Section 5 – Electricity

Key results show:

Provisional 2015
Electricity generated in 2015 fell by 0.4 per cent from 338.9 TWh in 2014 to 337.7 TWh. (**Chart 5.1**)

Gas' share of generation fell from 29.8 per cent to 29.5 per cent. Coal's share of generation decreased from 29.7 per cent to 22.6 per cent with a record low generation of 76.3 TWh as a result of reduced capacity due to the conversion of a unit at Drax from coal to biomass and the temporary closure of some plants due to market conditions, in addition to an increase in the carbon price floor from April 2015. (**Chart 5.2**)

Renewables' share of electricity generation increased from 19.1 per cent in 2014 to a record 24.7 per cent in 2015 due to an increase in solar and wind capacity. (**Chart 5.2**)

Low carbon electricity's share of generation increased from 37.9 per cent in 2014 to a record high of 45.5 per cent in 2015, due to an increase in nuclear generation after outages in the fourth quarter of 2014 and higher renewables generation following increases in capacity. (**Chart 5.3**)

Net imports of electricity, at a record high level at 20.9 TWh, made up 5.8 per cent of electricity supplied in 2015 and were up 2.1 per cent from 20.5 TWh in 2014. (**Chart 5.4**).

Final consumption of electricity in 2015 was 0.2 per cent higher than in 2014. Domestic consumption fell slightly by 0.1 per cent, despite a slight fall in temperature. (**Chart 5.5**).

Quarter 4 2015
Electricity generated in the fourth quarter of 2015 fell by 2.0 per cent from 90.0 TWh a year earlier to 88.2 TWh (**Chart 5.1**).

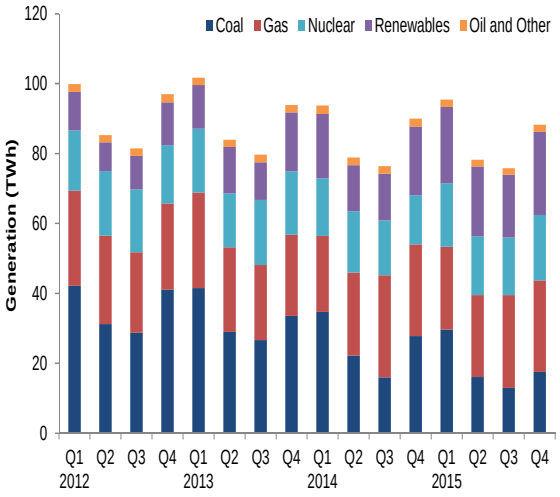
Gas' quarterly share of generation increased from 29.1 per cent to 29.7 per cent, while coal's quarterly share fell from 30.9 per cent to 19.9 per cent. Nuclear's share increased from 15.6 per cent to 21.2 per cent due to an increase in nuclear generation after outages in the fourth quarter of 2014. (**Chart 5.2**).

Renewables' share of electricity generation increased from 21.8 per cent in the fourth quarter of 2014 to a record 26.9 per cent in the fourth quarter of 2015 due to increased solar and wind capacity. In December, generation from wind was at a record high 4.60 TWh, with generation from offshore wind at a record high 2.45 TWh. Again, this was due to increased capacity along with an average wind speed increase of 3.0 knots compared to December 2014. (**Chart 5.2**).

Low carbon electricity's share of generation increased from 37.5 per cent in the fourth quarter of 2014 to a record high of 48.1 per cent in the fourth quarter of 2015, due to an increase in nuclear generation after outages in the fourth quarter of 2014 and higher renewables generation following increases in capacity. (**Chart 5.3**)

Final consumption in the fourth quarter of 2015 fell by 1.3 per cent on a year earlier, and domestic sales fell by 2.2 per cent, as a result of the warmer weather, including the warmest December on record. **(Chart 5.6)**

Chart 5.1 Electricity generated by fuel type



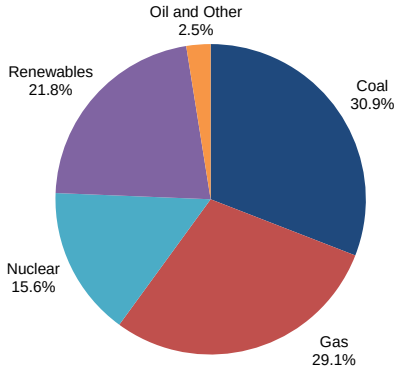
In 2015, total electricity generated fell 0.4 per cent from 338.9 TWh in 2014 to 337.7 TWh.

In 2015, coal fired generation fell by 24 per cent from 100.7 TWh in 2014 to 76.3 TWh, its lowest level in the time series, as a result of reduced capacity due to the conversion of a unit at Drax from coal to biomass and the temporary closure of some plants due to market conditions, in addition to an increase in the carbon price floor from April 2015. Nuclear generation rose 10.3 per cent from 63.7 TWh to 70.3 TWh. Gas fired generation fell 1.2 per cent from 100.9 TWh to 99.7 TWh.

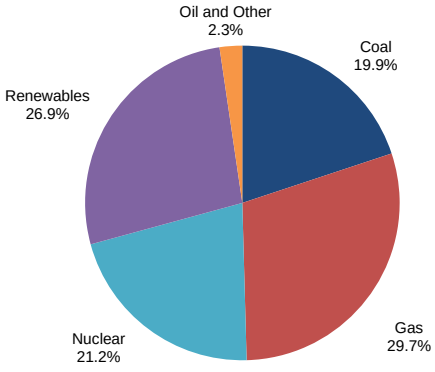
In 2015, wind and solar PV generation rose 33 per cent from 36.1 TWh to 48.0 TWh, mainly due to increased capacity compared to 2014. Hydro generation rose 7.4 per cent from 5.9 TWh to 6.3 TWh, with average rainfall in 2015 17.5 per cent higher than a year earlier.

Chart 5.2 Shares of electricity generation

Q4 2014



Q4 2015



The share of generation from coal decreased from 29.7 per cent in 2014 to 22.6 per cent in 2015 with a record low generation of 76.3 TWh as a result of reduced capacity. The share of generation from nuclear increased from 18.8 per cent to 20.8 per cent in 2015 while the share of generation from gas fell from 29.8 per cent in 2014 to 29.5 per cent in 2015.

The share of generation from renewables (hydro, wind and bioenergy) increased from 19.1 per cent in 2014 to a record 24.7 per cent in 2015. This was mainly due to increased wind, solar and bioenergy generation capacity.

In 2015 Q4, total electricity generated fell 2.0 per cent from 90.0 TWh in 2014 Q4 to 88.2 TWh.

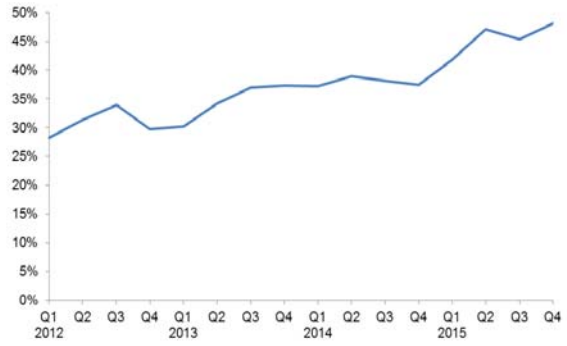
In 2015 Q4, coal fired generation fell by 37 per cent from 27.8 TWh in 2014 Q4 to 17.6 TWh. Gas fired generation remained constant at 26.2 TWh. Nuclear generation rose 3.3 per cent from 14.1 TWh to 18.7 TWh due to increased availability after outages in Q4 2014.

In 2015 Q4, wind and solar PV generation rose 23 per cent from 11.2 TWh to 13.9 TWh. Hydro generation increased 2.6 per cent from 1.7 TWh to 1.8 TWh.

The share of generation from coal decreased from 30.9 per cent in 2014 Q4 to 19.9 per cent in 2015 Q4 while the share of generation from gas increased from 29.1 per cent to 29.7 per cent over the same period. Share of generation from nuclear increased from 15.6 per cent in 2014 Q4 to 21.2 per cent in 2015 Q4.

The share of generation from renewables (hydro, wind and bioenergy) increased from 21.8 per cent in 2014 Q4 to 26.9 per cent in 2015 Q4, a new record. This was due to increased capacity for wind and bioenergy generation.

Chart 5.3 Low carbon electricity's share of generation



Low carbon electricity's share of generation increased from 37.9 per cent in 2014 to a record high of 45.5 per cent in 2015, due to higher renewables generation and increased nuclear availability after outages in Q4 2014.

Low carbon electricity's share of generation increased from 37.5 per cent in 2014 Q4 to a record high of 48.1 per cent in 2015 Q4, due to higher renewables generation and increased nuclear availability after outages in Q4 2014.

Chart 5.4 UK trade in electricity

In 2015, imports of electricity fell by 2.3 per cent, whilst exports fell by 35 per cent. Net imports of electricity were a record high at 20.9 TWh, up 2.1 per cent on 2014, and accounted for 5.8 per cent of electricity supplied in 2015.

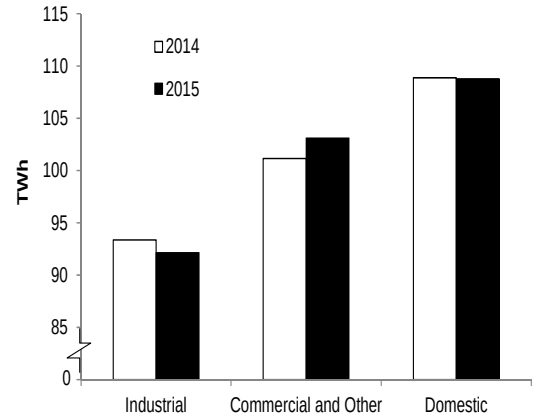
This increase was due to a rise in net imports via all of the interconnectors, apart from France which saw a fall in imports and an increase in exports (the first fall in net imports from the France interconnector since 2009). In 2015 the France interconnector ran at 81.0 per cent of capacity (imports and exports combined) compared to 85.5 per cent in 2014. The Netherlands interconnector ran at 91.5 per cent of capacity in 2015, the first time it has exceeded 90 per cent of capacity.

In 2015, the UK was a net importer from France and the Netherlands with net imports of 13.8 TWh and 8.0 TWh respectively. The UK was a net exporter to Ireland, with net exports of 0.9 TWh.

In 2015 Q4, compared with the same period in 2014, imports of electricity fell by 11.5 per cent, whilst exports decreased by 22 per cent. In each of the quarters from 2010 Q2, the UK has been a net importer.

Net imports of electricity, at 4.6 TWh, were 10.1 per cent lower on the level of 5.1 TWh in 2014 Q4. This represented 5.0 per cent of electricity supplied in 2015 Q4. In 2015 Q4, the UK was a net importer from France and Netherlands with net imports of 2.7 TWh and 2.0 TWh respectively and a net exporter to Ireland with net exports of 0.1 TWh.

Chart 5.5 Electricity final consumption (annual)



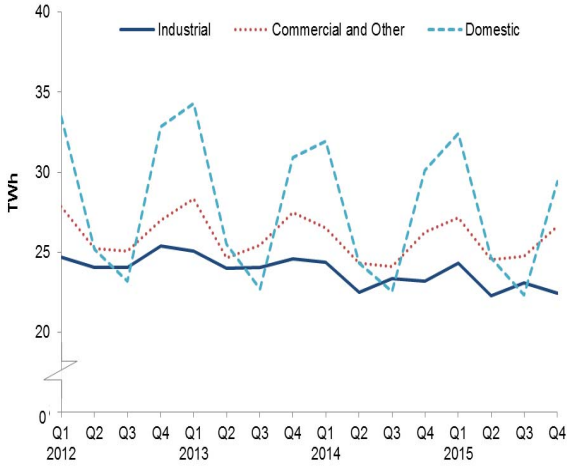
Final consumption of electricity rose slightly by 0.2 per cent in 2015, from 303.4 TWh in 2014 to 304.0 TWh.

Domestic use fell by 0.1 per cent, from 108.9 TWh in 2014 to 108.8 TWh in 2015. Industrial use of electricity fell 1.3 per cent, from 93.4 TWh to 92.1 TWh, while consumption by commercial and other users [1] rose by 1.9 per cent, from 101.2 TWh to 103.1 TWh.

In 2015, temperatures were on average 0.6 degrees cooler than in 2014.[2]

[1]Includes commercial, transport and other final users.
[2]Temperature data comes from table ET 7.1, at: www.gov.uk/government/publications/energy-trends-section-7-weather

Chart 5.6 Electricity final consumption (quarterly)

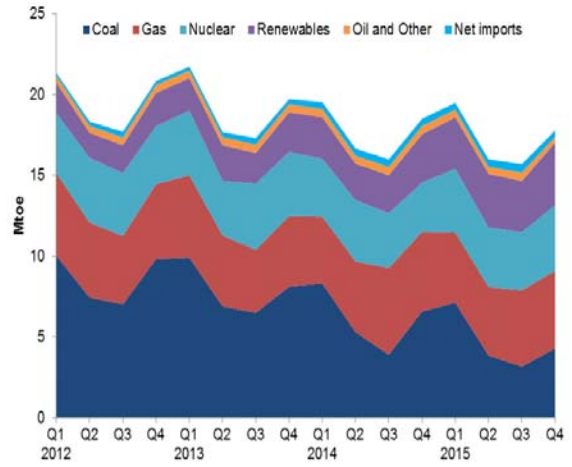


Final consumption of electricity fell by 1.3 per cent in 2015 Q4, from 79.5 TWh in 2014 Q4, to 78.5 TWh.

Domestic use fell by 2.2 per cent, from 30.1 TWh in Q4 2014 to 29.4 TWh in Q4 2015. Industrial use of electricity fell 3.2 per cent, from 23.2 TWh to 22.4 TWh, and consumption by commercial and other users rose by 1.5 per cent, from 26.2 TWh to 26.6 TWh.

In 2015 Q4, temperatures were on average 1.2 degrees warmer than a year earlier. December was the warmest on record with an average daily temperature of 9.5 degrees.

Chart 5.7 Fuel used for electricity Generation



Fuel used by generators in 2015 fell 2.4 per cent, from 70.7 mtoe in 2014 to 69.0 mtoe.[3]

In 2015, gas use was 3.5 per cent lower than in 2014. Coal use during 2015 was 23 per cent lower than a year earlier, while nuclear sources were 10.3 per cent higher due to increased nuclear availability after outages in 2014 Q4.

Fuel used by generators in 2015 Q4 fell 3.9 per cent, from 18.5 mtoe in 2014 Q4 to 17.8 mtoe.

In 2015 Q4, gas use was 2.4 per cent lower than in 2014 Q4. Coal use during the quarter was 35 per cent lower than a year earlier, while nuclear sources were 33 per cent higher.

The increased share of nuclear generation, at the expense of the less thermally efficient coal, has meant fuel use has fallen by more than generation in 2015.

[3] For wind (and other primary renewable sources), the fuel used is assumed the same as the electricity generated, unlike thermal generation where conversion losses are incurred.

Relevant tables

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Table 5.1. Fuel used in electricity generation and electricity supplied

	2014	2015 p	per cent change	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	per cent change [1]
FUEL USED IN GENERATION													
All generating companies										**Million tonnes of oil equivalent**			
Coal	24.11	18.44	*-23.5*	8.12	8.32	5.30	3.91	6.59	7.11	3.86	3.17	4.29	*-34.8*
Oil	0.53	0.59	*+10.4*	0.16	0.14	0.15	0.12	0.12	0.14	0.12	0.17	0.16	*+36.1*
Gas	18.78	18.12	*-3.5*	4.37	4.13	4.37	5.36	4.92	4.35r	4.24r	4.72r	4.80	*-2.4*
Nuclear	13.85	15.28	*+10.3*	3.97	3.59	3.80	3.40	3.05	3.95	3.68	3.60	4.06	*+32.9*
Hydro	0.51	0.54	*+7.4*	0.15	0.19	0.10	0.07	0.15	0.17r	0.12r	0.09	0.15	*+2.4*
Wind and Solar [2]	3.10	4.13	*+33.1*	0.92	0.99	0.57	0.58	0.97	1.10	0.98r	0.85	1.19	*+23.2*
Bioenergy [3]	6.53	8.87	*+35.7*	1.37	1.38	1.59	1.70	1.87	1.90	2.22r	2.23r	2.52	*+35.1*
Other fuels	1.52	1.21	*-20.8*	0.35	0.38	0.35	0.39	0.40	0.34	0.30	0.36r	0.20	*-50.4*
Net imports	1.76	1.80	*+2.1*	0.29	0.42	0.44	0.47	0.44	0.42	0.48	0.51	0.40	*-10.0*
Total all generating companies	70.70	68.97	*-2.4*	19.71	19.54	16.66	15.99	18.51	19.50r	16.00r	15.69r	17.78	*-3.9*
ELECTRICITY GENERATED													
All generating companies												**TWh**	
Coal	100.71	76.26	*-24.3*	33.58	34.67	22.21	16.01	27.81	29.69r	16.07r	12.93r	17.57	*-36.8*
Oil	1.88	1.81	*-3.8*	0.49	0.53	0.50	0.43	0.42	0.51	0.37	0.47	0.47	*+12.0*
Gas	100.93	99.75	*-1.2*	23.16	21.76	23.78	29.16	26.22	23.66r	23.39r	26.52r	26.17	*-0.2*
Nuclear	63.75	70.34	*+10.3*	18.16	16.53	17.50	15.66	14.06	18.17	16.92	16.56	18.69	*+32.9*
Hydro (natural flow)	5.88	6.32	*+7.4*	1.74	2.24	1.11	0.78	1.75	2.03r	1.45r	1.05r	1.79	*+2.6*
Wind and Solar [2]	36.07	48.00	*+33.1*	10.65	11.55	6.58	6.70	11.24	12.80r	11.45r	9.89r	13.86	*+23.3*
- of which, Offshore [6]	13.40	17.42	*+29.9*	4.03	4.38	2.09	2.24	4.69	4.68r	3.57	3.41r	5.76	*+22.8*
Bioenergy [3]	22.70	29.01	*+27.8*	4.44	4.59	5.48	5.94	6.68	6.95r	7.02r	6.94r	8.11	*+21.3*
Pumped Storage	2.88	2.44	*-15.2*	0.76	0.79	0.67	0.63	0.79	0.66r	0.59	0.56	0.64	*-19.5*
Other fuels	4.13	3.77	*-8.7*	0.86	1.04	1.00	1.03	1.06r	0.97r	0.93r	0.92	0.95	*-10.6*
Total all generating companies	338.93	337.70	*-0.4*	93.85	93.71	78.84	76.35	90.03	95.44r	78.18r	75.84r	88.23	*-2.0*
ELECTRICITY SUPPLIED [4]													
All generating companies												**TWh**	
Coal	95.53	72.35	*-24.3*	31.86	32.89	21.07	15.19	26.39	28.16r	15.25r	12.27r	16.66	*-36.8*
Oil	1.71	1.64	*-4.2*	0.45	0.48	0.46	0.39	0.38	0.47	0.33	0.42	0.42	*+11.6*
Gas	99.03	97.83	*-1.2*	22.72	21.33	23.34	28.63	25.73	23.17	22.95	26.03r	25.68	*-0.2*
Nuclear	57.90	63.89	*+10.3*	16.50	15.01	15.90	14.22	12.77	16.51	15.37	15.04	16.98	*+32.9*
Hydro	5.83	6.27	*+7.6*	1.72	2.21	1.10	0.77	1.74	2.02r	1.44r	1.04r	1.78	*+2.5*
Wind and Solar [2]	36.07	48.00	*+33.1*	10.65	11.55	6.58	6.70	11.24	12.80r	11.45r	9.89r	13.86	*+23.3*
- of which, Offshore [6]	13.40	17.42	*+29.9*	4.03	4.38	2.09	2.24	4.69	4.68r	3.57	3.41r	5.76	*+22.8*
Bioenergy [3]	19.61	25.16	*+28.3*	3.83	3.94	4.73	5.14	5.80	6.02r	6.08r	6.01r	7.05	*+21.5*
Pumped Storage (net supply) [5]	-1.01	-0.91	*-9.5*	-0.25	-0.26	-0.25	-0.24	-0.26	-0.23r	-0.23	-0.25r	-0.21	*-18.7*
Other fuels	3.85	3.52	*-8.8*	0.81	0.97	0.93	0.96	0.99	0.90r	0.87r	0.86r	0.88	*-10.7*
Net imports	20.51	20.94	*+2.1*	3.40	4.89	5.08	5.43	5.11	4.91	5.54	5.89	4.60	*-10.0*
Total all generating companies	339.03	338.69	*-0.1*	91.68	93.01	78.94	77.21	89.87	94.73r	79.05r	77.21r	87.70	*-2.4*

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Includes wave and tidal

3. Up to 2006 Q4, this includes non-biodegradable wastes. From 2007 Q1, this is included in 'Other fuels' (as it is not considered a renewable source).

4. Electricity supplied net of electricity used in generation

5. Net supply from pumped storage is usually negative, as electricity used in pumping is deducted.

6. This now includes a small amount of offshore wind generation from other generators

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Table 5.2 Supply and consumption of electricity

GWh

	2014	2015 p	*Per cent change*	2013 4th quarter	2014 1st quarter	2014 2nd quarter	2014 3rd quarter	2014 4th quarter	2015 1st quarter	2015 2nd quarter	2015 3rd quarter	2015 4th quarter p	*Per cent change* [1]
SUPPLY													
Indigenous production	338,927	337,703	*-0.4*	93,848	93,705	78,843	76,350	90,029	95,441r	78,184r	75,843r	88,235	*-2.0*
Major power producers [2 3]	297,939	292,694	*-1.8*	83,922	83,205	68,844	66,368	79,522	84,256r	66,557r	64,702r	77,180	*-2.9*
Auto producers	38,104	42,565	*+11.7*	9,163	9,710	9,328	9,354	9,713	10,529r	11,035r	10,584r	10,417	*+7.2*
Other sources [4]	2,883	2,444	*-15.2*	763	791	671	628	793	656r	592r	557r	639	*-19.5*
Imports	23,243r	22,716	*-2.3*	4,436	5,700r	5,770r	6,036r	5,737r	5,462	6,023	6,152	5,080	*-11.5*
Exports	2,723r	1,778	*-34.7*	1,038	808	694	604	618	555	484	259	480	*-22.3*
Transfers	-	-		-	-	-	-	-	-	-	-	-	
Total supply	359,447r	358,641	*-0.2*	97,246	98,598	83,919	81,783	95,148	100,348r	83,723r	81,736r	92,834	*-2.4*
Statistical difference	-549r	-70		-326	-89r	-271r	-163r	-26r	-209r	244r	32r	-137	
Total demand	359,996	358,711	*-0.4*	97,572	98,687r	84,189r	81,945r	95,174r	100,557r	83,479r	81,704r	92,971	*-2.3*
TRANSFORMATION	-	-		-	-	-	-	-	-	-	-	-	
Energy industry use [5]	28,026	27,557	*-1.7*	7,536	7,541	6,882	6,417	7,186	7,458r	6,560r	6,489r	7,051	*-1.9*
Losses	28,562	27,145	*-5.0*	7,078	8,314r	6,149r	5,604r	8,495r	9,205r	5,451r	5,034r	7,456	*-12.2*
FINAL CONSUMPTION	303,407r	304,008	*+0.2*	82,958	82,832r	71,158r	69,925	79,493	83,894r	71,469r	70,182r	78,465	*-1.3*
Iron & steel	3,786	3,626	*-4.2*	940	956	945	937	949	969	919	874r	863	*-9.0*
Other industries	89,587	88,520	*-1.2*	23,620r	23,399r	21,563r	22,396r	22,229r	23,353r	21,378r	22,211r	21,579	*-2.9*
Transport	4,259	4,259	*-*	1,067	1,065	1,065	1,065	1,065	1,065	1,065	1,065	1,065	*-*
Domestic	108,881	108,774	*-0.1*	30,936	31,961	24,317	22,518	30,084	32,406r	24,620r	22,339r	29,408	*-2.2*
Other final users	96,894	98,829	*+2.0*	26,395	25,451r	23,268r	23,009r	25,166r	26,100r	23,487r	23,693r	25,549	*+1.5*
Non energy use	-	-		-	-	-	-	-	-	-	-	-	

1. Percentage change between the most recent quarter and the same quarter a year earlier.

2. Companies that produce electricity from nuclear sources plus all companies whose prime purpose is the generation of electricity are included under the heading "Major Power Producers". At the end of December 2015 they were:

AES Electric Ltd., Anesco Ltd., Baglan Generation Ltd., British Energy plc., British Solar Renewables Ltd., Centrica Energy, Centrica Renewable Energy Ltd., CEP Wind 2, Coolkeeragh ESB Ltd., Corby Power Ltd., Coryton Energy Company Ltd., Cubico Sustainable Investments Ltd., Deeside Power Development Company Ltd., DONG Energy Burbo UK Ltd., Drax Power Ltd., EDF Energy plc., EDF Energy Renewables Ltd., Eggborough Power Ltd., E.On UK plc., Eneco Wind UK Ltd., Energy Power Resources, Falck Renewables Ltd., Fellside Heat and Power Ltd., First Hydro Company., Greencoat UK Wind plc., Immingham CHP, Infinis plc., International Power Mitsui, Lark Energy Ltd., Lightsource Renewable Energy Ltd., London Waste Ltd., Lynemouth Power Ltd., Magnox North Ltd., Marchwood Power Ltd., Peel Energy Ltd., Premier Power Ltd., Riverside Resource Recovery Ltd., Rocksavage Power Company Ltd., RWE Innogy Markinch Ltd., RWE Npower plc., Saltend Cogeneration Company Ltd., Scira Offshore Energy Ltd., Scotia Wind (Craigengelt) Ltd., Scottish Power plc., Scottish and Southern Energy plc., Seabank Power Ltd., SELCHP Ltd., Sembcorp Utilities (UK) Ltd., Severn Power Ltd., Slough Heat and Power Ltd., Spalding Energy Company Ltd., Statkraft Energy Ltd., Statkraft Wind UK Ltd.,Third Energy Trading Ltd.

3. This table includes the change of definition of Major power producers (MPPs) to include major wind farm companies. Details of this change of definition were given in an article on pages 43 to 48 of the September 2008 edition of Energy Trends.

4. Gross supply from pumped storage hydro

5. Includes electricity used in generation and for pumping