—	—	123	17
2	—	—	—	2	0,0	72	—	74	15
64	2 321	—	—	2 385	0,9	—	—	2 385	235
28	—	—	—	28	0,0	—	—	28	84
16	77	—	—	93	0,0	—	—	93	35
51	—	—	—	51	0,0	—	—	51	10
12	—	—	—	12	0,0	—	—	12	26
2	233	—	—	235	0,1	57	—	292	163
165	—	—	—	165	0,1	—	—	165	439
14 450	10 650	—	—	25 100	9,6	—	—	25 100	523
14	2	—	—	16	0,0	—	—	16	40
155	647	—	—	802	0,3	—	—	802	18
195	672	—	—	867	0,3	—	—	867	740
42	—	—	—	42	0,0	—	—	42	64
79	3 670	—	—	3 749	1,4	—	275	3 474	247
332	165	—	—	497	0,2	—	—	497	80
14	—	—	—	14	0,0	—	—	14	15
410	1 407	—	—	1 817	0,7	—	—	1 817	179
480	1 680	—	340	2 500	1,0	220	—	2 720	127
501	318	—	—	819	0,3	—	—	819	362
9 000	—	—	—	9 000	3,5	—	—	9 000	2 405
232	268	—	—	500	0,2	—	—	500	49
13	515	—	—	528	0,2	—	1	527	73
42	130	—	—	172	0,1	—	—	172	21
92	—	—	—	92	0,0	—	—	92	47
408	110	—	—	518	0,2	—	—	518	485
6 666	490	—	—	7 156	2,7	—	—	7 156	318
439	58	—	—	497	0,2	103	—	600	42
156	—	—	—	156	0,1	131	—	287	46
7 675	2 200	—	—	9 875	3,8	—	100	9 775	99
6	609	—	—	615	0,2	—	—	615	1 143
4	166	—	—	170	0,1	20	3	187	30
2	—	—	—	2	0,0	—	—	2	333
7	5	—	—	12	0,0	—	—	12	120
758	—	—	—	758	0,3	—	—	758	115
66	—	—	—	66	0,0	—	—	66	835
184	—	—	—	184	0,1	—	—	184	50
143	—	—	—	143	0,1	—	—	143	30
134 566	5 187	8 803	—	148 556	57,0	—	300	148 256	4 238
535	517	—	—	1 052	0,4	—	—	1 052	47
31	4	—	—	35	0,0	230	—	265	87
4 150	52	—	—	4 202	1,6	15	7	4 210	582
9	647	—	—	656	0,3	—	110	546	34
260	620	—	—	880	0,3	—	—	880	38
78	—	—	—	78	0,0	—	—	78	488
135	4 484	—	—	4 619	1,8	12	110	4 521	147
35	10 065	—	—	10 100	3,9	20	3 100	7 020	1 018
2 833	3 155	—	—	5 988	2,3	3 000	—	8 988	988
198 200	53 125	8 803	340	260 468	100,0	4 239	4 091	260 606	410
6 349 241	2 027 100	1 556 323	29 600	9 962 264		220 913	214 052	9 969 125	2 028



## WORLD: Selected electricity supply statistics

Table 41

Source: United Nations Energy Statistics Yearbook – 1986

Area	Net installed capacity of generating plant, self-producers and public, MW					
	Total	Thermal	Hydro	Nuclear	Geothermal	Ranking
World	2 460 436	1 614 128	566 823	274 504	4 981	
Africa	65 507	45 119	18 413	1 930	45	6
Asia	470 292	325 807	105 890	37 442	1 153	3
Europe	617 363	349 838	159 565	106 764	1 196	2
North America	857 491	607 600	150 155	97 548	2 188	1
Oceania	42 471	30 085	11 987	—	399	7
South America	92 257	30 401	60 181	1 675	—	5
USSR	321 671	229 420	62 141	30 110	—	4
<b>Country*</b>						
Argentina	16 255	9 021	6 216	1 018	—	23
Australia	33 478	26 199	7 029	—	250	12
Austria	15 784	5 361	10 423	—	—	25
Belgium	14 168	7 331	1 327	5 510	—	27
Brazil	44 749	6 390	37 702	657	—	10
Bulgaria	10 243	6 508	1 975	1 760	—	32
Canada	98 400	30 600	56 800	11 000	—	3
China	87 000	60 000	27 000	—	—	5
Czechoslovakia	20 371	14 614	2 897	2 860	—	19
Finland	11 456	6 651	2 505	2 300	—	31
France incl. Monaco	92 100	24 600	22 800	44 700	—	4
German Dem. Rep.	22 059	18 385	1 844	1 830	—	18
Germany, Fed. Rep.	82 660	57 076	6 710	18 874	—	6
India	54 689	37 494	15 965	1 230	—	9
Iran (Islamic Rep. of)	13 404	11 600	1 804	—	—	29
Italy and San Marino	56 205	36 617	17 863	1 273	452	8
Japan	173 329	111 800	35 150	26 165	214	2
Korea, Republic of	19 607	12 616	2 225	4 766	—	21
Mexico	24 085	17 059	6 601	—	425	16
Netherlands	17 157	16 650	—	507	—	22
Norway, Svbd, J. Myn 1	23 672	254	23 418	—	—	17
Poland	29 773	27 797	1 976	—	—	15
Romania	19 682	15 250	4 432	—	—	20
South African Customs Union	31 343	27 332	2 081	1 930	—	14
Spain	35 079	15 102	14 431	5 546	—	11
Sweden	33 100	7 634	15 813	9 648	5	13
Switzerland, Lichtenstein	15 210	750	11 510	2 950	—	26
S. Arabia, pt. Ntrl. Zn	14 120	14 120	—	—	—	28
Turkey	10 113	6 220	3 878	—	15	33
United Kingdom	66 512	55 177	4 190	7 144	1	7
United States	719 444	547 111	84 152	86 548	1 633	1
Venezuela	12 499	8 073	4 426	—	—	30
Yugoslavia	16 132	7 900	7 000	632	600	24

\* Countries with installed capacity of 10 000 MW and greater.

Production of electricity (self-producers and public), GW.h					Trade of electricity, GW.h			
Total	Thermal	Hydro	Nuclear	Geothermal	Imports	Exports	GW.h available	kW.h per capita
9 962 264	6 349 241	2 027 100	1 556 323	29 600	220 913	214 052	9 969 125	2 028
260 468	198 200	53 125	8 803	340	4 239	4 091	260 606	410
1 867 324	1 284 570	347 422	228 942	6 390	3 111	2 876	1 867 559	649
2 529 594	1 398 914	453 352	671 491	5 837	156 340	129 521	2 556 413	5 183
3 201 683	2 059 237	642 119	485 305	15 022	46 333	45 330	3 202 686	7 883
160 640	120 082	38 547	—	2 011	—	—	160 640	6 425
369 901	82 794	281 251	5 856	—	10 590	3 234	377 257	1 379
1 598 890	1 222 348	215 738	160 804	—	300	29 000	1 570 190	5 582
48 984	22 257	21 015	5 712	—	—	6	48 978	1 578
127 659	111 307	15 515	—	837	—	—	127 659	8 029
44 134	12 973	31 161	—	—	5 962	7 426	42 670	5 688
57 621	17 884	343	39 394	—	5 308	5 521	57 408	5 791
201 618	18 859	182 615	144	—	10 568	9	212 177	1 532
41 817	27 420	2 326	12 071	—	5 427	1 470	45 774	5 025
468 571	86 602	310 702	71 267	—	4 957	38 934	434 594	16 914
444 130	344 130	100 000	—	—	1 208	42	445 296	423
84 775	62 919	3 991	17 865	—	10 077	8 620	86 232	5 518
46 855	16 651	12 206	17 998	—	6 212	492	52 575	10 708
343 045	40 786	60 859	241 400	—	7 800	33 000	317 845	5 798
115 291	102 616	1 767	10 908	—	4 872	3 873	116 290	6 928
406 386	270 142	16 664	119 580	—	20 592	15 461	411 517	6 774
202 574	143 788	53 764	5 022	—	15	100	202 489	262
36 800	30 600	6 200	—	—	—	—	36 800	801
188 989	136 281	41 190	8 758	2 760	23 928	1 814	211 103	3 681
671 770	415 350	86 560	168 310	1 550	—	—	671 770	5 533
69 763	37 433	4 019	28 311	—	—	—	69 763	1 663
97 518	68 330	27 473	—	1 715	126	1 468	96 176	1 188
67 123	63 120	—	4 003	—	2 383	12	69 494	4 774
96 359	432	95 927	—	—	4 212	2 169	98 402	23 706
140 294	136 512	3 782	—	—	7 833	7 796	140 331	3 774
71 580	59 500	12 080	—	—	3 000	—	74 580	3 218
148 556	134 566	5 187	8 803	—	—	300	148 256	4 238
127 713	63 953	26 314	37 446	—	2 896	4 152	126 457	3 262
138 023	7 080	60 694	70 243	6	1 819	6 451	133 391	15 979
54 857	988	32 566	21 303	—	14 512	23 098	46 271	7 220
32 900	32 900	—	—	—	—	—	32 900	2 740
39 695	27 778	11 873	—	44	777	—	40 472	804
298 156	235 009	4 067	59 079	1	4 444	189	302 411	5 366
2 582 510	1 861 601	294 594	414 038	12 277	40 713	4 816	2 618 407	10 906
46 724	25 424	21 300	—	—	—	8	46 716	2 626
77 381	43 918	26 769	4 019	2 675	2 664	2 178	77 867	3 340



# Conversion factors and equivalents

## Heat/energy

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

## Calorific value, mass basis

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

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

## Other

1 cu sec	= 0,028 317 m <sup>3</sup> /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 <sup>3</sup> = 1 000 cm <sup>3</sup> )
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 <sup>3</sup> 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 <sup>c</sup>	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 GW.h in a typical modern power station. One ton of natural uranium, when used in a Magnox reactor, will supply about 30 GW.h.

*a 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.*

*b Centigrade heat unit.*

*c 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)

kW.h = kilowatt hour (unit)

MW.h = megawatt hour (1 000 units)

GW.h = gigawatt hour (1 000 000 units)