

CEGB Statistical Yearbook

1980-81



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<i>pages</i> 2	Organization of the Electricity Supply Industry
3	1980-81 Results

OPERATIONS AND PLANT

4	1	Summary of plant at 31 March 1981 and operating results 1980-81
5	2	Production and disposals of electricity 1920 to 1980-81
5	3	Supplies to Area Boards 1980-81

POWER STATIONS

6-8	4	Power stations: plant at 31 March 1981 and operating results 1980-81
9	5	Steam-driven generating sets: number, age and declared gross capability at 31 March 1981
9	6	Boilers: number, age and declared gross capability at 31 March 1981
9	7	Coal, gas and oil-fired steam power stations: 20 with highest thermal efficiency 1980-81
10-11	8	Location of power stations and supergrid development at 31 March 1981
12	9	Fossil-fired power stations: operating results, costs of generation, employees 1976-77 to 1980-81
13	10	Nuclear power stations: operating results, costs of generation, employees 1976-77 to 1980-81
13	11	Fuels consumed
13	12	Sources of coal delivered to CEGB
14	13	Power station plant under construction at 31 March 1981
14	14	New power station plant commissioned 1980-81
15	15	Location of Offices, Regional and Divisional Headquarters, Grid Control Centres and Laboratories

TRANSMISSION

16	16	Transmission lines, transformers and substations in service at 31 March 1981
16	17	Lengths of transmission lines in operation at 31 March 1980 and 1981
17	18	Transmission work completed 1980-81

FINANCE

18	19	Financial statistics 1957-58, 1967-68 and 1977-78 to 1980-81
19	20	Partial indicators of performance 1958-59 and 1962-63 to 1980-81

APPENDICES

20	CEGB: Members and principal officers at 31 March 1981
21	Organization of the CEGB at 31 March 1981

**ORGANIZATION
OF THE
ELECTRICITY SUPPLY INDUSTRY**

The Electricity Act, 1957, which came into effect on 1 January 1958, established the Electricity Council and the Central Electricity Generating Board in place of the original Authority. This Act transferred responsibility for the generation and main transmission of electricity to the Central Electricity Generating Board, whose principal duty is to develop and maintain an efficient, co-ordinated and economical system of supply of electricity in bulk for all parts of England and Wales, and to provide bulk supplies to the Area Boards for them to distribute. The Board is also empowered to provide bulk supplies for the Scottish Boards and undertakings outside Great Britain. When considering development proposals, the Board has a duty to take into account any effect which these proposals may have on the natural beauty of the countryside or on features of special interest.

The Board's present organization gives a high degree of delegated authority to its five Regions (responsible for power station and transmission operation and maintenance in their particular geographical areas). The construction, design and development functions associated with power stations and transmission have been consolidated into two Divisions—the Generation Development and Construction Division and the Transmission and Technical Services Division. A Research Division has been established to take over the work of the Headquarters' Research Department. Each Region and Division is headed by a Director-General who is personally responsible for the operations of his organization.

The Board's Headquarters' Departments continue to provide general services to the Board and to give specialized functional advice and expertise when required.

Where it is uneconomic for Regions and Divisions to establish specialized services within their own organizations, for example in the field of legal work, common services are provided by Headquarters.

Ultimate responsibility for all executive action throughout the organization is placed corporately on the Executive, which consists of the Chairman, the Deputy Chairman and the Full-time Members.

Members of the Board and principal officers at Regions, Divisions and Headquarters at 31 March 1981, are listed on page 20. The Chairman and two other Members of the Generating Board, together with the Chairmen of the Area Boards, are Members of the Electricity Council which is the central council for the industry in England and Wales for consultation on and formulation of general policy and which advises the Secretary of State for Energy on all matters affecting the industry. The Council has special responsibility for finance and labour relations.

		1980-81 forecast or target	1980-81 actual	1979-80
Sales of electricity				
Total sales (to Area Electricity Boards and direct consumers)	TW h*	220.6	209.240	218.662
Sales to Area Electricity Boards only	TW h	214.8	203.721	212.771
Average charge per kW h sold (total sales)	pence	2.7866	2.6416	2.1387
Finance†				
Total income	£ million	6,165.0	5,547.3	4,692.7
Total expenditure on Revenue Account (excluding interest)	£ million	6,105.0	5,357.2	4,623.0
Operating profit	£ million	60.0	190.1	69.7
Interest	£ million	425.0	449.0	362.2
Profit/(loss) after interest and MWCA**	£ million	(365.0)	(281.3)	(287.5)
Capital expenditure on property, plant and equipment	£ million	670.0	688.1	594.9
Net return on average net assets	per cent	0.4	1.2	0.5
Generation				
Number of power stations			128	132
New power station plant brought into operation	MW s.o.		340	1,209
Power station plant decommissioned	MW s.o.		664	304
Declared net capability of power stations (end of year)	MW s.o.		56,705	57,029
CEGB maximum system demand met	MW		42,600	44,225
Capability available at time of maximum system demand met	MW		51,081	48,931
Plant availability at peak demand on working days (December, January and February only)	per cent		86.9	83.8
Plant availability at peak demand on working days (all months)	per cent		75.8	73.0
Electricity supplied from CEGB power stations: total	TW h		211.551	221.651
Electricity supplied from CEGB nuclear power stations only	TW h		22.717	25.339
System thermal efficiency of fossil-fuel fired plant‡	per cent		32.17	31.67
Total works costs per kW h supplied	pence		1.9289	1.6178
Transmission				
Length of line (double or single circuit) in service: total	km		7,734	7,742
Length of line (double or single circuit) in service: 400 kV	km		5,110	5,089
Length of line (double or single circuit) in service: 275 kV	km		2,140	2,141
Number of 400 kV and 275 kV substations			204	202
Employees				
Total number at end of year			59,729	61,726
Sales per employee	million kW h		3.503	3.542
Employees per MW of declared net capability (end of year)			1.053	1.082

* One TW h equals one thousand million kW h

† From 1980-81 the Board has adopted current cost accounting (CCA). To aid comparison the results for 1979-80 are restated on a CCA basis.

‡ i.e. coal-, gas-, and oil-fired steam stations, diesel and gas turbine plant

** MWCA = monetary working capital adjustment

1 Summary of plant and operating results: plant at 31 March 1981 and operating results 1980-81

2 P

Region	No. of stations	Type of station	Declared gross capability		Declared net capability	Electricity supplied	Average load \square	Thermal efficiency
			Generators	Boilers			as percentage of average declared net capability	
			MW Gen.	kg/s	MW s.o.	GW h	per cent	per cent
South Eastern	24	Steam (coal, oil and gas-fired)	10,110·700	10,562·5	9,629	20,033	23·6	30·02
	2	Nuclear	1,191·938	—	1,075	2,716	28·8	25·77
	1	Diesel	8·000	—	8	—	—	—
	7	Gas turbine	1,246·266	—	1,242	15	0·1	15·55
		Hydro	—	—	—	—	—	—
	35	Total	12,556·904	10,562·5	11,954	22,764	21·8	29·42 \Leftarrow
South Western	14	Steam (coal, oil and gas-fired)	10,462·430	9,944·0	9,823	27,940	32·8	31·83
	4	Nuclear	2,521·800	—	2,162	12,965	69·4	29·14
		Diesel	—	—	—	—	—	—
	1	Gas turbine	435·872	—	430	8	—	12·14
	3	Hydro	3·348	—	3	12	45·6	—
	22	Total	13,423·450	9,944·0	12,418	40,925	38·0	30·91 \Leftarrow
Midlands	23	Steam (coal, oil and gas-fired)	14,897·000	14,205·0	14,059	70,575	56·9	32·76
		Nuclear	—	—	—	—	—	—
		Diesel	—	—	—	—	—	—
	3	Gas turbine	722·000	—	717	11	0·2	15·57
		Hydro	—	—	—	—	—	—
	26	Total	15,619·000	14,205·0	14,776	70,586	54·1	32·75
North Eastern	20	Steam (coal, oil and gas-fired)	11,545·000	10,853·2	10,931	53,454	55·6	32·62
		Nuclear	—	—	—	—	—	—
		Diesel	—	—	—	—	—	—
	1	Gas turbine	336·000	—	330	6	0·1	19·19
		Hydro	—	—	—	—	—	—
	21	Total	11,881·000	10,853·2	11,261	53,461	54·0	32·61
North Western	14	Steam (coal, oil and gas-fired)	4,575·650	4,757·0	4,301	16,721	42·5	31·80
	2	Nuclear	1,476·400	—	1,230	7,036	65·3	25·20
		Diesel	—	—	—	—	—	—
	3	Gas turbine	304·172	—	296	3	0·1	19·71
	5	Hydro	470·375	—	469 \circ	243 \blacktriangledown	25·4	—
	24	Total	6,826·597	4,757·0	6,296	24,002	42·2	29·51 \Leftarrow
England and Wales	72	Steam: Coal-fired	37,907·955	36,921·2	35,650	160,674	51·1	32·24
	18	Oil-fired	9,152·500	9,298·5	8,827	11,711	15·1	32·42
	2	Coal and oil-fired (a)	840·325	786·0	740	2,341	33·5	30·65
	1	Coal/oil-fired (b)	2,000·000	1,788·0	1,920	8,741	52·0	32·53
	2	Coal/gas-fired (c)	1,690·000	1,528·0	1,606	5,258	37·4	30·23
		Total steam	51,590·780	50,321·7	48,743	188,724	43·9	32·18 (e)
	8	Nuclear: Magnox	4,056·138	—	3,427	17,176	57·2	25·24
	1	AGR	1,134·000	—	1,040	5,541	62·6	37·17
	1	Diesel	8·000	—	8	—	—	—
	15	Total gas turbine (d)	3,044·310	—	3,015	43	0·2	15·43
7	Hydro	113·473	—	112	255	25·9	—	
1	Pumped storage	360·250	—	360	—188	—	—	
	128	Total	60,306·951	50,321·7	56,705	211,551	42·5	31·58 \Leftarrow

Note Where the figures have been rounded, the totals are correct but not necessarily equal to the sum of the rounded figures

\circ Includes Ffestiniog pumped storage

\blacktriangledown Excludes 525 GW h imported from the CEGB system and 336 GW h sent out from Ffestiniog

\square Average load is the number of GW h supplied from stations during the year (excluding units supplied from stations on pre-commissioning operation) divided by the product of the number of hours in the year and average declared net capability

\Leftarrow Includes nuclear stations

(a) Stations in which some boilers burn oil only and others coal only and where the steam is fed into a range

(b) Dual-fired boilers capable of burning coal or oil

(c) Boilers capable of burning either coal or gas or coal and gas at the same time

(d) Includes 1,664·810 MW Gen. main gas turbine sections

(e) With the inclusion of diesel and gas turbine plant to represent total fossil fired plant the system thermal efficiency is 32·17 per cent.

2 Production and disposals of electricity 1920 to 1980-81: in GW h

Year ended 31 March	Power station production			Other supplies					Net inter- change with Scotland and France (6+7 -8-9)	CEGB system electricity requirement (4+5+10)	Bulk sales of electricity			Total to Area Boards and direct consumers (13+14)
	Generated	Used in stations	Supplied (2-3)	From		To					Electricity lost in main trans- mission	Area Boards ▼	Direct consumers	
				Outside sources (England and Wales)	South of ○ Scotland	○ France	South of ○ Scotland	○ France						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1920 □	3,773	265	3,508							3,508		3,508		3,508
1930 □	9,751	579	9,172							9,172	2	9,170		9,170
1938 □	21,927	1,215	20,712	15	126 ◆				126 ◆	20,853	323	20,354	176	20,530
1946 □	37,189	2,181	35,008	187	36 ◆				36 ◆	35,231	667	34,311	253	34,564
1948	38,665	2,274	36,391	139	179		130		49	36,579	681	35,658	240	35,898
1958	86,613	5,310	81,303	360	54		447		-393	81,270	1,985	76,724	2,561	79,285
1959	91,753	5,520	86,233	438	62		598		-536	86,135	2,174	80,936	3,025	83,961
1960	100,556	6,068	94,488	1,038	225		692		-467	95,059	2,484	88,982	3,593	92,575
1961	111,414	6,673	104,741	1,306	603		944		-341	105,706	2,814	99,108	3,784	102,892
1962	122,203	7,413	114,790	1,404	679	33	880	28	-196	115,998	2,928	109,316	3,754	113,070
1963	136,537	8,805	127,732	1,503	667	138	1,522	49	-766	128,469	3,460	122,272	2,737	125,009
1964	141,655	9,564	132,091	1,753	173	90	914	140	-791	133,053	3,719	127,444	1,890	129,334
1965	151,301	10,279	141,022	1,743	138	77	563	296	-644	142,121	3,902	136,340	1,878	138,218
1966	160,360	11,540	148,820	1,798	280	244	790	47	-313	150,305	3,983	144,281	2,040	146,321
1967	164,885	12,113	152,772	1,864	142	431	449	72	52	154,688	4,507	147,930	2,251	150,181
1968	175,705	13,012	162,693	1,943	36	291	1,325	5	-1,003	163,633	4,598	156,398	2,637	159,035
1969	187,064	13,646	173,418	2,173	56	762	2,044	2	-1,228	174,363	5,216	166,141	3,005	169,146
1970	195,093	14,374	180,719	2,193	245	596	821	2	18	182,930	5,127	174,507	3,296	177,803
1971	201,164	15,006	186,158	2,270	579	353	337	6	589	189,017	4,567	180,436	4,014	184,450
1972	205,673	15,148	190,525	2,423	314	284	931	4	-337	192,611	4,049	183,186	5,376	188,562
1973	220,683	16,186	204,497	2,032	1,391	275	565	2	1,099	207,628	4,089	198,087	5,452	203,539
1974	217,542	15,779	201,763	2,386	919	216	494	57	584	204,733	4,108	195,688	4,937	200,625
1975	227,226	16,278	210,948	2,095	562	128	1,192	117	-619	212,424	4,209	202,586	5,629	208,215
1976	220,016	15,393	204,623	1,970	272	35	1,029	32	-754	205,839	4,519	195,724	5,596	201,320
1977	224,783	16,217	208,566	1,563	371	4	926	92	-643	209,486	4,825	198,756	5,905	204,661
1978	228,140	16,226	211,914	1,902	1,120	-	454	-	666	214,482	4,654	203,700	6,128	209,828
1979	238,148	16,057	222,091	1,865	1,381	7	653	83	652	224,608	4,961	213,979	5,668	219,647
1980	237,999	16,348	221,651	1,894	911	1	850	3	59	223,604	4,942	212,771	5,891	218,662
1981	226,761	15,210	211,551	1,883	1,245	22	331	19	917	214,351	5,111	203,721	5,519	209,240

Note

The figures are calculated on the assumption, for purposes of comparison, that the present organization of the electricity supply industry in Great Britain applied throughout

○ Interchange of supplies with the South of Scotland Electricity Board from 1955-56, corresponding figures within the undertaking of the former British Electricity Authority from 1948-49 to 1954-55, and estimated corresponding figures for earlier years

▼ For years before 1948-49, estimated corresponding figures

□ Calendar year

◆ Net supplies

3 Supplies to Area Boards 1980-81

Area Board	Electricity sold million	Proportion of total kW h		Overall average charge	
		Night	Peak	1980-81	1979-80
		per cent	per cent	pence per kW h	pence per kW h
London	16,127	19.5	5.2	2.7471	2.2291
South Eastern	14,761	22.3	5.2	2.6620	2.1690
Southern	20,773	22.0	5.1	2.6814	2.1858
South Western	10,834	24.5	4.9	2.6145	2.1169
Eastern	23,528	20.8	5.1	2.7196	2.1973
East Midlands	18,526	21.6	5.2	2.6633	2.1745
Midlands	20,266	20.9	5.2	2.7114	2.1848
South Wales	10,530	23.1	4.9	2.5705	2.0999
Merseyside and North Wales	14,692	23.2	4.9	2.5724	2.0642
Yorkshire	21,192	22.2	5.0	2.6633	2.1514
North Eastern	13,259	23.7	4.9	2.6082	2.0913
North Western	19,233	21.8	5.1	2.6642	2.1530
Total 1980-81	203,721	21.9	5.1	2.6655	-
1979-80	212,771	22.1	5.0	-	2.1577

Power stations: plant at 31 March 1981 and operating results 1980-81

Name of power station 1	Plant 2	Declared gross capability 3	Declared net capability 4	Details of generators 60 MW Gen. and over 5	Steam pressure and temperature at turbine stop-valve 6	7	Steam capacity of boilers 8	Firing 9	Cooling 10	Electricity supplied from station 11	Average load as per cent of average declared net capability 12	Thermal efficiency 13
		MW Gen.	MW s.o.	MW Gen.	bar	°C	kg/s			GW h	per cent	per cent
South Eastern Region												
Total stations 35, sites 33		12,556·904	11,954				10,562·5			22,764·492	21·8	29·42
Acton Lane	S	155·000	148		41·4	454	224·0	<i>CG</i>	C(T)	13·519	1·0	12·02
Ashford	D	8·000	8							Cr. 0·062	—	—
Bankside	SO	100·000	94	1x100	103·4	538	91·5	<i>OF</i>	E	Cr. 4·760	—	—
Barking	SO	232·500	220	3x77·5	62·1	482	265·0	<i>OF</i>	ES	1·712	0·1	5·20
Battersea	S	162·700	146	1x100	41·4/93·1	427/510	330·0	<i>PF</i>	E	149·728	11·2	20·71
Belvedere	SO	480·000	460	4x60, 2x120	62·1/103·4	482/538	492·0	<i>OF</i>	ES	240·608	6·0	28·02
Blackwall Point	S	90·000	86		41·4	454	138·0	<i>PF</i>	ES	11·262	1·5	18·66
Bradwell	S/N, D	258·350	245		50·3/12·4	371			S	Cr. 10·976	—	—
Brighton	S	330·000	308	2x60	62·0	482	440·0	<i>PF</i>	S	681·475	25·3	22·66
Brunswick Wharf	SO	346·000	330	2x63	62·0	482	473·0	<i>OF</i>	ES	343·138	11·9	24·33
Cliff Quay	S	276·000	258		41·4	441	414·0	<i>PF</i>	S	292·181	12·9	21·97
Croydon B	S	210·000	198		41·4	454	320·0	<i>PF</i>	R(T)	64·595	3·7	21·95
	G	140·000	140	2x70						Cr. 0·858	—	—
Deptford	S	166·500	158		62·0	482	221·0	<i>CG</i>	ES	87·369	6·3	16·89
Dungeness	A Station S/N, D	430·600	410	4x106	36·9	391			S	Cr. 20·569	—	—
Goldington	S	180·000	168		41·4	454	228·0	<i>PF</i>	R(t)	41·396	2·8	19·30
Grain	SO	315·000	300	1x315	159·0	538	277·0	<i>OF</i>	S	581·573	22·1	30·52
	G	116·000	116							1·586	0·2	19·12
Hastings	G	110·000	110							Cr. 0·348	—	—
Kingsnorth	S, SO	2,000·000	1,920	4x500	158·6	538	1,788·0	<i>OF, PF</i>	S	8,740·528	52·0	32·53
	G	70·000	68							0·391	0·1	19·28
Letchworth	G	140·000	140	2x70						3·904	0·3	18·48
Little Barford	A Station S	126·000	120		44·8	482	152·0	<i>PF</i>	R(t)	Cr. 1·984	—	—
	B Station S	127·000	118	2x63·5	62·1	482	138·0	<i>PF</i>	R(T)	231·652	22·4	25·80
Littlebrook	C Station SO	240·000	229	4x60	62·1	482	315·0	<i>OF</i>	ES	Cr. 2·913	—	—
	D Station G	70·000	70							0·276	0·2	22·52
Northfleet	SO	720·000	684	6x120	103·4	538	648·0	<i>OF</i>	ES	169·640	2·8	24·11
Norwich	G	110·000	110	2x65						Cr. 0·754	—	—
Richborough	SO	360·000	342	3x120	101·7	538	324·0	<i>OF</i>	E(T)	247·116	8·2	27·76
Rye House	S, D	128·000	120		41·4	454	176·0	<i>PF</i>	R(t)	18·905	1·8	16·98
	G	140·266	140	2x70						Cr. 0·957	—	—
Sizewell	A Station S/N, D	502·988	420	2x250	44·5/17·4	387			S	2,747·503	74·7	26·07
South Denes	SO	256·000	248	4x64	62·1	482	276·0	<i>OF</i>	S	107·133	4·9	25·55
Taylor's Lane	G	140·000	140	2x70						1·351	0·2	17·12
Tilbury	A Station SO	360·000	348	6x60	62·1	482	408·0	<i>OF</i>	ES	35·734	1·2	21·00
	B Station S	1,330·000	1,272	2x315, 2x350	158·6	566	1,126·0	<i>PF</i>	ES	3,712·768	33·3	29·75
	G	70·000	68							0·261	—	23·34
Watford	G	140·000	140	2x70						2·325	0·2	16·04
West Ham	S	120·000	114		43·1	460	184·0	<i>CG</i>	ES(T)	7·261	0·7	10·31
West Thurrock	S, SG	1,300·000	1,240	2x200, 3x300	162·0/158·6	566	1,114·0	<i>PF, GF</i>	ES	4,264·223	39·3	31·31

Pre-commissioning operation

8·306

Stations decommissioned

Cr. 0·746

Note

Column 1: Name of power station In some cases, two or more technically separate stations share a site, e.g. Tilbury A and B; for most general purposes they are referred to as the Tilbury power station

Column 2: Type of Plant The following abbreviations are used:

- G** = gas turbine
- H** = hydro
- D** = diesel
- PS** = pumped storage
- S** = steam
- SO** = steam with oil as fuel
- SN** = steam with nuclear fuel
- SG** = steam with gas as fuel
- SCH** = combined heat and power, supplying steam for industrial processing, from back pressure plant

Column 9: Type of firing The following abbreviations are used:

- CG* = chain grate stoker
- OF* = oil fuel
- PF* = pulverized fuel (coal)
- SS* = spreader stoker
- TG* = travelling grate
- GF* = gas fuel

Column 10: Type of cooling The following abbreviations are used:

- C** = canal
- L** = lake
- R** = river
- E** = upper estuary (i.e. non-saline or brackish)
- ES** = lower estuary (i.e. saline)
- S** = sea
- (T)** = tower cooling
- (t)** = mixed cooling

Column 12: Average load as per cent of average declared net capability Average load is the number of GW h supplied during the year (excluding electricity supplied from stations on pre-commissioning operation) divided by the number of hours in the year

Name of power station 1	Plant 2	Declared gross capability 3	Declared net capability 4	Details of generators 60 MW Gen. and over 5	Steam pressure and temperature at turbine stop-valve 6 7	Steam capacity of boilers 8	Firing 9	Cooling 10	Electricity supplied from station 11	Average load as per cent of average declared net capability 12	Thermal efficiency 13		
		MW Gen.	MW s.o.	MW Gen.	bar °C	kg/s			GW h	per cent	per cent		
South Western Region													
Total stations 22, sites 20		13,423.450	12,418			9,944.0			40,925.009	38.0	30.92		
Aberthaw	A Station	S, SO	600.000	516	6x100	103.4	524	570.0	PF, OF	S	1,718.786	38.0	30.23
	B Station	S	1,399.000	1,310	2x462, 1x475	158.6	566	1,170.0	PF	S	5,620.143	52.3	32.72
		G	52.500	51							0.393	0.1	11.84
Berkeley		SN, D	334.400	276	4x83	20.3/3.9	319/316			ES	1,003.923	41.5	22.30
Carmarthen Bay		S	292.500	224	4x60	62.1	482	280.0	PF	S	384.884	19.6	22.09
Didcot		S	1,920.000	1,820	4x480	158.6	566	1,620.0	PF	R(T)	9,169.428	57.7	30.88
		G	100.000	100							0.701	0.1	15.17
Earley		GT, D	113.372	111							Cr. 0.145	—	—
East Yelland		S, D	180.430	170		42.7	468	253.0	CG	S	3.100	0.2	5.50
Fawley		SO	2,000.000	1,932	4x500	158.6	538	1,788.0	OF	S	5,271.594	31.1	34.24
		G	70.000	68							0.480	0.1	14.71
Hinkley Point	A Station	SN, D	543.900	430	6x73.5	42.4/10.7	350/336			S	3,131.881	83.1	24.43
	B Station	SN, G	1,134.000	1,040	2x567	160.0	538			S	5,540.628	62.6	37.17
	(Gas turbines for emergency supplies only)		70.000										
Marchwood		SO	480.000	454	8x60	62.1	482	592.0	OF	S	59.864	1.5	20.77
Mary Tavy Group	Chagford	H	0.026										
	Mary Tavy	H	2.622	3							11.981	45.6	—
	Morwellham	H	0.700										
Oldbury-on-Severn		SN, G	439.500	416	2x216	43.1	389			S	3,288.453	90.2	26.80
Pembroke		SO	2,000.000	1,900	4x500	158.6	538	1,788.0	OF	S	4,467.597	26.8	34.07
		G	100.000	100							Cr. 0.127	—	—
Plymouth		SO, D	217.500	205	2x60	62.1/41.4	482/468	258.0	OF	S	7.234	0.4	13.86
Poole		SO	320.000	305	2x60	62.1	496	387.0	OF	S	Cr. 0.088	—	—
Portishead		SO, D	363.000	339	6x60	62.1	482	456.0	OF	S	26.874	0.9	17.00
Rogerstone		S	120.000	114	2x60	62.1	482	138.0	PF	R(T)	211.666	21.2	24.39
Uskmouth	A Station	S	240.000	228	4x60	62.1	482	320.0	PF	ES	19.802	1.0	15.81
	B Station	S	330.000	306	3x110	103.4	538	324.0	PF	ES	979.600	36.5	28.94
<i>Pre-commissioning operation</i>									6.357				

Stations decommissioned

1	2	3	4	5	6	7	8	9	10	11	12	13	
		MW Gen.	MW s.o.	MW Gen.	bar	°C	kg/s			GW h	per cent	per cent	
Midlands Region													
Total stations 26, sites 19		15,619.000	14,776				14,205.0			70,586.354	54.1	32.75	
Castle Donington		S	600.000	564	6x100	103.4	566	630.0	PF	R(t)	2,072.453	41.9	29.34
Cottam		S	1,948.000	1,840	4x487	158.6	566	1,712.0	PF	E(T)	10,930.962	67.8	34.25
		G	100.000	100							1.055	0.1	21.20
Drakelow	A Station	S	244.000	228	2x60, 2x62	103.4	566	260.0	PF	R(t)	520.940	26.1	25.51
	B Station	S	480.000	448	4x120	103.4	538	432.0	PF	R(t)	1,503.841	38.3	29.23
	C Station	S, D	906.500	860	1x255, 2x325	241.3/158.6	593/566	788.0	PF	R(T)	3,439.623	45.7	29.60
Hams Hall	A Station	G	15.000	15							0.012	—	7.18
	B Station	S	330.000	306		44.8	441	450.0	PF	R(T)	Cr. 0.575	—	—
	C Station	S, SG	390.000	366	6x65	62.1	482	414.0	PF, GF	R(T)	993.847	31.0	26.36
High Marnham		S	1,000.000	930	5x200	162.0	566	868.0	PF	E(T)	3,945.325	48.4	30.43
Ironbridge	B Station	S	972.000	920	2x486	158.6	566	844.0	PF	R(T)	5,285.937	65.6	33.13
		G	35.000	34							0.174	0.1	20.23
Leicester		G	102.000	102							2.353	0.3	10.50
Meaford		S	240.000	224	4x60	103.4	566	260.0	PF	R(T)	859.853	43.8	26.98
Nechells		S	224.000	212		44.8	441	348.0	CG	R(T)	52.869	2.8	14.90
Nottingham		S	174.500	148		62.1/41.4	482/454	236.0	PF	R	55.732	4.2	18.88
Ocker Hill		G	280.000	280	4x70						5.606	0.2	16.98
Ratcliffe-on-Soar		S	2,000.000	1,932	4x500	158.6	566	1,740.0	PF	R(T)	13,885.960	82.0	35.09
		G	70.000	68							0.903	0.2	21.00
Rugeley	A Station	S	600.000	560	5x120	103.4	538	540.0	PF	R(T)	2,612.838	53.3	29.56
	B Station	S	974.000	920	2x487	158.6	566	856.0	PF	R(T)	6,724.920	83.4	35.47
		G	50.000	50							0.334	0.1	16.69
Spondon		SCH	30.000	18		62.1	468	92.0	CG		79.283	50.3	63.05
Staythorpe	A Station	S	360.000	336	6x60	62.1	482	480.0	SS	R	98.231	3.3	17.86
	B Station	S	360.000	336	3x120	103.4	538	324.0	PF	R(t)	1,962.619	66.7	32.02
Stourport	B Station	S	120.000	112	2x60	103.4/86.2	566/510	131.0	PF	R	393.174	40.1	27.65
Walsall		S	204.000	191		41.4	454	300.0	CG	C(T)	27.172	1.6	12.82
West Burton		S	1,924.000	1,840	4x481	158.6	566	1,740.0	PF	E(T)	11,570.841	71.8	34.21
		G	70.000	68							0.534	0.1	19.47
Willington	A Station	S	416.000	392	4x104	103.4	566	420.0	PF	R(t)	1,507.176	43.9	30.11
	B Station	S	400.000	376	2x200	162.0	566	340.0	PF	R(T)	2,053.274	62.3	31.74
<i>Pre-commissioning operation</i>													

Stations decommissioned

Cr. 0.912

Name of power station 1	Plant 2	Declared gross capability 3	Declared net capability 4	Details of generators 60 MW Gen. and over 5	Steam pressure and temperature at turbine stop-valve 6	7	Steam capacity of boilers 8	Firing 9	Cooling 10	Electricity supplied from station 11	Average load as per cent of average declared net capability 12	Thermal efficiency 13				
											per cent	per cent				
North Eastern Region																
Total stations 21, sites 18											11,881·000	11,261	10,853·2	53,460·568	54·0	32·61
		MW Gen.	MW s.o.	MW Gen.	bar	°C	kg/s			GW h	per cent	per cent				
Blyth	A Station	S	480·000	448	4x120	103·4	538	432·0	PF	S	2,979·437	75·9	33·12			
	B Station	S	1,180·000	1,100	2x260, 2x330	158·6	566	1,014·0	PF	S	4,185·110	43·4	30·53			
Doncaster		S	130·000	122		41·4	454	184·0	TG	C	62·405	5·8	20·68			
Drax		S	1,980·000	1,875	3x660	158·6	565	1,683·0	PF	E(T)	10,750·555	65·5	35·29			
		G	70·000	70							0·677	0·1	14·50			
Dunston		S	104·000	98		41·4	454	104·0	PF	ES	80·288	9·4	24·00			
Eggborough		S	1,800·000	1,720	4x450	158·6	566	1,612·0	PF	R(T)	10,111·911	67·1	33·61			
		G	70·000	68							0·608	0·1	22·63			
Elland		S	180·000	168	3x60	62·1	482	207·0	PF	R(t)	610·433	41·5	26·49			
Ferrybridge	B Station	S	300·000	282	3x100	103·4	524	288·0	PF	R(t)	1,760·864	71·3	31·29			
	C Station	S	2,000·000	1,932	4x500	158·6	566	1,740·0	PF	R(T)	13,110·684	77·5	35·03			
		G	70·000	68							0·931	0·2	22·86			
Hartlepool		G	70·000	68							0·778	0·1	16·02			
Huddersfield		S	60·000	56		41·4	454	92·0	TG	R(t)	48·575	9·9	24·48			
Keadby		S	360·000	336	6x60	62·1	482	414·0	PF	ES	503·425	17·1	23·43			
Mexborough		S	120·000	113		41·4	454	161·0	TG	R(t)	Cr. 1·601	—	—			
North Tees		S	251·000	236	4x62·75	62·1	496	315·0	PF	S	341·701	16·5	23·03			
Skelton Grange	A Station	S	180·000	168	3x60	62·1	496	207·0	PF	R(t)	313·253	21·3	24·37			
	B Station	S	480·000	448	4x120	103·4	538	432·0	PF	R(T)	2,127·912	54·2	30·20			
Stella North		S	240·000	224	4x60	62·1	482	257·2	PF	ES(T)	688·005	35·1	25·58			
Stella South		S	315·000	300	5x63	62·1	482	345·0	PF	ES	976·913	37·2	26·74			
Thornhill		S	135·000	129		27·6	441	200·0	TG	R(t)	98·106	8·7	18·57			
Thorpe Marsh		S	1,000·000	942	2x500	158·6	566	890·0	PF	E(T)	4,011·810	48·6	31·19			
		G	56·000	56							0·410	0·1	19·16			
Wakefield		S	250·000	234	4x62·5	62·1	482	276·0	PF	R(t)	695·190	33·9	25·38			
<i>Pre-commissioning operation</i>											2·877					
<i>Stations decommissioned</i>											Cr. 0·689					

1	2	3	4	5	6	7	8	9	10	11	12	13	
		MW Gen.	MW s.o.	MW Gen.	bar	°C	kg/s			GW h	per cent	per cent	
North Western Region													
Total stations 24, sites 23													
		6,826·597	6,296				4,757·0			23,814·317	41·9	29·51	
Agecroft	B & C Stations	S, G	358·325	336	2x124	41·4/103·4	454/538	360·0	PF	R(T)	1,084·487	36·8	30·27
Bold	A Station	S	128·000	120		41·4	454	152·0	PF	R(T)	74·363	7·1	21·20
	B Station	S	180·000	168	3x60	62·1	482	207·0	PF	R(T)	534·108	36·3	26·66
Bromborough		SO	205·000	197		62·1	482	304·0	OF	S	Cr. 1·528	—	—
Carrington		S	256·000	240	4x64	62·1	482	315·0	PF	C	866·751	41·2	26·63
Chadderton		S	252·000	236	4x63	62·1	482	315·0	PF	R(T)	302·404	14·6	22·83
Connah's Quay		S	192·000	180		41·4	454	228·0	PF	ES(T)	299·391	19·0	23·82
Cwm Dylfi		H	6·500	5							10·285	23·5	—
Dolgarrog		H	26·500	27							65·675	27·8	—
Ffestiniog		PS, D	360·250	360	4x90						336·770 - 525·090 ◆	10·7	—
Fiddler's Ferry		S	2,000·000	1,880	4x500	158·6	566	1,740·0	PF	E(T)	12,317·212	74·8	34·16
		G	70·000	68							0·366	0·1	20·52
Fleetwood		S	96·000	90		41·4	454	117·0	PF	S(T)	20·152	2·6	20·45
Heysham		G	70·000	68							1·815	0·3	21·99
Huncoat		S	160·000	150		41·4	454	195·0	PF	C(T)	148·534	11·3	22·31
Ince	A Station	SO	252·000	240	4x63	62·1	482	276·0	OF	R(T)	Cr. 2·636	—	—
	B Station	G	50·800	50							0·934	0·2	22·54
Lister Drive		G, D	113·372	110							Cr. 0·300	—	—
Maentwrog		H	24·000	24							57·152	27·2	—
Padiham		S, SO, G	240·325	224	2x120	103·4	538	216·0	OF, PF	R(T)	623·002	31·7	31·88
Rheidol		H	53·125	53							109·446	23·6	—
Roosecote		S	128·000	120		41·4	454	152·0	PF	ES	87·536	8·3	21·96
Trawsfynydd		S, N, D	474·800	390	4x117·5	20·0/63·9	363/379			L	1,148·253	33·6	23·54
Westwood		S	128·000	120		41·4	454	180·0	PF	L(T)	205·861	19·6	21·09
Wylfa		S, N, G	1,001·600	840	4x247·5	44·9	383			S	5,887·828	80·0	25·55
<i>Pre-commissioning operation</i>											162·738		
<i>Stations decommissioned</i>											Cr. 1·192		

◆ This figure is the GW h imported from the system at Ffestiniog for pumping purposes.

5 Steam-driven generating sets: number, age and declared gross capability at 31 March 1981 (including generating sets in nuclear stations)

Year of commissioning	Age at 31 March 1981	Under 30 MW		30 MW and under 60 MW		60 MW and under 100 MW		100 MW and under 500 MW		500 MW and over		Total	
		Years	No.	MW Gen	No.	MW Gen	No.	MW Gen	No.	MW Gen	No.	MW Gen	No.
1976-81	Under 5	—	—	—	—	—	—	—	—	6	3,033	6	3,033·000
1971-75	5 and under 10	—	—	—	—	—	—	6	1,655	20	10,189	26	11,844·000
1966-70	10 and under 15	—	—	1	40·00	—	—	9	2,482	27	13,144	37	15,666·000
1961-65	15 and under 20	3	60·741	10	327·26	10	773·0	49	7,424	2	1,000	74	9,585·001
1956-60	20 and under 25	3	30·000	20	640·50	69	4,224·5	33	3,924	—	—	125	8,819·000
Since 1956	Sets under 25 years	6	90·741	31	1,007·76	79	4,997·5	97	15,485	55	27,366	268	48,947·001
Before 1956	Sets 25 years and over	3	8·700	105	4,262·50	54	3,343·0	1	100	—	—	163	7,714·200
Total		9	99·441	136	5,270·26	133	8,340·5	98	15,585	55	27,366	431	56,661·201

6 Boilers: number, age and declared gross capability at 31 March 1981 (excluding boilers in nuclear stations)

Year of commissioning	Age at 31 March 1981	Under 25 kg/s		25 kg/s and under 50 kg/s		50 kg/s and under 75 kg/s		75 kg/s and under 100 kg/s		100 kg/s and under 375 kg/s		375 kg/s and over		Total	
		Years	No.	kg/s	No.	kg/s	No.	kg/s	No.	kg/s	No.	kg/s	No.	kg/s	No.
1976-81	Under 5	—	—	—	—	—	—	—	—	—	—	4	1,618·0	4	1,618·0
1971-75	5 and under 10	—	—	—	—	—	—	—	—	2	563·0	20	8,857·0	22	9,420·0
1966-70	10 and under 15	2	5·0	—	—	—	—	—	—	5	1,315·0	27	11,623·0	34	12,943·0
1961-65	15 and under 20	—	—	—	—	—	—	5	471·5	36	5,328·0	2	890·0	43	6,689·5
1956-60	20 and under 25	19	308·0	41	1,544·0	52	3,581·6	5	478·0	28	3,198·0	—	—	145	9,109·6
Since 1956	Boilers under 25 years	21	313·0	41	1,544·0	52	3,581·6	10	949·5	71	10,404·0	53	22,988·0	248	39,780·1
Before 1956	Boilers 25 years and over	29	667·0	204	7,551·0	37	2,337·6	—	—	—	—	—	—	270	10,555·6
Total		50	980·0	245	9,095·0	89	5,919·2	10	949·5	71	10,404·0	53	22,988·0	518	50,335·7

7 Coal, gas and oil-fired steam power stations: 20 with highest thermal efficiency 1980-81

Power stations (or sections)	Region	Steam pressure at turbine stop-valve	Steam temperature at turbine stop-valve and re-heat	Declared net capability at 31 March 1981	Electricity supplied from station 1980-81	Average load \square as percentage of average declared net capability		Generating plant brought into operation	
						Average calorific value of all fuel burnt	Average thermal efficiency		
		bar	°C	MW s.o.	GWh	per cent	kJ/kg	per cent	
Rugeley B	M	158·6	566	920	6,725	83·4	23,232	35·47	1972
Drax	NE	158·6	565	1,875	10,751	65·5	23,766	35·29	1974-76
Ratcliffe-on-Soar	M	158·6	566	1,932	13,886	82·0	23,372	35·09	1968-70
Ferrybridge C	NE	158·6	565	1,932	13,111	77·5	23,825	35·03	1966-68
Cottam	M	158·6	566	1,840	10,931	67·8	24,336	34·25	1969-70
Fawley \odot	SW	158·6	566	1,932	5,272	31·1	42,591	34·24	1969-71
West Burton	M	158·6	566	1,840	11,571	71·8	24,429	34·21	1967-68
Fiddler's Ferry	NW	158·6	566	1,880	12,317	74·8	25,471	34·16	1971-73
Pembroke \odot	SW	158·6	538	1,900	4,468	26·8	43,032	34·07	1970-73
Eggborough	NE	158·6	566	1,720	10,112	67·1	23,606	33·61	1968-69
Ironbridge B	M	158·6	566	920	5,286	65·6	24,387	33·13	1970
Blyth A	NE	103·4	538	448	2,979	75·9	24,117	33·12	1958-60
Aberthaw B	SW	158·6	566	1,310	5,620	52·3	26,652	32·72	1971-79
Kingsnorth \diamond	SE	158·6	538	1,920	8,741	52·0	28,665	32·53	1970-73
Staythorpe B	M	103·4	538	336	1,963	66·7	23,941	32·02	1960-61
Padiham B \blacklozenge	NW	103·4	538	224	623	31·7	26,737	31·88	1962
Willington B	M	162·0	566	376	2,053	62·3	24,274	31·74	1962-63
West Thurrock \blacklozenge	SE	162·0/158·6	566	1,240	4,264	39·3	25,306	31·31	1963-65
Ferrybridge B	NE	158·6	566	282	1,761	71·3	23,205	31·29	1957-59
Thorpe Marsh	NE	158·6	566	942	4,012	48·6	24,292	31·19	1963-65
Total or average for above 20 stations				25,769	136,444	60·6	25,266	33·90	
Total or average for corresponding 20 stations 1979-80				27,160	142,194	59·6	25,159	33·74	
Total or average for all steam stations				48,743	188,724	43·9	25,145	32·18	
Total or average for all steam stations 1979-80				49,207	196,007	45·3	25,451	31·68	

Note

\square Average load is the number of GW h supplied during the year divided by the number of hours in the year (8,760): the average declared net capability is the daily average for the whole year

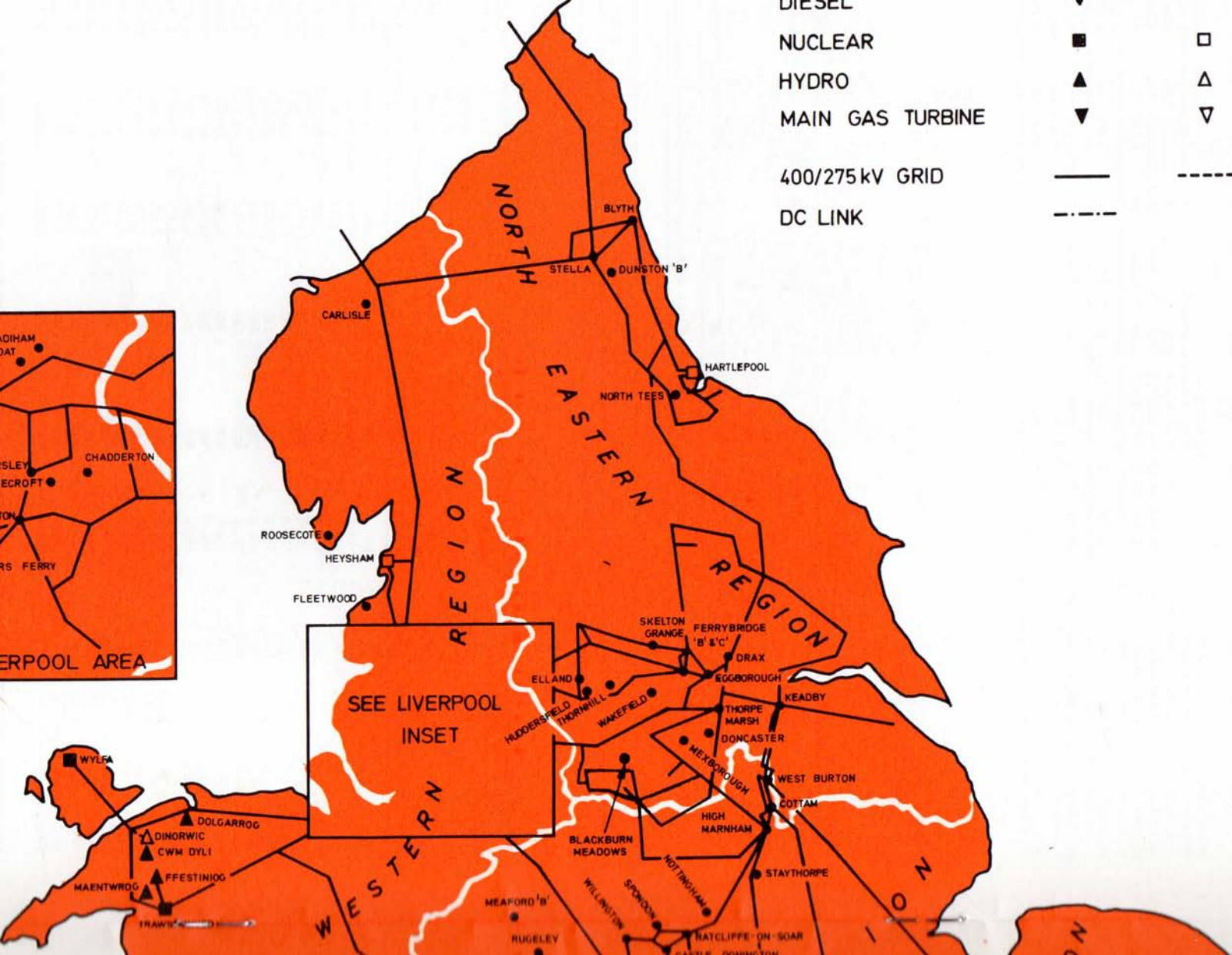
\blacktriangledown Excluding electricity supplied from station on pre-commissioning operation

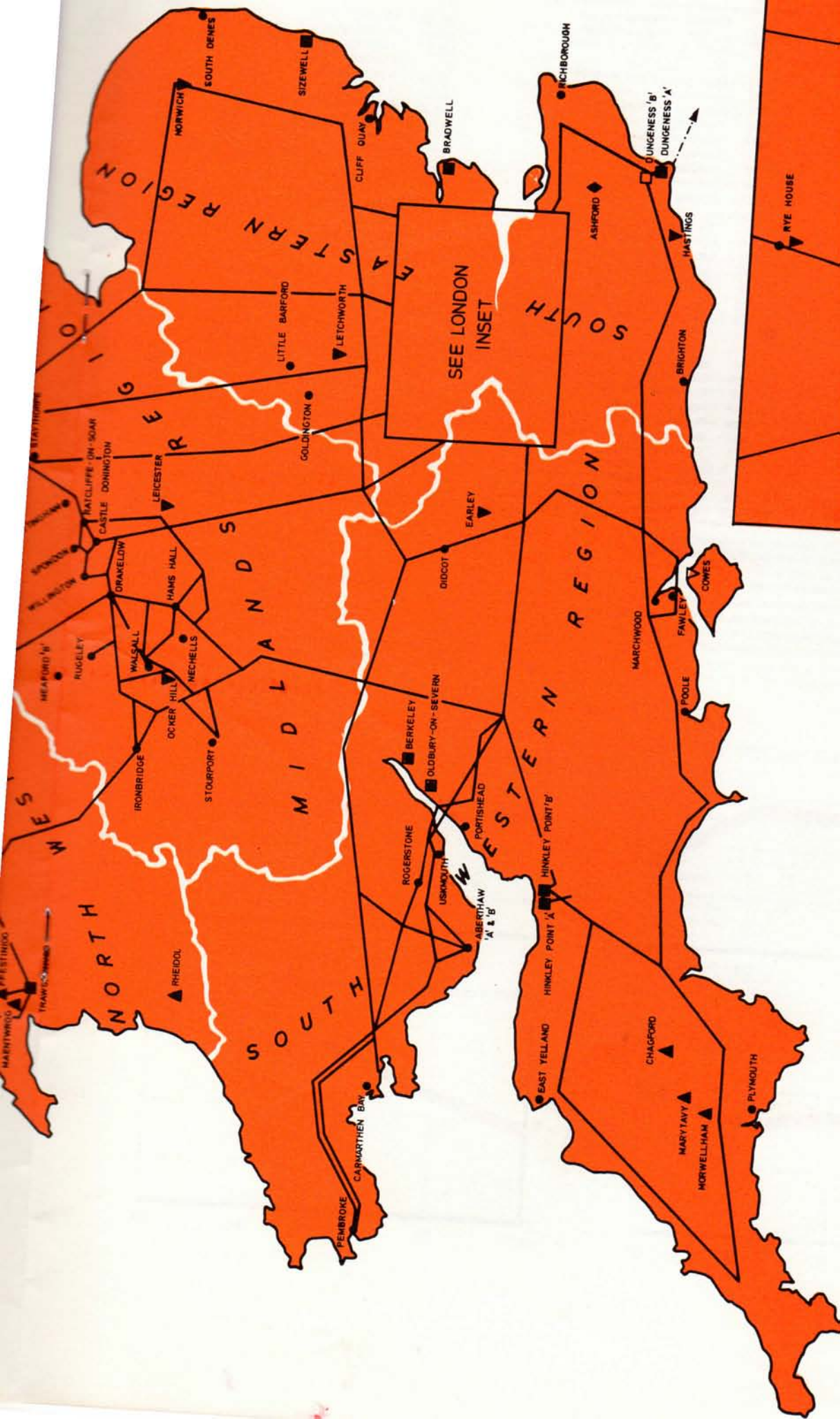
\odot Oil burning

\diamond Dual-fired station

\blacklozenge Mixed-fired station

Where figures have been rounded the totals are correct but not necessarily equal to the sum of the rounded figures





9 Fossil-fired power stations: operating results, costs of generation, employees, 1976-77 to 1980-81

1976-77	1977-78	1978-79	1979-80	1979-80	1980-81
Operating results					
70,330	70,004	75,240	80,367	Coal and all other solid fuel	k tonne
97.33	97.19	98.42	98.35	Percentage of coal pulverized	per cent
8,074	9,075	9,736	6,839	Oil	k tonne
14,049	16,336	17,524	12,310	Oil (coal equivalent)	k tonne*
974	952	242	382	Gas	k tonne
2,045	2,095	533	841	Gas (coal equivalent)	k tonne*
79,378	80,031	85,218	87,588	Total fuel ▲	k tonne
86,424	88,435	93,297	93,518	Total fuel ▲ (coal equivalent)	k tonne*
26.239	26.404	26.195	25.470	Average calorific value of all fuel	GJ/tonne
54,126	52,521	52,139	52,186	Average declared net capability	MW s.o.
182,646	184,775	197,312	196,233	Total electricity supplied	GW h
31.57	31.48	31.82	31.67	Average thermal efficiency □	per cent
'Generation employees' at conventional steam power stations					
5,374	5,129	5,185	5,160	Non-industrial staff ◆	5,029
13,602	12,953	12,733	12,520	Industrial staff on operation ◆	11,589
12,026	11,626	11,780	11,946	Industrial staff on repair and maintenance ◆	11,613
31,002	29,708	29,698	29,626	Total staff ◆	28,231
0.57	0.57	0.57	0.57	No. 'generation employees' per MW s.o.	0.54
5.9	6.2	6.6	6.6	GW h per 'generation employee' ○	6.7
Costs					
Historic accounting basis			Current cost		
Works cost per kW h of electricity supplied					
←					→
0.9048	1.0680	1.1182	1.3634	Fuel including transport	p/kW h
0.0369	0.0405	0.0488	0.0619	Fuel handling, etc. ∅	p/kW h
0.9417	1.1085	1.1670	1.4253	Inclusive fuel cost	p/kW h
0.0491	0.0515	0.0568	0.0666	Operation (excluding fuel and handling)	p/kW h
0.0973	0.1091	0.1213	0.1432	Repairs and maintenance (excluding fuel and handling)	p/kW h
1.0881	1.2691	1.3451	1.6351	Total works cost	p/kW h
Cost per gigajoule consumed					
79.345	93.386	98.844	119.928	All fuel (excluding handling, etc.)	p/GJ
82.578*	96.930	103.161	125.375	All fuel (including handling, etc.)	p/GJ

Note

* One tonne of fuel oil is equivalent to 1.74 tonnes of coal for 1976-77 and to 1.80 tonnes of coal for 1977-78 to 1980-81

One tonne of gas is equivalent to 2.10 tonnes of coal for 1976-77 and to 2.20 tonnes of coal for 1977-78 to 1980-81

▲ Excluding fuel consumed for the production of steam for sale, which totalled some 230 k tonnes (241 ktce) in 1980-81

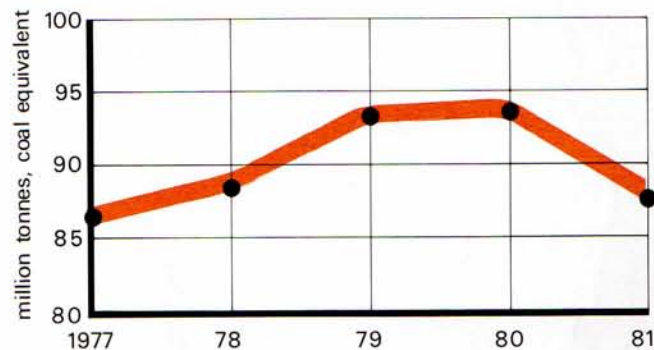
□ 3,600 as a percentage of heat consumed per kWh supplied, including pre-commissioned output. There are 3,600 kJ in a kW h of electricity

∅ The operation of, and repairs and maintenance to, fuel handling, pulverizing, ash disposal and flue gas treatment plant

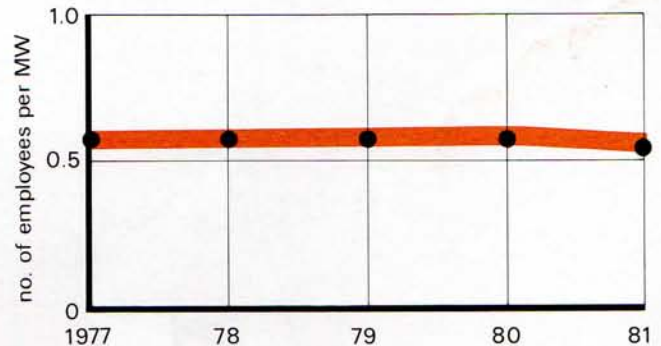
◆ The figures given are averages of end-of-month figures and exclude supervising staff, administrative and clerical employees, canteen employees and other small groups

○ Excluding electricity supplied from stations on pre-commissioned operation

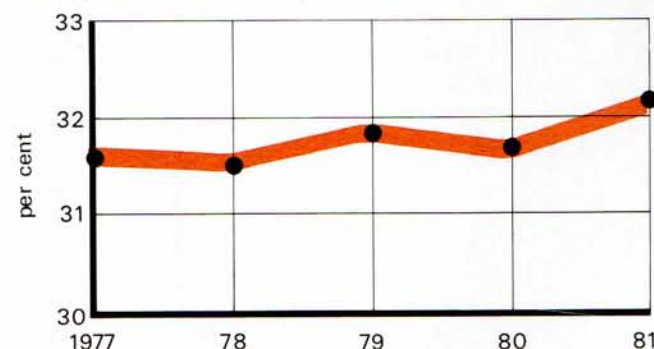
Fuel burnt



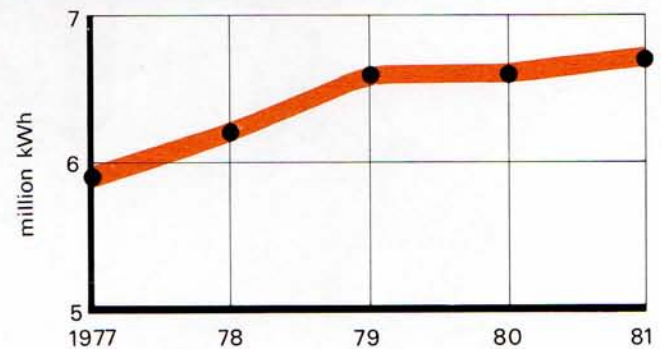
No. of 'generation employees' per megawatt of output capacity



Average thermal efficiency



Million kWh supplied per 'generation employee'



10 Nuclear power stations: operating results, costs of generation, employees 1976-77 to 1980-81

1976-77	1977-78	1978-79	1979-80		1979-80	1980-81
				Operating results		
1,090.59	1,016.78	822.87	784.70	Net uranium burn-up for generation	tonne	663.57
10,723	11,667	10,650	10,897	(coal equivalent)	k tonne	9,772
5,420	3,610	2,794	4,032	Oil burnt in IC engines	tonne	3,043
9	7	5	7	(coal equivalent)	k tonne*	5
10,732	11,674	10,655	10,904	Total fuel (coal equivalent)	k tonne*	9,777
3,666	3,855	4,030	4,236	Average declared net capability	MW s.o.	4,437
25,920	27,096	24,750	25,339	Total electricity supplied	GW h	22,717
25.52	26.03	26.44	26.78	Average thermal efficiency†	per cent	27.38
				'Generation employees'		
1,020	1,137	1,160	1,165	Non-industrial staff ◆		1,187
1,616	1,747	1,746	1,765	Industrial staff on operation ◆		1,746
1,203	1,357	1,414	1,438	Industrial staff on repair and maintenance ◆		1,454
3,839	4,241	4,320	4,368	Total staff ◆		4,387
1.05	1.10	1.07	1.03	No. 'generation employees' per MW s.o.		0.99
6.44	5.99	5.73	5.80	GW h per 'generation employee' ○		5.18
				Works cost per kW h of electricity supplied ∅		
	Historic accounting basis					Current cost
0.4114	0.3986	0.5339	0.7227	Fuel including transport (uranium/oil)	p/kW h	0.8099
0.0098	0.0117	0.0143	0.0167	Fuel handling	p/kW h	0.0167
0.4212	0.4103	0.5482	0.7394	Inclusive fuel cost	p/kW h	0.8266
0.0616	0.0717	0.0961	0.1131	Operation (excluding fuel and handling)	p/kW h	0.1131
0.0570	0.0658	0.1013	0.1352	Repairs and maintenance (excluding fuel and handling)	p/kW h	0.1352
0.5398	0.5478	0.7456	0.9877	Works costs relating to operation in the year	p/kW h	1.0749
0.0836	0.0954	0.1580	0.1999	Accounting provisions relating to earlier years	p/kW h	0.2363
0.6234	0.6432	0.9036	1.1876	Total works cost	p/kW h	1.3112
				Cost per gigajoule consumed		
29.169	28.817	36.009	53.761	All fuel (excluding handling, etc.)	p/GJ	60.247
29.864	29.663	36.974	55.003	All fuel (including handling, etc.)	p/GJ	61.490

Note

○ Excluding electricity supplied from stations on pre-commissioned operation.

* 1976-77—One tonne of fuel oil is equivalent to 1.74 tonnes of coal
1977-78 to 1980-81—One tonne of fuel oil is equivalent to 1.80 tonnes of coal

† 3,600 as a percentage of heat consumed per kW h supplied, including pre-commissioned output. There are 3,600 kJ in a kW h of electricity

∅ Works costs include the accounting costs at all nuclear stations in operation in each year. Inclusive fuel costs incorporate the same cost elements as included under that heading in 'Costs of producing electricity from coal-fired and oil-fired power stations' described in the CEBG Annual Report (appendix 4, para 3f). The two sets of figures are closely related but not strictly comparable due mainly to the effect of excluding the older magnox stations (Berkeley and Bradwell) from the latter presentation and the CCA accounting adjustments in 1979-80 and 1980-81. Accounting provisions relating to earlier years represent mainly the impact of inflation on provisions for reprocessing costs set aside in earlier years. Also included is an accounting adjustment to ensure provision in full for the eventual reprocessing of residual fuel over the lives of the plant remaining when financial provision commenced in March 1976.

◆ The figures given are averages of end-of-month figures and exclude supervising staff, administrative and clerical employees, canteen employees and other small groups

11 Fuels consumed

	1980-81	1979-80
	Million tonnes, coal equivalent	
Coal	79.68	80.61
Oil fuels ●	8.17	12.34
Gas ▲	—	0.84
Nuclear	9.77	10.90
Total	97.62	104.69

● One unit mass of oil is equal to 1.80 units of coal in heat value

▲ One unit mass of gas is equal to 2.20 units of coal in heat value

12 Sources of coal delivered to CEBG

	1980-81	1979-80
	Million tonnes	
NCB Region		
Scotland	—	—
North Eastern	10	11
Yorkshire	24	24
North Midlands	22	21
South Midlands	6	7
Western	10	10
South Wales	3	4
NCB source unknown	—	1
Total NCB	75	78
NCB licensed and other UK coals	2	2
Foreign coals	4	2
Total	81	82

Power station plant under construction at 31 March 1981

Station	Type	No. of units and design net capability MW s.o.	Year of start on site to probable completion of commissioning
Coal and oil-fired plant			
Drax completion	Coal	3 x 660*	1978-86
Grain	Oil	3 x 660* ⌀	1971-83
Ince B	Oil	2 x 500*	1972-82
Littlebrook D	Oil	3 x 660*	1974-83
Nuclear plant			
Dungeness B	AGR	2 x 600	1966-82
Hartlepool	AGR	2 x 660*	1968-83
Heysham I	AGR	2 x 660*	1970-83
Heysham II	AGR	2 x 660	1981-88
Hydro plant			
Dinorwic	Pumped-storage	6 x 250 (generating mode)	1974-83
Main gas-turbine plant			
Bull's Bridge	GT	4 x 70	1976-81
Cowes	GT	2 x 70	1978-82
Total		14,020	

AGR = advanced gas-cooled reactor
 * The design net capability shown includes auxiliary gas-turbines with the main generating units
 ⌀ Unit 2 is completed and unit 5 has not been released for construction

New power station plant commissioned 1980-81

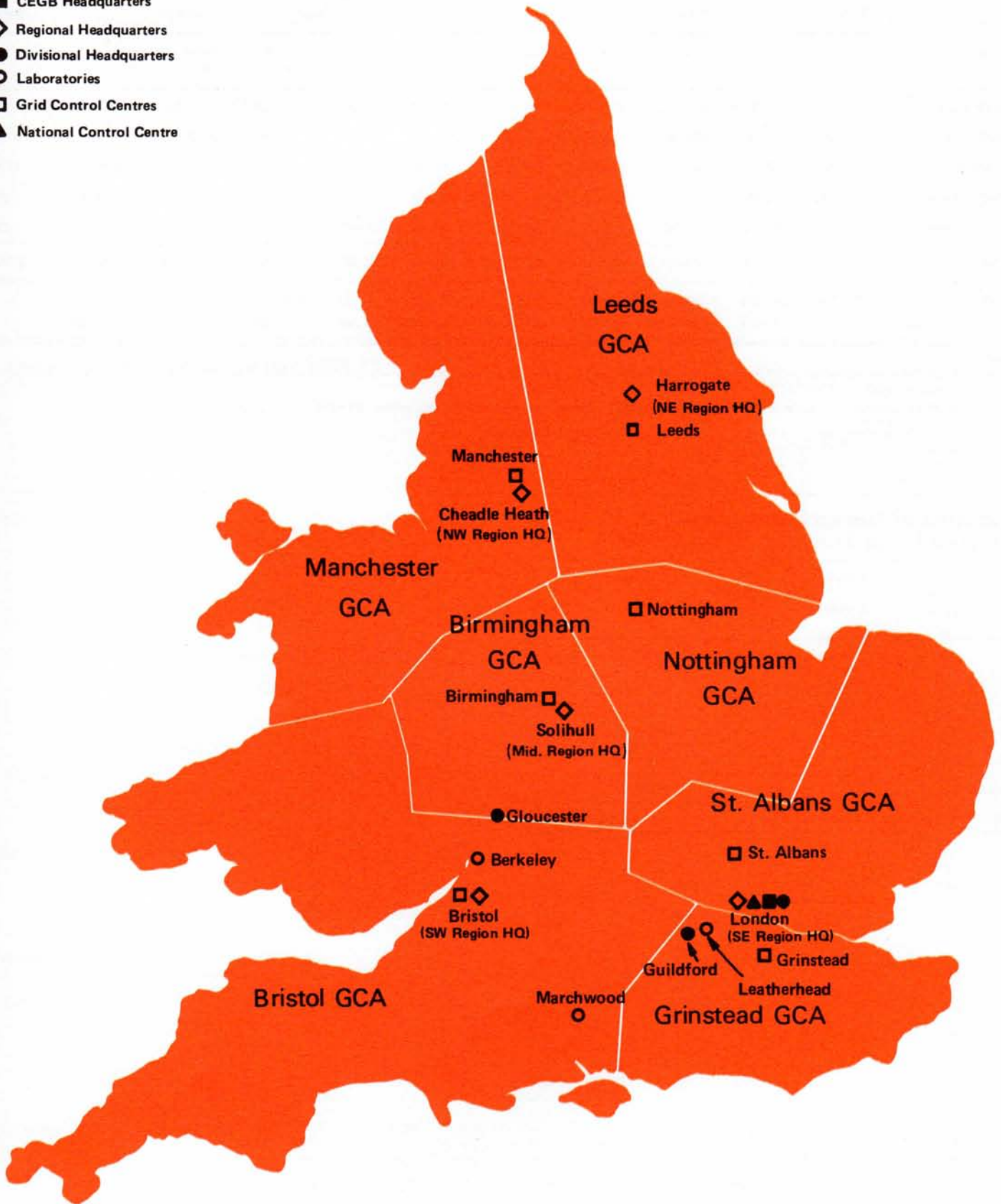
Station	Region	Unit	Commissioned rating	Gross capability		Net capability	Type of fuel	Plant commissioned in year ended 31 March		
				Turbine	Boiler			1971	MW s.o.	
Abethaw B	SW	No. (8)	Addition (c)	MW	Gen.	kg/s	MW s.o.	1971	3,533 ▼	
		(9)		13	—	20	Coal	1972	5,520	
Didcot	SW	(2)	Addition (c)	—	—	—	5	Coal	1973	2,798
		(7)		22	—	20	Nuclear	1974	2,052	
Hinkley Point B	SW	Reactor 3 (8)	Addition (c)	22	—	—	20	Nuclear	1975	1,735
		Reactor 4		22	—	20	Nuclear	1976	1,165	
									1977	1,118
									1978	57
Littlebrook D	SE	AGT 1	First (a)	35	—	—	35	Gas oil	1979	914
		AGT 2		35	—	35	Gas oil	1980	1,209	
Taylor's Lane	SE	GT 2	First (a)	70	—	—	70	Gas oil	1981	340
		GT (3)		5	—	5	Gas oil			
Total		3 (a)		334	110	340				

▼ Not included is 2 MW s.o. due to adjustments.

Note
 (a) First commissioning at full rating
 (c) Addition to interim rating
 () = units shown in brackets are not included in total as they were accounted for in previous years
 AGT = auxiliary gas turbine

15 Location of Offices, Regional and Divisional Headquarters, Grid Control Centres and Laboratories

- CEGB Headquarters
- ◇ Regional Headquarters
- Divisional Headquarters
- Laboratories
- Grid Control Centres
- ▲ National Control Centre



16 Transmission lines, transformers and substations in service at 31 March 1981

On the basis of highest operational voltage

Main transmission lines

Region	400 kV		275 kV		132 kV		66 kV or lower voltage		Total lines		Number of towers
	Route km	Circuit km	Route km	Circuit km	Route km	Circuit km	Route km	Circuit km	Route km	Circuit km	
South Eastern	1,024·003	1,955·477	460·081	800·105	249·556	425·098	43·369	69·574	1,777·009	3,250·254	4,523
South Western	1,674·161	3,342·725	369·987	633·444	62·838	89·633	11·539	27·049	2,118·525	4,092·851	5,982
Midlands	1,045·558	1,792·549	313·957	815·925	30·422	38·259	—	—	1,389·937	2,646·733	4,005
North Eastern	569·720	949·444	732·737	1,556·008	20·089	34·216	—	—	1,322·546	2,539·668	4,060
North Western	796·672	1,384·937	263·066	616·689	46·329	84·306	19·827	19·997	1,125·939	2,105·929	3,438
Total	5,110·114	9,425·132	2,139·828	4,422·171	409·234	671·512	74·780	116·620	7,733·956	14,635·435	22,008
Overhead lines	5,057·015	9,347·906	1,764·045	3,895·692	225·614	435·215	36·834	38·266	7,083·508	13,717·079	
Underground cables	53·099	77·226	375·783 ◆	526·479 ◆	183·620 ○	236·297 ○	37·946	78·354	650·448	918·356	

Note

○ Includes 24·597 route and circuit km of cross-channel submarine cable (to mid-channel) and 7·115 route and circuit km of land cable, direct current 100 kV each pole to earth, 200 kV between poles.

◆ Includes 80·913 route and circuit km of cable between Kingsnorth—Beddington—Willesden, direct current 266 kV each pole to earth, 532 kV between poles.

17 Lengths of transmission lines in operation at 31 March 1980 and 1981

	Overhead lines		Underground cables	
	31 March 1981	31 March 1980	31 March 1981	31 March 1980
	Route km	Route km	Circuit km	Circuit km
400 kV	5,057	5,048	77·2	65·4
275 kV	1,764	1,769	526·4	520·4
132 kV	226	270	236·3	220·4
66 kV or under	37	37	78·3	78·3
Total	7,084	7,124	918·2	884·5
1980-81 variation	0·56 per cent decrease		3·81 per cent increase	

Capacity of main transformers MVA

400 kV	275 kV	132 kV	Total	Number of 400 kV and 275 kV		Region
				Transformers	Substations	
29,204	17,710	2,237	49,151	161	49	South Eastern
19,050	7,235	240	26,525	105	41	South Western
12,130	10,380	615	23,125	80	30	Midlands
9,510	15,135	—	24,645	122	51	North Eastern
16,330	12,800	990	30,120	102	33	North Western
86,224	63,260	4,082	153,566	570	204	Total

18 Transmission work completed 1980-81

Region	Locality or route	Voltage kV	Overhead lines km		Underground cables km		Transformers		Switchgear		Rup. cap. MV
			Route	Circuit	Route	Circuit	No.	Capacity of each MVA	No.	Type ◆	
South Eastern	Barking LV Connections Fishergate	132	—	—	—	0.96	—	—	—	—	—
		132/22	—	—	—	—	1	60	—	—	—
		33	—	—	—	—	—	—	1	OCBo	1.00
	Grain	400	—	—	—	—	1	2,000 MVA SR	—	—	—
		400	—	—	—	—	—	—	1	ACB	35.0
	Kemsley—Beddington	400/275	—	—	11.68	11.68	—	—	1	ACBo	15.0
		275	0.28	0.28	—	—	—	—	—	—	—
	Littlebrook D ●	400/275	—	—	—	—	4	750	—	—	—
		400	—	—	0.90	0.90	—	—	6	GCB _o	35.0
		275	2.26	3.08	—	—	—	—	—	—	—
Rayleigh—Tilbury—Kingsnorth	400/132	—	—	—	—	1	240	—	—	—	
	132	—	—	0.49	0.49	—	—	1	GCB _o	5.0	
	400	8.15	8.15	—	—	—	—	2	GCB _o	35.0	
	400	0.46	0.46	—	—	—	—	—	—	—	
South Western	Whitson	275	—	—	—	—	—	1	ACB	15.0	
		400/275	—	—	—	—	1	750	—	—	—
	Tee into Whitson East Yelland	400	0.07	0.07	—	—	—	—	1	VCB	3.5
Midlands	Ironbridge	400	—	—	—	—	1	240	1	ACB	35.0
		132	0.24	0.24	—	—	—	—	1	GCB	4.3
	Hams Hall C	132	—	—	—	—	—	—	1	ACBo	3.5
	Grendon	132	—	—	—	—	—	—	7	OCBo	5.0
	Patent Shaft Steelworks (D) Lincoln—Wold Newton (D)	275	0.34	0.34	—	—	2	100	—	—	—
North Eastern	Blyth	275	—	—	—	—	2	240	—	—	—
		275	—	—	0.27	0.27	—	—	1	ACB	15.0
		275/66	—	—	—	—	1	120	—	—	—
	Hawthorn Pit—Norton	275	—	—	0.21	0.21	—	—	1	SF6	15.0
		275	—	27.53	—	—	—	—	—	—	—
	Saltholme ●	275/132	0.50	0.50	—	—	2	240	1	SF6	15.0
		132	—	—	0.40	0.80	—	—	—	—	—
	Wilton	275/66	—	—	1.00	1.00	1	180	—	—	—
Wincobank ●	275/33	—	—	0.20	0.40	2	100	1	SF6	15.0	
West Bolden	275/66	—	—	—	—	1	120	—	—	—	
North Western	Capenhurst A—Ince A Ince B	132	0.80	0.80	—	—	—	—	—	—	—
		400	—	—	—	—	—	—	1	ACBo	10.0
	Fiddler's Ferry	275	—	—	—	—	—	—	1	SF6	15.0
		400	—	—	—	—	—	—	1	GCB _o	35.0
	Pentir	400	—	—	—	—	1	200 MVA QB	—	—	—
	Pentir—Dinorwic Penisarwaun—Dinorwic	400	—	—	10.75	10.75	—	—	—	—	—
400	—	—	6.18	6.18	—	—	—	—	—	—	

Note

● New substation commissioned

(D) Disconnected

Transformer type equipment:

SR = Series reactor

QB = Quadrature booster

◆ Type of switchgear

OCBo = Oil circuit breaker, outdoor

ACBo = Air circuit breaker, outdoor

 GCB_o = Gas circuit breaker, outdoor

SF6 = Sulohur hexafluoride circuit breaker

VCB = Vacuum circuit breaker

19 Financial statistics 1957-58, 1967-68 and 1977-78 to 1980-81

		1957-58	1967-68	1977-78	1978-79	1979-80	1979-80	1980-81	
1	Basis of accounting								
2	Capital employed at 31 March						CCA	CCA	
(a)	Property, plant and equipment	£m	974.0	2,957.2	4,053.1	4,236.5	4,751.0	18,644.4	20,837.7
	Less depreciation, etc.	£m	959.9	3,035.3	3,885.4	4,081.2	4,353.4	18,010.2	20,011.0
(b)	Initial fuel, nuclear stations	£m	—	57.3	126.2	121.9	124.3	482.4	589.3
	Less amounts written off	£m	—	—	—	—	—	—	—
(c)	Interest in subsidiary companies	£m	—	—	0.5	0.7	1.0	—	—
	Less amounts written off	£m	—	—	—	—	—	—	—
(d)	Trade investments	£m	—	—	—	—	—	—	—
(e)	Balance of consideration	£m	—	—	—	—	—	—	—
	Less amounts written off	£m	—	—	—	—	—	—	—
(f)	Net current assets	£m	24.5	4.5	—	—	—	—	—
3	Financed from	£m	-10.9	-140.3	41.0	32.7	272.3	150.8	234.5
(a)	Borrowing	£m	924.0	2,727.6	3,476.7	3,479.6	3,920.2	3,920.2	4,163.8
(b)	Reserves	£m	50.0	229.6	576.4	756.9	830.8	14,724.2	16,673.9
4	Average capital employed (i.e. net assets)	£m	902.7	2,821.0	3,954.1	4,144.8	4,493.8	13,429.7	15,812.9
5	Sales of electricity (to Area Boards and direct consumers)	mn.kW h	79,285	159,035	209,828	219,647	218,662	218,662	209,240
6	Average revenue from sales of electricity (to Area Boards and direct consumers)	p/kW h	0.4264	0.5354	1.6848	1.8368	2.1387	2.1387	2.6416
7	Income	£m	340.3	858.1	3,546.4	4,047.3	4,692.7	4,692.7	5,547.3
8	Expenditure	£m	327.2	848.9	3,527.7	3,981.5	4,739.9	4,980.2	5,828.6
9	Profit after interest and MWCA†	£m	13.1	9.3	18.7	65.8	-47.2	-287.5	-281.3
10	Interest included in (8)	£m	35.2	141.9	297.1	297.1	346.5	362.2	449.0
11	MWCA† included in (8)	£m	—	—	—	—	—	-5.0	22.4
12	Net earnings (9 + 10 + 11)	£m	48.3	151.2	315.8	362.9	299.3	69.7	190.1
13	Depreciation	£m	38.1	160.2	386.0	406.6	429.3	593.8	708.4
14	Increase in provisions	£m	—	2.6	78.2	133.7	151.3	81.2	74.1
15	Gross earnings (12 + 13 + 14)	£m	86.4	314.0	780.0	903.2	879.9	744.7	972.6
16	Profit after interest and MWCA† (9) / Average capital employed (4)	per cent	1.4	0.3	0.5	1.6	-1.1	-2.1	-1.8
17	Interest (10) / Average capital employed (4)	per cent	3.9	5.0	7.5	7.2	7.7	2.7	2.8
18	Net earnings (12) / Average capital employed (4)	per cent	5.3	5.4	8.0	8.8	6.7	0.5	1.2
19	Income (7) / Average capital employed (4)	per cent	37.7	30.4	89.7	97.6	104.4	34.9	35.1
20	Net earnings (12) / Income (7)	per cent	14.2	17.6	8.9	9.0	6.4	1.5	3.4
21	Capital Expenditure	£m	157.9	432.7	501.2	515.2	602.4	634.6	713.0
22	Changes in trade investments and subsidiary companies	£m	—	—	0.1	0.2	0.3	0.2	1.9
23	Working capital changes	£m	-16.2	2.7	102.5	125.4	390.9	300.3	171.3
24	Capital requirements (21 + 22 + 23)	£m	141.7	435.4	603.8	640.8	993.6	935.1	886.2
25	Financed from borrowing, etc.	£m	84.6	263.1	70.5	2.9	440.5	440.5	243.6
26	Receipts from lessors	£m	—	—	43.5	24.3	11.4	11.3	41.4
27	Transfers between Boards, etc.	£m	5.9	0.2	6.9	7.5	8.3	8.2	6.9
28	COSA‡	£m	—	—	—	—	—	92.6	70.7
29	Financed from regular internal sources (9 + 11 + 13 + 14 + 26 + 27 + 28)	£m	57.1	172.3	533.3	637.9	553.1	494.6	642.6
30	Self-financing ratio	per cent	40.3	39.6	88.3	99.5	55.7	52.9	72.5

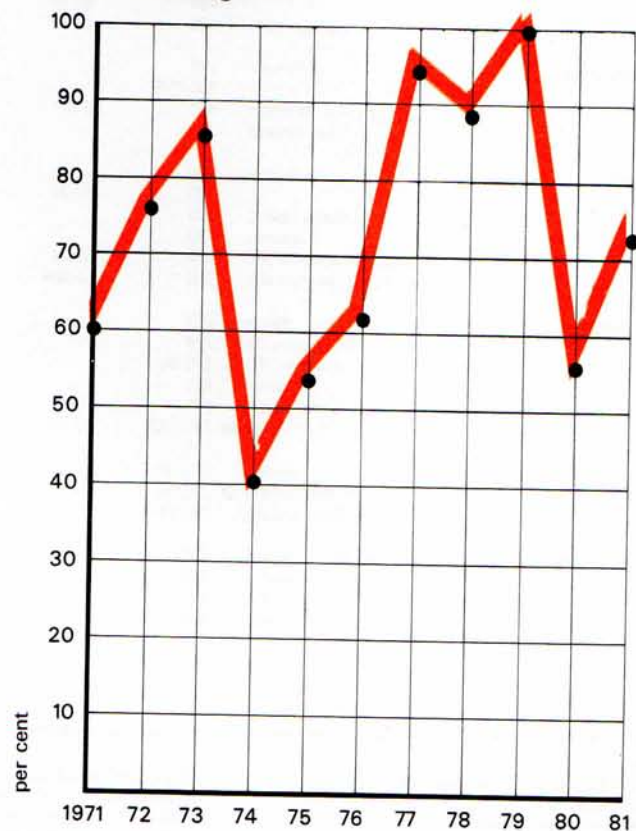
CCA = current cost accounting
HC = historical cost

† MWCA = monetary working capital adjustment
‡ COSA = cost of sales adjustment

Capital expenditure



Self financing ratio



20 Partial indicators of performance 1958-59 and 1962-63 to 1980-81

		1958-59	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
Comparisons of CEGB costs and fossil fuel price											
1	Total costs per kW h sold	pence	0.4153	0.4293	0.4416	0.4584	0.4740	0.5210	0.5304	0.5311	0.5964
2	Fossil fuel price	p/GJ	16.144	16.656	16.751	16.871	16.937	18.539	18.994	19.648	23.212
3	Retail Price Index (RPI)		100.0	109.9	111.5	116.0	121.6	126.1	129.0	136.2	153.5
4	Total costs per kW h/RPI (average)		100.0	94.1	95.3	95.1	93.9	99.5	99.0	89.3	93.6
5	Fuel price per p/GJ/RPI (average)		100.0	93.9	93.0	90.1	86.3	91.0	91.2	85.0	93.7
Manpower productivity											
6	Employees per megawatt of declared net capability (DNC)		2.27	1.94	1.95	2.00	2.08	2.09	1.91	1.56	1.43
7	Electricity supplied from power stations per employee	mn.kW h	1.623	2.078	2.040	2.056	1.935	1.905	2.036	2.479	2.649
8*	Employees per megawatt of DNC (1958-59 = 100)		100.0	85.40	86.02	87.91	91.79	91.83	83.91	75.36	62.81
9*	Electricity supplied per employee (1958-59 = 100)		100.0	128.03	125.69	126.68	119.22	117.38	125.45	139.80	163.22
Plant availability											
10*	Mean availability of coal- and oil-fired 500-660 MW single-shaft generating units at times of daily peak for working days for winter period (Dec. Jan. Feb.)	per cent	—	—	—	—	—	—	56.3	53.9	62.8
System thermal efficiency of fossil-fired plant											
11*	Coal-, gas- and oil-fired steam stations, diesel and gas-turbine plant †	per cent	26.10	27.44	27.67	27.49	27.28	27.52	27.97	28.24	28.36

* These data are shown graphically in the CEGB's Annual Report and Accounts for 1980-81, Figures 1-4

† Including pre-commissioned output

Source of information for Retail Price Index (in row 6) and average earnings of employees in UK (in row 9): "Monthly Digest of Statistics" (Central Statistical Office)

		1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Comparisons of CEGB costs and fossil fuel price											
1	Total costs per kW h sold	pence	0.6416	0.6479	0.7560	1.0339	1.2888	1.4474	1.6812	1.8127	2.7856
2	Fossil fuel price	p/GJ	25.847	26.311	30.738	52.892	68.110	79.345	93.386	98.638	147.488
3	Retail Price Index (RPI)		167.7	179.6	198.4	234.0	291.6	336.0	383.1	414.8	558.8
4	Total costs per kW h/RPI (average)		92.1	86.9	91.8	106.4	106.4	103.7	105.7	105.2	120.0
5	Fuel price per p/GJ/RPI (average)		95.5	90.7	96.0	140.0	144.7	146.3	151.0	147.3	163.5
Manpower productivity											
6	Employees per megawatt of declared net capability (DNC)		1.20	1.13	1.11	1.13	1.08	1.08	1.08	1.10	1.05
7	Electricity supplied from power stations per employee	mn.kW h	2.913	3.207	3.142	3.191	3.237	3.434	3.492	3.599	3.542
8*	Employees per megawatt of DNC (1958-59 = 100)		53.03	49.77	48.76	49.73	47.44	47.44	47.46	48.43	46.39
9*	Electricity supplied per employee (1958-59 = 100)		179.48	197.60	193.59	196.61	199.45	211.58	215.61	221.75	218.24
Plant availability											
10*	Mean availability of coal- and oil-fired 500-660 MW single-shaft generating units at times of daily peak for working days for winter period (Dec. Jan. Feb.)	per cent	62.5	69.4	69.1	75.2	70.8	74.2	75.3	84.6	87.8
System thermal efficiency of fossil-fired plant											
11*	Coal-, gas- and oil-fired steam stations, diesel and gas-turbine plant †	per cent	28.95	29.73	29.78	30.56	31.24	31.57	31.48	31.82	31.67

* These data are shown graphically in the CEGB's Annual Report and Accounts for 1980-81, Figures 1-4

† Including pre-commissioned output

Source of information for Retail Price Index (in row 6) and average earnings of employees in UK (in row 9): "Monthly Digest of Statistics" (Central Statistical Office)

Central Electricity Generating Board at 31 March 1981

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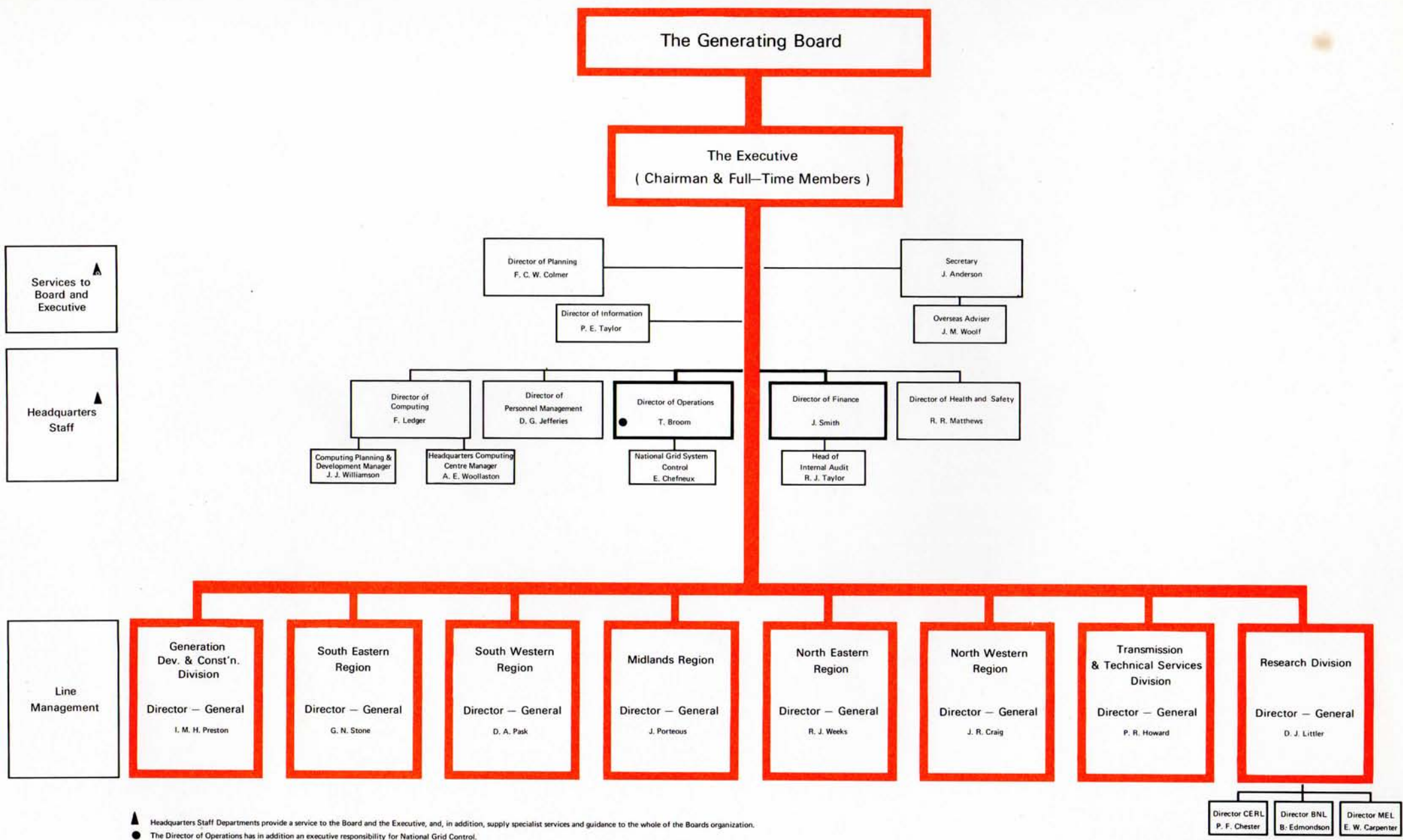
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Central Electricity Generating Board

Organization at 31 March 1981



▲ Headquarters Staff Departments provide a service to the Board and the Executive, and, in addition, supply specialist services and guidance to the whole of the Board's organization.
● The Director of Operations has in addition an executive responsibility for National Grid Control.

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