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P. Semark
General Manager, Generation

Head Office
Megawatt Park, Maxwell Drive,
Sunninghill Park, Sandton

Postal address
P.O. Box 1091,
2000 Johannesburg
Republic of South Africa

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Escom's Statistical Yearbook

Last year we published the Statistical Yearbook for the first time. It represents our entry into the world of technical statistics and we assess its role from many different perspectives: a valuable contribution to professionals and researchers; a desire to express Escom's technical achievements in the language of figures; a means to create perspective in an African and world context from which to view Escom and its role; an official document which we hope will form the base line from which the curve of progress is traced.

In all these aspects, the Yearbook has proved an unqualified success.

Within three months of its publication, the demand exhausted our stocks. From all over the world and from all possible categories of the public the requests streamed in.

This year the Yearbook has been amplified. Experience coupled with public response has led to us delete a certain number of tables from the document while adding others. These are tables which refer specifically to the generation of power in an African context. We have experienced difficulty in obtaining these figures and although some of them are incomplete, I believe that these tables contribute substantially to the Yearbook's value.

I.C. McRAE
Chief Executive
Chairman of Escom Management Board
June 1987

Escom Statistics – 1986

Highlights of Escom's year

	1986	1985	1984	1983	1982	1981	Change 1985-86 %	Average yearly increase 1981-86 %
Financial								
Revenue (R million)	**5 845**	4 625	3 832	3 302	2 695	2 141	26,4	22,2
Charges against revenue (R million)	**5 645**	4 585	3 995	3 405	2 753	2 218	23,1	20,5
Net expenditure on fixed assets (R million)	**3 770**	4 757	3 719	2 757	2 741	1 951	–20,7	14,1
Fixed assets at 31 December (R million)	**27 633**	23 969	19 261	15 591	12 858	10 144	15,3	22,2
Average price per kW.h sold (cents)	**4,98**	4,12	3,58	3,36	2,80	2,28	20,9	16,9
Average cost per kW.h sold (cents)	**4,81**	4,08	3,74	3,47	2,86	2,36	17,9	15,3
Average coal cost per ton (Rand)	**14,87**	13,25	12,55	12,44	11,75	9,71	12,2	8,9
Electricity sold by Escom (mill. kW.h)	**117 353**	112 306	106 904	98 251	96 136	93 844	4,5	4,6
Operating statistics								
Total electricity sent out by Escom (mill. kW.h)	**126 766**	122 494	117 086	108 321	104 920	100 425	3,5	4,8
Electricity available for distribution (mill. kW.h)	**123 748**	119 229	113 898	105 404	102 516	99 713	3,8	4,4
Coal burnt in Escom power stations (Mt)	**58,9**	59,5	58,7	55,0	55,2	53,9	–1,0	1,8
Water consumed in Escom power stations (Mℓ)	**262 372**	275 716	269 868	255 654	265 933	235 138	–4,8	2,2
Peak demand on integrated Escom system (MW)	**18 278** **(20/6/86)**	17 852 (12/7/85)	17 296 (15/6/84)	15 639 (10/8/83)	15 532 (2/7/82)	14 674 (12/6/81)	2,4	4,5
Escom plant in service at 31 December								
Installed capacity (MW)	**28 086**	25 716	24 514	22 949	21 749	20 049	9,2	7,0
Assigned sent-out rating (MW)	**26 682**	24 359	23 168	21 673	20 523	18 989	9,5	7,0
Transmission lines:								
765 kV (km)	**427**	—	—	—	—	—	—	—
533 kV (DC)(km)	**1 030**	1 030	1 030	1 030	1 030	1 030	—	—
400-220 kV (km)	**18 012**	17 488	16 842	16 017	15 251	14 998	3,0	3,7
165 kV and below (km)	**153 103**	142 528	130 425	121 343	111 535	105 344	7,4	7,8
Underground cables:								
132 kV and below (km)	**5 201***	8 378	8 024	7 596	7 319	7 191		
Capacity of transformers (MVA)	**109 395***	169 112	156 198	143 590	136 131	126 638		
Staff employed at 31 December	**60 800**	66 000	64 560	62 420	58 850	52 080	–7,9	3,1

**With the reorganisation of Distribution into smaller, more manageable regions, the statistics for 1986 have been collected by each region using the zero-based method. In previous years, the annual growth was added onto the totals and it would appear that no allowance was made for decommissioned plant or circuits sold to other supply authorities.*

Since fairly substantial differences now appear it is the intention to carry out a "census" type assessment this year and this will be repeated at 3-yearly intervals.

Table 1 ESCOM

Financial statistics

	1986	1985	1984	1983	1982	1981
Electricity sold						
Electricity thousand GW.h sold	**117**	112	107	98	96	94
Annual increase – thousand GW.h	**5**	5	9	2	2	6
Annual increase – %	**4,49**	5,05	8,81	2,20	2,44	7,20
Electricity sold (R'million)	**5 845**	4 625	3 832	3 302	2 695	2 141
Annual increase – %	**26,39**	20,69	16,05	22,50	25,91	20,81
Cents per kW.h	**4,98**	4,12	3,58	3,36	2,80	2,28
Annual Increase – %	**20,95**	14,89	6,65	19,86	22,91	12,69
Charges against revenue (R'million)						
OPERATING EXPENDITURE	**2 465**	2 144	1 909	1 691	1 401	1 061
Annual increase – %	**15,00**	12,28	12,88	20,75	32,00	26,87
Cost of fuel	**1 055**	893	853	727	694	570
Annual increase – %	**18,08**	4,75	17,35	4,69	21,76	40,51
LOAN CHARGES	**3 060**	2 291	1 565	1 214	877	721
Annual increase of loan charges %	**33,57**	46,36	29,00	38,42	21,66	18,85
Interest and finance charges	**2 540**	1 922	1 284	940	722	604
Redemption of loans	**521**	369	282	274	155	117
Interest charges capitalised	**935**	1 235	1 056	726	583	296
Operating surplus (R'million)	**320**	190	357	397	418	359
APPROPRIATION TO FUNDS	**120**	150	520	500	476	436
Capital Development Fund	**0**	0	450	450	450	435
Reserve Fund	**120**	150	70	50	26	1
SURPLUS OR DEFICIT	**200**	40	–163	–103	–58	–77
Ratio surplus before interest: interest	**1,10**	1,08	1,23	1,33	1,48	1,50
Total assets (R'million)	**35 664**	31 145	24 414	18 975	14 698	11 021
FIXED ASSETS	**27 633**	23 969	19 261	15 591	12 858	10 144
Assets in Commission at cost	**19 907**	15 497	12 058	9 219	7 689	6 323
Works under construction	**7 514**	8 278	7 028	6 210	5 017	3 721
Equipment at book value	**212**	195	175	162	152	100
STORES MATERIALS AND FUEL	**969**	868	714	672	448	306
OTHER NON-CURRENT ASSETS	**6 339**	5 749	3 837	2 352	1 082	362
CURRENT ASSETS (exc stores, mat and fuel)	**723**	559	602	360	310	209
Financed by (R'million)						
CURRENT LIABILITIES	**3 302**	2 321	1 955	1 445	1 050	872
BORROWINGS	**19 348**	18 153	14 006	10 761	8 534	6 334
STATUTORY FUNDS AND RESERVES	**13 014**	10 671	8 453	6 768	5 114	3 815
Ratio Borrowings: Equity	**1,49**	1,70	1,66	1,59	1,67	1,66

Table 2 ESCOM

Source and application of funds

	1986	1985	1984	1983	1982	1981
Source of funds (R'million)						
Internal funds generated	**2 782**	1 497	1 389	1 277	1 047	814
External finance	**5 041**	5 783	3 512	2 550	2 605	1 804
Change in working capital	**829**	106	–237	–5	25	40
Other	**21**	14	19	12	10	50
TOTAL SOURCE OF FUNDS	**8 673**	7 400	4 682	3 835	3 687	2 709
Application of funds (R'million)						
Repayment of loans	**4 625**	2 177	550	538	777	666
Fixed assets	**3 770**	4 757	3 719	2 757	2 741	1 951
Other	**278**	466	413	540	168	92
TOTAL APPLICATION OF FUNDS	**8 673**	7 400	4 682	3 835	3 687	2 709

Growth in key statistics

	1981	1982	1983	1984	1985	1986
Electricity thousand GW.h sold	100	102	105	114	120	125
Revenue	100	126	154	179	216	273
Operating expenditure	100	132	159	180	202	232
Cost of fuel	100	122	127	150	157	185
Loan charges	100	122	168	217	318	425
Interest and finance charges	100	120	156	213	318	421
Redemption of loans	100	132	234	241	315	445
Interest charges capitalised	100	197	245	357	418	316
Operating surplus	100	116	111	99	53	89
Total assets	100	133	172	222	283	324
Fixed assets	100	127	154	190	236	272
Assets in Commission at cost	100	122	146	191	245	315
Works under construction	100	135	167	189	222	202
Equipment, vehicles, etc.	100	153	162	175	195	212
Stores material and fuel	100	146	219	233	283	317
Current assets (exc. stores, mat and fuel)	100	148	172	288	268	346
Current liabilities	100	120	166	224	266	379
Borrowings	100	135	170	221	287	305
Statutory funds and reserves	100	134	177	222	280	341

Table 4

Escom operating statistics

	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Plant performance															
Total power station capacity, installed rating, MW	**28 086**	25 716	24 514	22 949	21 749	20 049	18 349	15 974	14 434	13 556	12 444	11 242	10 692	10 142	9 551
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	13 595	12 756	11 688	10 522	10 002	9 482	8 849
Peak demand on integrated Escom system, MW	**18 278**	17 852	17 296	15 639	15 532	14 674	13 668	12 855	11 490	10 735	10 085	9 185	8 552	7 350	6 630
Average station availability[1]	**78,5**	77,5	74,9	71,9	74,3	74,2	74,7	78,8	77,4	78,5	82,3	85,0	83,7	82,5	
Station load factor, per cent[2]	**55,5**	58,0	58,1	55,6	59,3	62,2	57,8	60,9	60,7	61,9	66,8	68,6	66,3	62,6	59,6
Integrated Escom system load factor, per cent	**77,3**	76,2	75,0	76,9	75,3	77,6	77,5	76,4	77,3	75,8	76,1	76,5	75,1	77,3	76,4
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	39 589,5	37 505,6	37 257,4	34 231,7	30 891,4	27 907,9	24 952,8
Coal burnt, kg/kW.h sent out	**0,515**	0,522	0,533	0,546	0,551	0,563	0,568	0,580	0,574	0,576	0,579	0,567	0,560	0,563	0,571
Average heat rate of coal-fired station, MJ/kW.h sent out	**10,95**	11,26	11,45	11,57	11,82	12,01	12,16	12,33	12,44	12,55	12,66	12,59	12,56	12,65	13,07
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	21,61	21,78	21,87	22,21	22,42	22,47	22,89
Overall thermal efficiency, sent-out basis	**32,9**	32,0	31,4	31,1	30,5	30,0	29,6	29,2	28,9	28,7	28,4	28,6	28,7	28,5	27,5
Average coal cost, R/ton	**14,87**	13,25	12,55	12,44	11,75	9,71	8,12	6,96	6,67	6,22	5,39	4,05	2,92	2,39	2,25
Average coal cost, c/kW.h sent out	**0,6815**	0,691 6	0,669 2	0,679 3	0,647 1	0,547 3	0,461 4	0,404 5	0,382 4	0,358 2	0,312 2	0,229 5	0,163 7	0,134 8	0,128 5
Electricity output															
Total electricity sent out in South Africa, million kW.h[3]	**130 083**	125 962	120 835	112 366	109 536	106 135	99 905	92 615	84 812	79 352	75 381	70 111	66 412	60 700	55 332
Escom electricity available for distribution as a percentage of South African total	**95,1**	94,7	94,3	93,8	93,6	93,9	93,0	92,8	91,7	89,8	89,4	87,8	84,7	82,0	80,4
Total electricity sent out on Escom system (Escom stations and purchased), million kW.h[4]	**126 766**	122 494	117 086	108 321	104 920	100 425	93 021	86 037	77 826	71 291	67 414	61 533	56 259	49 770	44 485
Total sent out from Escom stations, million kW.h	**126 511**	121 987	116 581	103 295	102 769	97 824	83 362	75 643	70 902	67 050	66 188	61 498	56 251	49 759	44 475
Sub-total, from coal-fired stations, million kW.h	**114 298**	113 941	110 094	100 738	100 217	95 675	82 342	74 485	69 004	65 114	64 309	60 400	55 141	49 570	43 662
Sub-total, from hydro-electric stations, million kW.h	**1 623**	624	560	595	1 016	1 653	992	1 144	1 887	1 924	1 853	1 098	1 110	189	813
Sub-total, from pumped-storage station, million kW.h	**1 785**	2 107	1 994	1 957	1 519	415	—	—	—	—	—	—	—	—	—
Sub-total, from diesel and gas-turbine stations, million kW.h	**2**	0	8	5	17	81	28	14	11	12	26	—	—	—	—
Sub-total, nuclear power station, million kW.h	**8 803**	5 315	3 925	—	—	—	—	—	—	—	—	—	—	—	—
Total purchased by Escom and sent out on Escom system, million kW.h	**255**	507	505	5 026	2 151	2 601	9 659	10 394	6 924	4 241	1 226	35	8	11	10
Total consumed by Escom, million kW.h[5]	**3 018**	3 265	3 188	2 917	2 404	712	71	58	52	27	—	—	—	—	—
Total available for distribution, million kW.h	**123 748**	119 229	113 898	105 404	102 516	99 713	92 950	85 979	77 774	71 264	67 414	61 533	56 259	49 770	44 485
Total sold, million kW.h[6]	**117 353,0**	112 305,9	106 904,1	98 251,1	96 135,9	93 844,0	87 539,3	80 582,8	72 780,4	67 125,4	63 355,7	57 869,2	52 585,1	46 578,4	41 648,9
Growth in kW.h sales, per cent	**4,5**	5,1	8,8	2,2	2,4	7,2	8,6	10,7	8,4	5,9	9,5	10,0	12,9	11,8	9,5
Employees															
Total number at 31 December	**60 800**	66 000	64 560	62 420	58 850	52 080	47 490	43 690	41 040	39 112	36 915	33 999	29 891	28 559	26 937
Ratio number/million kW.h sold	**0,518**	0,588	0,604	0,635	0,612	0,555	0,542	0,542	0,564	0,583	0,583	0,588	0,568	0,613	0,647
Assets															
In commission at 31 December, Rand '000	**19 907 000**	15 496 953	12 058 241	9 218 946	7 689 399	6 323 048	5 604 038	4 255 502	3 564 600	2 851 103	2 311 725	2 008 917	1 847 484	1 699 279	1 526 697
Ratio Rand '000/million kW.h sold	**169,64**	137,99	112,79	93,83	79,98	67,38	64,02	52,81	48,98	42,47	36,49	34,71	35,13	36,48	36,66

[1]Capacity hours available x 100/total capacity hours in year
[2]kW.h sent out x 100/(assigned sent-out rating x hours in year)
[3]Electricity sent out by Escom and municipalities which generate all or part of their electricity requirements
[4]Includes Escom electricity sent out to neighbouring countries
[5]In respect of pumped-storage facilities and synchronous condensor mode of operation. See Table 9, Note 4.
[6]Difference between electricity available for distribution and electricity sold is due to transmission losses.

Table 5

Summary of operations over 37 years

	Coal-fired power stations							Power station output (sent-out basis)							
	Coal used					Coal cost									
Year	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	Coal-fired stations GW.h	Hydro-electric stations GW.h	Pumped-storage station GW.h	Diesel and gas-turbine stations GW.h	Nuclear station GW.h	Total power station output GW.h	Total power station capacity assigned sent-out rating at 31 December MW	Average power station plant load factor sent-out basis %
1950	6 323,4	22,72	0,869	19,74	18,2	0,84	0,072 9	7 276	7	—	4	—	7 287	1 290	64,7
1951	6 662,9	22,72	0,855	19,43	18,5	0,98	0,084 0	7 797	6	—	3	—	7 806	1 361	66,1
1952	7 113,4	22,75	0,865	19,68	18,3	1,20	0,103 7	8 220	6	—	1	—	8 227	1 454	66,9
1953	7 393,9	23,08	0,837	19,32	18,6	1,33	0,111 6	8 838	7	—	—	—	8 845	1 635	65,5
1954	8 024,9	23,06	0,805	18,56	19,4	1.41	0,113 6	9 971	6	—	—	—	9 977	1 846	66,4
1955	8 999,7	22,89	0,788	18,04	20,0	1,52	0,120 1	11 419	6	—	—	—	11 425	2 145	65,9
1956	9 688,5	22,96	0,765	17,56	20,5	1,62	0,123 6	12 663	7	—	—	—	12 670	2 498	61,2
1957	10 220,6	22,79	0,750	17,09	21,1	1,69	0,126 6	13 634	6	—	—	—	13 640	2 555	61,1
1958	10 784,1	22,73	0,743	16,89	21,3	1,77	0,131 2	14 511	5	—	—	—	14 516	2 748	62,0
1959	11 548,7	22,44	0,732	16,43	21,9	1,82	0,132 9	15 774	3	—	—	—	15 777	2 983	62,6
1960	12 512,6	22,52	0,723	16,28	22,1	2,03	0,146 6	17 306	2	—	—	—	17 308	3 091	65,2
1961	13 194,9	22,39	0,722	16,17	22,3	2,10	0,151 6	18 282	2	—	—	—	18 284	3 226	66,2
1962	13 955,5	22,22	0,719	15,98	22,5	2,09	0,150 7	19 401	3	—	—	—	19 404	3 406	65,8
1963	14 721,1	22,15	0,708	15,68	23,0	2,11	0,149 2	20 789	4	—	—	—	20 793	3 788	65,7
1964	15 654,7	22,15	0,692	15,33	23,5	2,07	0,143 0	22 634	5	—	—	—	22 639	4 077	65,2
1965	16 726,7	22,39	0,680	15,23	23,6	2,09	0,142 3	24 583	—	—	—	—	24 583	4 181	67,4
1966	16 982,3	22,20	0,666	14,79	24,4	2,23	0,148 6	25 504	—	—	—	—	25 504	4 377	67,1
1967	18 307,7	22,44	0,645	14,47	24,9	2,30	0,148 2	28 371	—	—	—	—	28 371	5 328	66,8
1968	19 133,9	22,63	0,620	14,03	25,6	2,33	0,144 6	30 843	—	—	—	—	30 843	5 800	62,9
1969	19 982,9	22,73	0,595	13,52	26,6	2,37	0,141 2	33 598	—	—	—	—	33 598	6 441	62,1
1970	21 630,6	22,97	0,580	13,32	27,0	2,26	0,130 8	37 321	—	—	—	—	37 321	7 060	62,9
1971	23 416,2	23,30	0,576	13,42	26,8	2,25	0,129 7	40 645	94	—	—	—	40 739	8 373	61,3
1972	24 952,8	22,89	0,571	13,07	27,5	2,25	0,128 5	43 662	813	—	—	—	44 475	8 849	59,6
1973	27 907,9	22,47	0,563	12,65	28,5	2,39	0,134 8	49 570	189	—	—	—	49 759	9 482	62,5
1974	30 891,4	22,42	0,560	12,56	28,7	2,92	0,163 7	55 141	1 110	—	—	—	56 251	10 002	66,3
1975	34 231,7	22,21	0,567	12,59	28,6	4,05	0,229 5	60 400	1 098	—	—	—	61 498	10 522	68,6
1976	37 257,4	21,87	0,579	12,66	28,4	5,39	0,312 2	64 309	1 853	—	26	—	66 188	11 688	66,8
1977	37 505,6	21,78	0,576	12,55	28,7	6,22	0,358 2	65 114	1 924	—	12	—	67 050	12 756	61,9
1978	39 589,5	21,61	0,574	12,44	28,9	6,67	0,382 4	69 004	1 887	—	11	—	70 902	13 595	60,7
1979	43 264,9	21,22	0,580	12,33	29,2	6,96	0,404 5	74 485	1 144	—	14	—	75 643	15 056	60,9
1980	46 755,0	21,34	0,568	12,16	29,6	8,12	0,461 4	82 342	992	—	28	—	83 362	17 339	57,8
1981	53 903,7	21,25	0,563	12,01	30,0	9,71	0,547 3	95 675	1 653	415	81	—	97 824	18 989	62,2
1982	55 198,4	21,39	0,551	11,82	30,5	11,75	0,647 1	100 217	1 016	1 519	17	—	102 769	20 523	59,3
1983	55 010,2	21,11	0,546	11,57	31,1	12,44	0,679 3	100 738	595	1 957	5	—	103 295	21 673	55,6
1984	58 703,6	21,38	0,533	11,45	31,4	12,55	0,669 2	110 094	560	1 994	8	3 925	116 581	23 168	58,1
1985	59 488,6	21,52	0,522	11,26	32,0	13,25	0,691 6	113 941	624	2 107	0	5 315	121 987	24 359	58,0
1986	58 915,9	21,19	0,515	10,95	32,9	14,87	0,681 5	114 298	1 623	1 785	2	8 803	126 511	26 682	55,5

Water consumption

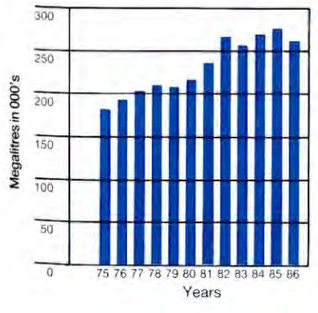


Table 6

Power station operating statistics for the year ended 31 December 1986

Power station	Sent-out rating on 31 December 1986 MW	Energy sent out million kW.h	Maximum demands 1 hour sent out MW	Station load factor[1] %	Specific water consumption ℓ/kW.h sent out	Availability[3] %	Overall thermal efficiency % sent out	Fuel burnt tons	kg of coal/kW.h sent out	Heat content of coal (as received) MJ/kg	Station heat rate MJ/kW.h sent out
Coal-fired stations											
Arnot	1 980	11 458	2 039	66,1	2,44	81,4	33,5	5 644 615	0,493	21,74	10,75
Camden	1 520	6 594	1 361	49,5	2,51	70,9	28,2	3 641 715	0,552	23,04	12,75
Duvha	3 450	22 047	3 458	73,0	2,00	79,4	34,8	10 217 154	0,463	22,30	10,36
Grootvlei	1 130	4 586	1 078	46,3	1,76	69,0	30,0	2 489 018	0,543	22,05	12,01
Hendrina	1 900	11 586	1 938	69,6	2,61	81,7	31,2	5 978 653	0,516	22,35	11,55
Hex River	111	6	54	0,6	4,81	96,7	17,5	4 416	0,749	27,70	20,55
Highveld	412	441	326	12,2	4,21	75,4	25,3	315 119	0,714	19,73	14,26
Ingagane	465	1 908	474	46,8	4,04	89,0	28,1	1 089 963	0,571	22,26	12,79
Klip[9]	0[2]	4	30	2,2	10,48	100,0	11,6	7 342	1,757	17,61	30,95
Komati	906	3 506	768	44,2	2,83	68,7	26,3	2 187 942	0,624	21,91	13,71
Kriel	2 850	16 395	2 587	65,7	1,99	69,0	35,1	8 085 259	0,493	20,77	10,25
Lethabo	1 186[2]	5 082	1 248	61,6	1,84	70,8	34,2	3 415 171	0,672	15,48	10,52
Matla	3 450	19 192	3 542	63,5	1,93	85,9	35,3	9 486 709	0,494	20,58	10,19
Salt River	228	—[6]	111	0,4[7]	5,78[7]	88,8	14,9[7]	7 950	0,925[7]	26,21	24,23[7]
Taaibos	440	535	390	13,9	4,60	96,2	23,9	407 957	0,763	19,61	15,05
Tutuka	1 755[2]	9 271	1 767	77,6	1,88	86,5	36,6	4 288 510	0,463	21,12	9,85
Umgeni	222	—[6]	112	0,3[7]	21,50[7]	98,8	23,6[7]	3 931	0,554[7]	27,54	15,26[7]
Vaal	270	575	197	24,3	4,82	82,2	15,6	725 214	1,262	18,28	23,07
Vierfontein	336	234	256	8,0	9,24	83,8	17,3	246 296	1,053	19,77	20,81
West Bank	80	4	72	0,6	5,96	96,6	11,4	4 808	1,212	26,10	31,64
Wilge	221	874	192	45,2	4,40	67,9	23,3	668 115	0,764	20,16	15,45
Sub-total for coal-fired stations	**22 912**	**114 298**		**58,5**	**2,22**	**78,9**	**32,9**	**58 915 857**	**0,515**	**21,19**	**10,95**
Gas-turbine and diesel stations											
Acacia	171	—[6]	91	0,1		96,2		291			
Port Rex	171	1	129	0,2		97,0		821			
Paratus[8]	48[2]	1		0,7		—		22			
Sub-total for gas turbine stations	**390**	**2**		**0,1**		**96,6**		**1 134**			
Hydro-electric stations											
Hendrik Verwoerd	320	792	390	28,3		95,4					
Vanderkloof	220	831	273	43,2		95,0					
Sub-total for hydro stations	**540**	**1 623**		**34,3**		**95,2**					
Pumped-storage station											
Drakensberg	1 000	1 785	1 118	20,4		88,5					
Sub-total for pumped-storage station	**1 000**	**1 785**		**20,4**		**88,5**					
Nuclear station											
Koeberg	1 840	8 803	1 857	54,6	0,12	60,4		15 472[4]	77,5[5]		
Sub-total for nuclear station	**1 840**	**8 803**		**54,6**	**0,12**	**60,4**					
Total/weighted average all Escom	**26 682**	**126 511**		**55,5**		**78,5**					
Other power sources											
Cahora Bassa	1 355	—[6]									
Swawek		228									
Tescor		24									
Other		3									
Sub-total for other power sources	**1 355**	**255**									
Total/weighted average	**28 037**	**126 766**		**52,8**		**74,6**					

[1] *Station load factor* $= \frac{kW.h\ sent\ out \times 100}{(assigned\ sent\text{-}out\ rating) \times hours\ in\ year}$

[2] *Operating statistics are based on average capacity during the year*

[3] *Availability* $= \frac{capacity\ hours\ available \times 100}{total\ capacity\ hours\ in\ year}$

[4] *Burn-up of nuclear fuel MW.d/t*

[5] *Burn-up as a percentage of target burn-up for cycle*

[6] *Auxiliary consumption exceeded energy generated*

[7] *Based on energy generated*

[8] *Taken over by Escom on 23 October 1986 from Swawek*

[9] *The power station was decommissioned in March 1986*

Power stations on order as at 31 December 1986

Name of station	Type	Location	No. and rating of generator sets MW	Total installed rating MW	Total sent-out rating MW	Year of completion first set	Year of completion last set
Kendal	Coal-fired	Kendal	6 x 686	4 116	3 780	1988	1993
Lethabo	Coal-fired	Vereeniging	4 x 618	2 472	2 372	1986	1990
Majuba	Coal-fired	Volksrust	6 x 657	3 942	3 690	1991	1995[2]
Matimba	Coal-fired	Ellisras	6 x 665	3 990	3 690	1987	1991
Palmiet	Pumped-storage	Grabouw	2 x 200	400	400	1987	1988
Tutuka	Coal-fired	Standerton	3 x 609	1 827	1 755	1985	1990
Power stations under construction[1]				**16 747**	**15 687**		
Plant on order at 31 December 1985				18 583	17 450		
Less plant taken into commercial service during 1986[3]				1 836	1 763		
Plus plant placed on order in 1986				—	—		
Total, plant on order at 31 December 1986				**16 747**	**15 687**		

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

[2] *Construction of sets 4, 5 and 6 has been deferred.*

[3] *During 1986, the following plant was taken into commercial service:*

	Installed rating	*Sent-out rating*
Letabo, Set 2:	*618 MW*	*593 MW*
Tutuka, Set 2:	*609 MW*	*585 MW*
Tutuka, Set 3:	*609 MW*	*585 MW*
Total for 1986	***1 836 MW***	***1 763 MW***

Power stations under construction

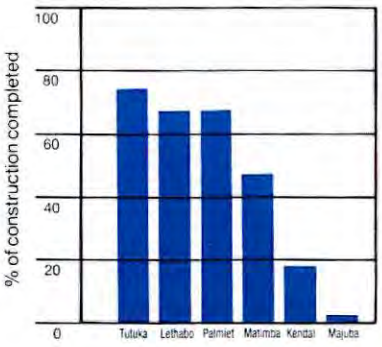


Table 8

ESCOM

Coal-fired power stations: 12 with highest thermal efficiency 1986

Station	Steam conditions at turbine inlet Pressure MPa (abs)	Steam conditions at turbine inlet Temperature °C	Assigned sent-out rating MW	Energy sent out GW.h	Station load factor %	Average heat content of all fuel burnt MJ/kg	Overall thermal efficiency sent-out basis %	Date of commercial operation	Type of steam supply
Tutuka	16,1	535	1 755	9 271	82,0	21,12	36,6	1985	Reheat
Matla	16,1	535	3 450	19 192	63,5	20,58	35,3	1979-83	Reheat
Kriel	16,0	510	2 850	16 395	65,7	20,77	35,1	1976-79	Reheat
Duvha	16,1	535	3 450	22 047	73,0	22,30	34,8	1980-84	Reheat
Lethabo	16,1	535	1 186	5 082	66,6	15,48	34,2	1986	Reheat
Arnot	15,9	510	1 980	11 458	66,1	21,74	33,5	1971-75	Reheat
Hendrina	10,3	538	1 900	11 586	69,6	22,35	31,2	1970-77	Non-reheat
Grootvlei	10,3	538	1 130	4 586	46,3	22,05	30,0	1969-77	Non-reheat
Camden	10,3	538	1 520	6 594	49,5	23,04	28,2	1967-69	Non-reheat
Ingagane	8,4	510	465	1 908	46,8	22,26	28,1	1963-69	Non-reheat
Komati	8,4	510	906	3 506	44,2	21,91	26,3	1962-66	Non-reheat
Highveld	6,3	482	412	441	12,2	19,73	25,3	1959-63	Non-reheat

Escom trends in plant availability, reliability and forced outage rate

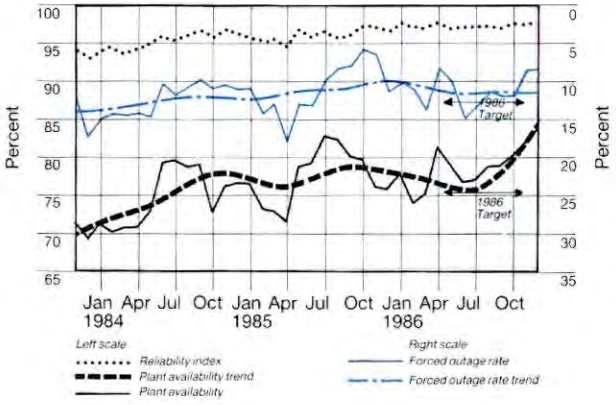


Table 9

Coal-fired power stations in service as at 31 December 1986

Name of station	Name of Colliery	Location	Station capacity[1]			Boilers		Main turbo-generators		Steam conditions at turbine inlet	
			Boilers kg/s	Installed rating Generators MW[1]	Assigned sent-out rating MW[1]	Number	Maximum continuous rating each kg/s	Number	Nominal rating each MW	Pressure MPa (abs)	Temperature °C
Arnot[4]	Arnot	Middelburg, Tvl	1 998,6	2 100	1 980	6	333,1	6	350	15,9/3,98	510/510
Camden[4]	Usutu	Ermelo	1 814,4	1 600	1 520	8	226,8	8	200	10,3	538
Duvha[4]	Douglas	Witbank	3 042,0	3 600	3 450	6	507,0	6	600	16,1/3,55	535/535
Grootvlei[4]	Springfield	Balfour	1 301,6	1 200	1 130	5	214,2	6	200	10,3	538
						1	230,6			10,3	538
Hendrina[4]	Optimum	Hendrina	2 142,0	2 000	1 900	10	214,2	10	200	10,3	538
Hex River[6]	—[3]	Worcester	170,0	120	111	4	25,2	3	20	4,2	427
						2	34,6	2	30	4,2	482
Highveld[5]	Coalbrook	Sasolburg	554,4	480	412	8	69,3	8	60	6,3	482
Ingagane[4]	Kilbarchan	Newcastle	567,0	500	465	5	113,4	5	100	8,4	510
Komati[4]	Blinkpan	Middelburg	1 133,8	1 000	906	5	113,4	5	100	8,4	510
						4	141,7	4	125	8,4	510
Kriel[4]	Kriel	Bethal	2 640,0	3 000	2 850	6	440,0	6	500	16,0/3,17	510/510
Lethabo[4]	New Vaal	Sasolburg	1 016,4	1 236	1 186	2	508,2	2	618	16,1/3,68	535/535
Matla[4]	Matla	Bethal	3 049,2	3 600	3 450	6	508,2	6	600	16,1/3,68	535/535
Salt River[6]	—[3]	Cape Town	328,0	240	228	10	32,8	4	30	4,2	482
								2	60	4,2	482
Taaibos[5]	Coalbrook	Sasolburg	584,0	480	440	8	73,1	8	60	4,2	441
Tutuka[4]	New Denmark	Standerton	1 521,0	1 827	1 755	3	507,0	3	609	16,1/3,55	535/535
Umgeni[6]	Kilbarchan	Pinetown	345,6	240	222	8	22,7	4	30	4,2	454
						5	32,8	2	60	4,2	454
Vaal[5]	Cornelia	Viljoensdrif	430,2	318[2]	270	18	23,9	9	33	2,5	427
Vierfontein[5]	Vierfontein	Viljoenskroon	503,5	360	336	19	26,5	12	30	4,2	441
West Bank[6]	—[3]	East London	138,6	85	80	4	21,4	3	15	2,9	427
						2	26,5	2	20	2,9	427
Wilge[4]	New Largo	Witbank	337,5	240	221	4	15,7	2	30	4,2	454
						4	50,4	3	60	4,2	454
						1	73,1				
Total			**23 617,8**	**24 226**	**22 912**	**164**		**131**			

[1]Difference between installed and sent-out rating reflects auxiliary power consumption and reduced capacity caused by age of the plant and/or low coal quality.
[2]Includes three 7 MW house sets.
[3]Non-pithead stations receiving coal from TCOA
[4]Base-load station
[5]Mid-merit station
[6]Station used for peaking or emergency supplies

Pumped storage, nuclear, hydro, gas-turbine and diesel power stations in service as at 31 December 1986

Power station	Location	Station capacity			Reactors		Main turbo-generators		Steam conditions at turbine inlet	
		Reactors kg/s	Installed rating Generators MW	Assigned sent-out rating MW	Number	Maximum continuous rating each kg/s	Number	Nominal rating each MW	Pressure MPa (abs)	Temp. °C
Gas-turbine and diesel stations[1]										
Acacia	Cape Town		171	171			3	57		
Port Rex	East London		171	171			3	57		
Paratus[2]	Walvis Bay		48	48			1	22,4		
							4	6,4		
Total, gas-turbine stations			**390**	**390**			**11**			
Hydro-electric stations[3]										
Hendrik Verwoerd	Norvalspont		320	320			4	80		
Vanderkloof	Petrusville		220	220			2	110		
Total, hydro-electric stations			**540**	**540**			**6**			
Pumped-storage station[4]										
Drakensberg	Bergville		1 000	1 000			4	250		
Total, pumped-storage station			**1 000**	**1 000**			**4**			
Nuclear plant										
Koeberg[6]	Cape Town	3 025	1 930	1 840	2	504,2	2	965	5,5/1,1	270/252
Total, nuclear plant		**3 025**	**1 930**	**1 840**	**2**		**2**			

Other power sources

Hydro-electric station	Firm contractual capacity MW
Cahora Bassa, Moçambique[5]	1 355

1. Used only for peaking or emergency supplies.

2. Taken over from SWAWEK during 1986.

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

4. 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.

5. Not available during 1986.

6. Base load station.

Table 11

ESCOM

Transmission and distribution equipment in service as at 31 December 1986

	Total 1985	Change 1986	Total 1986
Overhead lines, in circuit km[1]			
765 kV	—	427	427
533 kV DC (monopolar)	1 030	—	1 030
400 kV	9 914	371	10 285
275 kV	6 334	153	6 487
220 kV	1 240	—	1 240
165 kV to 132 kV	14 243	2 832	17 075
88 kV to 33 kV	21 001	(508)	20 493
22 kV and below	107 284	8 251	115 535
Total	**161 046**	**11 526**	**172 572**
Underground cables, in circuit km[1]			
165 kV to 132 kV	80	1,3	81,3
88 kV to 33 kV	378	857	1 235,0
22 kV and below	7 920	(4 035,3)	3 884,7
Total	**8 378**	**(3 177)**	**5 201**
Transformers[1]			
Capacity MVA	169 112	(59 717)	109 395
Number in service	97 298	835	98 133

[1] *With the reorganisation of Distribution into smaller, more manageable regions, the statistics for 1986 have been collected by each region using the zero-based method. In previous years, the annual growth was added onto the totals and it would appear that no allowance was made for decommissioned plant or circuits sold to other supply authorities.*

Since fairly substantial differences now appear, it is the intention to carry out a "census" type assessment this year and this will be repeated at 3-yearly intervals.

Transmission and distribution equipment: by Region as at 31 December 1986

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

	Transmission lines									Transformers		
Region	765 kV	533 kV DC (monopolar)	400 kV	275 kV	220 kV	165 kV to 132 kV	88 kV to 33 kV	22 kV and below	**Total**	Capacity MVA	Number in service	MVA/No
North-eastern Transvaal	—	809	259	750	—	2 081	372	7 276	**11 547**	775	6 107	0,13
Eastern Transvaal	—	—	1 590	729	—	1 863	1 361	12 343	**17 886**	6 157	7 282	0,85
Western Transvaal	—	50	392	733	—	2 177	2 833	18 736	**24 921**	16 621	13 371	1,24
Central Transvaal	—	171	331	629	—	267	1 365	4 679	**7 442**	10 944	4 627	2,37
Southern Transvaal	—	—	584	848	—	1 089	3 692	5 300	**11 513**	28 314	6 067	4,67
Orange Free State	427	—	1 058	567	—	1 959	2 333	17 809	**24 153**	9 766	9 748	1,00
Northern Cape	—	—	934	779	418	2 577	1 182	7 981	**13 871**	4 932	5 935	0,83
Western Cape	—	—	705	—	—	760	1 287	5 725	**8 477**	9 867	9 288	1,06
Southern Cape	—	—	737	—	—	1 556	1 350	7 269	**10 912**	2 408	12 373	0,19
Eastern Cape	—	—	2 021	—	822	1 586	1 469	10 245	**16 143**	5 744	6 418	0,89
Eastern Natal	—	—	254	484	—	340	1 211	5 840	**8 129**	6 316	7 950	0,79
Western Natal	—	—	1 420	968	—	820	2 038	12 332	**17 578**	7 551	8 967	0,84
Total	**427**	**1 030**	**10 285**	**6 487**	**1 240**	**17 075**	**20 493**	**115 535**	**172 572**	**109 395**	**98 133**	**1,11**

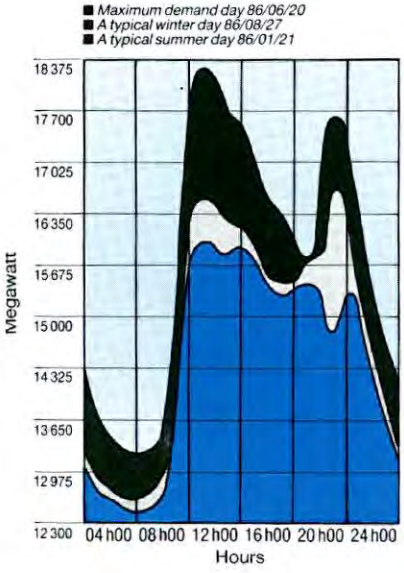
	Underground cables			
North-eastern Transvaal	—	—	42	**42**
Eastern Transvaal	—	—	55	**55**
Western Transvaal	—	1	31	**32**
Central Transvaal	24	1 056	2 221	**3 301**
Southern Transvaal	29	58	377	**464**
Orange Free State	—	2	34	**36**
Northern Cape	—	1	4	**5**
Western Cape	28	111	309	**448**
Southern Cape	—	5	78	**83**
Eastern Cape	—	—	3	**3**
Eastern Natal	—	—	510	**510**
Western Natal	—	1	221	**222**
Total	81	1 235	3 885	**5 201**

	Total lines and cables								
1986	427	1 030	10 285	6 487	1 240	17 156	21 728	119 420	**177 773**
1985	0	1 030	9 914	6 334	1 240	14 323	21 379	115 204	**169 424**
Change	427	0	371	153	0	2 833	349	4 216	**8 349**

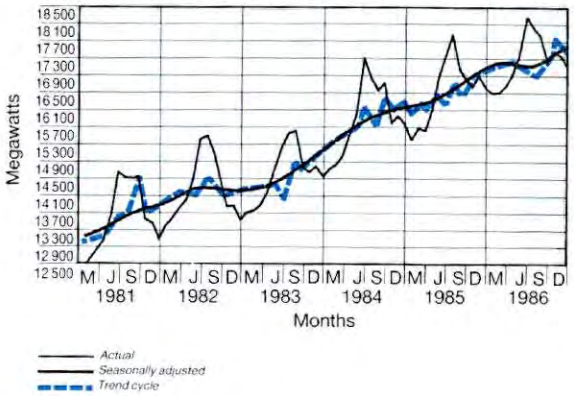
Maximum one-hour demand, MW

	1981	1982	1983	1984	1985	**1986**	Increase 1985-1986 %	Average yearly increase 1981-1986 %
Maximum simultaneous one-hour demand on total Escom system	09h00 12/6/81 14 674	09h00 2/7/82 15 532	09h00 10/8/83 15 639	09h00 15/6/84 17 296	11h00 12/7/85 17 852	**09h00 20/6/86 18 278**	2,4	4,5

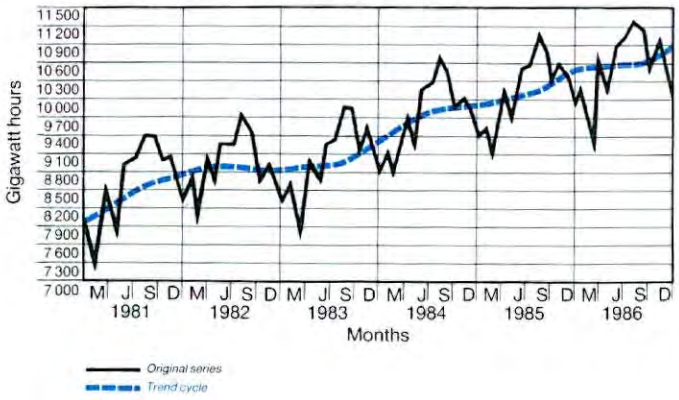
Electricity demand patterns



Maximum demand on Escom total integrated system



Escom total GW.h available for distribution

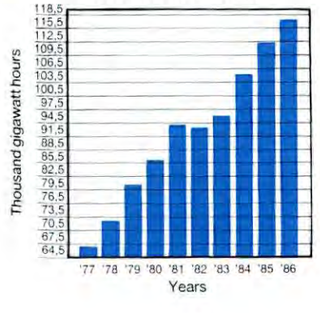


Electricity sent out and sold

	Electricity sent out								Electricity sales				Employees	
Year	South Africa total sent out GW.h	Escom electricity available for distribution as % of South African total[1]	Electricity sent out from Escom power stations GW.h	Electricity purchased from other sources GW.h	Own consumption GW.h	Available for distribution GW.h	Peak demand on integrated Escom system MW	Integrated Escom system load factor %	Ratio GW.h sold/ GW.h sent out	Electricity sold GW.h	Growth for the year %	Average selling price c/kW.h	Total number at 31 December	Ratio number/ GW.h sold
1950	10 437[2]	71,1	7 287	131	—	7 418	1 182[2]	71,6	0,932	6 910,6	11,1	0,274 1	9 352	1,353
1951	11 098[2]	72,1	7 806	195	—	8 001	1 212[2]	75,4	0,932	7 456,5	7,9	0,292 2	10 336	1,386
1952	11 678[2]	74,1	8 227	424	—	8 651	1 265[2]	77,9	0,934	8 080,6	8,4	0,311 5	10 889	1,348
1953	12 823[2]	73,3	8 845	550	—	9 395	1 394[2]	76,9	0,929	8 732,2	8,1	0,354 2	11 518	1,319
1954	14 167[2]	73,5	9 977	437	—	10 414	1 570[2]	75,7	0,929	9 676,6	10,8	0,380 8	12 317	1,273
1955	16 021[2]	73,4	11 425	339	—	11 764	1 806[2]	74,4	0,932	10 964,0	13,3	0,413 9	12 490	1,139
1956	17 293[2]	74,8	12 670	257	—	12 927	2 001[2]	73,5	0,930	12 019,5	9,6	0,428 5	12 977	1,080
1957	18 720	73,7	13 640	163	—	13 803	2 151[2]	73,3	0,925	12 763,1	6,2	0,447 8	13 421	1,052
1958	19 765	74,3	14 516	164	—	14 680	2 249[2]	74,5	0,927	13 602,1	6,6	0,473,3	14 312	1,052
1959	21 051	75,4	15 777	94	—	15 871	2 429[2]	74,6	0,928	14 724,5	8,3	0,495 1	13 947	0,947
1960	22 717	76,3	17 308	15	—	17 323	2 605[2]	75,7	0,929	16 094,1	9,3	0,507 9	14 654	0,911
1961	23 760	77,0	18 284	8	—	18 292	2 733[2]	76,4	0,930	17 013,2	5,7	0,515 5	15 441	0,908
1962	25 599	75,8	19 404	13	—	19 417	2 925[2]	75,3	0,933	18 121,0	6,5	0,516 4	16 467	0,909
1963	27 335	76,1	20 793	19	—	20 812	3 183[2]	74,6	0,937	19 500,0	7,6	0,517 7	16 804	0,862
1964	29 547[2]	76,8	22 639	41	—	22 680	3 460[2]	74,6	0,937	21 247,5	9,0	0,510 1	17 172	0,808
1965	31 939	77,4	24 583	126	—	24 709	3 669	76,9	0,937	23 143,3	8,9	0,507 6	17 851	0,771
1966	33 929[2]	77,0	25 504	630[3]	—	26 134	3 906	76,4	0,940	24 554,3	6,1	0,525 4	18 579	0,757
1967	36 897	77,1	28 371	70	—	28 441	4 227	76,8	0,937	26 657,1	8,6	0,546 7	19 817	0,743
1968	39 761	77,6	30 843	8	—	30 851	4 658	75,4	0,936	28 885,0	8,4	0,555 0	20 893	0,723
1969	42 847	78,4	33 598	8	—	33 606	5 055	75,9	0,937	31 505,6	9,1	0,556 5	21 644	0,687
1970	47 456	77,7	37 321	7	—	37 328	5 622	75,8	0,935	34 890,6	10,7	0,554 5	22 700	0,651
1971	51 081	79,8	40 739	8	—	40 747	6 115	76,1	0,934	38 040,0	9,0	0,577 2	25 050	0,659
1972	55 332	80,4	44 475	10	—	44 485	6 630	76,4	0,936	41 648,9	9,5	0,610 8	26 937	0,647
1973	60 700	82,0	49 759	11	—	49 770	7 350	77,3	0,936	46 578,4	11,8	0,648 4	28 559	0,613
1974	66 412[2]	84,7	56 251	8	—	56 259	8 552	75,1	0,935	52 585,1	12,9	0,682 2	29 891	0,568
1975	70 111	87,8	61 498	35	—	61 533	9 185	76,5	0,940	57 869,2	10,0	0,795 0	33 999	0,588
1976	75 381	89,4	66 188	1 226	—	67 414	10 085	76,1	0,940	63 355,7	9,5	1,036 0	36 915	0,583
1977	79 352	89,8	67 050	4 241	27	71 264	10 735	75,8	0,942	67 125,4	5,9	1,535 3	39 112	0,583
1978	84 812	91,7	70 902	6 924	52	77 774	11 490	77,3	0,936	72 780,4	8,4	1,788 7	41 040	0,564
1979	92 615	92,8	75 643	10 394	58	85 979	12 855	76,4	0,937	80 582,8	10,7	1,898 0	43 690	0,542
1980	99 905	93,0	83 362	9 659	71	92 950	13 668	77,5	0,942	87 539,3	8,6	2,024 2	47 490	0,542
1981	106 135	93,9	97 824	2 601	712	99 713	14 674	77,6	0,941	93 844,0	7,2	2,281 1	52 080	0,555
1982	109 536	93,6	102 769	2 151	2 404	102 516	15 532	75,3	0,938	96 135,9	2,4	2,803 8	58 850	0,612
1983	112 366	93,8	103 295	5 026	2 917	105 404	15 639	76,9	0,932	98 251,1	2,2	3,360 6	62 420	0,635
1984	120 835	94,3	116 581	505	3 188	113 898	17 296	75,0	0,939	106 904,1	8,8	3,584 2	64 560	0,604
1985	125 962	94,7	121 987	507	3 265	119 229	17 852	76,2	0,942	112 305,9	5,1	4,117 9	66 000	0,588
1986	130 083	95,1	126 511	255	3 018	123 748	18 278	77,3	0,948	117 353,0	4,5	4,9803	60 800	0,518

[1]Includes Escom electricity sent out to neighbouring territories.
[2]Estimates based on limited information.
[3]Includes purchases from City of Johannesburg during serious drought.
[4]Figures not available.

Electricity sales



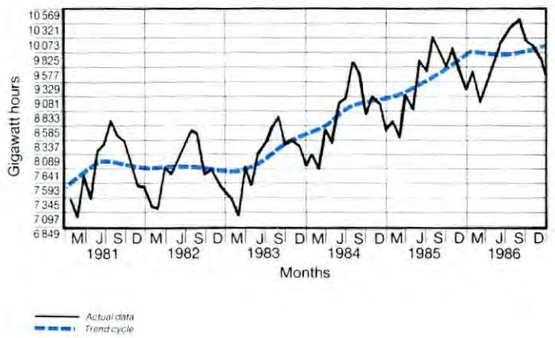
Escom total GW.h sold

Year	Traction	Bulk supply	Mining	Air and steam	Industrial and commercial	Domestic and street lighting
1950	524	1 106	3 899	277	991	114
1951	539	1 261	4 105	268	1 150	134
1952	555	1 459	4 333	265	1 338	131
1953	584	1 640	4 736	234	1 402	135
1954	619	1 839	5 317	220	1 540	142
1955	690	2 048	5 977	212	1 881	157
1956	740	2 282	6 445	191	2 187	174
1957	753	2 540	6 790	160	2 331	190
1958	789	2 838	7 136	154	2 480	206
1959	887	3 058	7 676	138	2 737	228
1960	1 045	3 243	8 259	126	3 169	253
1961	1 178	3 368	8 626	124	3 437	279
1962	1 296	3 570	9 143	116	3 692	303
1963	1 389	3 998	9 416	115	4 253	329
1964	1 559	4 494	9 847	94	4 873	381
1965	1 763	4 921	10 271	87	5 663	439
1966	1 836	5 344	10 775	40	6 069	492
1967	1 958	5 996	11 441	Terminated	6 729	563
1968	2 181	6 628	11 995		7 439	642
1969	2 307	7 264	12 642		8 574	719
1970	2 410	8 108	13 948		9 608	817
1971	2 616	9 265	14 227		11 014	918
1972	2 782	10 716	14 509		12 642	1 000
1973	2 896	12 752	15 800		14 026	1 105
1974	3 108	15 522	16 941		16 106	909
1975	3 307	18 055	17 444		18 050	1 013
1976	3 475	20 096	18 746		19 907	1 131
1977	3 508	20 862	20 139		21 586	1 030
1978	3 586	21 834	22 219		24 181	960
1979	4 035	24 133	24 000		27 475	940
1980	4 455	26 923	25 882		29 373	906
1981	4 660	29 961	27 131		31 091	1 002
1982	4 436	32 349	27 372		30 959	1 020
1983	4 137	32 729	28 021		32 286	1 078
1984	4 595	35 541	29 506		36 119	1 144
1985	4 587	37 451	30 849		38 215	1 204
1986	4 501	40 570	31 860		39 170	1 252

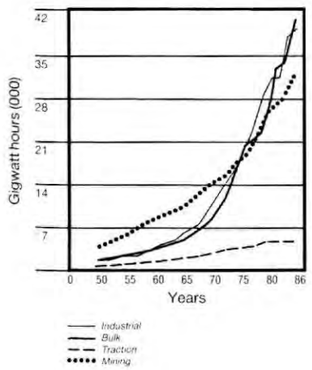
Sales as a percentage of the total GW.h sold

Year	Total sold	Traction	Bulk supply	Mining	Air and steam	Industrial and commercial	Domestic and street lighting
1950	6 911	7,6	16,0	56,4	4,0	14,3	1,6
1951	7 456	7,2	16,9	55,0	3,6	15,4	1,8
1952	8 080	6,9	18,1	53,6	3,3	16,6	1,6
1953	8 732	6,7	18,8	54,2	2,7	16,1	1,5
1954	9 677	6,4	19,0	54,9	2,3	15,9	1,5
1955	10 964	6,3	18,7	54,5	1,9	17,2	1,4
1956	12 020	6,2	19,0	53,6	1,6	18,2	1,4
1957	12 763	5,9	19,9	53,2	1,3	18,3	1,5
1958	13 602	5,8	20,9	52,5	1,1	18,2	1,5
1959	14 725	6,0	20,8	52,1	0,9	18,6	1,6
1960	16 094	6,5	20,1	51,3	0,8	19,7	1,6
1961	17 013	6,9	19,8	50,7	0,7	20,2	1,6
1962	18 121	7,2	19,7	50,5	0,6	20,4	1,7
1963	19 500	7,1	20,5	48,3	0,6	21,8	1,7
1964	21 248	7,3	21,2	46,3	0,4	22,9	1,8
1965	23 143	7,6	21,3	44,4	0,4	24,5	1,9
1966	24 554	7,5	21,8	43,9	0,2	24,7	2,0
1967	26 657	7,3	22,4	42,9	—	25,2	2,1
1968	28 885	7,5	22,9	41,5	—	25,8	2,2
1969	31 506	7,3	23,1	40,1	—	27,2	2,3
1970	34 891	6,9	23,2	40,0	—	27,5	2,3
1971	38 040	6,9	24,4	37,4	—	29,0	2,4
1972	41 649	6,7	25,7	34,8	—	30,4	2,4
1973	46 578	6,2	27,4	33,9	—	30,1	2,4
1974	52 585	5,9	29,5	32,2	—	30,6	1,7
1975	57 869	5,7	31,2	30,1	—	31,2	1,8
1976	63 356	5,5	31,7	29,6	—	31,4	1,8
1977	67 125	5,2	31,1	30,0	—	32,2	1,5
1978	72 780	4,9	30,0	30,5	—	33,2	1,3
1979	80 583	5,0	29,9	29,8	—	34,1	1,2
1980	87 539	5,1	30,8	29,6	—	33,6	1,0
1981	93 844	5,0	31,9	28,9	—	33,1	1,1
1982	96 136	4,6	33,6	28,5	—	32,2	1,1
1983	98 251	4,2	33,3	28,5	—	32,9	1,1
1984	106 904	4,3	33,2	27,6	—	33,8	1,1
1985	112 306	4,1	33,3	27,5	—	34,0	1,1
1986	117 353	3,8	34,6	27,1	—	33,4	1,1

Total Escom: sales



Sales growth by category, from 1950



Bulk: sales

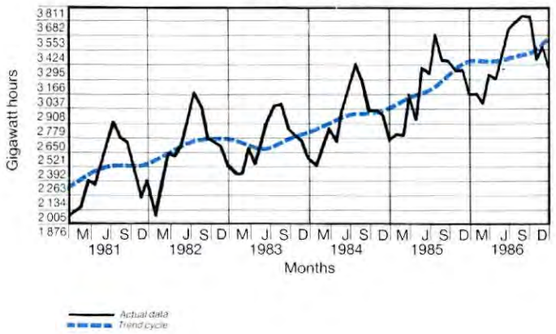


Table 16

Revenue per kW.h by category of customer (excluding air and steam)

	Actual price (in c/kW.h)							Real price (in c/kW.h)						
Year	Traction	Bulk supplies	Mining	Industrial and commercial	Domestic and street lighting	Average for all categories	% Change	Consumer Price Index 1980 = 100	Traction	Bulk supplies	Mining	Industrial and commercial	Domestic & street lighting	Average for all categories	% Change
1950	0,355 7	0,353 5	0,206 9	0,286 0	1,087 0	0,270 1		19,5	1,824 1	1,812 8	1,061 2	1,466 9	5,574 3	1,385 0	
1951	0,357 4	0,360 6	0,227 4	0,303 0	1,032 1	0,287 7	6,5	20,9	1,710 2	1,725 3	1,088 0	1,449 9	4,938 3	1,376 3	–0,6
1952	0,381 1	0,380 7	0,245 4	0,312 8	1,063 0	0,305 5	6,2	22,7	1,678 9	1,677 2	1,081 0	1,378 0	4,683 0	1,346 0	–2,2
1953	0,461 8	0,419 9	0,282 9	0,360 4	1,208 3	0,349 2	14,3	23,5	1,965 1	1,787 0	1,204 0	1,533 5	5,141 6	1,485 8	10,4
1954	0,531 8	0,463 8	0,299 2	0,388 1	1,324 7	0,376 3	7,8	23,9	2,225 2	1,940 6	1,251 9	1,623 7	5,542 6	1,574 6	6,0
1955	0,617 7	0,522 5	0,326 2	0,399 1	1,348 5	0,409 9	8,9	24,7	2,500 7	2,115 5	1,320 7	1,616 0	5,459 4	1,659 7	5,4
1956	0,634 9	0,544 8	0,334 4	0,399 2	1,362 5	0,420 9	2,7	25,2	2,519 3	2,161 7	1,326 8	1,584 1	5,406 8	1,670 1	0,6
1957	0,644 8	0,569 4	0,352 7	0,415 0	1,384 7	0,440 9	4,8	25,9	2,489 4	2,198 6	1,361 8	1,602 4	5,346 3	1,702 3	1,9
1958	0,655 7	0,586 1	0,379 0	0,440 7	1,429 4	0,466 4	5,8	26,8	2,446 6	2,186 9	1,414 3	1,644 4	5,333 6	1,740 3	2,2
1959	0,667 1	0,604 9	0,396 3	0,468 2	1,441 1	0,486 3	4,3	27,2	2,452 6	2,223 7	1,457 0	1,721 2	5,298 2	1,788 0	2,7
1960	0,664 4	0,600 9	0,414 4	0,483 3	1,449 2	0,498 7	2,5	27,5	2,416 0	2,185 2	1,506 9	1,757 5	5,270 0	1,813 5	1,4
1961	0,672 7	0,612 7	0,421 6	0,494 3	1,484 3	0,509 6	2,2	28,1	2,394 0	2,180 3	1,500 3	1,759 2	5,282 1	1,813 5	0
1962	0,739 8	0,609 4	0,417 4	0,487 4	1,478 4	0,510 9	0,3	28,5	2,595 7	2,138 1	1,464 7	1,710 1	5,187 3	1,792 7	–1,1
1963	0,728 3	0,604 4	0,419 2	0,487 8	1,476 1	0,512 5	0,3	28,8	2,528 8	2,098 6	1,455 6	1,693 6	5,125 3	1,779 6	–0,7
1964	0,691 0	0,591 2	0,412 1	0,490 2	1,442 9	0,507 3	–1,0	29,5	2,342 4	2,004 0	1,397 1	1,661 8	4,891 2	1,719 5	–3,4
1965	0,696 3	0,591 2	0,405 7	0,481 9	1,398 3	0,505 1	–0,4	30,6	2,275 5	1,932 0	1,325 7	1,574 7	4,569 6	1,650 7	–4,0
1966	0,717 2	0,596 9	0,418 2	0,510 8	1,385 1	0,521 8	3,3	31,7	2,262 6	1,882 9	1,319 2	1,611 3	4,369 3	1,646 2	–0,3
1967	0,752 4	0,606 3	0,444 4	0,536 8	1,393 1	0,546 6	4,8	32,8	2,294 0	1,848 6	1,355 0	1,636 7	4,247 3	1,666 6	1,2
1968	0,755 3	0,603 7	0,449 3	0,551 3	1,391 1	0,555 0	1,5	33,3	2,268 2	1,813 0	1,349 2	1,655 5	4,177 5	1,666 7	0
1969	0,755 0	0,598 8	0,454 5	0,549 6	1,369 5	0,556 5	0,3	34,3	2,201 0	1,745 8	1,325 1	1,602 2	3,992 6	1,622 5	–2,7
1970	0,756 2	0,600 1	0,450 1	0,549 8	1,345 3	0,554 5	–0,4	36,1	2,094 8	1,662 4	1,246 7	1,523 1	3,726 5	1,536 1	–5,3
1971	0,763 0	0,613 9	0,471 6	0,573 4	1,360 8	0,577 2	4,1	38,3	1,992 1	1,603 0	1,231 4	1,497 0	3,553 1	1,507 2	–1,9
1972	0,791 3	0,636 6	0,510 4	0,600 8	1,415 6	0,610 8	5,8	40,8	1,939 4	1,560 3	1,250 9	1,472 5	3,469 7	1,497 1	–0,7
1973	0,842 4	0,674 1	0,541 8	0,637 7	1,504 9	0,648 4	6,2	44,7	1,884 5	1,508 1	1,212 1	1,426 7	3,366 7	1,450 7	–3,1
1974	0,882 8	0,703 6	0,557 2	0,705 7	1,548 0	0,682 3	5,2	49,9	1,769 1	1,410 1	1,116 6	1,414 1	3,102 2	1,367 3	–5,7
1975	1,016 2	0,807 9	0,659 0	0,821 9	1,707 9	0,795 0	16,5	56,6	1,795 4	1,427 4	1,164 2	1,452 1	3,017 4	1,404 6	2,7
1976	1,326 4	1,052 9	0,872 6	1,064 1	2,091 5	1,036 0	30,3	62,9	2,108 8	1,674 0	1,387 3	1,691 8	3,325 1	1,647 1	17,3
1977	2,004 0	1,577 9	1,294 6	1,564 1	3,177 8	1,535 3	48,2	70,0	2,862 8	2,254 1	1,849 4	2,234 4	4,539 7	2,193 2	33,2
1978	2,386 8	1,778 9	1,604 4	1,798 9	3,787 5	1,788 7	16,5	77,6	3,075 7	2,292 4	2,067 5	2,318 1	4,880 8	2,305 0	5,1
1979	2,601 8	1,871 5	1,731 1	1,892 4	3,982 6	1,898 0	6,1	87,9	2,960 0	2,129 1	1,969 4	2,152 9	4,530 8	2,159 3	–6,3
1980	2,676 2	2,002 7	1,854 0	2,025 6	4,275 4	2,024 2	6,7	100,0	2,676 2	2,002 7	1,854 0	2,025 6	4,275 4	2,024 2	–6,3
1981	2,988 8	2,269 7	2,078 7	2,283 7	4,731 4	2,281 1	12,7	115,2	2,594 4	1,970 2	1,804 4	1,982 4	4,107 1	1,980 1	–2,2
1982	3,649 5	2,807 8	2,540 5	2,825 0	5,418 2	2,803 8	22,9	132,1	2,762 7	2,125 5	1,923 2	2,138 5	4,101 6	2,122 5	7,2
1983	4,550 6	3,367 1	3,048 3	3,376 9	6,232 3	3,360 7	19,9	148,4	3,066 4	2,268 9	2,054 1	2,275 6	4,199 7	2,264 6	6,7
1984	4,695 5	3,593 4	3,268 1	3,594 7	6,661 4	3,584 2	6,7	165,7	2,833 8	2,168 6	1,972 3	2,169 4	4,020 2	2,163 1	–4,5
1985	5,373 4	4,124 3	3,788 9	4,119 8	7,507 4	4,117 9	14,9	192,6	2,789 9	2,141 4	1,967 3	2,139 0	3,897 9	2,138 1	–1,2
1986	6,236 7	4,870 6	4,721 8	5,025 0	9,195 1	4,980 3	20,9	228,5	2,729 4	2,131 6	2,066 5	2,199 1	4,024 1	2,179 6	1,9

Table 17 ESCOM

Customer categories by distribution region

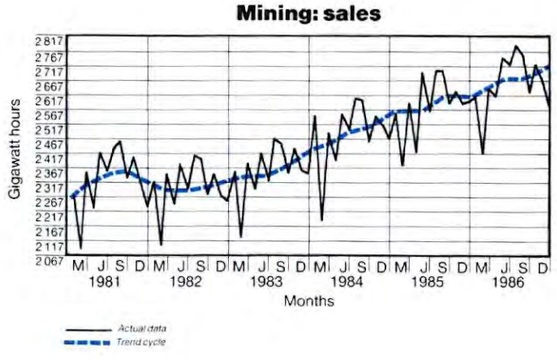
Distribution region and category	Number of customers	GW.h sold 1986	% of total GW.h	Revenue R000 1986	% of total Revenue	Average price cents per kW.h sold 1986
Distribution Div 1: Western Cape						
Bulk sales	44	4 345	60,2	177 103	45,7	4,08
Domestic and street lighting	89 237	663	9,2	65 176	16,8	9,82
Industrial	13 197	1 903	26,4	121 803	31,4	6,40
Mining	25	17	0,2	2 184	0,6	12,50
Traction	2	289	4,0	21 572	5,6	7,46
Total	**102 505**	**7 218**	**100,0**	**387 839**	**100,0**	**5,37**
Distribution Div 1: Southern Cape						
Bulk sales	57	770	52,1	41 849	45,1	5,44
Domestic and street lighting	3 486	21	1,4	2 150	2,3	10,47
Industrial	8 796	446	30,2	35 348	38,1	7,93
Mining	3	2	0,1	207	0,2	13,76
Traction	1	240	16,2	13 310	14,3	5,55
Total	**12 343**	**1 477**	**100,0**	**92 863**	**100,0**	**6,29**
Distribution Div 1: Eastern Cape						
Bulk sales	82	3 011	86,0	137 613	76,0	4,57
Domestic and street lighting	5 093	28	0,8	3 223	1,8	11,54
Industrial	6 265	278	7,9	23 988	13,2	8,63
Mining	0	0	0	0	0	0
Traction	2	185	5,3	16 229	9,0	8,77
Total	**11 442**	**3 502**	**100,0**	**181 053**	**100,0**	**5,17**
Distribution Div 1: Eastern Natal						
Bulk sales	16	7 590	55,5	358 416	55,2	4,72
Domestic and street lighting	14 975	137	1,0	12 518	1,9	9,12
Industrial	8 670	5 654	41,3	258 502	39,8	4,57
Mining	1	14	0,1	1 033	0,2	7,37
Traction	3	283	2,1	19 239	3,0	6,81
Total	**23 665**	**13 678**	**100,0**	**649 706**	**100,0**	**4,75**
Distribution Div 2: Eastern Transvaal						
Bulk sales	44	1 419	9,2	73 484	9,9	5,18
Domestic and street lighting	1 095	11	0,1	988	0,1	9,03
Industrial	7 733	11 159	72,6	512 344	69,3	4,59
Mining	106	2 425	15,8	129 930	17,6	5,36
Traction	10	352	2,3	22 762	3,1	6,47
Total	**8 988**	**15 366**	**100,0**	**739 509**	**100,0**	**4,81**
Distribution Div 2: Orange Free State						
Bulk sales	69	1 858	19,8	91 547	20,2	4,93
Domestic and street lighting	1 576	11	0,1	1 023	0,2	9,64
Industrial	9 432	356	3,8	28 774	6,3	8,09
Mining	33	6 932	73,8	319 085	70,4	4,60
Traction	4	236	2,5	12 868	2,8	5,44
Total	**11 114**	**9 393**	**100,0**	**453 297**	**100,0**	**4,83**

Distribution region and category	Number of customers	GW.h sold 1986	% of total GW.h	Revenue R000 1986	% of total Revenue	Average price cents per kW.h sold 1986
Distribution Div 2: Northern Cape						
Bulk sales	51	869	28,6	47 223	26,5	5,43
Domestic and street lighting	946	8	0,3	776	0,4	10,01
Industrial	6 556	393	12,9	29 846	16,7	7,59
Mining	82	1 469	48,3	80 881	45,4	5,51
Traction	3	299	9,8	19 495	10,9	6,52
Total	**7 638**	**3 038**	**100,0**	**178 222**	**100,0**	**5,87**
Distribution Div 2: Western Natal						
Bulk sales	14	1 975	38,9	96 760	35,5	4,90
Domestic and street lighting	6 572	46	0,9	4 039	1,5	8,74
Industrial	10 936	1 736	34,2	94 413	34,6	5,44
Mining	47	328	6,5	19 267	7,1	5,87
Traction	5	990	19,5	58 405	21,4	5,90
Total	**17 574**	**5 075**	**100,0**	**272 885**	**100,0**	**5,38**
Distribution Div 3: North-eastern Transvaal						
Bulk sales	31	1 388	22,0	74 078	22,9	5,34
Domestic and street lighting	1 018	12	0,2	1 088	0,3	8,91
Industrial	6 440	3 001	47,6	152 308	47,2	5,08
Mining	58	1 632	25,9	78 031	24,2	4,78
Traction	4	270	4,3	17 369	5,4	6,43
Total	**7 551**	**6 303**	**100,0**	**322 875**	**100,0**	**5,12**
Distribution Div 3: Western Transvaal						
Bulk sales	61	2 057	12,6	109 111	13,9	5,31
Domestic and street lighting	286	2	0,0	232	0,0	10,46
Industrial	9 361	1 022	6,3	66 786	8,5	6,54
Mining	77	12 918	79,4	586 461	75,0	4,54
Traction	5	280	1,7	19 830	2,5	7,09
Total	**9 790**	**16 278**	**100,0**	**782 419**	**100,0**	**4,81**
Distribution Div 3: Central Transvaal						
Bulk sales	40	5 127	59,4	251 901	55,7	4,91
Domestic and street lighting	12 225	296	3,4	22 491	5,0	7,60
Industrial	11 627	2 599	30,1	142 543	31,5	5,49
Mining	21	252	2,9	14 323	3,2	5,69
Traction	5	365	4,2	20 913	4,6	5,73
Total	**23 918**	**8 637**	**100,0**	**452 171**	**100,0**	**5,23**
Distribution Div 3: Southern Transvaal						
Bulk sales	62	10 162	37,1	516 925	38,8	5,09
Domestic and street lighting	1 311	17	0,1	1 380	0,1	8,29
Industrial	9 373	10 623	38,8	501 638	37,7	4,72
Mining	93	5 872	21,4	272 985	20,5	4,65
Traction	5	713	2,6	38 744	2,9	5,43
Total	**10 844**	**27 388**	**100,0**	**1 331 671**	**100,0**	**4,86**
Total Escom						
Bulk sales	571	40 570	34,6	1 976 009	33,8	4,87
Domestic and street lighting	137 820	1 252	1,1	115 085	2,0	9,20
Industrial	108 386	39 170	33,4	1 968 293	33,7	5,03
Mining	546	31 860	27,1	1 504 397	25,7	4,72
Traction	49	4 501	3,8	280 736	4,8	6,24
Total	**247 372**	**117 353**	**100,0**	**5 844 510**	**100,0**	**4,98**

Table 18

Sales to mining sector, million kW.h

Year	Gold and uranium	Diamond	Coal mines	Platinum	Copper	Chrome	Asbestos	Iron ore and manganese	Iron	Manganese	Other	Total	% Growth
1967	9 946	264	453	308	235	11	91	74			59	11 441	5,8
1968	10 339	281	480	378	256	14	107	81			59	11 995	4,8
1969	10 647	282	495	653	282	17	118	80			68	12 642	5,4
1970	11 504	288	535	941	343	20	137	88			92	13 948	10,3
1971	11 662	297	563	962	374	25	152	92			100	14 227	2,0
1972	11773	325	589	990	422	31	161	101			117	14 509	2,0
1973	12 263	334	620	1 581	565	33	168		86	27	123	15 800	8,9
1974	12 803	338	648	1 978	653	52	193		104	30	142	16 941	7,2
1975	13 108	346	705	2 001	679	42	238		121	37	167	17 444	3,0
1976	13 918	343	812	2 184	728	61	266		180	49	205	18 746	7,5
1977	14 708	342	941	2 287	874	84	275		271	62	295	20 139	7,4
1978	16 241	497	1 078	2 388	1 023	106	223		272	72	319	22 219	10,3
1979	17 201	596	1 248	2 772	1 042	126	233		334	83	365	24 000	8,0
1980	18 477	678	1 426	2 973	1 117	127	242		361	94	387	25 882	7,8
1981	19 406	714	1 522	3 014	1 131	117	240		335	104	548	27 131	4,8
1982	20 069	656	1 691	2 466	1 178	105	235		305	113	554	27 372	0,9
1983	20 724	649	1 686	2 552	1 178	99	225		215	77	616	28 021	2,4
1984	21 427	634	1 873	3 023	1 160	106	186		286	73	738	29 506	5,3
1985	22 088	652	2 142	3 402	1 304	175	184		306	84	512	30 849	4,5
1986	22 756	700	2 052	3 438	1 385	189	162		294	88	796	31 860	3,3



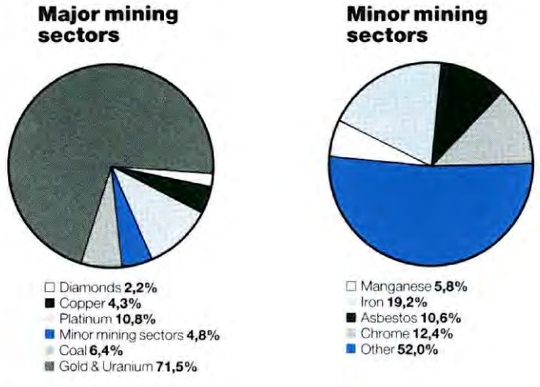


Table 19(a) ESCOM

Sales to industry, million kW.h

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

Note: Figures not available for years prior to 1966

Table 19(b) ESCOM

Sales to industry, million kW.h

By Standard Industrial Classification of selected economic activities (SIC)

Year	Division 11	31	32	33	34	35	36	371	372	38	Other	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

Standard Industrial Classification Divisions

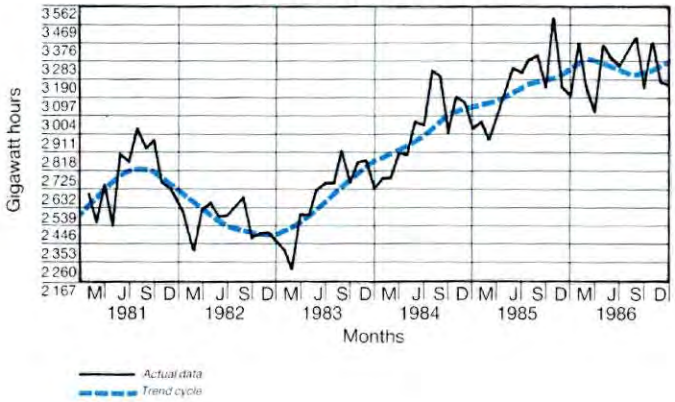
Division	
11	*Agriculture, hunting, forestry and logging*
31	*Manufacture of food, beverages, and tobacco*
32	*Manufacture of textiles, wearing apparel and leather goods*
33	*Manufacture of wood and wood products, including furniture*
34	*Manufacture of paper and paper products, including printing and 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*
Other	*This includes other manufacturing and commercial enterprises*

Total number of farm supplies

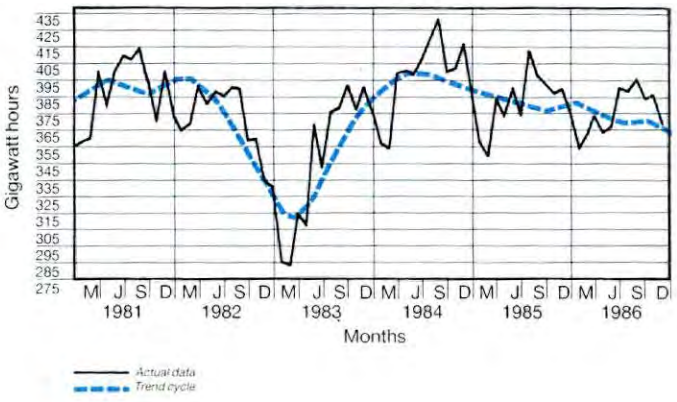
Farm supplies include supplies which are furnished to agricultural and smallholdings and which are primarily used for farming purposes.

Year	**1986**	1985	1984	1983	1982	1981	1980	1979	1978	1977
Number	**78 809**	70 364	65 018	59 098	53 467	49 238	45 156	41 605	39 787	38 010
% growth	**12,0**	8,2	10,0	10,5	8,6	9,0	8,5	4,6	4,7	9,7
Annual average growth 1976 – 1986	**8,6%**									

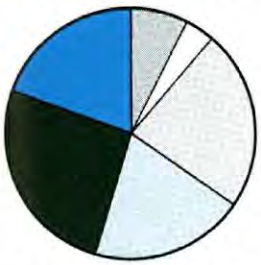
Industrial: sales



Traction: sales

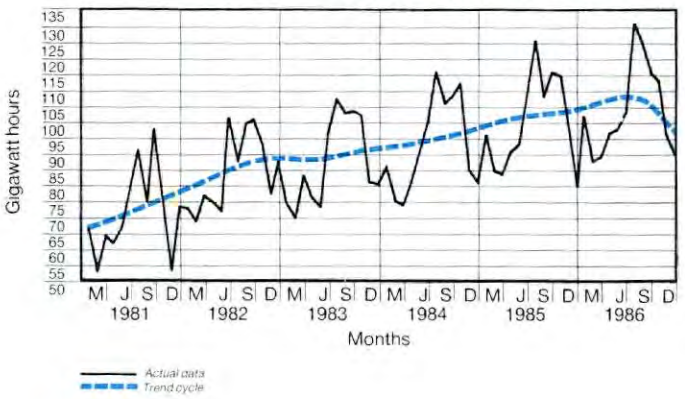


Electricity sales to sectors of industry



- Agriculture, forestry and logging **7,3%**
- Wood and wooden products **3,8%**
- Chemicals and chemical products **19,8%**
- Iron & steel basic industries **26,3%**
- Non-ferrous metal basic industries **23,1%**
- Other, including commercial enterprises **19,7%**

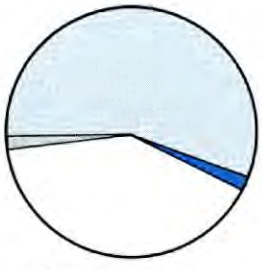
Domestic and Street Lighting: sales



Number of customers by category (excluding traction, air and steam)

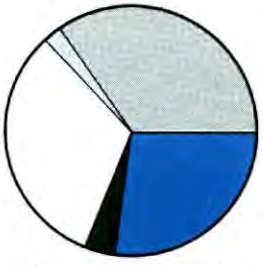
Year	Bulk S.A. municipalities	Mining	Industrial and commercial	Domestic and street lighting	Total for all categories	% Change
1950	70	133	2 759	35 090	38 052	
1951	79	138	3 023	37 937	41 177	8,2
1952	96	141	2 839	30 691	33 767	−18,0
1953	100	144	3 015	33 063	36 322	7,6
1954	108	145	3 089	33 877	37 219	2,5
1955	115	151	3 274	36 452	39 992	7,5
1956	125	166	3 490	38 944	42 725	6,8
1957	134	170	3 551	41 113	44 968	5,2
1958	137	174	4 216	43 665	48 192	7,2
1959	146	177	4 593	46 437	51 353	6,6
1960	155	183	5 039	49 968	55 345	7,8
1961	168	192	5 453	53 908	59 721	7,9
1962	179	209	6 410	56 456	63 254	5,9
1963	186	230	7 128	61 093	68 637	8,5
1964	187	240	7 782	66 397	74 606	8,7
1965	203	251	9 051	71 517	81 022	8,6
1966	208	259	10 278	77 121	87 866	8,4
1967	220	267	11 435	83 189	95 111	8,2
1968	233	276	13 540	85 227	99 276	4,4
1969	249	289	14 978	91 999	107 515	8,3
1970	265	294	16 336	98 155	115 050	7,0
1971	289	297	16 927	106 684	124 197	8,0
1972	310	299	18 500	108 517	127 626	2,8
1973	326	302	20 049	117 034	137 711	7,9
1974	332	314	41 647	106 857	149 150	8,3
1975	353	325	43 598	109 029	153 305	2,8
1976	365	333	61 142	105 482	167 322	9,1
1977	368	340	62 507	106 743	169 958	1,6
1978	386	354	65 797	109 317	175 854	3,5
1979	404	357	65 656	101 792	168 209	−4,3
1980	419	386	69 479	109 558	179 842	6,9
1981	434	403	77 722	113 552	192 111	6,8
1982	453	418	82 801	119 889	203 561	6,0
1983	468	421	89 439	124 433	214 761	5,5
1984	487	410	94 863	130 471	226 231	5,3
1985	528	524	101 246	135 770	238 068	5,2
1986	571	546	108 386	137 820	247 323	3,9

Number of customers per category



- Bulk **0,2%**
- Industrial **43,8%**
- Mining **0,2%**
- Domestic & street lighting **55,8%**

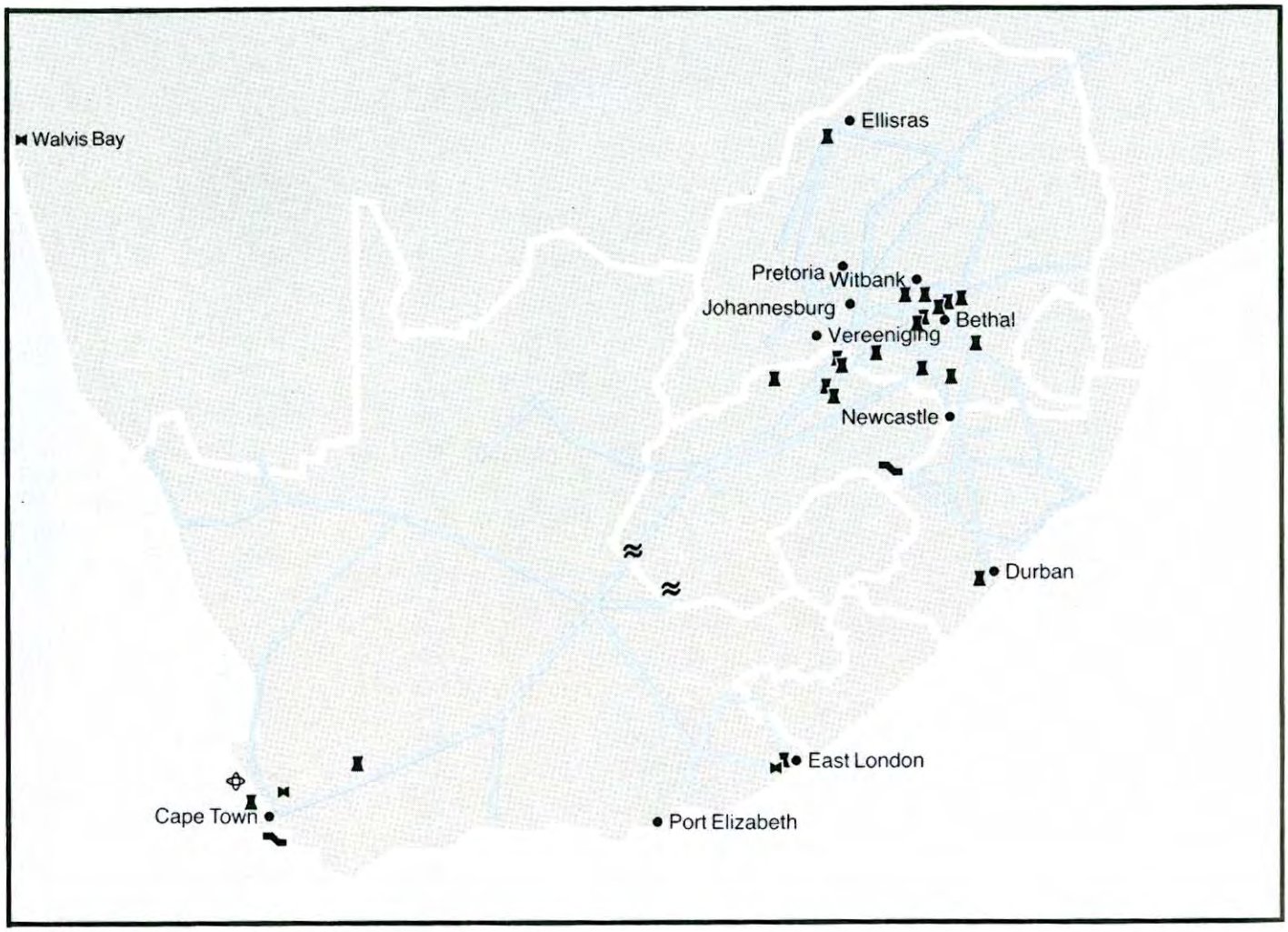
Electricity sales to different customer categories



- Domestic & street lighting **1,1%**
- Bulk **34,6%**
- Mining **27,1%**
- Traction **3,8%**
- Industrial **33,4%**

Escom maps

Escom's interconnected generation system



Reference

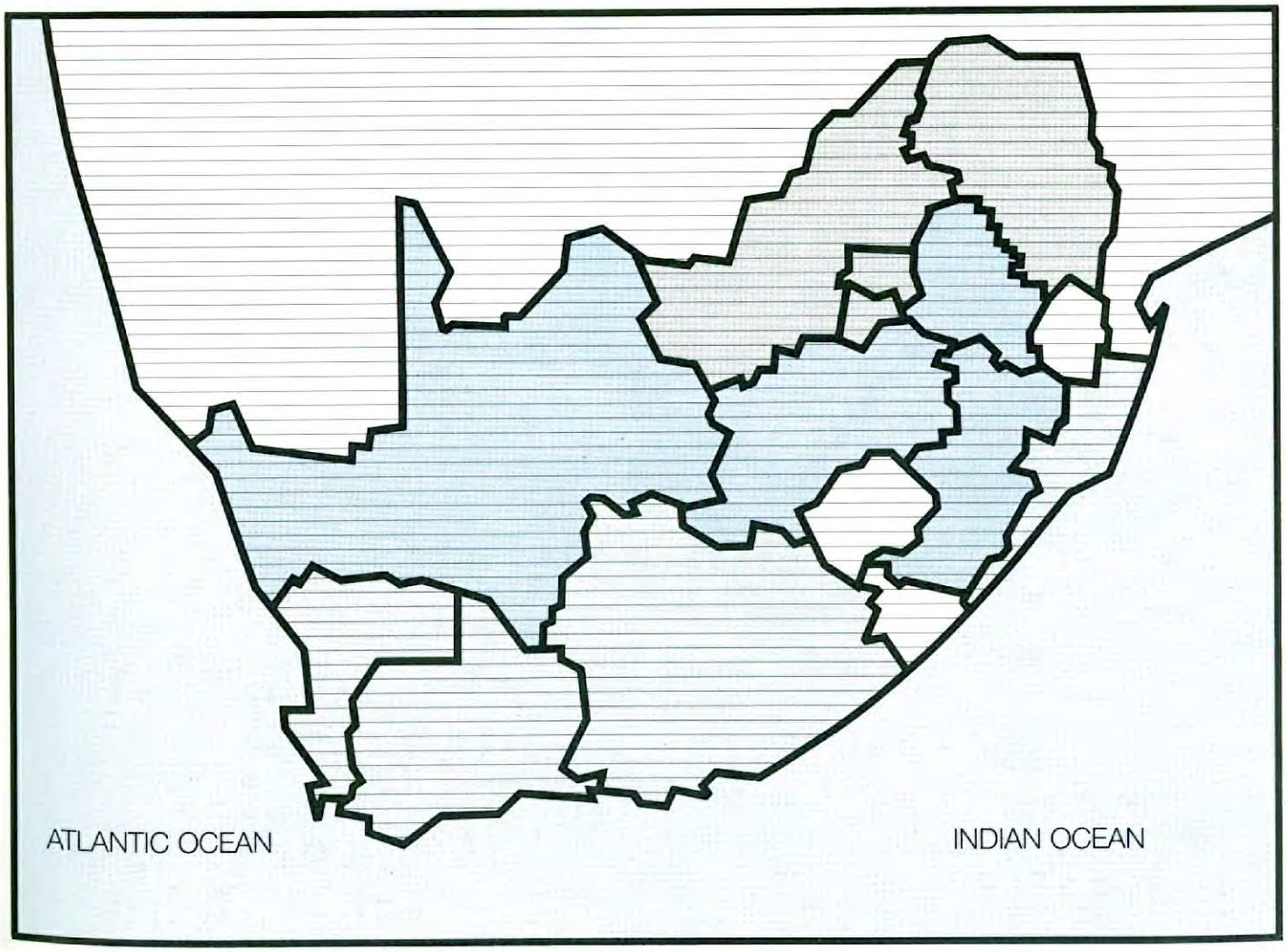
- Coal
- Nuclear
- Hydro
- Pumped storage
- Gas-turbine

Escom's distribution regions in the RSA

Division 1
Eastern Natal – Durban
Southern Cape – George
Eastern Cape – East London
Western Cape – Bellville

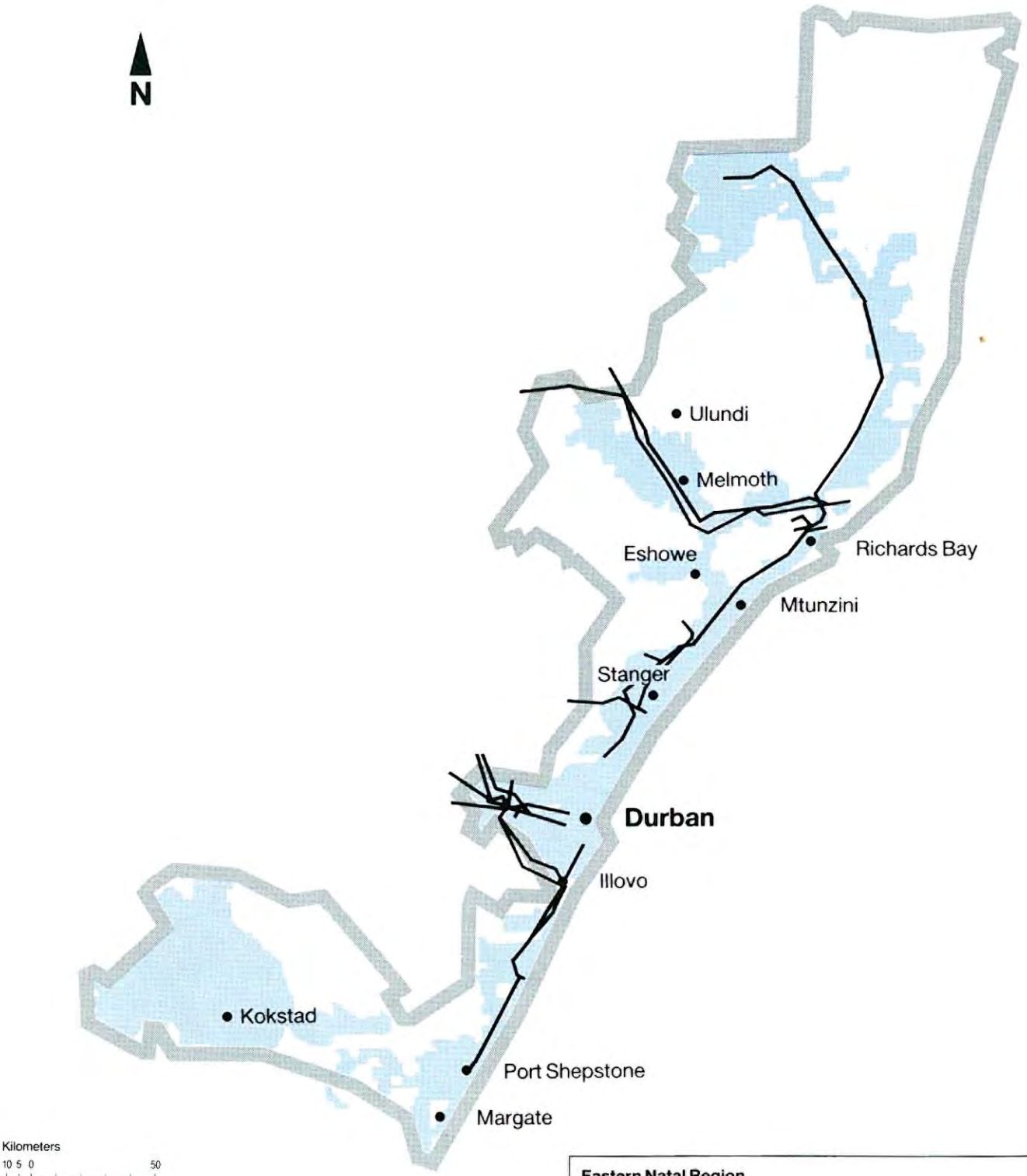
Division 2
Northern Cape – Kimberley
Orange Free State – Bloemfontein
Western Natal – Pietermaritzburg
Eastern Transvaal – Witbank

Division 3
Central Transvaal – Johannesburg
Southern Transvaal – Johannesburg
North-Eastern Transvaal – Nelspruit
Western Transvaal – Johannesburg



Map 3

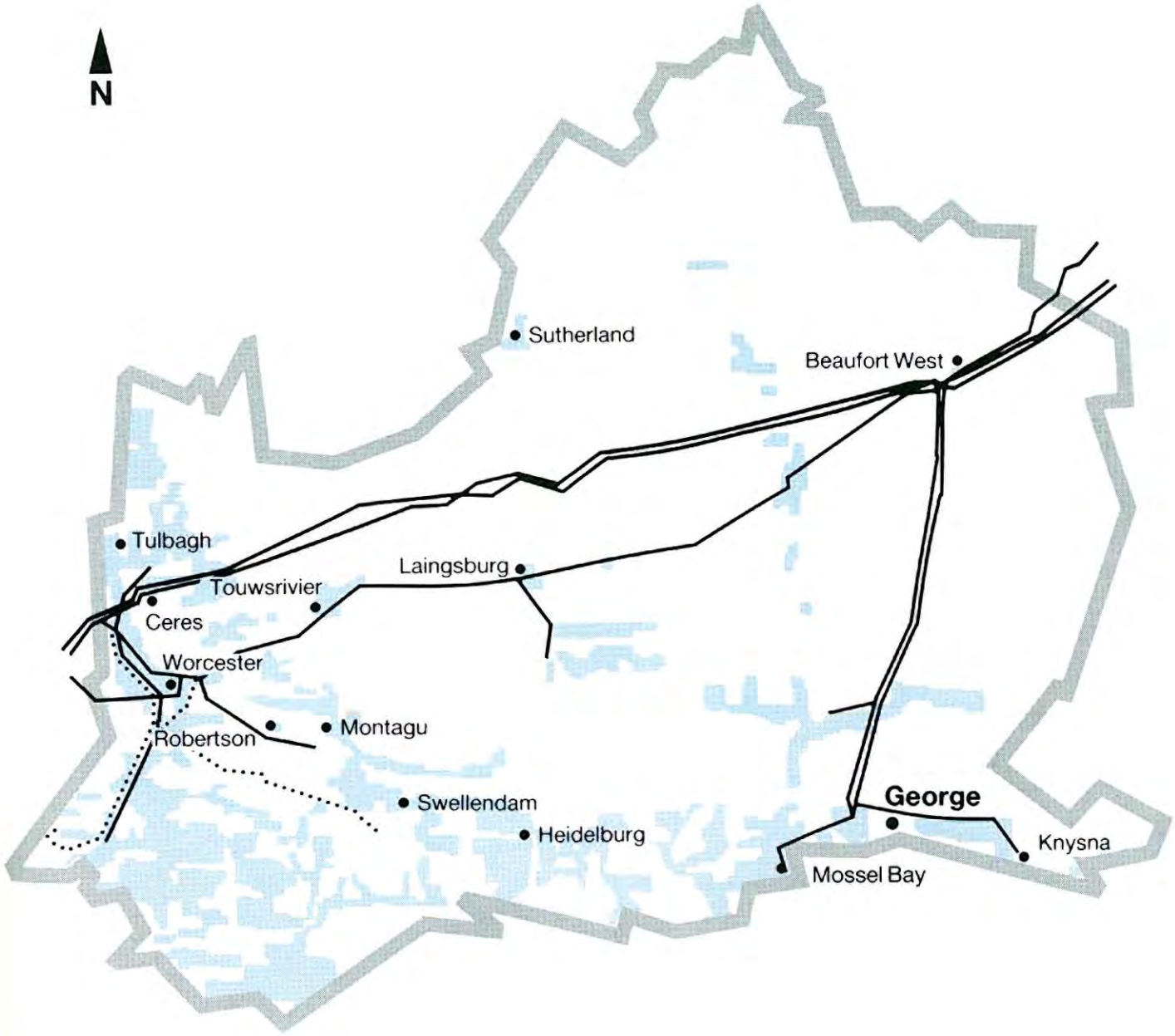
Eastern Natal Distribution Region



Eastern Natal Region 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) 2-0282

Map 4

Southern Cape Distribution Region



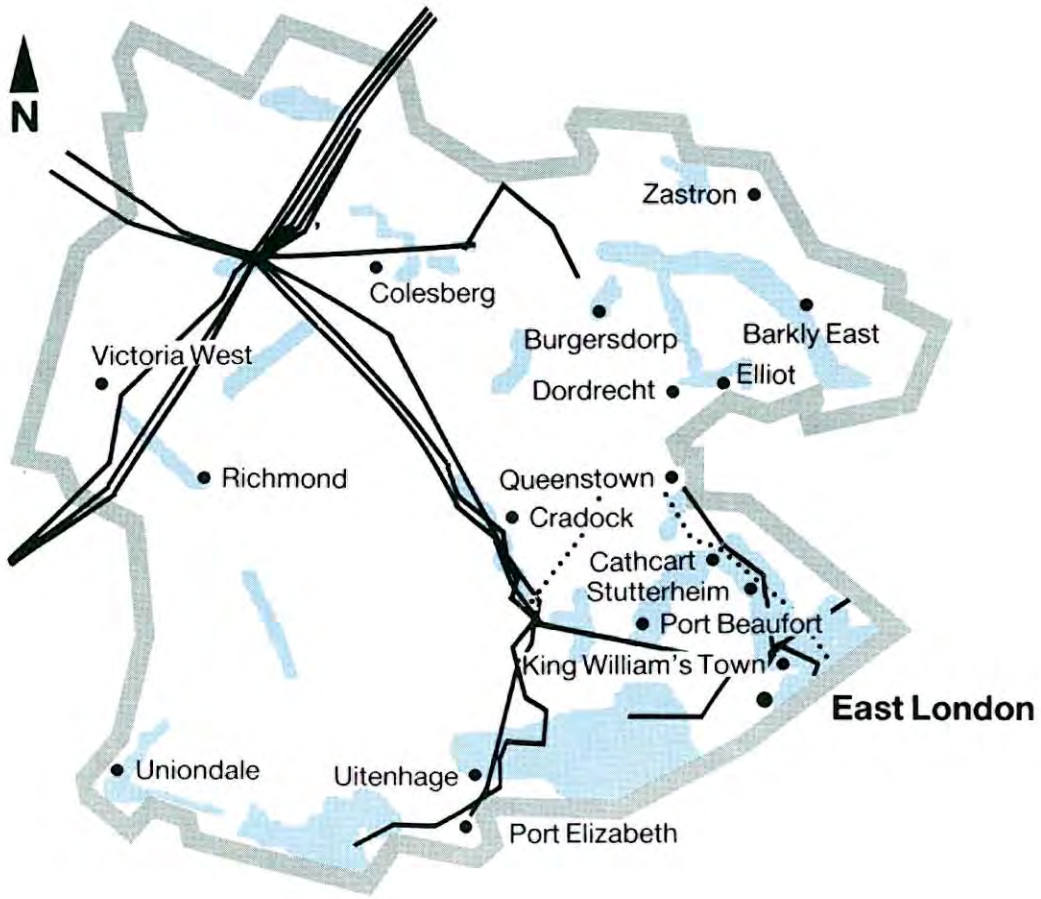
Kilometers
10 5 0 50

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

Southern Cape Region Regional Office: George	(0441) 74-2650
Worcester District	(0231) 2-2394
Grabouw District	(024) 53-1140
George District	(0441) 74-4123
Swellendam District	(0291) 4-1051

Map 5

Eastern Cape Distribution Region



Kilometers

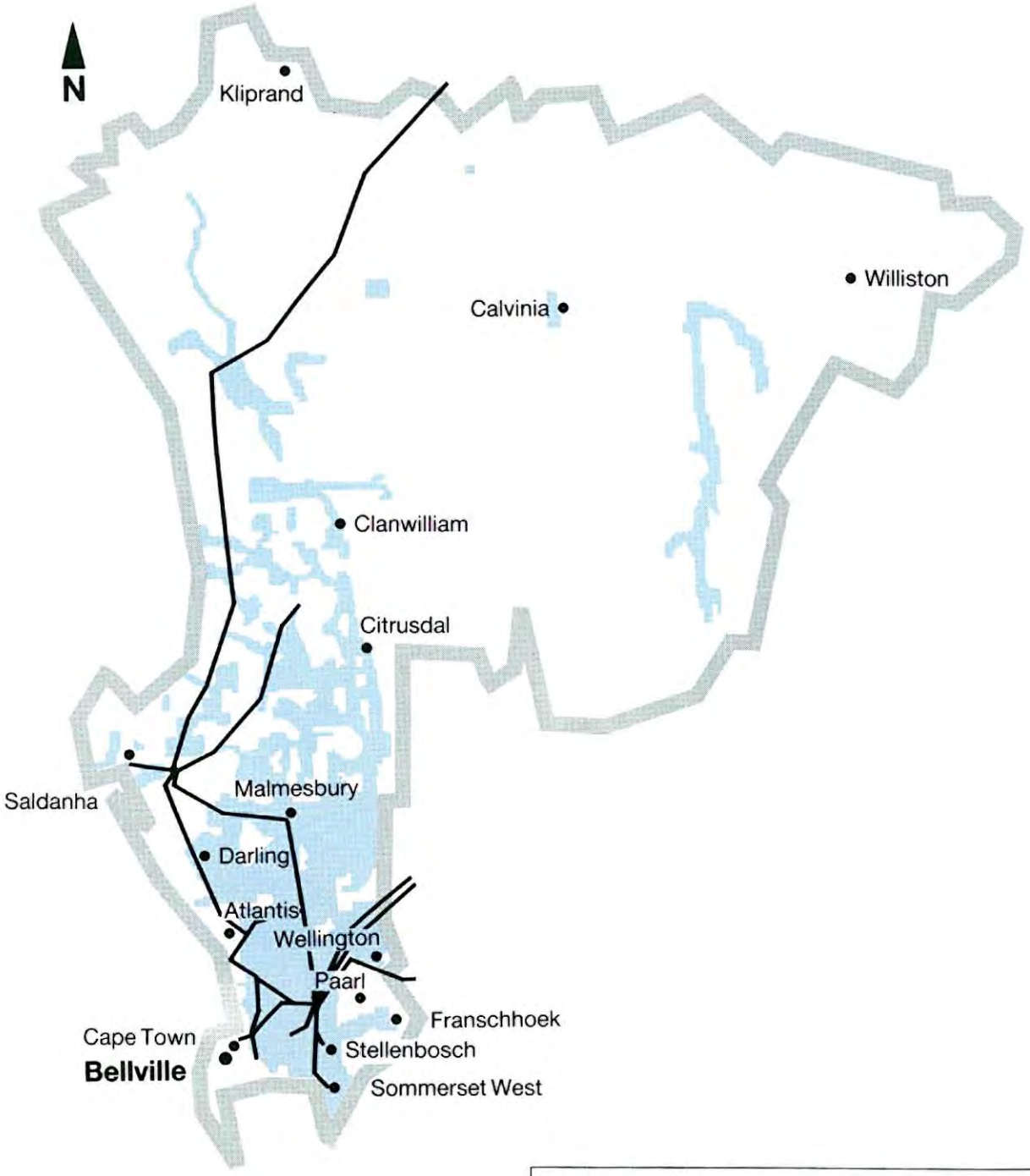
10 0 50 100

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

Eastern Cape Region 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

Map 6

Western Cape Distribution Region



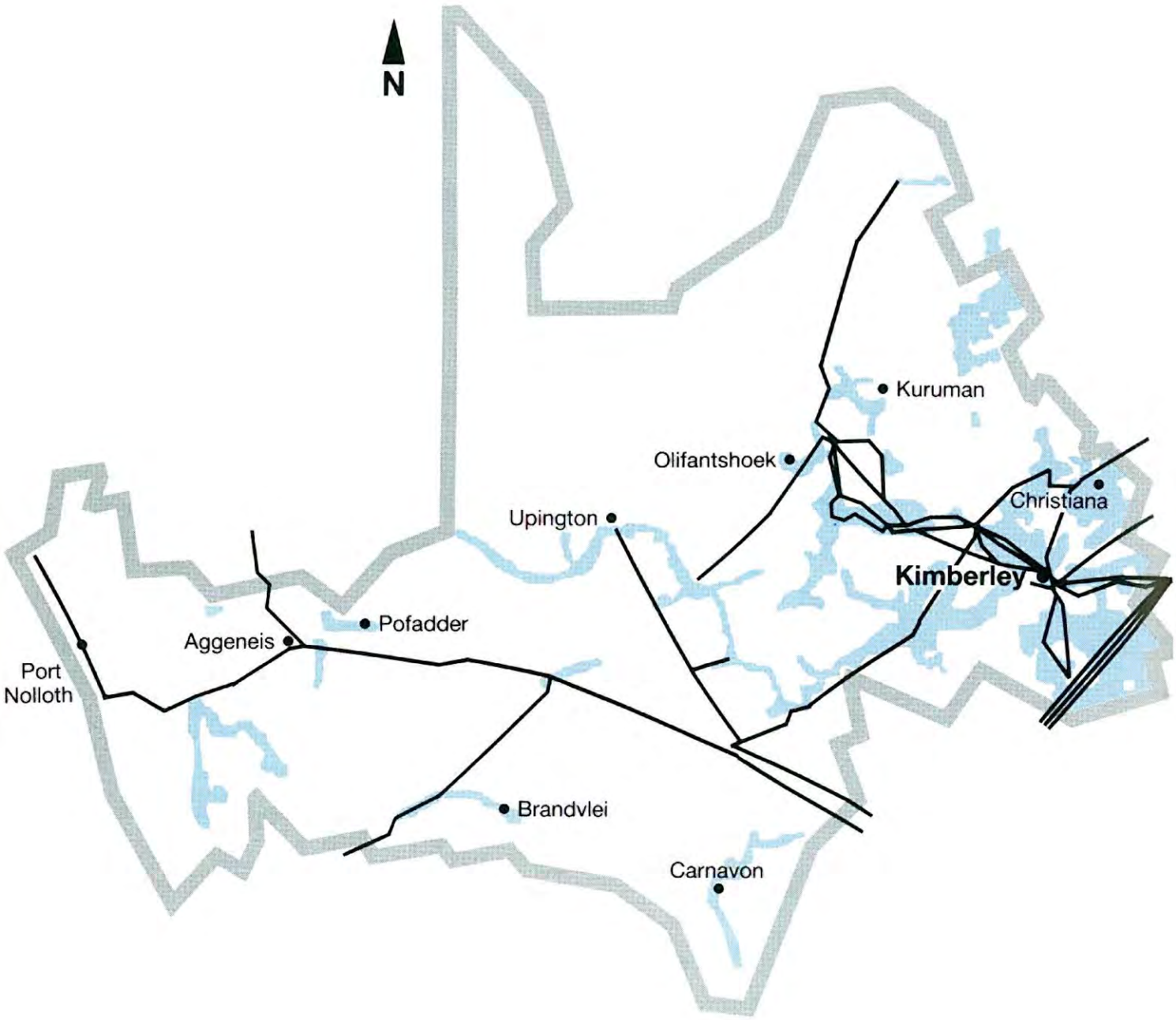
Kilometers
10 5 0 50

Area of supply
Transmission lines
Reticulated areas

Western Cape Region Regional Office: Bellville	(021) 915-9111
Bellville District	(021) 99-1160
Goodwood District	(021) 99-1160
Kraaifontein District	(021) 902-7457
Somerset West District	(024) 2-7117
Malmesbury District	(0224) 2-1369
Vredenburg District	(02281) 3-1155
Vredendal District	(0271) 3-1020

Map 7

Northern Cape Distribution Region



Kilometers

10 0 50 100

Area of supply

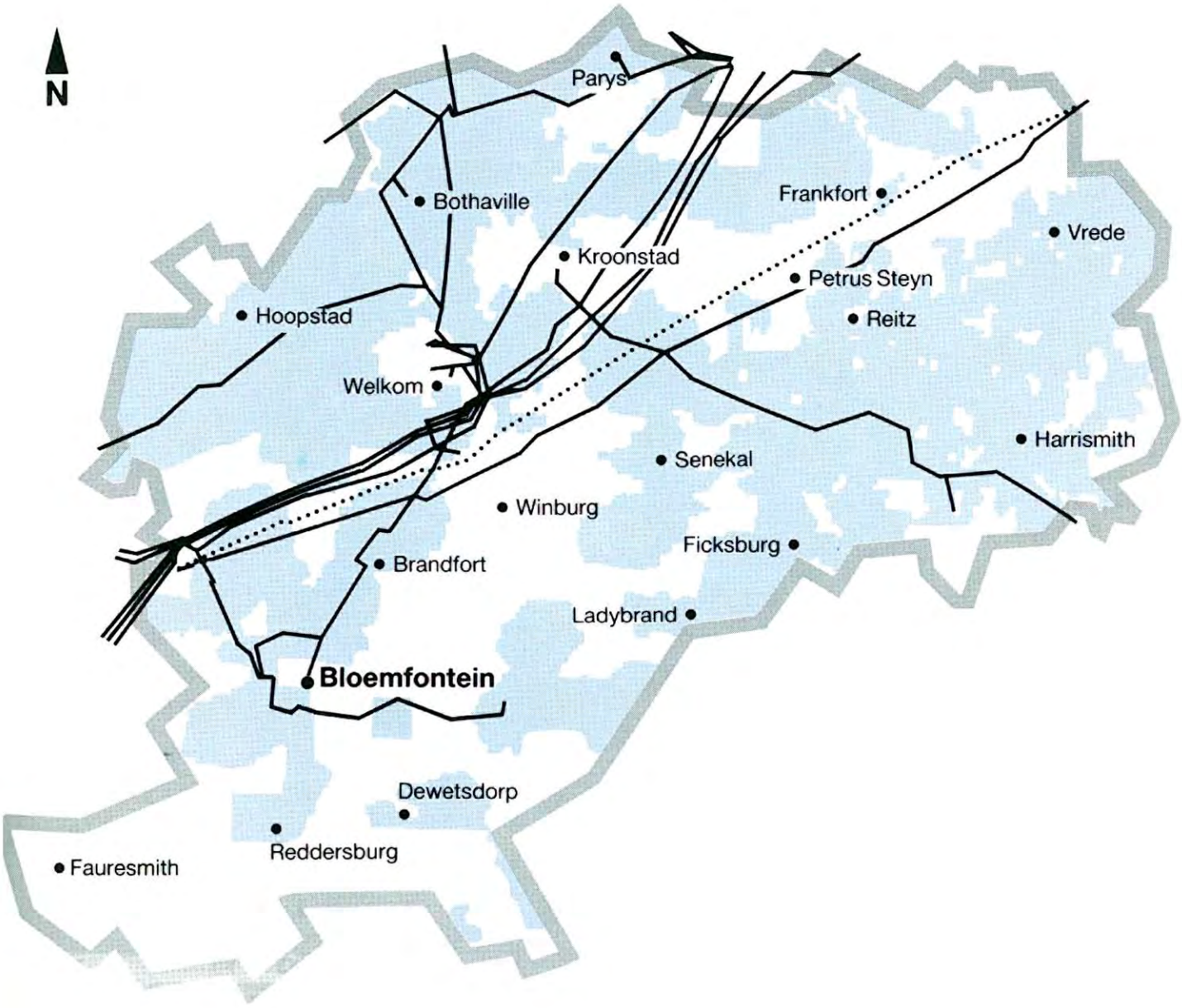
Transmission lines

Reticulated areas

Northern Cape Region Regional Office: Kimberley	(0531) 2-1371
Upington District	(0541) 5742
Kimberley District	(0531) 2-1371
Jan Kempdorp District	(05332) 4-1079
Kuruman District	(01471) 2-2151

Map 8

Orange Free State Distribution Region



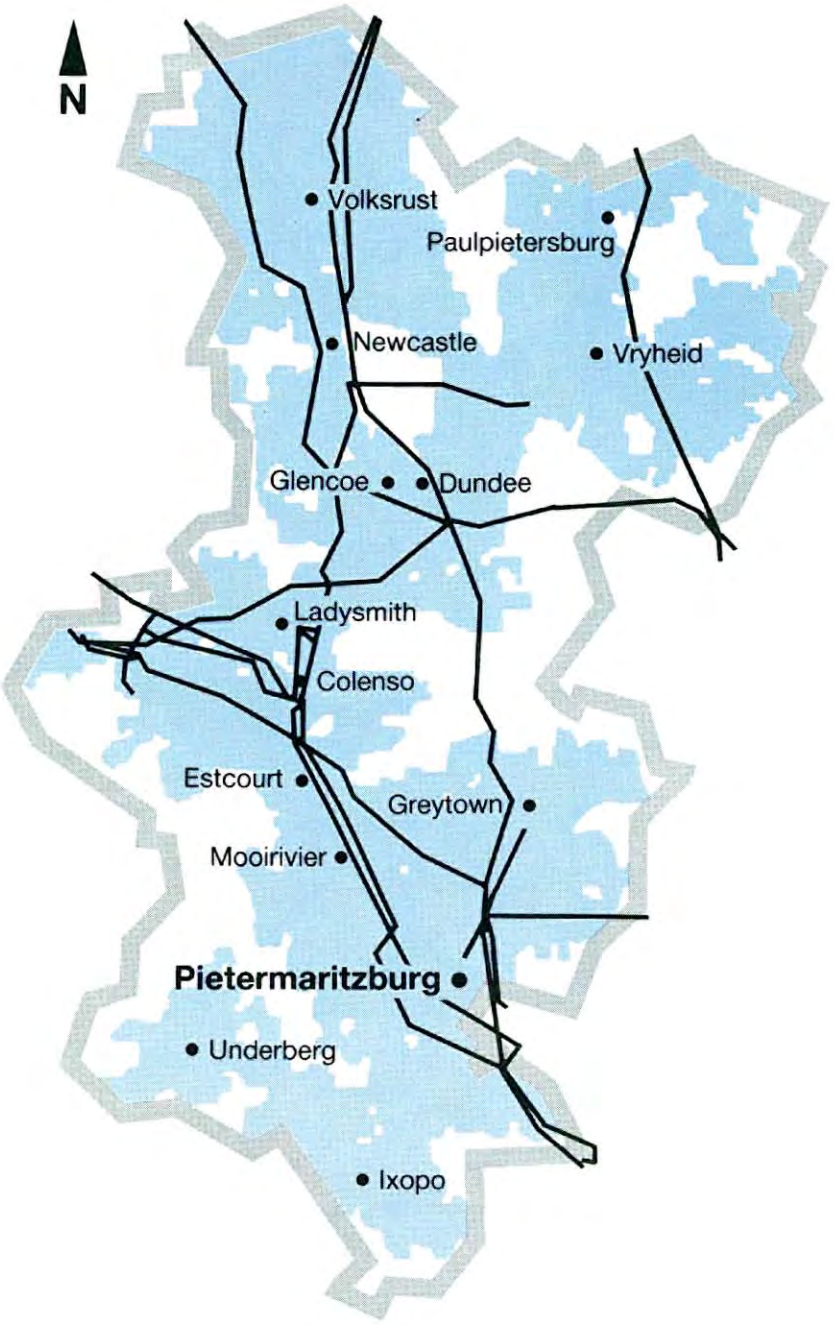
Kilometers
10 5 0 50

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

Orange Free State Region Regional Office: Bloemfontein	(051) 30-2411
Bloemfontein District	(051) 35-2853
Welkom District	(0171) 2-4236
Bethlehem District	(01431) 3-5133
Bothaville District	(014141) 2118/2110
Parys District	(01601) 2341
Kroonstad District	(01411) 3-2757/8/9

Map 9

Western Natal Distribution Region



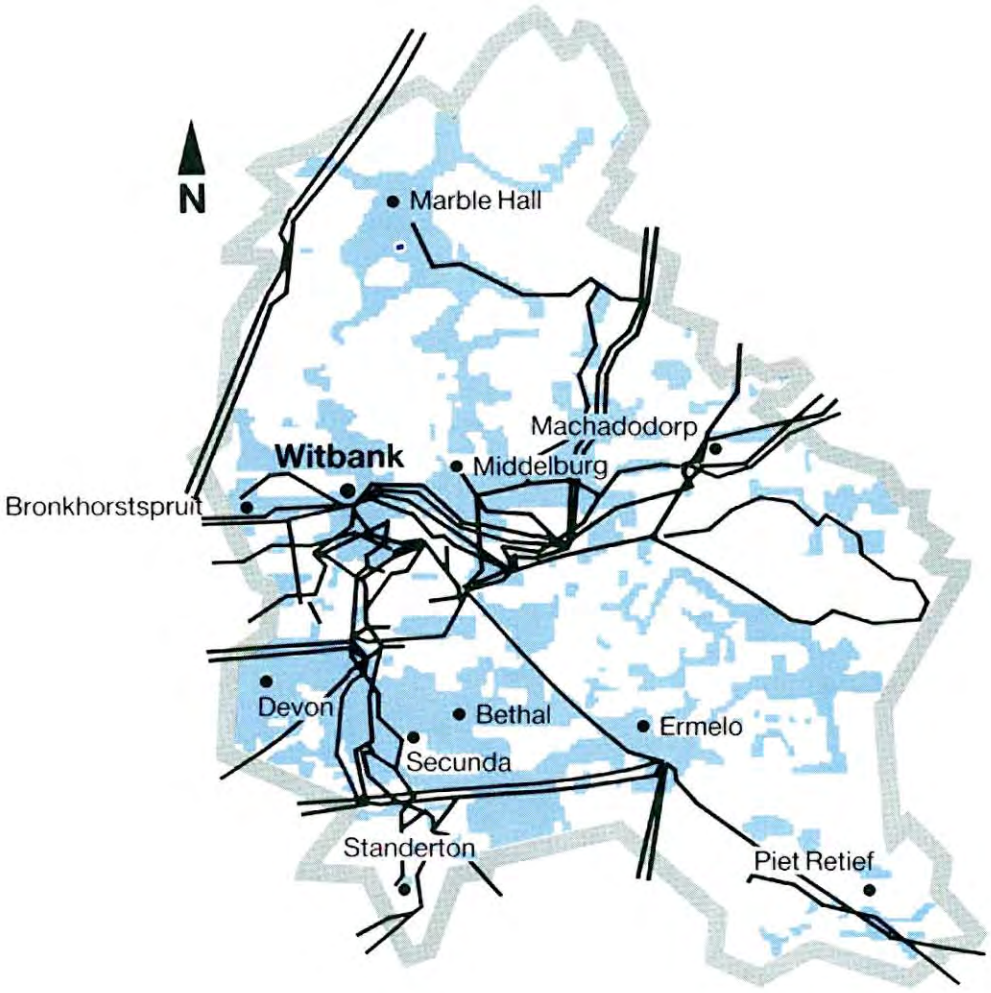
Kilometers
10 5 0 50

Area of supply	
Transmission lines	
Reticulated areas	

Western Natal Region	
Regional Office: Pietermaritzburg	(0331) 94-7245
Newcastle District	(03431) 6351
Colenso District	(03622) 2232
Pietermaritzburg District	(0331) 94-7351/2/3

Map 10

Eastern Transvaal Distribution Region



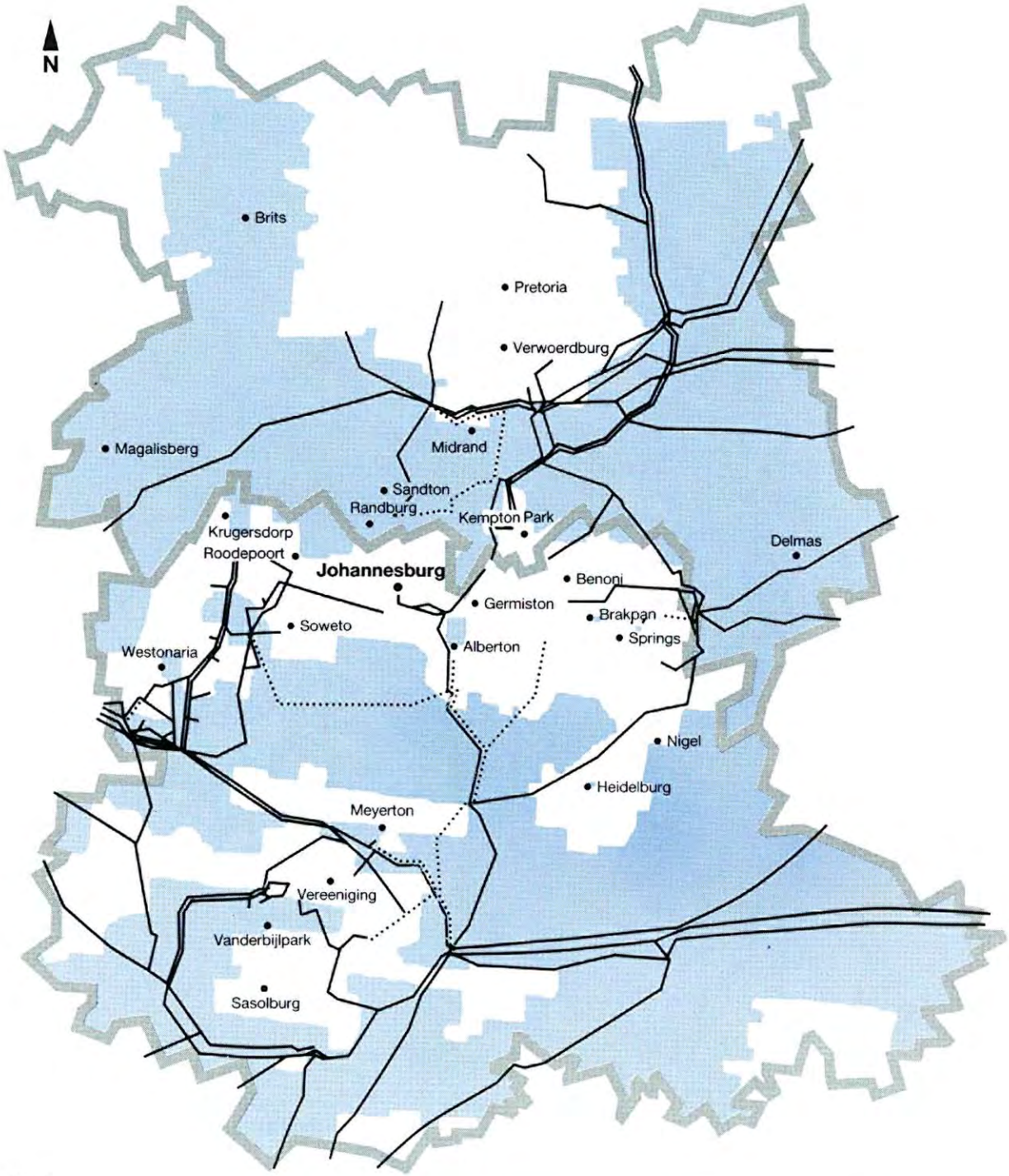
Kilometers
10 5 0 50

Area of supply
Transmission lines
Reticulated areas

Eastern Transvaal Region	
Regional Office: Witbank	(01351) 67-9111
Wildebees District	(01363) 7-1130
Ermelo District	(01341) 7450/1/2/3/4
Witbank District	(01351) 67-3200
Middelburg District	(01321) 2-7128/9
Groblersdal District	(01202) 4039

Map 11

Central and Southern Transvaal Distribution Regions



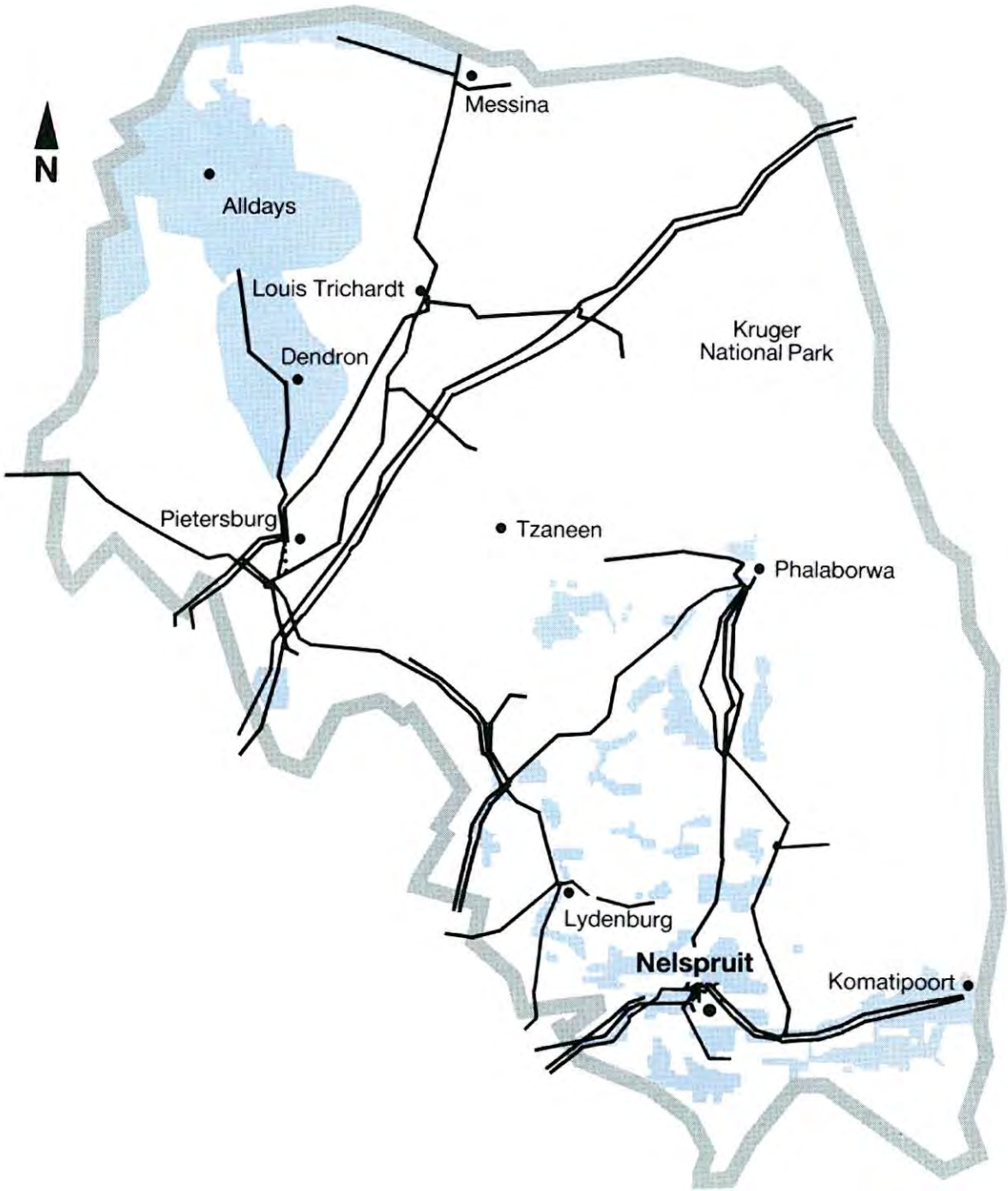
Kilometers
5 0 5 10 15

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

Central Transvaal Region		**Southern Transvaal Region**	
Regional Office: Johannesburg	(011) 711-9111	Regional Office: Johannesburg	(011) 711-9111
Irene District	(012) 61-2236	Nigel District	(011) 739-2161
Sandton District	(011) 786-4746	Vereeniging District	(016) 21-3410
Midrand District	(011) 702-2307/8/9	Westonaria District	(011) 693-5348/9
Randburg District	(011) 711-2913	Alberton District	(011) 869-1811
Petit District	(011) 54-8356	Brakpan District	(011) 55-8266

Map 12

North-eastern Transvaal Distribution Region



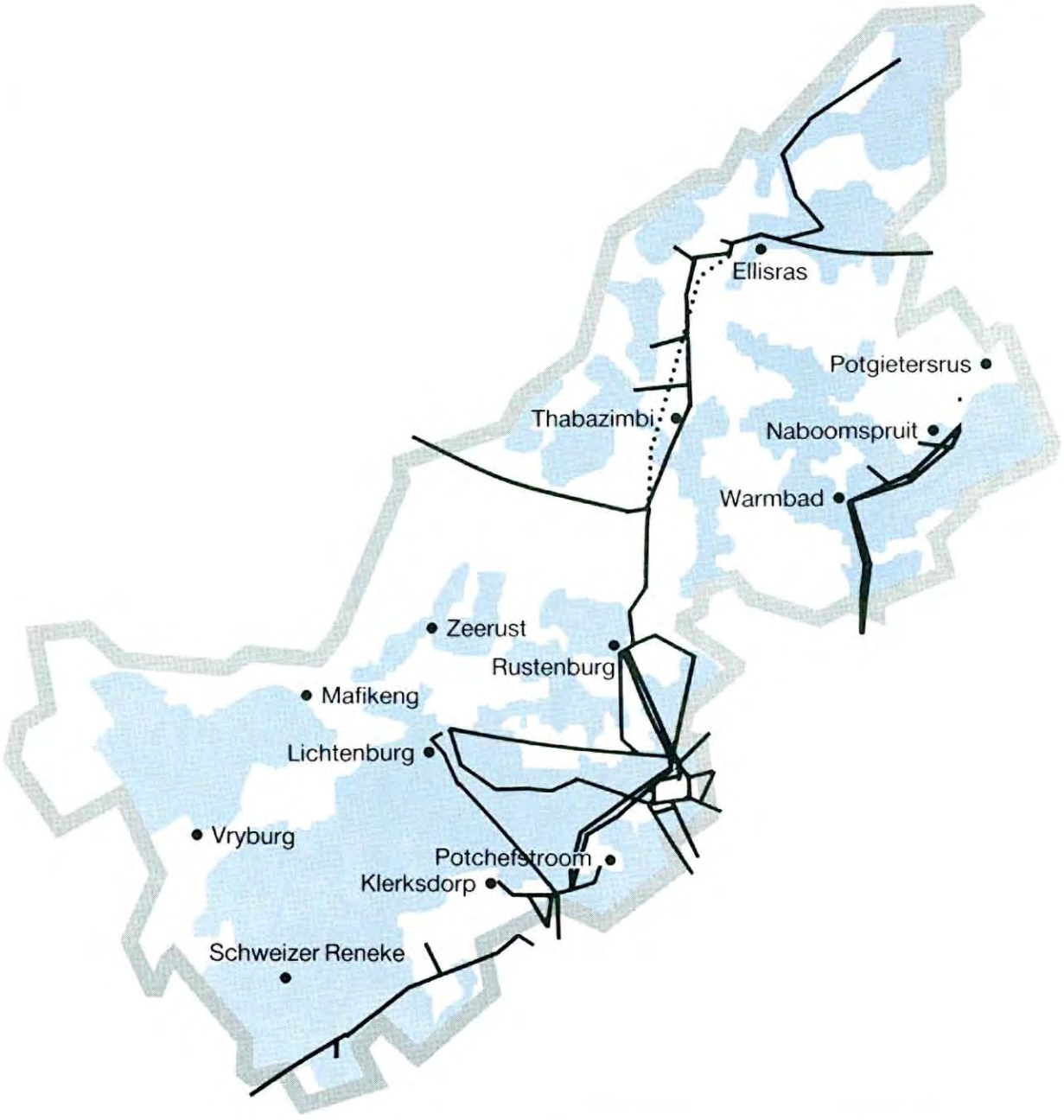
Kilometers
10 5 0 50

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

North-eastern Transvaal Region Regional Office: Nelspruit	(01311) 5-2001
Soutpansberg District	(01521) 7-4821/2/3/4
Nelspruit District	(01311) 5-2316
Lydenburg District	(01323) 2314
Phalaborwa District	(01524) 5888

Map 13

Western Transvaal Distribution Region



Kilometers
10 0 50 100

Area of supply
Transmission lines
Transmission lines under construction
Reticulated areas

Western Transvaal Region Regional Office: Johannesburg	(011) 711-9111
Carletonville District	(01491) 7-2064/5
Klerksdorp District	(018) 2-4544/2-4740
Vryburg District	(01451) 6276/5741/2/3
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

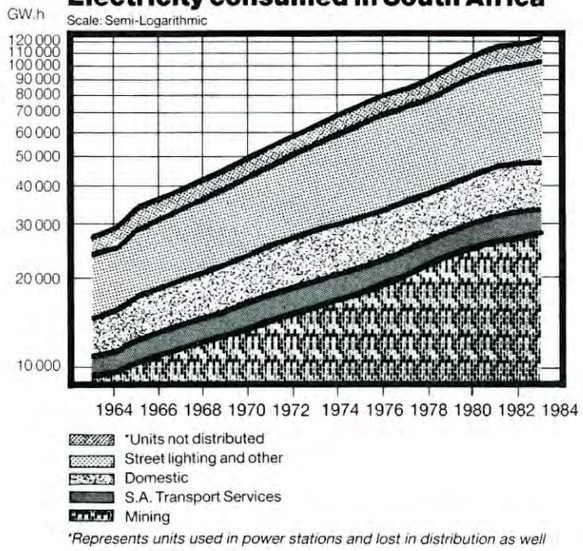
Table 22

Production and consumption of electricity in the Republic of South Africa

Reprinted from Central Statistical Services Report No. 15 – 01 – 10, census of Electricity, Gas and Steam 1983.

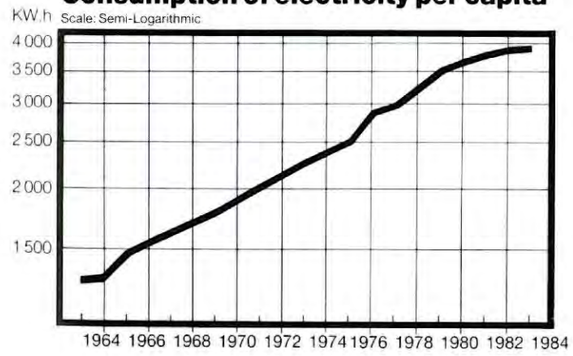
Year	Gross production of electricity	Purchases outside Republic	Used in power stations and lost in distribution	Sales outside Republic	Total number of units consumed in South Africa	Electricity supplied for consumption						
						By mining	S.A. Transport Services		For domestic purposes	Manufacturing commerce, etc.	For other purposes	Consumption per capita
							Traction	Other				
	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	GW.h	kW.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	1 034
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	3 708
1981	113 656	2 660	15 894	2 232	98 190	26 311	4 652	999	14 738	45 735	5 755	3 837
1982	119 012	2 167	18 542	2 406	100 230	27 166	4 883	1 115	14 618	45 691	6 757	3 931
1983	121 122	5 084	20 367	2 875	102 965	28 336	4 339	921	14 490	49 232	6 177	3 941

Electricity consumed in South Africa



*Represents units used in power stations and lost in distribution as well as units sold outside the Republic

Consumption of electricity per capita



Motive power employed – electricity Kilowatt*

Ownership and group	Steam turbines	Gas turbines	Steam reciprocating engines	Diesel and heavy oil engines	Petrol, paraffin and other light oil engines	Gas engines	Water turbines and water wheels	Total
Public supply undertakings								
Electricity generating stations								
Private undertakings and Escom	19 791 000	342 000	—	120	—	320	1 540 325	21 673 765
Local authorities	1 421 500	201 000	—	4 695	—	—	3 000	1 630 195
All undertakings	21 212 500	543 000	—	4 815	—	320	1 543 325	23 303 960
Electricity distributing stations								
Private undertakings and Escom	—	—	—	—	—	—	250	250
Local authorities	541 280	144 000	—	23 442	665	—	187 150	896 537
All undertakings	541 280	144 000	—	23 442	665	—	187 400	896 787
Total								
All undertakings	21 753 780	687 000	—	28 257	665	320	1 730 725	24 200 747
Self-producers								
Electricity generating stations	571 713	—	3 260	11 802	300	—	200	587 275
Electricity distributing stations	492 876	14 500	3 137	71 474	3	—	375	582 365
Total – All undertakings	1 064 589	14 500	6 397	83 276	303	—	575	1 169 640
Grand total								
All undertakings	22 818 369	701 500	6 397	111 533	968	320	1 731 300	25 370 387

*Reprinted from Central Statistical Services Report No. 15 – 01 – 10, census of Electricity, Gas and Steam 1983.

Electricity available for distribution

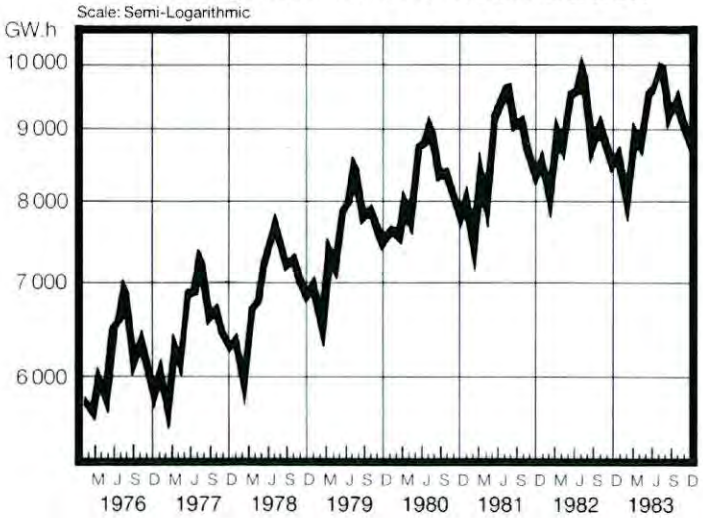


Table 24

SOUTH AFRICA

Installed capacities and gross production of electricity by type of motive power employed

Reprinted from Central Statistical Services Report No. 15 – 01 – 10, census of Electricity, Gas and Steam 1983.

Undertaking	Fuel operated plants						Hydro-electric plants		All plants	
	From coal		From liquid or gaseous fuels		All fuel operated plants					
	Installed capacities	Gross production	Installed capacities	Gross production	Installed capacities	Gross production	Installed capacities	Gross production	Installed capacities	Gross production
	kW	MW.h	kW	MW.h	kW	MW.h	kW	MW.h	kW	MW.h
All undertakings	22 824 766	121 077 002	814 321	30 232	23 639 087	121 107 234	1 731 300	15 230	25 370 387	121 122 464
Public supply undertakings	21 753 780	115 837 745	716 242	10 336	22 470 022	115 848 081	1 730 725	13 479	24 200 747	115 861 560
Self-producers – Total	1 070 986	5 239 257	98 079	19 896	1 169 065	5 259 153	575	1 751	1 169 640	5 260 904
Mining										
Gold mines	—	—	49 317	4	49 317	4	—	—	49 317	4
Coal mines	6 500	24 063	4 800	—	11 300	24 063	—	—	11 300	24 063
Other mines	24 710	38 475	28 727	19 345	53 437	57 820	—	—	53 437	57 820
Total – Mining	31 210	62 538	82 844	19 349	114 054	81 887	—	—	114 054	81 887
Manufacturing undertakings	1 009 176	5 110 300	14 885	286	1 024 061	5 110 586	375	210	1 024 436	5 110 796
Miscellaneous industries	30 600	66 419	—	—	30 600	66 419	200	1 541	30 800	67 960
S.A. Transport Services	—	—	350	261	350	261	—	—	350	261

Supply available for consumption and number of undertakings

Reprinted from Central Statistical Services Report No. 15 – 01 – 10, census of Electricity, Gas and Steam 1983.

Undertaking	Generating undertakings	Distributing undertakings	Gross production of electricity	Purchases outside the Republic	Units consumed by auxiliary installations and lost in station transformers	Units lost in transmission and transformers	Sales outside the Republic	Supply available for consumption in South Africa
	No.	No.	MW.h	MW.h	MW.h	MW.h	MW.h	MW.h
Public supply undertakings								
Private undertakings and ESCOM	4	4	109 251 748	5 022 791	8 875 760	7 156 486	2 867 130	95 375 163
Local authorities	12	314	6 609 812	60 748	806 301	2 034 214	7 407	3 822 638
All undertakings	16	318	115 861 560	5 083 539	9 682 061	9 190 700	2 874 537	99 197 801
Self-producers								
Mining[1]	1	53	81 887	—	8 521	110 364	—	36 998
Manufacturing	26	27	5 110 796	—	1 303 122	71 728	—	3 735 946
S.A. Transport Services	—	1	261	—	4	11	—	246
Other	2	2	67 960	—	3	41	—	67 916
Total	29	83	5 260 904	—	1 311 650	182 144	—	3 767 110
All undertakings	45	401	121 122 464	5 083 539	10 993 711	9 372 844	2 874 537	102 964 911

Note 1: Negative number of units for mining is caused by transmission losses on the total number of units generated and the number of units bought exceeding units generated.

Consumption of electricity in South Africa

Reprinted from Central Statistical Services Report No. 15 – 01 – 10, census of Electricity, Gas and Steam 1983.

Units consumed by	MW.h
Mining	
Gold and uranium mines	20 458 365
Coal mines	1 831 101
Other mines	5 516 951
S.A. Transport Services	
Traction	4 338 658
Other	920 556
Own local authority departments	
Water departments	251 906
Public lighting (street, etc.)	607 697
Other purpose	701 577
Rand Water Board and Regional Water Supply Commissions	1 710 910
Government Departments, Provincial Administrations, etc.	2 904 442
Other Private Businesses (manufacturing, commerce, etc.)	49 232 316
Domestic use	14 490 432
Other	—
Total	102 964 911

Table 27

South African municipal supply statistics

Source: 1986 Official South African Municipal Yearbook

Town	Year ended	Number of consumers: Domestic	Business	Industry	Other	Total
Adelaide	30.6.85	323	87	2	—	412
Alberton	30.6.85	18 000	638	290	1	18 929
Alicedale	1985	176	1	—	—	177
Allanridge	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.
Amalia H.C.	—	n.a.	n.a.	n.a.	n.a.	n.a.
Attridgeville	31.12.85	n.a.	n.a.	n.a.	n.a.	10 500
Beacon Bay	1.12.85	2 157	57	7	—	2 221
Beaufort West	30.6.85	2 214	388	6	—	2 608
Bedfordview	21.12.85	2 347	92	14	—	2 453
Belfast	30.6.85	n.a.	n.a.	n.a.	n.a.	1 200
Benoni	30.6.85	18 865	1 583	268	2	20 718
Bethal	30.6.85	n.a.	n.a.	n.a.	n.a.	2 130
Bethlehem	1985	3 552	613	49	1	4 215
Bloemhof	30.6.85	505	122	6	—	633
Boksburg	30.6.85	19 911	896	170	—	20 977
Bothaville	30.6.85	1 101	286	18	—	1 405
Brakpan	1985	11 586	1 373	355	—	13 314
Brandfort	—	657	147	14	—	818
Bredasdorp	30.6.85	1 036	161	13	—	1 210
Brits	30.6.85	2 375	609	105	—	3 089
Britstown	31.12.85	n.a.	n.a.	n.a.	n.a.	n.a.
Bronkhorstspruit	30.6.85	1 287	166	47	–	1 500
Camperdown	—	n.a.	n.a.	n.a.	n.a.	n.a.
Cape Div. Council	30.6.85	5 664	113	104	—	5 881
Cape Town	1984/85	n.a.	n.a.	n.a.	n.a.	217 467
Carletonville	1985	5 941	637	—	—	6 578
Ceres	30.6.85	2 189	359	76	—	2 624
Christiana	1985	715	86	808	—	1 609
Citrusdal	30.6.85	246	66	7	—	319
Clanwilliam	30.6.85	450	68	11	—	529
Colenso	30.6.85	502	54	1	—	557
Cradock	30.6.85	1 587	160	55	—	1 802
De Aar	30.6.85	1 694	289	26	—	2 009
De Rust	30.6.85	n.a.	n.a.	n.a.	n.a.	250
Delareyville	1985	499	108	·9	—	616
Delmas	1985	1 374	155	19	1	1 549
Deneysville	30.6.85	280	26	1	—	307
Despatch	1984	3 731	154	—	—	3 885
Dewetsdorp	30.6.85	n.a.	n.a.	n.a.	n.a.	364
Douglas	30.6.85	354	77	8	—	439
Dundee	30.6.85	n.a.	n.a.	n.a.	n.a.	0
Durban	1984/85	199 563	23 407	450	3	223 423
East London	30.6.85	20 148	2 318	231	—	22 697
Edenvale	1.6.85	7 562	213	279	—	8 054
Empangeni	1.12.85	3 385	937	12	—	4 334
Ermelo	30.6.85	3 175	479	60	—	3 714
Eshowe	1985	n.a.	n.a.	n.a.	n.a.	1 090
Estcourt	30.6.85	2 341	452	24	—	2 817
Fauresmith	30.6.85	194	25	20	—	239
Ficksburg	30.6.85	926	228	20	—	1 174
Fochville	30.6.85	1 876	167	—	—	2 043
George	30.6.85	n.a.	n.a.	n.a.	n.a.	7 155
George (Pacaltsdorp)	30.6.85	655	19	—	—	674
Germiston	30.6.85	23 346	3 196	803	229	27 574
Glencoe	30.6.85	1 051	89	11	—	1 151
Gobabis	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.

Town	MW.h sold: Domestic	Business	Industrial	Not defined and other	Total	Maximum demand MW/MVA	Average monthly load factor	Electricity sales revenue R	Average c/kW.h
Adelaide	2 691	1 313	210	—	4 214	1 080	37,1	350 369	8,31
Alberton	n.a.	n.a.	n.a.	n.a.	n.a.	148 000	60,5	29 787 176	5,54
Alicedale	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	49 065	—
Allanridge	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	557 034	—
Amalia H.C.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
Attridgeville	n.a.	n.a.	n.a.	n.a.	n.a.	20 000	—	n.a.	—
Beacon Bay	11 150	856	915	—	12 921	6 772	74,0	n.a.	—
Beaufort West	9 669	9 396	913	—	19 978	5 520	48,1	1 936 243	9,69
Bedfordview	74 141	12 944	61 830	—	148 915	32 360	52,5	8 772 233	5,89
Belfast	n.a.	n.a.	n.a.	9 875	9 875	2 500	45,1	652 832	6,61
Benoni	197	51 512	311 301	327 105	690 115	159 321	63,0	36 690 273	5,32
Bethal	n.a.	n.a.	n.a.	44 793	44 793	12 800	61,7	2 915 382	6,51
Bethlehem	30 004	21 168	34 335	1	85 505	19 680	67,0	5 322 279	6,22
Bloemhof	n.a.	n.a.	n.a.	12 510	12 510	2 209	67,6	758 418	6,06
Boksburg	206 044	58 335	371 673	36 527	672 579	159 000	62,8	38 867 200	5,78
Bothaville	8 634	5 765	4 035	—	18 434	6 000	65,0	1 259 880	6,83
Brakpan	8 121	1 644	3 624	216 611	230 000	55 000	60,0	13 338 749	5,80
Brandfort	3 896	—	1 423	—	5 319	n.a.	—	487 155	9,16
Bredasdorp	n.a.	n.a.	n.a.	7 782	7 782	2 360	58,0	710 378	9,13
Brits	21 965	15 940	97 595	—	135 499	34 603	50,2	9 688 011	7,15
Britstown	n.a.	n.a.	n.a.	n.a.	n.a.	600	20,0	210 469	—
Bronkhorstspruit	n.a.	n.a.	n.a.	27 832	27 832	12 000	52,0	2 118 942	7,61
Camperdown	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
Cape Div. Council	26 976	2 323	121 426	—	150 726	34 400	57,4	n.a.	—
Cape Town	n.a.	n.a.	n.a.	3 057 277	3 057 277	681 000	64,3	202 759 238	6,63
Carletonville	64 734	33 935	—	—	98 669	21 237	53,0	6 551 255	6,64
Ceres	12 453	6 008	21 276	7 553	47 290	14 020	55,7	3 282 928	6,94
Christiana	n.a.	n.a.	n.a.	n.a.	n.a.	3 500	37,0	n.a.	—
Citrusdal	1 435	1 109	964	—	3 508	1 095	36,6	329 024	9,38
Clanwilliam	2 552	390	60	—	3 003	n.a.	—	289 124	9,63
Colenso	3 751	694	164	—	4 610	700	50,7	375 385	8,14
Cradock	11 982	3 457	6 453	—	21 893	5 040	56,8	1 731 207	7,91
De Aar	10 922	4 181	7 141	852	23 095	6 400	59,1	1 954 620	8,46
De Rust	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	91 796	—
Delareyville	5 240	2 035	927	—	8 202	2 500	37,5	714 141	8,71
Delmas	14 767	4 828	7 080	87	26 761	6 400	60,0	1 948 190	7,28
Deneysville	3 312	1 528	798	—	5 638	1 820	52,8	392 256	6,96
Despatch	28 854	2 665	—	—	31 519	8 000	55,0	2 497 841	7,92
Dewetsdorp	n.a.	n.a.	n.a.	3 782	3 782	1 300	49,9	n.a.	—
Douglas	2 781	2 362	4 113	—	9 256	2 000	40,0	639 064	6,90
Dundee	25 823	11 157	2 689	—	39 669	n.a.	—	2 530 857	6,38
Durban	1 529 616	973 343	3 240 727	116 197	5 859 884	1 078 638	72,0	310 925 859	5,31
East London	138 293	51 544	423 356	10 288	623 481	130 528	54,5	39 208 734	6,29
Edenvale	94 153	5 272	68 109	—	167 534	n.a.	39,3	n.a.	—
Empangeni	29 564	35 285	17 537	—	82 387	19 080	49,3	5 241 324	6,36
Ermelo	34 389	10 795	25 744	3 195	74 123	16 800	50,4	4 302 925	5,81
Eshowe	n.a.	n.a.	n.a.	18 213	18 213	4 480	46,4	n.a.	—
Estcourt	17 739	5 847	104 550	—	128 136	24 480	59,8	5 824 075	4,55
Fauresmith	1 206	158	164	—	1 528	500	34,9	146 860	9,61
Ficksburg	7 910	3 806	5 921	—	17 637	6 300	32,0	n.a.	—
Fochville	19 146	4 330	—	—	23 477	7 500	35,7	1 509 608	6,43
George	n.a.	n.a.	n.a.	115 998	115 998	24 900	53,2	n.a.	—
George (Pacaltsdorp)	291	64	—	—	355	15 000	—	409 642	—
Germiston	275 572	53 851	583 812	32 804	946 039	213 527	50,6	51 857 592	5,48
Glencoe	7 437	899	2 859	1 273	12 467	4 140	34,0	966 688	7,75
Gobabis	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	1 089 131	—

South African Municipal supply statistics

Source: 1986 Official South African Municipal Yearbook

Town	Year ended	Number of consumers: Domestic	Business	Industry	Other	Total	MW.h sold: Domestic	Business	Industrial	Not defined and other	Total	Maximum demand MW/MVA	Average monthly load factor	Electricity sales revenue R	Average c/kW.h
Gordon's Bay	30.6.85	n.a.	n.a.	n.a.	n.a.	1 265	n.a.	n.a.	n.a.	9 600	9 600	2 680	51,7	603 117	6,28
Graaff-Reinet	30.6.85	1 948	297	—	1	2 246	5 325	13 211	—	1 680	20 216	6 000	57,0	2 335 000	11,55
Greytown	1985	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4 580	55,4	1 648 915	—
Groblersdal	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4 600	—	n.a.	—
Groot Brakrivier	30.6.85	1 317	15	1	—	1 333	4 670	320	1 610	—	6 600	1 200	62,8	501 565	7,60
Harding	30.6.85	329	72	4	—	405	n.a.	n.a.	n.a.	4 520	4 520	1 390	62,0	431 819	9,55
Harrismith	1985	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1 218	—	2 830 205	—
Hartbeesfontein	30.6.85	422	64	9	—	495	2 328	1 780	994	90	5 192	1 575	33,8	410 412	7,90
Hartswater	30.6.85	504	197	10	—	711	4 238	3 405	4 162	—	11 806	4 100	44,7	1 048 295	8,88
Heidelberg C.P.	30.6.85	610	69	4	—	683	1 957	1 200	1 407	—	4 563	11 000	—	353 029	7,74
Heidelberg Tvl	—	2 460	355	101	—	2 916	23 991	11 407	48 017	7 976	91 391	23 750	43,9	4 766 764	5,22
Hermanus	1.12.85	2 849	242	14	—	3 105	12 983	3 214	4 070	—	20 266	6 280	53,5	1 403 098	6,92
Hertzogville	1985	214	27	2	—	243	n.a.	n.a.	n.a.	n.a.	n.a.	620	—	147 563	—
Hobhouse	30.6.85	90	13	—	—	103	n.a.	n.a.	n.a.	1 081	1 081	287	43,0	68 771	6,36
Hoopstad	1985	380	20	10	—	410	3 027	865	432	—	4 324	1 380	—	326 285	7,55
Howick	1985	1 355	179	6	—	1 540	9 565	3 352	12 266	3 821	29 004	n.a.	—	1 913 217	6,60
Humansdorp	30.6.85	700	130	10	2	842	n.a.	n.a.	n.a.	21 000	21 000	5 400	44,4	1 542 235	7,34
Ibhayi	1985	9 096	265	—	—	9 361	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	2 623 310	—
Ikageng	—	1 623	210	—	—	1 833	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
Jan Kempdorp	30.6.85	729	87	9	—	825	4 396	1 399	4 496	—	10 291	3 250	40,2	997 092	9,69
Jansenville	30.6.85	210	65	—	—	275	837	403	—	—	1 240	n.a.	—	173 556	14,00
Jeffreys Bay	—	1 600	55	6	—	1 661	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	1 164 000	—
Johannesburg	30.6.85	107 780	4 262	3 251	—	115 293	1 831 904	194 605	3 116 179	—	5 142 688	1 243 400	63,1	280 353 582	5,45
Kakamas	—	492	25	12	1	530	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	550 444	8,90
Katlehong	1.12.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	20 000	48,0	n.a.	—
Keetmanshoop	30.6.85	1 725	164	124	—	2 013	4 365	11 896	—	—	16 261	n.a.	—	1 721 320	10,59
Kei Road	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
Keimoes	1985	531	20	1	—	552	n.a.	n.a.	n.a.	5 550	5 550	1 880	42,4	519 256	9,36
Kempton Park	30.6.85	20 376	958	245	—	21 579	261 749	84 800	79 600	—	426 149	98 400	66,0	22 882 139	5,37
Kimberley	30.6.85	17 303	—	203	1	17 507	128 121	7 105	128 897	—	264 124	n.a.	64,4	18 303 253	6,93
King William's Town	30.6.85	3 097	460	58	—	3 615	20 924	9 982	25 337	—	56 244	12 840	59,8	4 362 578	7,76
Kirkwood	30.6.85	314	100	2	—	416	1 605	1 615	559	—	3 779	1 176	36,7	338 369	8,95
Kleinmond	1985	n.a.	n.a.	n.a.	n.a.	1 041	n.a.	n.a.	n.a.	4 022	4 022	1 500	30,6	304 259	7,56
Klerksdorp	1.12.85	12 624	1 221	69	1	13 915	115 882	50 990	31 002	28 354	226 229	15 362	66,3	13 009 741	5,75
Klipplaat	1985	80	4	—	—	84	701	115	—	—	816	n.a.	68,0	29 012	—
Knysna	1985	2 721	413	24	—	3 158	n.a.	n.a.	n.a.	32 000	32 000	7 520	54,0	2 395 404	7,49
Kroonstad	30.6.85	5 627	898	232	4	6 761	n.a.	n.a.	n.a.	124 193	124 193	34 700	43,9	8 394 950	6,76
Krugersdorp	30.6.85	15 520	1 293	722	225	17 760	132 874	32 737	212 531	2 497	380 639	97 180	58,2	25 220 230	6,63
Kuruman	31.12.85	1 603	350	21	—	1 974	13 507	4 450	3 900	—	21 857	6 720	52,8	n.a.	—
Kwaguqa	—	4 500	90	—	—	4 590	912	—	—	—	912	n.a.	—	917 373	—
Ladismith	—	837	40	3	—	880	2 298	98	1 416	—	3 813	n.a.	—	362 590	9,51
Ladysmith	30.6.85	5 251	789	79	—	6 119	49 070	14 659	135 880	—	199 610	40 391	66,4	10 081 131	5,05
Laingsburg	30.6.85	300	40	—	—	340	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	181 000	6,10
Lamberts Bay	30.6.85	650	25	—	—	675	215	40	—	—	255	864	50,0	206 830	—
Leeudoringstad	30.6.85	530	30	—	—	560	n.a.	n.a.	n.a.	6 122	6 122	1 645	34,1	438 700	7,17
Lichtenburg	1.12.85	n.a.	n.a.	n.a.	n.a.	3 135	n.a.	n.a.	n.a.	51 962	51 962	13 137	45,2	3 565 999	6,86
Lindley	30.6.85	341	35	1	1	378	1 411	681	68	93	2 253	900	38,8	226 510	10,05
Louis Trichardt	1985	2 315	415	76	—	2 806	31 803	107 938	—	3 986	143 727	34 000	48,3	8 433 904	5,87
Makwassie	—	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	203 170	9,09
Malmesbury	30.6.85	2 091	277	32	—	2 400	12 934	4 669	12 719	—	30 322	9 000	56,0	2 129 861	7,02
Melmoth	30.12.85	365	55	—	—	420	2 780	2 548	—	—	5 328	1 500	50,0	336 732	6,32
Messina	30.6.85	580	140	4	—	724	7 000	759	781	—	8 540	1 928	75,0	501 150	5,87
Meyerton	30.6.85	1 757	2 627	62	—	4 446	2 430	738	4 220	94 917	102 305	197 413	69,5	5 935 085	5,80
Middelburg C.P.	1985	n.a.	n.a.	n.a.	n.a.	1 230	6 179	2 997	6 008	350	15 534	4 200	78,0	1 270 629	8,18
Middelburg Tvl	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	40 800	62,4	8 709 612	5,55
Mmabatho	1985	4 800	1 200	100	—	6100	42 589	22 882	15 983	—	81 454	22 383	46,6	n.a.	—

South African Municipal supply statistics

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Molteno	30.6.85	215	18	4	—	237	1 092	926	536	—	2 554	900	32,4	252 404	9,88
Montagu	30.6.85	1 021	110	34	—	1 165	4 597	1 938	5 976	—	12 511	3 200	60,0	995 357	7,96
Mooi River	30.6.85	531	63	2	—	596	n.a.	n.a.	n.a.	n.a.	n.a.	6 260	56,4	1 452 312	4,83
Moorreesburg	30.6.85	1 108	129	14	—	1 251	8 268	653	574	—	9 495	2 560	35,3	731 134	7,70
Mossel Bay	1985	n.a.	n.a.	n.a.	n.a.	4 300	n.a.	n.a.	n.a.	52 300	52 300	11 500	57,0	3 433 363	6,56
Naaboomspruit	1.1.86	869	152	1	—	1 022	10 423	3 796	348	—	14 567	2 970	69,2	1 353 077	9,29
Newcastle	1.12.85	8 500	350	170	—	9 020	99 100	40 800	431 400	11 600	582 900	110 000	62,0	25 433 000	4,36
Nigel	1985	4 666	488	146	—	5 300	2 868	721	5 597	—	9 186	33 760	56,0	8 396 308	—
Nylstroom	30.6.85	1 245	204	12	—	1 461	11 322	5 581	393	—	17 297	4 505	64,6	n.a.	—
Odendaalsrus	—	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3 207 383	3 207 383	8 400	63,9	n.a.	—
Olifantshoek	30.6.85	250	57	—	—	307	228	2 550	—	—	2 778	950	35,6	278 480	10,03
Oranjeville	30.6.85	204	16	—	—	220	716	102	—	—	818	234	54,3	64 514	7,88
Orkney	31.12.85	2 953	253	—	—	3 206	30 997	8 451	8 269	—	47 718	11 979	60,7	2 750 306	5,76
Otjiwarongo	—	2 050	273	—	—	2 323	4 320	5 364	—	—	9 683	n.a.	—	n.a.	—
Paarl	31.12.85	14 527	2 248	200	—	16 975	n.a.	n.a.	n.a.	225 482	225 482	57 120	63,6	16 441 473	7,29
Parys	30.6.85	n.a.	n.a.	n.a.	n.a.	3 113	n.a.	n.a.	n.a.	39 885	39 885	9 809	60,3	2 839 595	7,12
Pearston	1986	n.a.	n.a.	n.a.	n.a.	210	n.a.	n.a.	n.a.	108	108	n.a.	—	73 610	—
Petrus Steyn	1985	315	36	—	—	351	1 581	2 103	—	—	3 683	1 050	—	260 743	7,08
Phalaborwa	30.6.85	3 040	232	54	—	3 326	31 436	7 372	16 650	4 133	59 592	14 640	67,1	4 223 098	7,09
Pietermaritzburg	30.6.85	39 970	—	339	—	40 309	275 744	71 524	444 457	7 526	799 251	167 329	62,1	46 756 051	5,85
Pietersburg	30.6.85	9 290	529	96	1	9 916	79 390	39 720	65 696	8 320	193 126	49 551	60,6	13 317 705	6,90
Plettenberg Bay	31.12.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7 520	—	n.a.	—
Port Alfred	31.12.85	1 388	243	—	—	1 631	4 860	3 100	—	—	7 961	2 440	51,4	n.a.	—
Port Elizabeth	30.6.85	57 727	5 992	408	9 502	73 629	458 983	147 581	820 450	378 609	1 805 623	346 100	65,1	106 462 035	5,90
Port Shepstone	31.7.85	2 006	514	180	2	2 702	7 886	7 886	6 760	—	22 532	7 440	34,6	2 374 118	10,54
Potchefstroom	30.6.85	n.a.	n.a.	n.a.	n.a.	10 650	n.a.	n.a.	n.a.	246 169	246 169	53 465	66,6	14 547 117	5,91
Potgietersrus	30.6.85	3 161	543	66	1	3 771	42 088	17 558	16 222	4 944	80 812	19 499	54,5	6 877 533	8,51
Pretoria	—	117 036	4 214	395	2	121 647	1 101 714	427 105	1 947 640	328 833	3 805 293	n.a.	—	179 480 253	4,72
Prieska	1985	738	121	1	1	861	2 833	5 769	7 064	1 619	17 285	4 800	41,1	1 288 648	7,46
Queenstown	1985	n.a.	n.a.	n.a.	n.a.	4 319	25 935	—	41 727	—	67 662	18 340	38,5	5 188 439	7,67
Reitz	—	739	130	9	—	878	5 746	4 921	804	—	11 470	n.a.	—	n.a.	—
Richards Bay	30.6.85	3 175	231	4	—	3 410	30 861	78 045	284 011	617	393 533	96 000	60,6	20 686 957	5,26
Roodepoort	31.12.85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
Rustenburg	30.6.85	9 398	1 219	66	—	10 683	92 812	36 634	7 604	—	137 049	47 152	64,6	15 795 873	11,53
Sabie	1985	n.a.	n.a.	n.a.	n.a.	450	n.a.	n.a.	n.a.	29 000	29 000	n.a.	—	n.a.	—
Sasolburg	30.6.85	7 766	337	—	—	8 103	74 961	18 108	—	8 255	101 324	25 800	61,5	6 480 730	6,40
Senekal	30.6.85	810	144	6	—	960	5 690	3 134	9 428	4 031	22 284	5 227	51,6	1 282 592	5,76
Sishen-Kathu	30.6.85	2 000	15	3	—	2 018	28 200	1 628	750	—	30 578	8 000	70,2	2 305 572	7,54
Somerset East	31.12.85	1 602	491	12	—	2 105	5 870	11 756	8 972	—	26 599	6 520	67,0	2 244 203	8,44
Somerset West	30.6.85	6 353	555	67	—	6 975	51 797	19 979	2 220	—	73 996	18 200	65,4	5 054 130	6,83
Springs	1985	15 335	1 790	283	—	17 408	163 516	44 544	316 319	39 469	563 848	122 290	65,9	32 986 235	5,85
Stanger	30.6.85	5 260	862	148	—	6 270	41 448	17 896	10 292	115 048	184 685	35 520	64,9	10 791 900	5,84
Stellenbosch	30.6.85	9 682	307	27	1	10 017	48 827	2 731	98 821	1 038	151 417	n.a.	54,6	11 065 187	7,31
Sterkstroom	30.6.85	261	22	—	—	283	803	298	—	—	1 101	n.a.	—	n.a.	—
Stilfontein	30.6.85	n.a.	n.a.	n.a.	n.a.	1 303	n.a.	n.a.	n.a.	55 020	55 020	119 830	52,0	n.a.	—
Swakopmund	30.6.85	2 330	306	52	2	2 690	9 685	3 228	7 264	5 777	25 954	6 510	59,0	2 793 901	10,77
Swellendam	—	1 061	198	15	—	1 274	9 183	2 171	—	—	11 354	2 960	43,8	813 406	7,16
Tsumeb	30.6.85	n.a.	1 500	1	1	1 502	n.a.	9 057	2 398	2 453	13 908	3 050	70,9	1 255 650	9,03
Tweeling	1985	205	35	1	—	241	867	319	50	—	1 236	n.a.	—	108 146	8,75
Tzaneen	30.6.85	2 271	476	25	3	2 775	97 224	34 200	32 600	—	164 024	48 000	70,0	11 462 984	6,99
Uitenhage	1985	12 468	1 032	56	2	13 558	49 171	18 051	216 712	27 389	311 323	72 500	53,5	21 582 113	6,93
Upington	30.6.85	3 931	430	99	—	4 460	—	33 431	35 831	—	69 262	171 840	60,8	5 483 607	7,92
Utrecht	30.6.85	624	89	8	—	721	6 415	551	271	3 179	10 417	3 000	47,7	732 768	7,03
Vanderbijlpark	30.6.85	16 699	2 316	448	—	19 463	145 210	23 529	49 003	11 796	229 537	55 475	66,5	14 440 321	6,29
Vanrhynsdorp	30.6.85	356	48	—	—	404	n.a.	n.a.	n.a.	2 500	2 500	600	52,0	169 669	6,79
Vanwyksvlei	30.6.85	70	7	—	—	77	n.a.	n.a.	n.a.	208	208	n.a.	—	24 624	11,82

South African Municipal supply statistics

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Town	Year ended	Number of consumers: Domestic	Business	Industry	Other	Total
Ventersburg	—	n.a.	n.a.	n.a.	n.a.	n.a.
Ventersdorp	1985	n.a.	n.a.	n.a.	n.a.	1 100
Vereeniging	30.6.85	12 803	922	141	—	13 866
Villiers	30.6.85	344	60	5	—	409
Vosloorus	30.6.85	6 000	100	1	—	6 101
Vrede	30.6.85	500	55	4	1	560
Vredefort	—	423	36	7	—	466
Vredenburg-Saldanha	30.6.85	3 145	428	53	—	3 626
Vredendal	1985	930	230	30	—	1 190
Vryburg	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.
Vryheid	1985	n.a.	n.a.	n.a.	n.a.	4 000
Walvis Bay	30.6.85	4 229	197	72	—	4 498
Warmbaths	30.6.85	n.a.	n.a.	n.a.	n.a.	1 681
Warrenton	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.
Waterval-Boven	30.6.85	449	73	1	—	523
Welkom	1.12.85	14 114	1 573	137	—	15 824
Wellington	30.6.85	n.a.	n.a.	n.a.	n.a.	n.a.
Westonaria	30.6.85	3 233	381	52	—	3 666
White River	1985	2 000	400	50	—	2 450
Willowmore	30.6.85	316	54	—	—	370
Winburg	30.6.85	375	118	7	—	500
Wolmaransstad	30.6.85	614	157	20	—	791
Worcester	31.12.85	7 142	962	74	—	8 178
		1 047 909	94 465	14 012	9 994	1 444 330

MW.h sold: Domestic	Business	Industrial	Not defined and other	Total	Maximum demand MW/MVA	Average monthly load factor	Electricity sales revenue R	Average c/kW.h
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	n.a.	—
n.a.	n.a.	n.a.	12 909	12 909	n.a.	—	924 291	7,16
150 184	71 062	129 724	—	350 970	87 873	63,3	19 144 169	5,45
2 656	1 145	706	—	4 507	1 440	37,0	369 760	8,20
23 000	6 178	—	—	29 178	9 000	37,0	1 421 250	4,87
5 643	2 644	609	451	9 347	2 760	38,7	709 727	7,59
472	162	216	—	850	n.a.	—	377 970	—
18 955	7 769	34 392	—	61 115	13 200	60,4	4 005 536	6,55
4 745	2 021	3 208	313	10 287	3 000	42,6	840 181	8,17
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—	4 316 318	—
n.a.	n.a.	n.a.	n.a.	n.a.	15 360	—	4 495 962	—
20 236	4 673	24 711	1 896	51 516	12 640	63,8	4 816 070	9,35
n.a.	n.a.	n.a.	27 971	27 971	6 000	40,3	2 320 061	8,29
n.a.	n.a.	n.a.	n.a.	n.a.	2 200	—	824 145	—
n.a.	n.a.	n.a.	5 550	5 550	1 600	39,6	338 433	6,10
131 405	52 525	67 446	—	251 375	15 808	63,9	18 376 215	7,31
18 746	4 076	23 650	2 934	49 405	11 200	53,4	n.a.	—
n.a.	n.a.	n.a.	47 666	47 666	13 500	60,7	3 554 591	7,46
13 360	1 000	7 000	—	21 360	5 580	60,0	1 601 160	7,50
1 050	383	—	—	1 433	456	35,9	254 458	—
2 556	1 278	2 556	—	6 391	1 920	60,5	452 604	7,08
4 908	2 438	2 987	384	10 717	n.a.	n.a.	810 880	7,57
44 658	10 433	56 373	2 731	114 195	269 568	63,1	8 274 431	7,25
9 009 226	3 330 197	14 642 947	9 379 864	36 362 234			1 940 273 966	

Municipal supplies: generation

Source: Official South African Municipal Yearbook, 1985 and 1986

	Boilers					Engines			Generators		
Town	No.	Type	Make	Steam pressure (kPa)	Total evaporative capacity (kg/h)	No.	Type	Make	Make	Voltage	Total installed capacity kW
Bethulie	—	—	—	—	—	5	Diesel	4 x Ruston & 1 GM	2 ELIN, 1 ACEL, 1 AEG, 1 Delco	400/220	220
Bloemfontein	3	Watertube	ICL	250 lb/sq inch	544 311	—		—	—	—	—
	4	Watertube	ICL	425 lb/sq Inch	199 581	6		GEC	—	11 000	52 500
	3	Watertube	John Brown	425 lb/sq Inch	176 901	2	Steam Turbine	Oerlikon	—	11 000	30 000
	1	Watertube	Yarrow	425 lb/sq Inch	58 967	1		Stal Laval	—	11 000	20 000
Cape Town	4	Watertube	John Brown	4 400 000	118 000 ea.	5	Steam Turbine	Oerlikon	Oerlikon	11 000	150 000
	4	Watertube	John Thompson	4 400 000	118 000 ea.	1	Steam Turbine	Hitachi	Hitachi	11 000	30 000
						1	Gas Turbine	Curtiss-Wright	Brush	11 000	37 500
						4	Gen./Pump Turbine	Escher-Weis	Siemens	12 000	180 000
Cape Divisional Council	—	—	—	—	—	1	Gas Turbine	Curtiss-Wright	Brush	11 000	50 000
						4	Diesel	3 x Lister Blackstone 1 x Rolls-Royce	Petbow	380/400	1 220
Ceres	—	—	—	—	—	1	Water	Gilbert Gilkes	Garbe/Lahmeyer	400	500
						2	Water	Gilbert Gilkes	G.E.C.	400	500
Clanwilliam	—	—	—	—	—	1	GM	General Motors	General Motors	400	75
						1	MAN	Duitsland	Garbe/Lahmeyer	400	112
Edenvale	—	—	—	—	—	1	Hydro	Voigt	Garbe/Lahmeyer	3 300	200
Estcourt	—	—	—	—	—	1	Diesel	Caterpillar	—	380	400
George	6	Watertube	Babcock & Wilcox	1 360	3 x 5 900 3 x 11 800	1	Diesel	Caterpillar	—	400	200
						1	Turbine	Brown Boveri	Brown Boveri	11 000	1 500
								Metrovick	Metrovick	11 000	1 500
								Allen	Bruce Peebles	11 000	3 000
								Oerlikon	Oerlikon	11 000	3 000
Graaff-Reinet	—	—	—	—	—	2	Diesel	Allen	A.E.I.	400	1 800
Johannesburg	20	Watertube	Babcock & Wilcox	430 900	1 587 600	16	Steam Turbine	Fraser & Chalmers	B.G.E.	10 500	480 000
	11	Watertube	Babcock & Wilcox	455 000	935 550	4	Steam Turbine	Fraser & Chalmers	B.G.E.	10 500	240 000
	4	Watertube	Babcock & Wilcox	621 000	979 776	3	Steam Turbine	Escher Weis	Oerlikon	10 500	180 000
	3	Watertube	Mitchell Engineering	621 000	734 832						
						2	Gas Turbine	English Electric	B.G.E.	20 500	44 000
Kleinmond	—	—	—	—	—	3	Gas Turbine	Curtiss-Wright	Brush	11 500	132 000
Knysna	—	—	—	—	—	—	—	—	—	400	55
Kroonstad	3	Watertube	John Brown	3 034	68 040	2	Diesel	Ruston Busrys	Metropolitan Vickers	3 300	1 700
	2	Watertube	Combustion Engineering	3 034	45 360	3	Steam Turbine	Siemens	Siemens	6 600	30 000
Ladismith	—	—	—	—	—						
						3	Diesel	Lister Blackstone	Garbe Lahmeyer	400	175
									Brush	400	286
									Higgs Motors	400	285
Lichtenburg	—	—	—	—	—	2	Diesel	Caterpillar	—	380	730
Lydenburg	—	—	—	—	—	—	—	—	G.E.C.	400	440
						—	—	—	Garbe/Lahmeier	11 000	3 350
Oudtshoorn	—	Watertube	Babcock & Wilcox	1,5 MPa	5 500 ea	1	Cond.	Allan	Peebles	3 300	1 500
	2	Watertube	Babcock & Wilcox	1,5 MPa	12 000 ea	1	Cond.	Met Vick	Met Vick	3 300	1 500
	1	Watertube	Babcock & Wilcox	1,5 MPa	18 000 ea	1	Cond.	Met Vick	Met Vick	3 300	1 000
						2	Cond.	Met Vick	Met Vick	11 000	6 000
Port Elizabeth	12	Watertube	I.C.A.L.	4 200 200	1 140 000	2	Diesel	Caterpillar	Kato	3 300	1 500
						9	Steam Turbine	6 Parsons/3 Hitachi	Parsons/Hitachi	11 000	240 000
Pretoria	10	Watertube	Yarrow	4 500	95 000 ea	2	Gas Turbine	Rolls-Royce	Brush	11 000	52 500
	5	Watertube	Yarrow	6 600	250 000 ea	6	Steam Turbine	English Electric	—	11 000	180 000
						5	Steam Turbine	English Electric	—	11 000	300 000
Queenstown	4	Watertube	Babcock & Wilcox	1 379	29 976	1	Diesel	Rolls-Royce	Brush	11 000	25 000
	4	Watertube	Babcock & Wilcox	1 379	39 952	3	Steam Turbine	B.T.H.	B.T.H.	11 000	9 000
						2	Steam Turbine	Bellis & Morcom	B.G.E.	3 300	2 500
Somerset East	—	—	—	—	—	1	Diesel	M.W.M.	Grabe	3 300	116
						2	Diesel	Caterpillar	E.M.	380	1 200
						—	—	Curtis	Elect Construction	380	320
Springs	—	—	—	—	—	2	Diesel	Rolls-Royce	Petbow	380	200
Upington	—	—	—	—	—	1	Diesel	Detroit	Unelec	380	460
						1	Diesel	Detroit	Markon	380	260
Umtata	—	—	—	—	—	1	—	—	—	400/231	315
Willowmore	—	—	—	—	—	—	Diesel	English Electric	—	6 600	1 500
						—	Diesel	Mirlees	—	6 600	666
						1	Diesel	Allen	Harland & Wolf	11 000	1 120
						5	Diesel	Blackstone	—	220/330	560

International Statistics

Net electricity production by utility – 1984*

Source: The Electricity Council, London, United Kingdom
An international comparison of electricity prices as at August 1985.

	Total production GW.h	Ranking
Germany (a)	330 914	1
France – EdF	273 200	2
England and Wales – CEGB (b)	213 673	3
Japan – Tokyo Electric	145 338	4
Italy – ENEL	137 462	5
South Africa – Escom (g)	116 581	6
Canada – Ontario Hydro	114 707	7
Spain	108 262	8
Canada – Hydro Quebec	99 691	9
Japan – Kansai Electric (a)	96 554	10
Japan – Chubu Electric (b)	73 653	11
Sweden – SSPD	62 437	12
USA – Commenwealth Edison	59 887	13
Korea	53 808	14
Netherlands	53 030	15
Belgium (c)	47 834	16
USA – Pacific Gas & Electric	45 534	17
Finland	43 226	18
Canada – BC Hydro (b)	42 215	19
Austria (d)	37 525	20
France – Other utilities	33 600	21
USA – Detroit Edison	32 218	22
Australia – Victoria (e)	23 675	23
Greece	22 821	24
Canada – TransAlta	22 676	25
Scotland – SSEB (b)	21 688	26
USA – Consolidated Edison	21 189	27
Denmark	19 695	28
Sweden – Sydkraft	19 331	29
Portugal (f)	17 362	30
Ireland (b)	10 417	31
Scotland – NoSHEB (b)	10 260	32
Australia – Western (b)	6 841	33
Northern Ireland (b)	5 245	34
South Africa — Other utilities (g)	4 254	35
Luxembourg	516	36

(a) Gross generation
(b) Figures for 1984/85
(c) Total public supply
(d) Figures for 1983
(e) Figures for 1983/84
(f) Electricidade de Portugal only. Includes energy for synchronous compensation and hydro pumping.
(g) Total South Africa: 120 835 GW.h

**Data from other utilities/countries not available.*

World electricity generating capacity 1984

Source: United Nations Yearbook 1983/84

	Country	MW	%	Population (millions)
1.	U.S.A.	688 430	29,5	232
2.	U.S.S.R.	304 000	13,0	270
3.	Japan	160 770	6,9	118
4.	Canada	95 220	4,1	24
5.	West Germany	87 120	3,7	61
6.	France	84 700	3,6	54
7.	China	83 000	3.6	1 008
8.	United Kingdom	66 900	2,9	56
9.	Italy	53 970	2,3	56
10.	India	47 690	2,0	698
11.	Brazil	41 660	1,8	124
12.	Spain	31 650	1,4	38
13.	Australia	31 130	1,3	15
14.	Sweden	30 860	1,3	8
15.	Poland	27 790	1,2	36
16.	South Africa	24 760	1,1	30
17.	Mexico	23 390	1,0	73
18.	Norway	23 310	1,0	4
19.	East Germany	21 520	0,9	17
20.	Czechoslovakia	18 600	0,8	15
21.	Romania	18 530	0,8	23
22.	Netherlands	17 650	0,8	14
23.	Yugoslavia	15 250	0,7	23
24.	Switzerland	15 060	0,6	6
25.	Austria	14 933	0,6	8
	Other	304 342	13,1	
	Total	2 332 245		

African electricity generating capacity

Source: United Nations Yearbook 1983/84

	Country	MW	%	Population (millions)
1.	South African Customs Union	24 760	44,1	30
2.	Egypt	5 409	9,6	45
3.	Nigeria	4 025	7,2	89
4.	Algeria	3 436	6,1	20
5.	Morocco	1 919	3,4	20
6.	Moçambique	1 803	3,2	13
7.	Zambia	1 728	3,1	6
8.	Zaïre	1 716	3,1	30
9.	Zimbabwe	1 539	2,7	8
10.	Libya	1 300	2,3	3
11.	Ivory Coast	1 163	2,1	9
12.	Ghana	1 060	1,9	12
13.	Tunisia	985	1,7	7
14.	Angola	600	1,1	7
15.	Kenya	544	1,0	9
	Others	4 175	7,4	
	Total	56 162		

Electric production in Sub-Saharan Africa – mill.kW.h

Source: "Africa South of the Sahara – 1986", 15th Edition. Europa Publications Limited.

	1983	1982	1981	1980	1979
Angola	*	*	1 500	1 500	1 400
Benin	*	*	5	5	5
Botswana	622	604	546	—	—
Burkina Faso	—	123	115	—	—
Cameroon	*	*	*	—	—
Central African Republic	*	*	*	*	62
Chad	*	*	*	64	63
Congo	233	200	158	—	—
Equatorial Guinea	*	*	*	16	—
Ethiopia	*	*	*	*	—
Gabon	*	*	450	450	440
Ghana	*	*	5	5	5
Guinea	*	*	*	*	(1976 – 500)
Ivory Coast	*	*	2	—	—
Kenya	*	*	1 467	1 405	1 498
Liberia	*	*	1 100	±900	±880 provis.
Madagascar	360	342	337	—	—
Malawi	*	*	428	434	392
Mali	91	—	—	—	—
Mauritius	371	363	362	—	—
Moçambique	*	*	5 800 estimate	14 000 estimate	—
Namibia	1 000?	—	—	—	—
Niger	*	*	60	60	50
Nigeria	*	*	*	6 899	5 977
Senegal	*	*	599	559	636
Sierra Leone	*	*	235	235	230
South Africa[1]	112 366	109 536	106 135	99 905	92 615
Sudan	—	—	—	—	—
Swaziland	—	—	—	—	—
Tanzania	—	—	—	—	—
Togo	*	*	*	76	73
Uganda	*	*	657	650 estimate	650 estimate
Zaïre	*	*	*	*	3 967
Zambia	10 072 estimate	10 581	9 793	—	—
Zimbabwe	*	21 169	20 305	18 600	—

[1] *Source: Escom*
**Figures not provided*

World electricity production – Total net production (a)

**Source: Handbook of Electricity Supply Statistics, 1984.
Issued by The Electricity Council, London, U.K.**

	1970	1973	1975	1976	1977	1978	1979	1980	1981	1982
	TW.h[f]									
EEC[b]	816	987	989	1 069	1 091	1 143	1 200	1 209	1 206	1 203
Austria	29	30	34	34	37	37	39	41	42	42
Bulgaria	18	21	24	26	27	29	30	32	35	38
Czechoslovakia	40	48	53	58	60	64	63	67	68	70
Finland	21	25	25	28	32	34	37	39	39	39
Germany (GDR)	61	70	76	83	83	85	86	88	90	93
Hungary	13	16	19	21	21	23	24	24	24	25
Iceland	2	2	2	2	3	3	3	3	3	3
Norway	57	72	77	82	73	80	88	84	91	92
Poland	60	78	90	97	102	107	109	113	107	109
Portugal	7	10	10	9	13	14	16	15	13	14
Romania	33	44	51	54	57	60	61	63	64	67
Spain	54	74	78	86	90	95	101	105	105	108
Sweden	59	76	79	84	87	90	92	94	101	97
Switzerland	35	37	43	36	45	43	46	48	52	52
Turkey	8	12	15	17	20	21	22	23	24	26
USSR	693	854	982	1 051	1 088	1 135	1 168	1 220	1 255	1 295
Yugoslavia	25	33	38	41	46	48	51	55	56	61
Total Europe[c]	**2 036**	**2 491**	**2 686**	**2 880**	**2 980**	**3 114**	**3 241**	**3 326**	**3 379**	**3 438**
Egypt[d]	8	10	12	14	14	16	17	18	19	21
Zimbabwe	6	7	6	7	5	6	7	9	10	10
Rep. of South Africa[c][g]	51	65	75	80	84	90	98	107	114	119
Total Africa[c]	**82**	**107**	**118**	**128**	**136**	**149**	**162**	**179**	**187**	**194**
Canada	205	263	274	295	317	336	353	367	378	376
USA	1 640	1 959	2 003	2 113	2 211	2 285	2 319	2 354	2 365	2 306
Total N America[c]	**1 845**	**2 230**	**2 277**	**2 410**	**2 528**	**2 620**	**2 672**	**2 721**	**2 743**	**2 682**
Argentina[d]	25	26	25	25	29	30	34	36	36	37
Brazil	46	64	78	84	98	107	113	124	137	140
Chile[d]	8	9	9	9	10	10	11	11	12	13
Colombia[d]	8	10	12	14	14	15	18	20	22	23
Mexico	28	37	43	46	50	56	59	61	69	75
Peru[d]	5	6	8	8	9	9	9	10	11	11
Venezuela[d]	12	16	20	21	22	25	28	32	37	39
Total Central & S America[c]	**150**	**213**	**209**	**220**	**274**	**299**	**326**	**326**	**380**	**398**
China[d]	73	106	—	130	210	256	282	301	309	318
India[d]	60	69	80	89	91	100	106	108	117	129
Japan[e]	340	451	455	487	508	537	562	551	556	555
Taiwan[d]	13	18	21	23	25	28	30	31	32	34
Total Asia[c]	**600**	**780**	**—**	**800**	**850**	**900**	**1 070**	**1 260**	**1 300**	**1 330**
Australia[d]	54	69	74	77	82	86	90	96	103	106
New Zealand[d]	14	18	21	22	21	22	24	22	23	24
Total Oceania[c]	**67**	**85**	**94**	**98**	**102**	**107**	**113**	**118**	**127**	**130**
Total World[c]	**4 780**	**5 906**	**6 050**	**6 540**	**6 870**	**7 190**	**7 580**	**7 963**	**8 116**	**8 172**

(a) Supplied from power stations. Includes production from private generation.
(b) German FR, France, Italy, Netherlands, Belgium, Luxembourg, U.K., Ireland, Denmark, Greece.
(c) Rounded totals – including production from unlisted countries.
(d) Gross production (units generated).
(e) Year from 1 April – 31 March.
(f) TW.h – 1 000 GW.h
(g) Updated figures from S.A. Statistics (compiled by Central Statistical Service, Pretoria)
Source: Eurostat monthly bulletin on electrical energy, Nov. 1977, Dec. 1980, Dec. 1982 & Dec. 1983. Luxembourg: Statistical Office of the European Communities.

Installed generating capacity in Southern Africa 1985

Sources: SADCC (South African Developing Coorodinating Council), Escom, Official South African Municipal Yearbook and SWAWEK

Country	Hydro power	Pumped storage	Coal	Other	Nuclear	Total	% of total
Angola	289	—	—	140	—	429	1,18
Ciskei	—	—	—	—	—	0	—
Bophuthatswana	—	—	—	—	—	0	—
Botswana	—	—	95	30	—	125	0,34
Lesotho	—	—	—	2	—	2	0,01
Malawi	125	—	—	24	—	149	0,41
Moçambique	2 164	—	58	185	—	2 407	6,62
South Africa	542	1 180	24 927	792	1 930	28 981	79,73
SWA/Namibia	240	—	120	46	—	406	1,12
Swaziland	41	—	8	45	—	94	0,26
Tanzania	249	—	—	164	—	413	1,14
Transkei	61	—	—	—	—	61	0,17
Venda	—	—	—	—	—	0	—
Zambia	1 669	—	—	130	—	1 799	4,95
Zimbabwe	666	—	750	68	—	1 484	4,08
Total	6 046	1 180	25 958	1 626	1 930	36 350	

Net consumption of electricity in Southern Africa 1980 to 1985

Sources: SADCC, SWAWEK and Central Statistical Services, Pretoria

Country	Consumption in GW.h 1980	1981	1982	1983	1984	1985	% Growth 1984-1985	Average Growth 1980-1985
Angola	623	651	706	697	691	640	–7,4	0,5
Ciskei	24	31	84	104	134	164	22,4	47,3
Bophuthatswana	1 213	1 325	1 182	1 243	1 490	1 750	17,5	7,6
Botswana	440	504	560	575	629	644	2,4	7,9
Lesotho	88	102	105	94	96	109	13,5	4,4
Malawi	353	343	362	400	411	414	0,7	3,2
Moçambique	677	648	655	667	591	518	–12,4	–5,2
South Africa	92 646	98 190	100 230	102 965	110 465	115 988	5,0	4,6
SWA/Namibia	1 021	1 061	1 065	1 121	1 158	1 153	–0,5	2,5
Swaziland	450	478	541	547	530	540	1,9	3,7
Tanzania	732	752	706	693	714	783	9,7	1,4
Transkei	99	104	138	163	198	217	9,7	17,0
Venda	16	20	24	27	35	45	28,4	22,7
Zambia	5 632	5 938	6 133	6 203	6 175	6 149	–0,4	1,8
Zimbabwe	6 943	7 137	7 317	6 973	7 033	7 631	8,5	1,9
Total	110 957	117 283	119 807	122 472	130 350	136 746	4,9	4,3

Production of electricity in Southern Africa million kW.h

Sources: SADCC, SWAWEK and Central Statistical Services, Pretoria

Year	Hydro Power	Pumped Storage	Coal	Other Thermal	Nuclear	Total
1975	14 122	0	75 566	674	0	90 362
1976	16 577	0	79 256	493	0	96 326
1977	20 649	0	80 014	494	0	101 157
1978	23 364	0	84 330	761	0	108 455
1979	27 100	0	90 285	721	0	118 106
1980	27 238	242	99 254	777	0	127 511
1981	21 041	715	112 551	772	0	135 079
1982	20 288	1 762	117 638	692	0	140 380
1983	22 876	2 200	119 775	752	0	145 603
1984	*	*	*	*	3 925	154 570**
1985	*	*	*	*	5 315	161 771**
Growth 1984 – 1985					35,4%	4,7%
Average annual growth 1975 to 1985						6,0%

*Figures not available
**Estimated

Selected world rankings electricity production

Source: The Economist: "The World in Figures"

Country	Rank in 1982	GW.h
World		8 234 000
United States	1	2 241 211
Soviet Union	2	1 366 000
Japan	3	580 000
Canada	4	377 624
West Germany	5	365 000
China	6	327 700
France	7	284 000
United Kingdom	8	272 121
Italy	9	183 148
Brazil	10	142 430
India	11	125 900
South Africa	12	119 013
Poland	13	117 561
Spain	14	113 766
Australia	15	105 034
East Germany	16	102 906
Sweden	17	96 522
Norway	18	91 871
Czechoslovakia	19	73 700
Mexico	20	73 559
Moçambique	46	14 000
Zambia	57	9 100
Zimbabwe	69	4 196
Angola	96	1 500
South West Africa/Namibia	108	967
Tanzania	113	715
Botswana	118	540
Malawi	123	428
Swaziland	132	310

Conversion factors and equivalents (a)

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[b]	= 1,8 Btu = 1 900,4 J (approx)
1 Q	= 10^{18} Btu
1 quad	= 10^{15} Btu

Calorific value, mass basis*

1 Btu/lb	= 2,326 kJ/kg

Pressure*

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

Other

1 cu sec	= 0,028 317 m^3/s
1 mile	= 1,609 344 km
1 lb	= 0,453 592 37 kg
1 gal (imp)	= 4,546 09 litres (1 litre = 1 dm^3 = 1 000 cm^3)
1 gal (US)	= 3,785 412 litres
1 ton (long)	= 1,016 05 tonnes (metric ton)
1 ton (short)	= 0,907185 tonnes (metric ton)
1 hp (UK)	= 745,700 W (or J/s)
1 hp (metric)	= 735,499 W (or J/s)

Approximate equivalents*

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

Power station equivalents*

475 tonnes of coal or 160 tonnes of oil will produce about 1 GW.h (e) in a typical modern power station. One tonne of natural uranium, when used in a Magnox reactor, will supply about 30 GW.h (e).

(a) Where appropriate, conversion factors conform to 'Conversion factors and tables' BS 350: Part 1: 1974.
(b) Centrigrade 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

***Source: Handbook of Electricity Supply Statistics, 1984. Issued by The Electricity Council, London, U.K.**