Chapter 5
Electricity

Key points
- UK electricity generation was broadly stable compared to 2015, at 336 TWh; however the fuel mix shifted significantly from coal to gas as policy supported a market preference for gas generation, and coal plants closed. Whilst fuel costs for coal fired generation are lower than for gas, emissions from coal are higher so generators must pay a greater carbon price per GWh produced. (Table 5.1)

- Coal’s share of generation fell steeply from 22 to 9 per cent in 2016, as generation from coal more than halved from 76 TWh to 31 TWh. Gas generation filled the gap, with its share of generation rising to 42 per cent in 2016, up from 29 per cent in 2015, as generation increased 44 per cent to 143 TWh. (Table 5.6)

- Renewables’ share of generation was stable at 24.5 per cent in 2016, the same as in 2015. Increased renewables generation capacity was balanced by less favourable weather conditions for solar and wind generation. (Table 6C, in chapter 6)

- Low carbon electricity’s share of generation increased slightly from 46.2 per cent to a record 46.5 per cent. Nuclear generation was up 2.7 per cent compared to 2015, due to improved availability and fewer outages. (Table 5.6)

- Total electricity supply (including net imports) fell by 0.8 per cent to 357 TWh, as net imports fell by 3.4 TWh. (Tables 5.6 and 5.1). The UK remained a net importer of electricity in 2016, with net imports contributing 4.9 per cent of electricity supply. (Table 5.1)

- Final consumption of electricity has been broadly the same since 2014, at 304 TWh in 2016, remaining near its lowest level since 1995. (Table 5.1).

Introduction

5.1 This chapter presents statistics on electricity from generation through to sales, and includes statistics on generating capacity, fuel used for generation, load factors and efficiencies. It also includes a map showing the electricity network in the United Kingdom and the location of the main power stations as at the end of May 2017. A full list of tables is available at the end of the chapter.

5.2 Electricity comprised 17.5 per cent of the UK’s final energy consumption in 2016, down from 17.8 per cent in 2015 and 18.2 per cent in 2014; however, this was due to an increase in final consumption of petroleum products and natural gas. Final consumption of electricity remained stable at 304 TWh over the period.

5.3 Overleaf is an energy flow chart for 2016, showing the flows of electricity from fuel inputs through to consumption. It illustrates the flow of primary fuels used for the production of electricity through to the final use of the electricity produced or imported as well as the energy lost in conversion, transmission and distribution. The widths of the bands are proportional to the size of the flows they represent.
Electricity flow chart 2016 (TWh)

Notes:
1. Hydro includes generation from pumped storage while electricity used in pumping is included under Energy Industry Use.
2. Conversion, Transmission and Distribution Losses is calculated as fuel used (Table 5.6) minus generation (Table 5.6) plus losses (Table 5.1).
Electricity supply (Table 5.1)

5.4 In 2016, the total UK electricity supply was 357 TWh, slightly lower than 360 TWh in 2015 (-0.8 per cent). Of this total supply, just over 95 per cent was home produced with 4.9 per cent from imports, net of exports. For electricity, supply is totally driven by demand – the impacts of improving energy efficiency and overall warmer temperatures have seen demand drop since 2005, with final consumption in broadly stable since 2014 and at its lowest level in a series since 1995 (see paragraph 5.38).

Chart 5.1: Electricity supply

5.5 In 2016, UK generation rose marginally by 0.1 per cent on 2015. Of the 336 TWh produced, 86 per cent was from major power producers and 14 per cent from other generators, while 37 per cent was from primary sources (including nuclear, wind, solar and hydro) and 63 per cent from secondary sources (including coal, gas, oil, bioenergy and non-bio waste).

5.6 Net imports in 2016 were down by 16 per cent to 18 TWh compared to the record 21 TWh in 2015. The UK has four interconnectors allowing trade with Europe: England-France (2 GW capacity), England-Netherlands (1 GW), Northern Ireland-Ireland (0.6 GW) and Wales-Ireland (0.5 GW). Table 5A below shows the UK’s net imports via interconnectors during the past three years.

Table 5A: Net Imports via interconnectors 2014 to 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>France - UK</th>
<th>Ireland - N. Ireland</th>
<th>Netherlands - UK</th>
<th>Ireland - Wales</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>14,951</td>
<td>121</td>
<td>7,856</td>
<td>-2,408</td>
<td>20,520</td>
</tr>
<tr>
<td>2015</td>
<td>13,838</td>
<td>167</td>
<td>7,999</td>
<td>-1,065</td>
<td>20,938</td>
</tr>
<tr>
<td>2016</td>
<td>9,728</td>
<td>199</td>
<td>7,306</td>
<td>313</td>
<td>17,546</td>
</tr>
</tbody>
</table>

1. Figures taken from the demand data available on the National Grid website at www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Data-Explorer/.

5.7 Imports fell by 13 per cent whilst exports increased 21 per cent as nuclear outages in France increased export demand. The France-UK interconnector was damaged by a ship’s anchor in November 2016 which halved its capacity for the rest of the year. Utilisation of the interconnector

1 Excluding pumped storage production.
fell from 81 per cent in 2015 to 71 per cent in 2016 and net imports from France fell 30 per cent over the same period.

**Chart 5.2: Electricity imports and exports in 2016**

<table>
<thead>
<tr>
<th>Export from UK</th>
<th>Import to UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>1.3 TWh</td>
</tr>
<tr>
<td>NL</td>
<td>0.1 TWh</td>
</tr>
<tr>
<td>IR</td>
<td>0.7 TWh</td>
</tr>
</tbody>
</table>

5.8 Net imports from the Netherlands were down 8.7 per cent, with utilisation of the interconnector down from 91 per cent in 2015 to 87 per cent in 2016. The UK was a net importer from the Republic of Ireland for the first time since the Ireland-Wales interconnector opened in 2012, with a 0.9 TWh net export in 2015 switching to a 0.5 TWh net import in 2016, due to reduced availability from France.

**Electricity distributed via the public distribution system and for other generators (Table 5.2)**

5.9 The majority of electricity in the United Kingdom is supplied by the public distribution system (PDS), the interconnected high voltage transmission network and lower voltage distribution network. In 2016, 93 per cent of UK electricity was supplied by the PDS. The remainder was provided by other generators (largely autogeneration and generation from renewable sources). Major power producers\(^2\) (MPPs) provide the majority of power to the PDS, with the remainder made up of transfers from other generators which can sell surplus electricity into the PDS, as well as net imports.

5.10 Since 2009 the proportion of electricity supplied by the public distribution system has slowly declined, from 95.2 per cent in 2009 to 92.8 per cent in 2016. This was due to an increase in autogeneration and local generation, including a rise in small scale renewables. Of the electricity supplied by other generators, 44 per cent (21 TWh) was transferred to the public distribution system in 2016. This proportion has been broadly flat since 2014.

5.11 In 2016, 6.4 per cent of final consumption of electricity was by other generators and did not pass over the public distribution system. This was up from 5.7 per cent in 2015 and a further increase on the 5.1 per cent in 2014. A substantial proportion of electricity used in the energy industries is self-generated (around 24 per cent in 2016). At petroleum refineries the proportion is even higher; in this sector 72 per cent of electricity consumed in 2016 was self-generated.

5.12 Autogenerators produce electricity as part of their manufacturing or other commercial activities, principally for their own use. In 2016, 10.8 per cent of the industrial demand for electricity was met by autogeneration, an increase of 1.6 percentage points on the previous year. Table 5.4 shows the fuels used by autogenerators to generate this electricity within each major sector and also the quantities of electricity generated and consumed.

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\(^2\) Further information on the definitions of other generators and MPPs can be found in paragraph 5.62.
5.13 Of the electricity consumed by the domestic sector in 2016, 19 per cent was reported as being purchased under some form of off-peak pricing structure (e.g. Economy 7), down slightly from 20 per cent in 2015. 16 per cent of consumption was through prepayment systems, stable since 2011.

5.14 Domestic electricity generation by households with micro-generation units (such as solar photovoltaic panels) increased sharply since the Feed in Tariff (FiT) scheme was launched in April 2010 in Great Britain (see paragraph 6.61 for further information on FiTs uptake). In 2016, consumption of self-produced electricity by the domestic sector increased by 20 per cent on 2015, to 1.356 GWh, which was more than fifty times the 23 GWh consumed in 2010. However, self-produced electricity still accounts for only 1.3 per cent of domestic consumption.

**Combined Heat and Power (CHP) plants**

5.15 Combined Heat and Power (CHP) is the simultaneous generation of useable heat and power in a single process, and is frequently referred to as cogeneration. A large proportion of CHP schemes in the UK are covered by the CHPQA programme and are covered in detail in Chapter 7, along with background information. Table 5B shows how much CHP capacity and generation is covered in Chapter 7 using statistics sourced from the CHPQA programme compared to other CHP plants not covered by the scheme.

<table>
<thead>
<tr>
<th></th>
<th>Generation (GWh)</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major Power Producers (Thermal)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHPQA (ch 7)</td>
<td>6,469</td>
<td>1,990</td>
</tr>
<tr>
<td>CHP (not included in ch 7)</td>
<td>18,310</td>
<td>2,298</td>
</tr>
<tr>
<td>Other thermal generation</td>
<td>228,504</td>
<td>54,030</td>
</tr>
<tr>
<td><strong>Total MPP thermal generation</strong></td>
<td>253,284</td>
<td>58,318</td>
</tr>
<tr>
<td><strong>Autogenerators (Thermal)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHPQA (ch 7)</td>
<td>13,600</td>
<td>3,581</td>
</tr>
<tr>
<td>CHP (not included in ch 7)</td>
<td>5,391</td>
<td>452</td>
</tr>
<tr>
<td>Other thermal generation</td>
<td>10,980</td>
<td>2,581</td>
</tr>
<tr>
<td><strong>Total thermal autogeneration</strong></td>
<td>29,972</td>
<td>6,614</td>
</tr>
<tr>
<td><strong>Wind, solar &amp; hydro (MPP and autogenerators)</strong></td>
<td>53,182</td>
<td>13,348</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>336,438</strong></td>
<td><strong>78,279</strong></td>
</tr>
</tbody>
</table>

5.16 In 2016, CHP comprised 9.8 per cent of MPP’s thermal electricity generation, and 63 per cent of thermal autogeneration.
Electricity fuel use, generation and supply (Tables 5.3 & 5.6)

5.17 Whilst generation was stable, fuel used in 2016 fell 6.2 per cent, as the generation mix shifted from coal to the more thermally efficient gas-fired stations, from 68 million tonnes of oil equivalent (mtoe) to 64 mtoe. Coal use dropped 62 per cent to 7 mtoe and gas use rose 39 per cent to 25 mtoe (Table 5.3).

5.18 Including 3 TWh of pumped storage, the United Kingdom generated 339 TWh of electricity in 2016. UK generation has been flat since 2014. Major power producers (MPPs, companies whose main business is generating electricity as defined in paragraph 5.63) accounted for 86 per cent of generation with the remaining 14 per cent supplied by other generators, including autogenerators. Generation by MPPs was down 1.0 per cent in 2016 compared to the previous year, while generation by other generators was 8 per cent up over the same period, from 43 TWh to 46 TWh (Table 5.6).

5.19 2016 saw a big shift in the mix of fuels for electricity generation as coal was replaced by gas. Coal-fired electricity generation more than halved (-60 per cent) compared to 2015, falling by 45 TWh to 31 TWh. Gas generation increased by 43 TWh to 143 TWh (+44 per cent) in 2016 compared to the previous year. The main driver for the switch was an increase in the carbon price floor in April 2015, from £9 per tonne of CO₂ to £18 per tonne of CO₂. Since coal generation produces more than double the carbon dioxide per GWh of electricity supplied compared to gas, this made generation from coal more expensive than gas. Therefore the coal-fired plants tended to reserve generation for periods of highest demand. Additionally, two large coal power plants closed in March 2016, reducing coal-fired capacity.

5.20 Nuclear generation rose 2 per cent from 70 TWh to 72 TWh in 2016 as nuclear plants had fewer planned and unplanned outages than in 2015.

5.21 Renewable generation, including wind, solar and biomass, was stable compared to the previous year, at 83 TWh in 2016. Less favourable weather conditions for hydro, wind and solar (lower wind speeds, reduced rainfall and fewer sun hours compared to 2015’s record year) were mitigated by the addition of new generation sites which increased overall wind and solar capacity. Overall wind and solar generation remained constant at 48 TWh. Natural flow hydro generation fell by 14 per cent, from the record 6.3 TWh in 2015 to 5.4 TWh in 2016 due to lower rainfall levels in the catchment areas. Over the same period, generation from bio-energy (including biodegradable wastes) rose 3 per cent to 30 TWh, due to the conversion of third unit at Drax from coal to high-range co-firing (85% to <100% biomass) during 2015. More information on renewable electricity can be found in Chapter 6.

5.22 Not all electricity produced by generators is available for use as plants require a portion for their own works. Deducting stations’ own use, in 2016 gross electricity supplied was 324 TWh, 0.6 per cent higher than in 2015 (Table 5.6).

5.23 Chart 5.3 shows the share of 2016 generation by fuel, on an output basis (i.e. the percentage of electricity generated by the fuel), compared with 2015. Further information on this and the alternative input basis of comparing fuel use can be found in paragraph 5.71.

5.24 Shares of generation shifted significantly from coal to gas. Coal’s share fell 13 percentage points from 22 per cent in 2015 to 9 per cent in 2016. The share was taken by gas which rose 13 percentage points from 29 per cent to 42 percent. Renewables’ share of generation was broadly stable at 24.5 per cent, close to 2015’s record high of 24.6 per cent, as increased capacity mitigated the less favourable weather conditions. Nuclear’s share was stable at 21 per cent.

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3 Renewables includes wind, natural flow hydro, solar, wave, tidal and bioenergy (including co-firing).
4 Including generation from wave and tidal.
5 For consistency with the Renewables chapter (Chapter 6), non-biodegradable wastes (previously included in thermal renewables / bio-energy) have been moved to the ‘other fuels’ category for 2007 onwards for autogeneration and for 2013 onwards for MPPs. Prior to this, they remain in thermal renewables.
A historical series of fuel used in generation on a consistent, energy supplied, fuel input basis is available at Table 5.1.1 on the BEIS section of the GOV.UK website and accessible from the Digest of UK Energy Statistics home page: www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes.

**Plant capacity (Tables 5.7, 5.8 and 5.9)**

Electricity generation capacity is the maximum power available to the UK at any one time. Capacity is provided by Major Power Producers (MPPs, companies whose main business is the generation of electricity) and other generators including non-MPP renewables. In this section, wind, small scale hydro and solar PV capacity is de-rated to account for intermittency, to enable direct comparison with conventional fuels which are less dependent on the weather (Table 5.7).

In 2016, total capacity of all generators was 78,279 MW, down 3.4 per cent from the 81,026 MW installed at the end of 2015. MPPs fell by 3,548 MW, from 71,928 MW to 68,380 MW. This was mostly due to the closure of two coal-fired power plants - Ferrybridge C (in Yorkshire) and Longannet (in Scotland). Some of this reduction in capacity was offset by the increase in wind and solar capacity (de-rated, see paragraph 5.77). Wind capacity increased by 818 MW and solar capacity by 402 MW in 2016. The past six years have seen the closure, capacity reduction, full/partial mothballing or conversion to biomass of several large power stations. These are summarised in table 5C below.

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6 From 2006 onwards, MPP capacities are measured in Transmission Entry Capacity (TEC) terms, rather than Declared Net Capacity (DNC). The effect of this change has been to increase the capacity of MPPs by about 2,000 MW in total. A full definition of TEC and DNC is given in paragraph 5.76. Wind, small scale hydro, and solar photovoltaic DNC is de-rated to take into account intermittency. Renewables installed capacity figures are given in table 6.4.
Table 5C: Major Power Producers capacity closed, converted or reduced (as at end of May 2017), since end-2010

<table>
<thead>
<tr>
<th>Site</th>
<th>Fuel</th>
<th>Status</th>
<th>Previous Capacity (MW)</th>
<th>New Capacity (MW)</th>
<th>Year of closure, capacity reduction or conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fife</td>
<td>CCGT</td>
<td>Closed</td>
<td>123</td>
<td>0</td>
<td>2011</td>
</tr>
<tr>
<td>Derwent</td>
<td>CCGT-CHP</td>
<td>Closed</td>
<td>228</td>
<td>0</td>
<td>2012</td>
</tr>
<tr>
<td>Shotton</td>
<td>CCGT-CHP</td>
<td>Closed</td>
<td>210</td>
<td>0</td>
<td>2012</td>
</tr>
<tr>
<td>Kingsnorth A</td>
<td>Coal/Oil</td>
<td>Closed</td>
<td>1,940</td>
<td>0</td>
<td>2012</td>
</tr>
<tr>
<td>Grain A</td>
<td>Oil</td>
<td>Closed</td>
<td>1,300</td>
<td>0</td>
<td>2012</td>
</tr>
<tr>
<td>Oldbury</td>
<td>Nuclear</td>
<td>Closed</td>
<td>434</td>
<td>0</td>
<td>2012</td>
</tr>
<tr>
<td>Wylfa (Reactor 1)</td>
<td>Nuclear</td>
<td>Partially Closed</td>
<td>980</td>
<td>490</td>
<td>2012</td>
</tr>
<tr>
<td>Keadey</td>
<td>CCGT</td>
<td>Mothballed</td>
<td>749</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Kings Lynn</td>
<td>CCGT</td>
<td>Mothballed</td>
<td>340</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Roosecote</td>
<td>CCGT</td>
<td>Mothballed</td>
<td>229</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Cockenzie</td>
<td>Coal</td>
<td>Closed</td>
<td>1,152</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Drax</td>
<td>Coal</td>
<td>Partially Converted</td>
<td>3,870</td>
<td>3,225</td>
<td>2013</td>
</tr>
<tr>
<td>Drax</td>
<td>Biomass</td>
<td>Partially Converted</td>
<td>0</td>
<td>645</td>
<td>2013</td>
</tr>
<tr>
<td>Ironbridge</td>
<td>Coal</td>
<td>Converted</td>
<td>940</td>
<td>360</td>
<td>2013</td>
</tr>
<tr>
<td>Tilbury B</td>
<td>Coal</td>
<td>Closed</td>
<td>750</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Didcot A</td>
<td>Coal/Gas</td>
<td>Closed</td>
<td>1,958</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Fawley</td>
<td>Oil</td>
<td>Closed</td>
<td>1,036</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Teeside</td>
<td>OCGT</td>
<td>Closed</td>
<td>45</td>
<td>0</td>
<td>2013</td>
</tr>
<tr>
<td>Ferrybridge C</td>
<td>Coal</td>
<td>Partially Closed</td>
<td>1,960</td>
<td>980</td>
<td>2014</td>
</tr>
<tr>
<td>Drax</td>
<td>Coal</td>
<td>Partially Converted</td>
<td>3,225</td>
<td>2,580</td>
<td>2014</td>
</tr>
<tr>
<td>Drax</td>
<td>Biomass</td>
<td>Partially Converted</td>
<td>645</td>
<td>1,290</td>
<td>2014</td>
</tr>
<tr>
<td>Uskmouth</td>
<td>Coal</td>
<td>Mothballed</td>
<td>363</td>
<td>0</td>
<td>2014</td>
</tr>
<tr>
<td>Barking</td>
<td>CCGT</td>
<td>Closed</td>
<td>1,000</td>
<td>0</td>
<td>2014</td>
</tr>
<tr>
<td>Littlebrook D</td>
<td>Oil</td>
<td>Closed</td>
<td>1,370</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Drax</td>
<td>Coal</td>
<td>Partially Converted</td>
<td>2,580</td>
<td>1,935</td>
<td>2015</td>
</tr>
<tr>
<td>Drax</td>
<td>Biomass</td>
<td>Partially Converted</td>
<td>1,290</td>
<td>1,935</td>
<td>2015</td>
</tr>
<tr>
<td>Ironbridge</td>
<td>Biomass</td>
<td>Closed</td>
<td>360</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Killingholme A</td>
<td>CCGT</td>
<td>SBR</td>
<td>665</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Killingholme B</td>
<td>CCGT</td>
<td>SBR</td>
<td>900</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Lynemouth</td>
<td>Coal</td>
<td>Mothballed</td>
<td>420</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Wylfa (Reactor 2)</td>
<td>Nuclear</td>
<td>Closed</td>
<td>490</td>
<td>0</td>
<td>2015</td>
</tr>
<tr>
<td>Ferrybridge C</td>
<td>Coal</td>
<td>Closed</td>
<td>980</td>
<td>0</td>
<td>2016</td>
</tr>
<tr>
<td>Longannet</td>
<td>Coal</td>
<td>Closed</td>
<td>2,260</td>
<td>0</td>
<td>2016</td>
</tr>
</tbody>
</table>

1. Reactor 2 with capacity of 217 MW closed on 30 June 2011, reactor 1 with capacity of 217 MW closed on 29 February 2012.
2. Reactor 1 closed on 30 April 2012, reactor 2 closed on 31 December 2015 (both with a capacity of 490 MW).
3. Partly converted to biomass. One unit (645 MW) converted to biomass in 2013, a second unit (also 645 MW) converted to biomass in 2014 and a third unit (also 645 MW) converted to high-range co-firing (85% to <100% biomass) in 2015. Overall capacity remains at 3,870 MW (coal 1,935 MW, biomass 1,935 MW).
4. Converted from coal to dedicated biomass in 2013 (at 900 MW), before reducing to 360 MW in April 2014.
5. Converted from coal at 1,063 MW capacity to dedicated biomass at 750 MW capacity in 2011 before closing in 2013.
6. Reduced capacity from 1,875 MW (CCGT 1,830 MW / OCGT 45 MW) to 45 MW (OCGT) in 2011 before closing in 2013.
7. Two units (980 MW) closed in April 2014 and the second unit (980 MW) closed in March 2016.
8. One unit (120 MW) closed in April 2013, with the remaining two closing in April 2014. Two units reopened in March 2015, raising capacity to 230 MW.
9. Station placed on Supplemental Balancing Reserve – the station is closed but will be available in times of need, e.g. during winter periods when electricity demand is high.
Since 2010, Major Power Producers plant closures and an increase in renewable capacity saw the MPP’s proportion of total generating capacity steadily fall from 92 per cent in 2010 to 87 per cent in 2016. The capacity of other generators increased correspondingly, from 8 per cent to 13 per cent over the period. From 2015 to 2016 the capacity of other generators rose by 801 MW (8.8 per cent), with a 502 MW increase in capacity from renewables other than hydro and wind, a 290 MW increase in capacity from solar and a 218 MW increase in wind capacity. This was partially offset by a net 156 MW decrease in Combined Cycle Gas Turbine (CCGT) stations and a 73 MW decrease in conventional thermal steam. A breakdown of the capacity of all generating plants at the end of December each year from 2000 to 2016 is shown in Chart 5.4.

**Chart 5.4: Generating capacity of all power producers 2000-2016**

1. ‘Conventional steam’ includes a small proportion of non-CCGT plants, gas turbines and plants that can be fuelled by a combination of gas, coal and oil.
2. ‘Hydro’ includes natural flow and pumped storage.
3. ‘Other renewables’ includes biofuels.
4. Wind included from 2007

In 2016, 85 per cent of the generating capacity in the UK owned by MPPs was in England and Wales, 12 per cent was in Scotland and 3.7 per cent in Northern Ireland. Of the net decrease in UK MPP capacity of 3,548 MW between 2015 and 2016, there was a 1,529 MW fall in England and Wales and a 2,046 MW fall in Scotland. The capacity in Northern Ireland increased by 27 MW between 2015 and 2016 (Table 5.8).

Non-MPP generators include autogenerators, businesses that generate their own electricity and may export surplus to the grid, and microgeneration by the domestic and commercial sectors. In 2016, 71 per cent of capacity was in the commercial and domestic sectors, a 7.2 percentage points increase on a year earlier. By industry, the oil and gas sector and chemicals sector had 9 and 7 per cent of capacity respectively, while engineering and other metal trades had a 1.7 per cent share. Paper, printing and publishing and food, drink and tobacco had a combined share of 9 per cent (Table 5.9).

In Table 5.9, data for the generating capacity for generators other than MPPs are shown according to the industrial classification of the generator. For CHP, schemes are classified according to the sector that receives the majority of the heat (as opposed to the sector in which the CHP operator was considered to operate).

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7 Includes solar photovoltaic capacity installed under the Feed in Tariff (FiT) scheme. For further information on FiTs, see Chapter 6.
8 The total capacity of ‘Other Generators’ fell in 2007 as, from this point, the capacity of major wind farm operators are included under MPPs (see paragraph 5.53). In 2008, Shotton CHP plant was re-classified as a MPP as the electricity generated is now exported to the grid rather than for use in the nearby paper mill. This change in classification led to a fall in capacity in the paper, printing and publishing sector.
Plant loads, demand and efficiency (Table 5.10)

5.32 The maximum load (demand) in the UK during the winter of 2016/2017 was 52,909 MW, which occurred on 26 January 2017, in the half-hour ending 18:00; this was 0.3 per cent higher than the previous winter’s maximum (on 18 January 2016). This occurred at the time of maximum demand in Great Britain (51,169 MW); at this time, Northern Ireland had a load of 1,740 MW. In Northern Ireland, the maximum load occurred on 5 December 2016 at the period ending 17:30 (1,740 MW), which was 3.1 per cent above that of the previous winter.10

5.33 Maximum demand in 2016/2017 was 77 per cent of the UK capacity of major power producers (as shown in Table 5.7) as measured at the end of December 2016, a 4 percentage point increase on 2015/2016.

5.34 In Great Britain, maximum demand in 2016/2017 was 78 per cent of the England, Wales and Scotland capacity of MPPs (Table 5.8). For Northern Ireland, the proportion was 68 per cent (65 per cent in 2015/16). These percentages do not include the capacities available via the interconnectors with neighbouring grid systems nor demand for electricity via these interconnectors.

5.35 Plant load factors measure how intensively each type of plant has been used. The load factor of nuclear stations in 2016 at 78.4 per cent was 3.3 percentage points higher than in 2015, and the highest since 80.1 per cent in 1998 as there were fewer planned and unplanned nuclear station outages compared to the previous two years. The CCCT load factor increased to 48.8 per cent, up from 31.7 per cent in the previous year as gas generation replaced coal. The load factor for coal fired power stations fell from 39.3 per cent in 2015 to a record low of 16.5 per cent in 2016.

5.36 Load factors for natural flow hydro and wind (as well as other renewables) can be found in table 6.5. Weather conditions were not as favourable as in 2015, with lower wind speeds and reduced sun hours. This saw the onshore wind load factor (on an unchanged configuration basis) fall from the record 29.4 per cent in 2015 to 24.2 per cent in 2016, and offshore wind load factor fall from 39.7 per cent to 36.7 per cent in 2016. The overall wind load factor (on an unchanged configuration basis) was 28.8 per cent, down from the record 33.3 per cent in 2015. Rainfall (in the main hydro areas) was also lower (20 per cent down in 2016 compared to 2015), leading to a decrease in the hydro load factor (on an unchanged configuration basis) of 5.5 percentage points, from 39.5 per cent to a 33.9 per cent in 2016.12 Pumped storage use is less affected by the weather and the load factor trended downwards from 2008 to 2015, as lower peak time demand for electricity and lower prices deterred its use. In 2016, the load factor rose by 0.9 percentage points from 2015 to 12.3 per cent.

5.37 Thermal efficiency measures the efficiency with which the heat energy in fuel is converted into electrical energy. Generally, nuclear efficiency has remained between 38 and 40 per cent over the last decade, with a rise of 0.9 percentage points from 2015 to 40 per cent in 2016. The efficiencies presented here are calculated using gross calorific values to obtain the energy content of the fuel inputs.13

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9 Maximum demand figures cover the winter period ending the following March. With the advent of the British Electricity Trading and Transmission Arrangements (BETTA) (see paragraph 5.53), England, Wales and Scotland are covered by a single network and a single maximum load is shown for Great Britain for 2006 to 2016.
10 In Great Britain the highest ever load met was 60,118 MW on 10 December 2002.
11 The load factors presented in table 5.10 use transmission entry capacity (as presented in table 5.7). For hydro and wind, this has been de-rated for intermittency, so is not suitable for calculating load factors. The installed capacity measure used in Chapter 6 has not been de-rated.
12 For renewables load factors, including the unchanged configuration and standard (average beginning and end of year) measures, see table 6.5
13 For more information on gross and net calorific values, see paragraph 5.79.
Electricity demand and consumption (Table 5.1)

5.38 Overall electricity demand fell by only 0.5 per cent, from 359 TWh in 2015 to 357 TWh in 2016. Of total demand, 27 TWh (7.5 per cent) was used within the energy industry; 26 TWh (7.4 per cent) was accounted for by losses, and 304 TWh (85 per cent) was final consumption, which was broadly similar to 2014 and 2015 and remaining near its lowest level in a series since 1995. Electricity demand broadly equals supply, although for a number of reasons there is a small difference which is termed the statistical difference\(^{14}\).

5.39 Temperatures influence the actual level of consumption, especially in the winter months, as customers adjust heating levels in their homes and businesses. The average temperature for the winter months (covering December to February) in 2015-16 was 1.9 degrees warmer than the same period a year earlier as December 2015 was unusually warm. In 2016, the daily average temperature was similar to 2015 while the average temperature during the first six months of 2016 was 0.3 degrees warmer than in 2015.

5.40 The average temperature in 2016 was similar to the previous year and domestic consumption was also broadly stable at 108 TWh (+0.2 per cent rise). Domestic consumption has generally declined each year from its peak of 126 TWh in 2005, on account of milder winters and continuing energy efficiency improvements. Commercial sector consumption in 2016 rose by 0.4 per cent, to 75 TWh. Agriculture consumption rose by 7.4 per cent, while public administration consumption rose by 2.4 per cent.

Chart 5.5: Final consumption of electricity by major sector, 2000-2016

5.41 Industrial consumption has fallen 20 per cent since 2000. The trend continued in 2016 with a slight decrease of 1.2 per cent compared to 2015, from 92.9 TWh to 91.8 TWh. Iron and steel fell by 23 per cent as SSI steelworks at Redcar closed in mid-September 2015, while the other sectors across the industrial sector fell by 0.3 per cent.

5.42 Consumption in the transport sector rose by 3.4 per cent in 2016, to 4.7 TWh. Of this total electricity consumption in the transport sector, 97 per cent came from rail with the rest from road which increased by 33 per cent to 129 GWh in 2016 as the number of electric vehicles increased from 29,000 to 39,000\(^{15}\). The number of electric vehicles has nearly doubled since 2014.

\(^{14}\) Further explanations of the statistical difference can be found in paragraph 5.87 and in paragraph A.19 of DUKES annex A.

Industrial consumption accounted for 26 per cent of total demand for electricity, less than the share of consumption by households (30 per cent), with transport and the services sector accounting for 29 per cent. Within the industrial sector, the three largest specified consuming industries are chemicals, food and paper, which together account for 40 per cent of industrial consumption. Taken together, the engineering industries and vehicles accounted for a further 18 per cent of industrial consumption of electricity. The iron and steel sector is also a substantial user of electricity but part of its consumption is included against blast furnaces and coke ovens under energy industry uses. A note on the estimates included within these figures can be found in paragraphs 5.83 to 5.86. Chart 5.6 shows the total demand for electricity in 2016, by final consumer.

Chart 5.6: Electricity demand by sector 2016

Consumption by the energy industries fell by 4.5 per cent. The bulk of the drop was due to a 8.3 per cent reduction in the amount of electricity used in generation, which accounted for 57 per cent of the energy industries’ total use of electricity in 2016. The coal extraction and manufacture and blast furnace industries also saw falls, of 11.6 per cent and 39 per cent respectively, reflecting the decline in production in the steel and coke industries. Additionally, 15 per cent of energy industry use is accounted for by pumping at pumped storage stations (see ‘pumped storage’ line in Table 5.1), while petroleum refineries are also significant consumers with 17 per cent of energy industry use. Energy industry use as a proportion of total demand was 7.5 per cent in 2016.

Losses as a proportion of electricity demand in 2016, at 7.4 per cent, were down by 0.2 percentage points on 2015 (7.6 per cent). Losses comprise three components:

- transmission losses (7.4 TWh) from the high voltage transmission system, which represented about 28 per cent of the losses figure in 2016;
- distribution losses (19 TWh), which occur between the gateways to the public supply system’s network and the customers’ meters, and accounted for about 72 per cent of losses; and
- theft or meter fraud (just under 1.0 TWh, around 4 per cent).

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16 See paragraph 5.75 for further information on the calculation of losses.
Power stations in the United Kingdom (Tables 5.11 and 5.12)

5.45 The total installed capacity of major UK power stations was 79,815 MW\(^{17}\) at the end of May 2017. Table 5.11 is a database of UK capacity with details of these Major Power Producers (MPPs) as well as the four interconnectors allowing trade with Europe, and an aggregate of other generating stations using renewable sources and smaller (<1 MW) Combined Heat and Power (CHP) plants.

5.46 Table 7.10 shows CHP schemes of 1 MW and over for which the information is publicly available. Total power output of these stations is given (electricity plus heat), not just that which is classed as good quality CHP under the CHP Quality Assurance programme (CHPQA, see Chapter 7), since CHPQA information for individual sites is not publicly available.

5.47 Table 5.12 shows capacity of the transmission and distribution networks for Great Britain, Northern Ireland and the United Kingdom as a whole. Transmission network connected capacity for the UK as a whole has reduced each year since 2012 due to closures and conversions of coal, oil and gas plants. These closures have been slightly offset by the increase in renewables capacity, in particular onshore wind which increased by 10 per cent in 2016.

5.48 The capacity of the distribution network has increased each year since 2011 for Great Britain and Northern Ireland, with capacity in 2016 in each around double that of 2011, driven by increasing quantities of embedded solar and wind. In 2016, distribution-connected capacity in Great Britain increased by 13 per cent (3.1 GW) on 2015, with 2.3 GW of this increase attributable to solar and 1.0 GW to wind. In 2016, total installed capacity across all networks in the UK was 98.5 GW, up 2.1 per cent on 2015. Of all capacity in Great Britain, 71 per cent was estimated to have been connected to the transmission network in 2016, and 68 per cent in Northern Ireland. This was down from 74 per cent and 72 per cent respectively, in 2015.

Carbon dioxide emissions from power stations

5.49 It is estimated that carbon dioxide emissions from power stations accounted for 21 per cent of the UK’s total carbon dioxide emissions in 2016. Emissions vary by type of fuel used to generate the electricity and emissions estimates for all electricity generation for 2014 to 2016 are shown in Table 5D below.

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Emissions (tonnes of carbon dioxide per GWh electricity supplied)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Coal</td>
<td>903</td>
</tr>
<tr>
<td>Gas</td>
<td>386</td>
</tr>
<tr>
<td>All fossil fuels</td>
<td>651</td>
</tr>
<tr>
<td>All fuels (including nuclear and renewables)</td>
<td>399</td>
</tr>
</tbody>
</table>

1. The carbon intensity figures presented in Table 5D are different to those produced for the Greenhouse Gas Inventory (GHGI). The differences arise due to slightly differing methodologies, including geographical coverage and treatment of autogenerators but principally because the GHGI presents figures based on a 5-year rolling average whereas those in Table 5D are presented as single year figures.

2. The numerator includes emissions from power stations, with an estimate added for auto-generation. The denominator (electricity supplied by all generators) used in these calculations can be found in table 5.6, with the figure for All fuels in 2016 being 320,110 GWh.

3. The 2016 emissions figures are provisional.

5.50 The emissions per GWh electricity supplied from coal increased in 2016 due to the drop in coal generation. Shorter cycles of operation can reduce emissions efficiency for coal plants.

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\(^{17}\) The total installed capacity for stations listed in table 5.11 differs from the total in table 5.7, as the latter is on a Transmission Entry Capacity basis, and taken as at the end of 2016. See paragraph 5.76 for more information on the measures of capacity.
**Sub-national electricity data**

5.51 The collection of data relating to regional and local consumption of electricity began in 2004. For details of the availability of local level electricity (and gas) data see Chapter 4, paragraph 4.17 and the sub-national electricity statistics pages on the BEIS section of the GOV.UK website at: [www.gov.uk/government/collections/sub-national-electricity-consumption-data](http://www.gov.uk/government/collections/sub-national-electricity-consumption-data). Data repeated here in previous editions of this publication as Table 5E are available via that link. The regional data will not sum exactly to the figures given in table 5.4 as the regional data are not based exactly on a calendar year and are obtained via different data sources.

**Electricity price and market penetration**

5.52 Electricity price and market penetration data are published by BEIS in the Quarterly Energy Prices publication, available at [www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-price-statistics](http://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-price-statistics). Data on Domestic electricity market penetration, repeated here in previous editions of this publication as Table 5F, are available in table 2.4.1 of Quarterly Energy Prices.
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<td>Commodity balances for UK electricity</td>
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<td>Commodity balances for electricity (separates out the public distribution system for electricity from the electricity generated and consumed by autogenerators)</td>
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<td>Fuels used to generate electricity in the UK (by MPP/other and fuel)</td>
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<td>5.5</td>
<td>Electricity supply, consumption and sales (links between DUKES tables and long term trends data)</td>
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| 5B    | Major Power Producers Capacity closed, converted or reduced | 2010-2016 |
| 5C    | Combined Heat & Power (CHP) generation & capacity (see chapter 7 for more) | 2016 |
| 5D    | Estimated carbon dioxide emissions by electricity supplied | 2014-2016 |


### Structure of the UK electricity industry

5.53 Up to March 2005 the electricity industries of Scotland, Northern Ireland and England and Wales operated independently although interconnectors joined all three grid systems together. From April 2005, under the British Electricity Trading and Transmission Arrangements (BETTA) introduced in the Energy Act 2004, the electricity systems of England and Wales and Scotland have been integrated. The paragraphs below describe the position up to March 2005 but indicate the further changes that have been made under BETTA.

5.54 From the period immediately after privatisation of the industry in 1990, when there were seven generating companies in England and Wales and 12 Regional Electricity Companies distributing and supplying electricity to customers in their designated area, there were many structural and business changes and residual flotations. Competition developed in mainland Britain as follows:

(a) From 1 April 1990, customers with peak loads of more than 1 MW (about 45 per cent of the non-domestic market) were able to choose their supplier;

(b) From 1 April 1994, customers with peak loads of more than 100 kW were able to choose their supplier;

(c) Between September 1998 and May 1999, the remaining part of the electricity market (i.e. below 100 kW peak load) was opened up to competition. Paragraph 5.52 and Table 5E give more details of the opening up of the domestic gas and electricity markets to competition.

5.55 Since the late 1990s, there have been commercial moves toward vertical re-integration between generating, electricity distribution and/or electricity supply businesses. Those mergers that have taken place were approved by the relevant competition authority. Initially the National Grid Company was owned by the 12 privatised regional electricity companies, but was floated on the Stock Exchange in 1995. National Grid (and its predecessors since 1990) has owned and operated the high voltage...
transmission system in England and Wales linking generators to distributors and some large customers. The transmission system is linked to continental Europe via an interconnector to France under the English Channel, and since 1 April 2011, to the Netherlands under the North Sea (see Table 5.10). Up to March 2005, the Scottish transmission system was regarded as being linked to that in England and Wales by two interconnectors but under BETTA National Grid also took on responsibility for operating the system in Scotland, to form a single Great Britain transmission network.

5.56 In Scotland, until the end of March 2005, the two main companies, Scottish Power and Scottish and Southern Energy, covered the full range of electricity provision. They operated generation, transmission, distribution and supply businesses. In addition, there were a number of small independent hydro stations and some independent generators operating fossil-fuelled stations, which sold their output to Scottish Power and Scottish and Southern Energy.

5.57 The electricity supply industry in Northern Ireland has been in private ownership since 1993 with Northern Ireland Electricity plc (NIE) (part of the Viridian Group) responsible for power procurement, transmission, distribution and supply in the Province. Generation is provided by three private sector companies who own the four major power stations. In December 2001, the link between Northern Ireland’s grid and that of Scotland was inaugurated. A link between the Northern Ireland grid and that of the Irish Republic was re-established in 1996, along which electricity is both imported and exported. However, on 1 November 2007 the two grids were fully integrated and a joint body SEMO (Single Electricity Market Operator) was set up by SONI (System Operator for Northern Ireland) and Eirgrid from the Republic to oversee the new single market. In July 2012, an interconnector between the Irish Republic and Wales began operations.

5.58 In March 2001, the means of trading electricity changed with the introduction in England and Wales of the New Electricity Trading Arrangements (NETA). This replaced the Electricity Pool of England and Wales. These arrangements were based on bi-lateral trading between generators, suppliers, traders and customers. They were designed to be more efficient and provide greater choice for market participants, whilst maintaining the operation of a secure and reliable electricity system. The system included forwards and futures markets, a balancing mechanism to enable National Grid, as system operator, to balance the system, and a settlement process. In April 2005 this system was extended to Scotland under BETTA.

Technical notes and definitions

5.59 These notes and definitions are in addition to the technical notes and definitions covering all fuels and energy as a whole in Chapter 1. For notes on the commodity balances and definitions of the terms used in the row headings see Annex A, paragraphs A.7 to A.42. While the data in the PDF copy of this Digest cover only the most recent five years, these notes also cover data for earlier years that are available on the BEIS energy statistics web site.

Electricity generation from renewable sources

5.60 Figures on electricity generation from renewable energy sources are included in the tables in this section. Further detailed information on renewable energy sources is included in Chapter 6.

Combined heat and power

5.61 Electricity generated from combined heat and power (CHP) schemes, CHP generating capacities and fuel used for electricity generation are included in the tables in this chapter. However, more detailed analyses of CHP schemes are set out in Chapter 7.

Generating companies

5.62 Following the restructuring of the electricity supply industry in 1990, the term "Major generating companies" was introduced into the electricity tables to describe the activities of the former nationalised industries and distinguish them from those of autogenerators and new independent companies set up to generate electricity. The activities of the autogenerators and the independent companies were classified under the heading "Other generating companies". In the 1994 Digest, a new terminology was adopted to encompass the new independent producers, who were then
beginning to make a significant contribution to electricity supply. Under this terminology, all companies whose prime purpose is the generation of electricity are included under the heading “Major power producers” (or MPPs). The term “Other generators” (“Autogenerators” in the balance tables) is restricted to companies who produce electricity as part of their manufacturing or other commercial activities, but whose main business is not electricity generation. “Other generators” also covers generation by energy services companies at power stations on an industrial or commercial site where the main purpose is the supply of electricity to that site, even if the energy service company is a subsidiary of a MPP. Additionally (and particularly since 2010), this category includes generation from the domestic sector.

5.63 The definition of MPPs was amended in 2008 to include major wind farm companies, but this change only applies to data for 2007 onwards. Most generators of electricity from renewable sources (apart from large scale hydro, large scale wind, large scale solar and some biofuels) are also included as “Other generators” because of their comparatively small size, even though their main activity is electricity generation.

5.64 Major wind farm operators have been included under MPPs, for 2007 onwards, in the monthly, quarterly, and annual tables of electricity statistics produced by BEIS. Until then, all generation using wind turbines was excluded from the MPP classification. This was because originally such generation was by small independent companies and collecting data on a monthly basis was prohibitively costly and unnecessarily burdensome on such companies. Similarly, major solar site operators have been included under MPPs for the first time in 2015.

5.65 Generation from wind has now become more concentrated in the hands of larger companies and BEIS has extended its system of monthly data collection to cover the largest wind power companies and, from 2015, solar. The intention is that, in future, any company whose wind generation capacity increases to above 50 MW will be asked to provide monthly data for generation from wind and thus be included in the list of MPPs.

5.66 The inclusion of major wind farm and solar site operators under MPPs affects the majority of the electricity tables in DUKES, with figures for MPPs and the public distribution system increased, and other generators reduced for 2007 onwards due to wind and from 2015 onwards due to solar.

5.67 Major power producers at the end of 2016 were:


5.68 Additionally, the following major wind farm companies are included, beginning with data for 2007:


5.69 Additionally, the following major solar companies are included, beginning with data for 2016:

Types of station
5.70 The various types of station identified in the tables of this chapter are as follows:

Conventional steam stations are stations that generate electricity by burning fossil fuels to convert water into steam, which then powers steam turbines.

Nuclear stations are also steam stations but the heat needed to produce the steam comes from nuclear fission.

Gas turbines use pressurised combustion gases from fuel burned in one or more combustion chambers to turn a series of bladed fan wheels and rotate the shaft on which they are mounted. This then drives the generator. The fuel burnt is usually natural gas or gas oil.

Combined cycle gas turbine (CCGT) stations combine in the same plant gas turbines and steam turbines connected to one or more electrical generators. This enables electricity to be produced at higher efficiencies than is otherwise possible when either gas or steam turbines are used in isolation. The gas turbine (usually fuelled by natural gas or oil) produces mechanical power (to drive the generator) and waste heat. The hot exhaust gases (waste heat) are fed to a boiler, where steam is raised at pressure to drive a conventional steam turbine that is also connected to an electrical generator.

Natural flow hydro-electric stations use natural water flows to turn turbines.

Pumped storage hydro-electric stations use electricity to pump water into a high level reservoir. This water is then released to generate electricity at peak times. Where the reservoir is open, the stations also generate some natural flow electricity; this is included with natural flow generation. As electricity is used in the pumping process, pumped storage stations are net consumers of electricity.

Wind farms use wind flows to turn turbines.

Other stations include stations burning fuels such as landfill gas, sewage sludge, biomass and waste.

Electricity supplied – input and output basis
5.71 The energy supplied basis defines the primary input (in million tonnes of oil equivalent, Mtoe) needed to produce 1 TWh of hydro, wind, or imported electricity as:

\[ \text{Electricity generated (TWh)} \times 0.085985 \]

The primary input (in Mtoe) needed to produce 1 TWh of nuclear electricity is similarly

\[ \frac{\text{Electricity generated (TWh)}}{\text{Thermal efficiency of nuclear stations}} \times 0.085985 \]

5.72 Figures on fuel use for electricity generation can be compared in two ways. Table 5.3 illustrates one way by using the volumes of fuel input to power stations (after conversion of inputs to an oil equivalent basis), but this takes no account of how efficiently that fuel is converted into electricity. The fuel input basis is the most appropriate to use for analysis of the quantities of particular fuels used in electricity generation (e.g. to determine the additional amount of gas or other fuels required as coal use declines under tighter emissions restrictions). A second way uses the amount of electricity generated and supplied by each fuel. This output basis is appropriate for comparing how much, and what percentage, of electricity generation comes from a particular fuel. It is the most appropriate method to use to examine the dominance of any fuel and for diversity issues. Percentage shares based on fuel outputs reduce the contribution of coal and nuclear, and increase the contribution of gas (by three percentage points in 2016) compared with the fuel input basis. This is because of the higher conversion efficiency of gas.

Public distribution system
5.73 This comprises the grid systems in England and Wales, Scotland and Northern Ireland. In April 2005 the Scotland and England and Wales systems were combined into a single grid.
Sectors used for sales/consumption
5.74 The various sectors used for sales and consumption analyses are standardised across all chapters of the 2016 Digest. For definitions of the sectors see Chapter 1 paragraphs 1.57 to 1.61 and Annex A paragraphs A.31 to A.42.

Losses
5.75 The losses component of electricity demand are calculated as follows:

Transmission losses: electricity lost as a percentage of electricity entering the GB transmission system (as reported by National Grid); this is applied to the electricity available figure in DUKES 5.5 (337,656 GWh in 2016).

Distribution losses: electricity lost in distribution as a percentage of electricity entering the distribution system (as reported by the distribution network operators); this is applied to electricity available less transmission losses.

Theft: a fixed percentage of 0.3 per cent is assumed to be stolen from the distribution network. This is applied to electricity available less transmission losses.

Transmission Entry Capacity, Declared Net Capacity and Installed Capacity
5.76 Transmission Entry Capacity (TEC) is a Connection and Use of System Code term that defines a generator’s maximum allowed export capacity onto the transmission system. In the generating capacity statistics of the 2007 Digest, it replaced Declared Net Capacity (DNC) as the basis of measurement of the capacity of Major Power Producers from 2006. DNC is the maximum power available for export from a power station on a continuous basis minus any power generated or imported by the station from the network to run its own plant. It represents the nominal maximum capability of a generating set to supply electricity to consumers. The maximum rated output of a generator (usually under specific conditions designated by the manufacturer) is referred to as its Installed Capacity. For the nuclear industry, the World Association of Nuclear Operators (WANO) recommends that capacity of its reactors is measured in terms of Reference Unit Power (RUP) and it is the RUP figure that is given as the installed capacity of nuclear stations.

DNC is used to measure the maximum power available from generating stations that use renewable resources. For wind and wave and small scale hydro a factor is applied to declared net capability to take account of the intermittent nature of the energy source (e.g. 0.43 for wind, 0.365 for small scale hydro and 0.17 for solar photovoltaics). Further information on this can be found in paragraph 6.119, and at: www.legislation.gov.uk/uksi/1990/264/made?view=plain

Load factors
5.78 The following definitions are used in Table 5.10:

Maximum load – This is twice the largest number of units supplied in any consecutive thirty minutes commencing or terminating at the hour.

Simultaneous maximum load met – The maximum load on the transmission network at any one time, net of demand met by generation connected to the distribution network. From 2005 (following the introduction of BETTA – see paragraph 5.53) it is measured by the sum of the maximum load met in Great Britain and the load met at the same time in Northern Ireland. Prior to 2005 it was measured by the sum of the maximum load met in England and Wales and the loads met at the same time by companies in other parts of the United Kingdom.

Plant load factor – The average hourly quantity of electricity supplied during the year, expressed as a percentage of the average output capability at the beginning and the end of year.

System load factor – The average hourly quantity of electricity available during the year expressed as a percentage of the maximum demand nearest the end of the year or early the following year.
**Thermal efficiency**

5.79 Thermal efficiency is the efficiency with which heat energy contained in fuel is converted into electrical energy. It is calculated for fossil fuel burning stations by expressing electricity generated as a percentage of the total energy content of the fuel consumed (based on average gross calorific values). For nuclear stations it is calculated using the quantity of heat released as a result of fission of the nuclear fuel inside the reactor. The efficiency of CHP systems is illustrated in Chapter 7, Table 7D. Efficiencies based on gross calorific value of the fuel (sometimes referred to as higher heating values or HHV) are lower than the efficiencies based on net calorific value (or lower heating value LHV). The difference between HHV and LHV is due to the energy associated with the latent heat of the evaporation of water products from the steam cycle which cannot be recovered and put to economic use.

**Period covered**

5.80 Until 2004, figures for the MPPs relate to periods of 52 weeks as listed below (although some data provided by electricity supply companies related to calendar months and were adjusted to the statistical calendar). In 2004, a change was made to a calendar year basis. This change was made in the middle of the year and the data are largely based on information collected monthly. The January to May 2004 data are therefore based on the 21 weeks ended 29 May 2004 and the calendar months June to December 2004, making a total of 361 days. In terms of days, 2004 is therefore 1.1 per cent shorter than 2005:

<table>
<thead>
<tr>
<th>Year</th>
<th>52 weeks ended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>28 December 2003</td>
</tr>
<tr>
<td>2004</td>
<td>21 weeks ended 29 May 2004 and 7 months ended 31 December 2004</td>
</tr>
<tr>
<td>2005 – 2016:</td>
<td>12 months ended 31 December</td>
</tr>
</tbody>
</table>

5.81 Figures for industrial, commercial and transport undertakings relate to calendar years ending on 31 December, except for the iron and steel industry where figures relate to the following 52 or 53 week periods:

<table>
<thead>
<tr>
<th>Year</th>
<th>53 weeks ended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>3 January 2004</td>
</tr>
<tr>
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<td>52 weeks ended</td>
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<td>2004</td>
<td>1 January 2005</td>
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<td>2005</td>
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<td>29 December 2007</td>
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<td>2008</td>
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<td>53 weeks ended</td>
</tr>
<tr>
<td>2009</td>
<td>2 January 2010</td>
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<td></td>
<td>52 weeks ended</td>
</tr>
<tr>
<td>2010</td>
<td>1 January 2011</td>
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<tr>
<td>2011</td>
<td>31 December 2011</td>
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<td>28 December 2013</td>
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<td>2014</td>
<td>27 December 2014</td>
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<td>53 weeks ended</td>
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<td>2015</td>
<td>2 January 2016</td>
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<td>52 weeks ended</td>
</tr>
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<td>2016</td>
<td>31 December 2016</td>
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</tbody>
</table>

**Monthly and quarterly data**

5.82 Monthly and quarterly data on fuel use, electricity generation and supply and electricity availability and consumption are available on the BEIS section of the GOV.UK website at: [www.gov.uk/government/collections/electricity-statistics](http://www.gov.uk/government/collections/electricity-statistics). Monthly data on fuel used in electricity generation by MPPs are given in Monthly Table 5.3 and monthly data on supplies by type of plant and
type of fuel are given in Monthly Table 5.4. Monthly data on availability and consumption of electricity by the main sectors of the economy are given in Monthly Table 5.5. A quarterly commodity balance for electricity is published in BEIS’s quarterly statistical bulletin *Energy Trends* (Quarterly Table 5.2) along with a quarterly table of fuel use for generation, electricity generated, and electricity supplied by all generators (Quarterly Table 5.1). Both these quarterly tables are also available from BEIS’s energy statistics web site. See Annex C for more information about *Energy Trends*.

**Data collection**

5.83 For MPPs, as defined in paragraphs 5.62 to 5.68, the data for the tables in this Digest are obtained from the results of an annual BEIS inquiry, sent to each company, covering generating capacity, fuel use, generation and sales of electricity (where a generator also supplies electricity).

5.84 Similarly, an annual inquiry is sent to licensed suppliers of electricity to establish electricity sales by these companies. Electricity consumption for the iron and steel sector is based on data provided by the Iron and Steel Statistics Bureau (ISSB) rather than electricity suppliers since electricity suppliers tend to over-estimate their sales to this sector by including some companies that use steel rather than manufacture it. The difference between the ISSB and electricity suppliers’ figures has been re-allocated to other sectors. A further means of checking electricity consumption data is now being employed on data for 2006 and subsequent years. A monthly inquiry is sent to electricity distributors, as well as the National Grid, to establish electricity distribution and transmission losses. Copies of the survey questionnaires are available in *electricity statistics: data sources and methodologies*, at: www.gov.uk/government/collections/electricity-statistics.

5.85 A sample of companies that generate electricity mainly for their own use (known as autogenerators or autoproducers – see paragraph 5.62, above) is covered by a quarterly inquiry commissioned by BEIS but carried out by the Office for National Statistics (ONS). Where autogenerators operate a combined heat and power (CHP) plant, this survey is supplemented (on an annual basis) by information from the CHP Quality Assessment scheme (for autogenerators who have registered under the scheme – see Chapter 7 on CHP). There are two areas of autogeneration that are covered by direct data collection by BEIS, mainly because the return contains additional energy information needed by the Department. These are the Iron and Steel industry, and generation on behalf of London Underground.

5.86 In addition to the above sources, some administrative data is used for renewable generation and capacity in the hands of non-major power producers - this includes data from the Renewables Obligation and Feed in Tariff schemes.

**Statistical differences**

5.87 Statistical differences are included in Tables 5.1 and 5.2. These arise because data collected on production and supply do not match exactly with data collected on sales or consumption. One of the reasons for this is that some of the data are based on different calendars as described in paragraphs 5.80 and 5.81, above. Sales data based on calendar years will always have included more electricity consumption than the slightly shorter statistical year of exactly 52 weeks.

5.88 Care should be exercised in interpreting the figures for individual industries in the commodity balance tables. Where companies have moved between suppliers, it has not been possible to ensure consistent classification between and within industry sectors and across years. The breakdown of final consumption includes some estimated data. In 2014, for about five per cent of consumption of electricity supplied by the public distribution system, the sector figures are partially estimated.

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0300 068 5346
## 5.1 Commodity balances

### Electricity

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total electricity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>360,907</td>
<td>355,379</td>
<td>335,213</td>
<td>336,178</td>
</tr>
<tr>
<td>Other sources (1)</td>
<td>2,966</td>
<td>2,904</td>
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<tr>
<td>Imports</td>
<td>13,774</td>
<td>17,533</td>
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<tr>
<td>Exports</td>
<td>-1,910</td>
<td>-3,102</td>
<td>-2,723</td>
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<td>Stock change</td>
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<tr>
<td>Transfers</td>
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<tr>
<td><strong>Total supply</strong></td>
<td>375,737</td>
<td>372,714</td>
<td>358,616</td>
<td>358,855</td>
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<td><strong>Total demand</strong></td>
<td>376,360</td>
<td>373,831</td>
<td>359,682</td>
<td>358,663</td>
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<td><strong>Transformation</strong></td>
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<td><strong>Energy industry use</strong></td>
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<td>570</td>
<td>536</td>
<td>606</td>
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<td>4,873</td>
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<td>Coal extraction and coke manufacture</td>
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<td>873</td>
<td>741</td>
<td>549</td>
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<td>Blast furnaces</td>
<td>369</td>
<td>438</td>
<td>440</td>
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<td>Patent fuel manufacture</td>
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<td>Pumped storage</td>
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<td>3,930</td>
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<td>Other</td>
<td>1,581</td>
<td>1,551</td>
<td>1,429</td>
<td>1,500</td>
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<td><strong>Losses</strong></td>
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<td>27,667</td>
<td>26,514</td>
<td>27,319</td>
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<td><strong>Final consumption</strong></td>
<td>316,272</td>
<td>315,047</td>
<td>332,166</td>
<td>331,246</td>
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<td>Industry</td>
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<td>16,525</td>
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<td>15,610</td>
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<td>Mechanical engineering etc</td>
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<td>7,064</td>
<td>6,912</td>
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<td>Electrical engineering etc</td>
<td>6,189</td>
<td>6,172</td>
<td>5,714</td>
<td>5,992</td>
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<td>5,087</td>
<td>4,831</td>
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<td>Food, beverages etc</td>
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<td>11,083</td>
<td>10,644</td>
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<td>Textiles, leather etc</td>
<td>2,910</td>
<td>2,894</td>
<td>2,721</td>
<td>2,692</td>
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<td>Paper, printing etc</td>
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<td>10,806</td>
<td>10,725</td>
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<td>Other industries</td>
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<td>20,060</td>
<td>20,567</td>
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<td>Construction</td>
<td>1,494</td>
<td>1,464</td>
<td>1,393</td>
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<td>Transport (3)</td>
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<td>4,504</td>
<td>4,516</td>
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<td>Air</td>
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<td>Rail (4)</td>
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<td>4,319</td>
<td>4,437</td>
<td>4,419</td>
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<td>Road (5)</td>
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<td>33</td>
<td>68</td>
<td>97</td>
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<td>Pipelines</td>
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5.1 Commodity balances (continued)

Electricity

<table>
<thead>
<tr>
<th>GWh</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total production (6)</td>
<td>360,907</td>
<td>355,379</td>
<td>335,213</td>
<td>336,178</td>
<td>336,438</td>
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Primary electricity

<table>
<thead>
<tr>
<th>Fuel Type</th>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>70,405</td>
<td>70,607</td>
<td>63,748</td>
<td>70,345</td>
<td>71,726</td>
</tr>
<tr>
<td>Large scale hydro (6)</td>
<td>3,898</td>
<td>3,349</td>
<td>4,333</td>
<td>4,578</td>
<td>3,682</td>
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<tr>
<td>Small scale hydro</td>
<td>272</td>
<td>260</td>
<td>301</td>
<td>328</td>
<td>269</td>
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<tr>
<td>Wind (7)(8)</td>
<td>17,157</td>
<td>23,958</td>
<td>26,762</td>
<td>34,662</td>
<td>32,750</td>
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Other generators

<table>
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<th>Fuel Type</th>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>-</td>
<td>733</td>
<td>678</td>
<td>720</td>
<td>736</td>
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<tr>
<td>Large scale hydro</td>
<td>406</td>
<td>415</td>
<td>533</td>
<td>656</td>
<td>747</td>
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<tr>
<td>Wind, wave and solar photovoltaics (7)(8)</td>
<td>4,048</td>
<td>6,454</td>
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Secondary electricity

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<th>Fuel Type</th>
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<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>70,405</td>
<td>70,607</td>
<td>63,748</td>
<td>70,345</td>
<td>71,726</td>
</tr>
<tr>
<td>Hydro</td>
<td>1,132</td>
<td>745</td>
<td>530</td>
<td>683</td>
<td>555</td>
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<tr>
<td>Gas</td>
<td>86,229</td>
<td>82,891</td>
<td>88,871</td>
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<td>12,698</td>
<td>17,694</td>
<td>17,401</td>
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<tr>
<td>Other</td>
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<td>522</td>
<td>528</td>
<td>689</td>
<td>968</td>
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Other generators

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>2,992</td>
<td>83</td>
<td>72</td>
<td>66</td>
<td>56</td>
</tr>
<tr>
<td>Hydro</td>
<td>1,441</td>
<td>1,321</td>
<td>1,390</td>
<td>1,354</td>
<td>1,285</td>
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<td>Gas</td>
<td>13,940</td>
<td>12,952</td>
<td>12,021</td>
<td>11,415</td>
<td>11,384</td>
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<tr>
<td>Renewables</td>
<td>8,621</td>
<td>8,888</td>
<td>9,921</td>
<td>11,546</td>
<td>12,641</td>
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<tr>
<td>Other</td>
<td>3,401</td>
<td>2,870</td>
<td>3,363</td>
<td>3,950</td>
<td>4,698</td>
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</table>

Primary and secondary production (9)

<table>
<thead>
<tr>
<th>Fuel Type</th>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>70,405</td>
<td>70,607</td>
<td>63,748</td>
<td>70,345</td>
<td>71,726</td>
</tr>
<tr>
<td>Hydro</td>
<td>5,310</td>
<td>4,701</td>
<td>5,888</td>
<td>6,298</td>
<td>5,395</td>
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<td>Wind, wave and solar photovoltaics</td>
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<td>36,016</td>
<td>47,865</td>
<td>47,788</td>
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<td>Coal</td>
<td>143,111</td>
<td>130,258</td>
<td>100,239</td>
<td>75,878</td>
<td>30,711</td>
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<td>Gas</td>
<td>2,573</td>
<td>2,066</td>
<td>1,920</td>
<td>2,037</td>
<td>1,839</td>
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<tr>
<td>Renewables</td>
<td>100,170</td>
<td>95,843</td>
<td>100,892</td>
<td>99,875</td>
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<td>Other</td>
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<td>18,100</td>
<td>22,619</td>
<td>29,240</td>
<td>30,043</td>
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<td>Other</td>
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<td>3,392</td>
<td>3,891</td>
<td>4,639</td>
<td>5,574</td>
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Total production

<table>
<thead>
<tr>
<th>GWh</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total production</td>
<td>360,907</td>
<td>355,379</td>
<td>335,213</td>
<td>336,178</td>
<td>336,438</td>
</tr>
</tbody>
</table>

(1) Pumped storage production.
(2) Total supply minus total demand.
(3) From 2004, non-traction Transport sector consumption is included under 'Transport Services'.
(4) From 2004, this includes light rail and metro systems (eg. London Underground).
(5) Included from 2004.
(6) Excludes pumped storage production.
(7) From 2007, major wind farm companies are included under Major Power Producers, see paragraph 5.63.
(8) From 2015, major solar companies are included under Major Power Producers, see paragraph 5.65.
(9) These figures are the same as the electricity generated figures in Table 5.5 except that they exclude pumped storage production. Table 5.5 shows that electricity used on works is deducted to obtain electricity supplied. It is electricity supplied that is used to produce Chart 5.2 showing each fuel's share of electricity output (see paragraph 5.23).
### 5.2 Commodity balances

#### Public distribution system and other generators

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>336,426</td>
<td>22,190</td>
<td>358,616</td>
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<td><strong>Public distribution system</strong></td>
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<tr>
<td>Other generators</td>
<td>297,938</td>
<td>297,938</td>
<td>293,251</td>
</tr>
<tr>
<td>Total</td>
<td>336,426</td>
<td>22,190</td>
<td>358,616</td>
</tr>
<tr>
<td><strong>Other generators</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>336,426</td>
<td>22,190</td>
<td>358,616</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>351,627</td>
<td>22,190</td>
<td>358,616</td>
</tr>
</tbody>
</table>

#### Statistical difference (2) |

#### Total demand (3) |

#### Total consumed (4) |

#### Total supplied (5) |

#### Total consumption (6) |

#### Industry (7) |

<table>
<thead>
<tr>
<th>Commodity</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron and steel</td>
<td>2,907</td>
<td>820</td>
<td>2,787</td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td>3,721</td>
<td>154</td>
<td>4,419</td>
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<tr>
<td>Mineral products</td>
<td>6,159</td>
<td>104</td>
<td>6,267</td>
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<tr>
<td>Chemicals</td>
<td>13,682</td>
<td>1,614</td>
<td>15,487</td>
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<tr>
<td>Mechanical engineering, etc</td>
<td>6,758</td>
<td>114</td>
<td>6,913</td>
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<td>Electrical engineering, etc</td>
<td>5,708</td>
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<td>5,714</td>
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<td>Vehicles</td>
<td>4,676</td>
<td>154</td>
<td>4,831</td>
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<td>Food, beverages, etc</td>
<td>9,300</td>
<td>1,343</td>
<td>10,644</td>
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<tr>
<td>Tissues, leather, etc</td>
<td>2,714</td>
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<td>2,721</td>
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<td>8,857</td>
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<td>Other industries</td>
<td>18,639</td>
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<td>Rail (4)</td>
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<tr>
<td>Road (5)</td>
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<tr>
<td>Other</td>
<td>196,171</td>
<td>7,105</td>
<td>265,277</td>
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#### Financial difference (6) |

#### Public administration (8) |

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<tr>
<th>Category</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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<tr>
<td>Other</td>
<td>196,171</td>
<td>7,105</td>
<td>265,277</td>
</tr>
</tbody>
</table>

#### General notes

1. Pumped storage production.
2. Total supply minus total demand.
3. From 2004, non-intraction transport sector consumption is included under ‘Transport Services’.
4. From 2004, this includes light rail and metro systems (e.g. London Underground).
6. From 2011, this includes consumption by domestic generators. See paragraph 5.14.
7. Electricity consumed under an off-peak tariff.
8. Sales for public lighting purposes are increasingly covered by wider contracts that cannot distinguish the public lighting element.
### 5.3 Fuel used in generation (1)

<table>
<thead>
<tr>
<th>Major power producers (2)</th>
<th>Original units of measurement</th>
<th>Millions of tonnes of oil equivalent (equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>M tonnes</td>
<td>53.84 49.84 38.22 29.18 12.04</td>
</tr>
<tr>
<td>Oil (3)</td>
<td>GWh</td>
<td>0.30 0.19 0.17 0.17 0.19</td>
</tr>
<tr>
<td>Gas (4)</td>
<td></td>
<td>184,307 174,070 189,695 185,955 271,563</td>
</tr>
</tbody>
</table>

**Other generators (2)**

Transport undertakings:

Gas: 12.88 10.28 9.65 7.17 13.78

Undertakings in industrial and commercial sectors:

- Coal (5): 1.06 0.03 0.02 0.02 0.02
- Oil (4): 0.28 0.30 0.32 0.33 0.32
- Gas (6): 32,236 30,659 27,918r 26,678r 26,514

**Major power producers (2)**

- Coal: 33.67 31.31 24.00 18.33 7.03
- Oil: 0.41 0.24 0.18 0.23 0.22
- Gas: 15.07 15.44 13.85 15.48 23.05
- Nuclear: 15.21 15.44 13.85 15.48 23.05
- Hydro (natural flow): 0.36 0.31 0.40 0.42r 0.34
- Wind: 1.48 2.06r 2.30r 2.86r 2.64
- Solar: - 0.12 0.18
- Other renewables: 2.77 2.22 2.97 3.59 3.67
- Other fuels: 0.18 0.19 0.47r 0.56

**Net imports**: 1.02 1.24r 1.76 1.80r 1.51

**Total major power producers (2)**: 69.75 68.07 61.98 59.29 54.61

Of which: conventional thermal and other stations: 37.56 36.19 29.88 25.85 14.56

combined cycle gas turbine stations: 15.60 14.89 16.09 15.73 22.79

**Other generators (2)**

Transport undertakings:

Gas (6): 0.00 0.00 0.00 0.00r 0.00

Undertakings in industrial and commercial sectors:

- Coal (5): 0.66 0.02 0.01 0.01
- Oil (4): 0.32 0.35 0.37r 0.38r 0.37
- Gas: 2.77 2.64 2.40r 2.29r 2.28
- Hydro (natural flow): 0.10r 0.09r 0.11r 0.12r 0.12
- Wind, wave and solar photovoltaics: 0.35r 0.55r 0.50r 1.14r 1.30
- Other renewables: 3.19r 2.81r 3.14r 3.57r 3.82
- Other fuels: 0.11 1.41 1.62r 1.71r 1.90

**Other renewables (7)**: 3.19 2.81 3.14 3.57 3.82

**Other fuels (8)**: 1.11 1.41 1.62r 1.71r 1.90

**Total other generators (2)**: 8.51r 7.88r 8.45r 9.23r 9.79

**All generating companies**

- Coal (5): 34.33 31.33 24.01 18.34r 7.04
- Oil (3)(4): 0.73 0.59 0.55r 0.61r 0.58
- Gas (6): 18.62 17.70 18.73r 18.28 25.33
- Nuclear: 15.21 15.44 13.85 15.48 15.41
- Hydro (natural flow): 0.46r 0.40r 0.51r 0.54r 0.46
- Wind, wave and solar photovoltaics: 1.82r 2.61 3.10 4.12 4.12
- Other renewables: 4.96r 5.04r 6.11r 7.16r 7.49
- Other fuels (9): 1.11 1.41 1.62r 1.71r 1.90

**Net imports**: 1.02r 1.24r 1.76 1.80r 1.51

**Total all generating companies**: 78.25r 75.77r 70.24r 68.05r 63.84

(1) A monthly update of fuel used in electricity generation by major power producers is given in Table 5.1 of Energy Trends, and a quarterly update of fuel used in electricity generation by all generating companies is given in Table 5.4 of Energy Trends.

(2) See paragraphs 5.62 to 5.69 for information on companies covered.

(3) Includes orimulsion, oil used in gas turbine and diesel plant, and oil used for lighting up coal fired boilers.

(4) Includes refinery gas.

(5) Includes coke oven coke.

(6) Includes colliery methane.

(7) Renewable sources which are included under hydro and other renewables in this table are shown separately in Table 6.6 of Chapter 6.

(8) Main fuels included are coke oven gas, blast furnace gas, and waste products from chemical processes.

(9) Includes gas turbines and oil engines and plants producing electricity from renewable sources other than hydro.
### 5.4 Fuels consumed for electricity generation (autogeneration) by main industrial groups

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<td><strong>Iron and steel and non-ferrous metals</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Coal (2)</td>
<td>521</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blast furnace gas</td>
<td>591</td>
<td>740</td>
<td>731</td>
<td>641</td>
<td>462</td>
</tr>
<tr>
<td>Coke oven gas</td>
<td>182</td>
<td>172</td>
<td>154</td>
<td>137</td>
<td>72</td>
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<tr>
<td>Natural gas</td>
<td>39</td>
<td>39</td>
<td>34</td>
<td>43</td>
<td>42</td>
</tr>
<tr>
<td>Petroleum</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Other (including renewables) (3)</td>
<td>63</td>
<td>58</td>
<td>62</td>
<td>63</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total fuel input (4)</strong></td>
<td>1,402</td>
<td>1,016</td>
<td>989</td>
<td>901</td>
<td>643</td>
</tr>
<tr>
<td><strong>Electricity generated by iron &amp; steel and non-ferrous metals (5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>389r</td>
<td>185</td>
<td>335</td>
<td>166</td>
<td>132</td>
</tr>
<tr>
<td><strong>Electricity consumed by iron and steel and non-ferrous metals from own generation (6)</strong> (in GWh)</td>
<td>2,373r</td>
<td>1,931</td>
<td>2,106r</td>
<td>1,892r</td>
<td>1,551</td>
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<tr>
<td><strong>Chemicals</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Coal</td>
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<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
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<tr>
<td>Natural gas</td>
<td>727</td>
<td>627</td>
<td>454r</td>
<td>419r</td>
<td>424</td>
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<tr>
<td>Petroleum</td>
<td>6</td>
<td>0</td>
<td>0r</td>
<td>0r</td>
<td>0</td>
</tr>
<tr>
<td>Other (including renewables) (3)</td>
<td>56r</td>
<td>34r</td>
<td>29r</td>
<td>38r</td>
<td>137</td>
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<tr>
<td><strong>Total fuel input (4)</strong></td>
<td>899r</td>
<td>668r</td>
<td>491r</td>
<td>464r</td>
<td>567</td>
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<tr>
<td><strong>Electricity generated by chemicals (5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>417r</td>
<td>301</td>
<td>211r</td>
<td>190r</td>
<td>233</td>
</tr>
<tr>
<td><strong>Electricity consumed by chemicals from own generation (6)</strong> (in GWh)</td>
<td>2,869r</td>
<td>1,875</td>
<td>1,614r</td>
<td>1,690r</td>
<td>2,073</td>
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<td><strong>Metal products, machinery and equipment</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Natural gas</td>
<td>42</td>
<td>40</td>
<td>27</td>
<td>30r</td>
<td>30</td>
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<tr>
<td>Petroleum</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Other (including renewables) (3)</td>
<td>48</td>
<td>49r</td>
<td>63</td>
<td>63r</td>
<td>67</td>
</tr>
<tr>
<td><strong>Total fuel input (4)</strong></td>
<td>95</td>
<td>94r</td>
<td>96</td>
<td>99r</td>
<td>102</td>
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<tr>
<td><strong>Electricity generated by metal products, machinery and equipment (5)</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>24</td>
<td>25</td>
<td>26r</td>
<td>27</td>
</tr>
<tr>
<td><strong>Electricity consumed by metal products, machinery and equipment from own generation (6)</strong> (in GWh)</td>
<td>2,178</td>
<td>2,177</td>
<td>2,300</td>
<td>2,310r</td>
<td>2,227</td>
</tr>
<tr>
<td><strong>Food, beverages and tobacco</strong></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Coal</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Natural gas</td>
<td>352</td>
<td>345</td>
<td>360</td>
<td>365r</td>
<td>358</td>
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<td>2r</td>
<td>2</td>
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<tr>
<td>Other (including renewables) (3)</td>
<td>10</td>
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<td>31</td>
<td>31r</td>
<td>31</td>
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<tr>
<td><strong>Total fuel input (4)</strong></td>
<td>369</td>
<td>377r</td>
<td>397</td>
<td>403r</td>
<td>394</td>
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<tr>
<td><strong>Electricity generated by food, beverages and tobacco (5)</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>187</td>
<td>187</td>
<td>198</td>
<td>199r</td>
<td>191</td>
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<tr>
<td><strong>Electricity consumed by food, beverages and tobacco from own generation (6)</strong> (in GWh)</td>
<td>1,339</td>
<td>1,301</td>
<td>1,343r</td>
<td>1,373r</td>
<td>1,277</td>
</tr>
</tbody>
</table>

(1) Industrial categories used are described in Table 11.

(2) The power plant in this category was reclassified as a Major Power Producer in 2013 so no longer appears in the autogeneration figures.

(3) Includes hydro electricity, solid and gaseous renewables and waste.

(4) Total fuels used for generation of electricity. Consistent with figures for fuels used by other generators in Table 5.6.
5.4 Fuels consumed for electricity generation (autogeneration) by main industrial groups
(continued)

<table>
<thead>
<tr>
<th>Thousand tonnes of oil equivalent</th>
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<td>(except where shown otherwise)</td>
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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Coal</td>
<td>26</td>
<td>10</td>
<td></td>
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<tr>
<td>Natural gas</td>
<td>417</td>
<td>301</td>
<td>272</td>
<td>247r</td>
<td>271</td>
</tr>
<tr>
<td>Petroleum</td>
<td>0</td>
<td>0r</td>
<td>0r</td>
<td>0r</td>
<td>0</td>
</tr>
<tr>
<td>Other (including renewables) (3)</td>
<td>94</td>
<td>145r</td>
<td>240r</td>
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<td>315</td>
</tr>
<tr>
<td>Total fuel input (4)</td>
<td>538</td>
<td>456r</td>
<td>512r</td>
<td>517r</td>
<td>586</td>
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<td>Electricity generated by paper,</td>
<td>210</td>
<td>187</td>
<td>207r</td>
<td>194r</td>
<td>214</td>
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<td>printing and publishing (5)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(in GWh)</td>
<td>2,441</td>
<td>2,180</td>
<td>2,402</td>
<td>2,257</td>
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<td>Electricity consumed by paper,</td>
<td>141</td>
<td>137</td>
<td>161r</td>
<td>155r</td>
<td>174</td>
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<tr>
<td>printing and publishing from</td>
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<td></td>
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<tr>
<td>own generation (6)</td>
<td>1,642</td>
<td>1,590</td>
<td>1,868r</td>
<td>1,802r</td>
<td>2,019</td>
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<tr>
<td>Coal</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coke oven gas</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Natural gas</td>
<td>71</td>
<td>59</td>
<td>60</td>
<td>64r</td>
<td>66</td>
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<td>Petroleum</td>
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<td>3</td>
<td>3r</td>
<td>3</td>
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<td>Other (including renewables) (3)</td>
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<td>Total fuel input (4)</td>
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<td>1,964r</td>
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<tr>
<td>Electricity generated by other</td>
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<td>129r</td>
<td>155r</td>
<td>191r</td>
<td>341</td>
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<tr>
<td>industries (5)</td>
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</tr>
<tr>
<td>(in GWh)</td>
<td>1,401r</td>
<td>1,501r</td>
<td>1,807r</td>
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<td>Electricity consumed by other</td>
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<td>119r</td>
<td>146r</td>
<td>179r</td>
<td>266</td>
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<tr>
<td>industries from own generation</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) (in GWh)</td>
<td>1,258r</td>
<td>1,390r</td>
<td>1,700r</td>
<td>2,080r</td>
<td>3,093</td>
</tr>
<tr>
<td>Total</td>
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<td></td>
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<tr>
<td>Coal</td>
<td>661</td>
<td>20</td>
<td>12</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Blast furnace gas</td>
<td>591</td>
<td>740</td>
<td>731</td>
<td>641</td>
<td>462</td>
</tr>
<tr>
<td>Coke oven gas</td>
<td>210</td>
<td>200</td>
<td>182</td>
<td>142</td>
<td>78</td>
</tr>
<tr>
<td>Natural gas</td>
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<td>1,411</td>
<td>1,208</td>
<td>1,168r</td>
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<tr>
<td>Petroleum</td>
<td>27</td>
<td>19r</td>
<td>18r</td>
<td>28r</td>
<td>17</td>
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<tr>
<td>Other (including renewables) (3)</td>
<td>2,222r</td>
<td>2,259r</td>
<td>2,351r</td>
<td>2,356r</td>
<td>2,466</td>
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<td>Total fuel input (4)</td>
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<td>4,648r</td>
<td>4,502r</td>
<td>4,347r</td>
<td>4,222</td>
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<tr>
<td>Electricity generated (5)</td>
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<td>1,013r</td>
<td>1,130r</td>
<td>966r</td>
<td>1,139</td>
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<tr>
<td>(in GWh)</td>
<td>15,649r</td>
<td>11,784r</td>
<td>13,142r</td>
<td>11,229r</td>
<td>13,245</td>
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<td>Electricity consumed from own</td>
<td>836r</td>
<td>718r</td>
<td>766r</td>
<td>776r</td>
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<tr>
<td>(in GWh)</td>
<td>9,725r</td>
<td>8,354r</td>
<td>8,907r</td>
<td>9,027r</td>
<td>10,208</td>
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</tbody>
</table>

(5) Combined heat and power (CHP) generation (i.e. electrical output from Table 7.8) plus non-chp generation, so that the total electricity generated is consistent with the "other generators" figures in Table 5.6.

(6) This is the electricity consumed by the industrial sector from its own generation and is consistent with the other generators final users figures used within the electricity balances (Tables 5.1 and 5.2). These figures are less than the total generated because some of the electricity is sold to the public distribution system and other users.

(7) The figures presented here are consistent with other figures presented elsewhere in this publication as detailed at (4), (5), and (6) above but are further dissaggregated. Overall totals covering all autogenerators can be derived by adding in figures for transport, services and the fuel industries. These can be summarised as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All industry</td>
<td>5,317</td>
<td>4,561</td>
<td>4,502r</td>
<td>4,347r</td>
<td>4,222</td>
</tr>
<tr>
<td>Fuel industries</td>
<td>1,981</td>
<td>1,799</td>
<td>2,043r</td>
<td>2,304r</td>
<td>2,497</td>
</tr>
<tr>
<td>Transport, Commerce and Administration</td>
<td>367</td>
<td>379</td>
<td>409r</td>
<td>408r</td>
<td>456</td>
</tr>
<tr>
<td>Services</td>
<td>1,143</td>
<td>1,492r</td>
<td>2,172r</td>
<td>2,611</td>
<td></td>
</tr>
<tr>
<td>Total fuel input</td>
<td>8,478</td>
<td>7,882</td>
<td>8,445r</td>
<td>9,230r</td>
<td>9,786</td>
</tr>
<tr>
<td>Electricity generated</td>
<td>3,036</td>
<td>2,893</td>
<td>3,205r</td>
<td>3,691r</td>
<td>3,994</td>
</tr>
<tr>
<td>Electricity consumed</td>
<td>1,489</td>
<td>1,503</td>
<td>1,691r</td>
<td>1,804r</td>
<td>1,970</td>
</tr>
<tr>
<td>GWh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity generated</td>
<td>35,309</td>
<td>33,647</td>
<td>37,274</td>
<td>42,926</td>
<td>46,453</td>
</tr>
<tr>
<td>Electricity consumed</td>
<td>17,318</td>
<td>17,484</td>
<td>19,668r</td>
<td>20,977r</td>
<td>22,907</td>
</tr>
</tbody>
</table>

139
## 5.5 Electricity supply, electricity supplied (net), electricity available, electricity consumption and electricity sales

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total supply</strong></td>
<td>375,737r</td>
<td>372,714r</td>
<td>358,616r</td>
<td>359,855r</td>
<td>356,943</td>
</tr>
<tr>
<td>less imports of electricity</td>
<td>-13,774r</td>
<td>-17,533r</td>
<td>-23,243</td>
<td>-22,716</td>
<td>-19,699</td>
</tr>
<tr>
<td>plus exports of electricity</td>
<td>+1,910r</td>
<td>+3,102r</td>
<td>+2,723</td>
<td>+1,778</td>
<td>2,153</td>
</tr>
<tr>
<td>less electricity used in pumped storage</td>
<td>-3,978</td>
<td>-3,930</td>
<td>-3,884</td>
<td>-3,711</td>
<td>-4,014</td>
</tr>
<tr>
<td>less electricity used on works</td>
<td>-17,983r</td>
<td>-17,850r</td>
<td>-16,479r</td>
<td>-16,654r</td>
<td>-15,273</td>
</tr>
<tr>
<td>equals <strong>Electricity supplied (net)</strong></td>
<td>341,912r</td>
<td>336,504r</td>
<td>317,733r</td>
<td>318,552r</td>
<td>320,110</td>
</tr>
</tbody>
</table>

**Total supply**

<table>
<thead>
<tr>
<th>375,737r</th>
<th>372,714r</th>
<th>358,616r</th>
<th>359,855r</th>
<th>356,943</th>
</tr>
</thead>
<tbody>
<tr>
<td>less electricity used in pumped storage</td>
<td>-3,978</td>
<td>-3,930</td>
<td>-3,884</td>
<td>-3,711</td>
</tr>
<tr>
<td>less electricity used on works</td>
<td>-17,983r</td>
<td>-17,850r</td>
<td>-16,479r</td>
<td>-16,654r</td>
</tr>
<tr>
<td>equals <strong>Electricity available</strong></td>
<td>353,776r</td>
<td>350,935r</td>
<td>338,253r</td>
<td>339,491r</td>
</tr>
</tbody>
</table>

**Final consumption**

<table>
<thead>
<tr>
<th>318,272r</th>
<th>316,271r</th>
<th>302,786r</th>
<th>303,448r</th>
<th>303,795</th>
</tr>
</thead>
<tbody>
<tr>
<td>plus Iron and steel consumption counted as energy industry use</td>
<td>+485</td>
<td>+572</td>
<td>+561</td>
<td>+411</td>
</tr>
<tr>
<td>equals <strong>Final users</strong></td>
<td>318,757r</td>
<td>316,844r</td>
<td>303,347r</td>
<td>303,860r</td>
</tr>
</tbody>
</table>

**Final consumption**

<table>
<thead>
<tr>
<th>304,221</th>
<th>302,690</th>
<th>287,456r</th>
<th>286,161r</th>
<th>284,313</th>
</tr>
</thead>
<tbody>
<tr>
<td>plus Oil and gas extraction use</td>
<td>+565</td>
<td>+570</td>
<td>+536</td>
<td>+606r</td>
</tr>
<tr>
<td>plus Petroleum refineries use</td>
<td>+1,338</td>
<td>+1,291</td>
<td>+1,218</td>
<td>+1,345r</td>
</tr>
<tr>
<td>plus Coal and coke use</td>
<td>+825</td>
<td>+796</td>
<td>+665</td>
<td>+501r</td>
</tr>
<tr>
<td>plus Other fuel industries use</td>
<td>+1,460</td>
<td>+1,402</td>
<td>+1,280</td>
<td>+1,394r</td>
</tr>
<tr>
<td>equals <strong>UK Electricity sales (1)</strong></td>
<td>308,408</td>
<td>306,748</td>
<td>291,153r</td>
<td>290,007r</td>
</tr>
</tbody>
</table>

---

(1) A calendar year estimate of the Renewables Obligation percentage can be calculated using the "total generation from sources eligible for the Renewable Obligation" figure from Table 6.4 as the numerator, and this figure as the denominator. Separate electricity sales data for public electricity suppliers are given for England and Wales, Scotland and Northern Ireland in Table 5.5 of Energy Trends on the BEIS website at:

### 5.6 Electricity fuel use, generation and supply

<table>
<thead>
<tr>
<th>Thermal sources</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewables (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hydro-natural flow**
- All generating companies
- Major power producers
- Other generators

<table>
<thead>
<tr>
<th>Non-thermal sources</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro-pumped storage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind and solar (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total All sources</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Major power producers (2) (5)

<table>
<thead>
<tr>
<th>Description</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel used</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used on works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (gross)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used in pumping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (net)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Other generators (2) (5)

<table>
<thead>
<tr>
<th>Description</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel used</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used on works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (gross)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used in pumping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (net)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### All generating companies

<table>
<thead>
<tr>
<th>Description</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel used</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used on works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (gross)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used in pumping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied (net)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 5.6 Electricity fuel use, generation and supply (continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Major power producers (2) (5)</th>
<th>Other generators (2) (5)</th>
<th>All generating companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Fuel used</td>
<td>213,158r</td>
<td>213,296r</td>
</tr>
<tr>
<td></td>
<td>Generation</td>
<td>75,812r</td>
<td>75,878r</td>
</tr>
<tr>
<td></td>
<td>Used on works</td>
<td>3,890r</td>
<td>3,893r</td>
</tr>
<tr>
<td></td>
<td>Supplied (gross)</td>
<td>71,922r</td>
<td>71,985r</td>
</tr>
<tr>
<td></td>
<td>Used in pumping</td>
<td>3,711</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supplied (net)</td>
<td>278,462r</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>Fuel used</td>
<td>87,557</td>
<td>213,296r</td>
</tr>
<tr>
<td></td>
<td>Generation</td>
<td>75,878r</td>
<td>75,878r</td>
</tr>
<tr>
<td></td>
<td>Used on works</td>
<td>1,571</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supplied (gross)</td>
<td>71,985r</td>
<td>71,985r</td>
</tr>
<tr>
<td></td>
<td>Used in pumping</td>
<td>4,014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supplied (net)</td>
<td>276,590</td>
<td></td>
</tr>
</tbody>
</table>

(1) Thermal renewable sources are those included under bioenergy in Chapter 6. Prior to 2007, non-biodegradable wastes are also included.

(2) See paragraphs 5.62 to 5.69 on companies covered.

(3) Other thermal sources include coke oven gas, blast furnace gas and waste products from chemical processes.

From 2007, non-biodegradable wastes are also included.

(4) For Major Power Producers before 2015, this is wind only; for Major Power Producers from 2015 and for other generators, this includes solar photovoltaics as well as wave and tidal.

(5) From 2007, major wind farm companies are included under Major Power Producers, see paragraph 5.64.

(6) Includes gas turbines, oil engines and plants producing electricity from thermal renewable sources; also stations with some CCGT capacity but mainly operate in conventional thermal mode.
## 5.7 Plant capacity - United Kingdom

### Major power producers (1)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total transmission entry capacity (2)</td>
<td>81,877</td>
<td>77,167</td>
<td>75,694</td>
<td>71,928</td>
<td>68,380</td>
</tr>
<tr>
<td>Of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional steam stations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal fired</td>
<td>23,072</td>
<td>20,591</td>
<td>18,732</td>
<td>17,534</td>
<td>13,447</td>
</tr>
<tr>
<td>Oil fired</td>
<td>2,338</td>
<td>1,370</td>
<td>1,370</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mixed or dual fired (3)</td>
<td>3,113</td>
<td>1,180</td>
<td>1,180</td>
<td>1,180</td>
<td>1,180</td>
</tr>
<tr>
<td>Coal fired</td>
<td>23,072</td>
<td>20,591</td>
<td>18,732</td>
<td>17,534</td>
<td>13,447</td>
</tr>
<tr>
<td>Oil fired</td>
<td>2,338</td>
<td>1,370</td>
<td>1,370</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mixed or dual fired (3)</td>
<td>3,113</td>
<td>1,180</td>
<td>1,180</td>
<td>1,180</td>
<td>1,180</td>
</tr>
<tr>
<td>Nuclear stations</td>
<td>9,946</td>
<td>9,906</td>
<td>9,937</td>
<td>9,487</td>
<td>9,497</td>
</tr>
<tr>
<td>Gas turbines and oil engines</td>
<td>1,651</td>
<td>1,639</td>
<td>1,643</td>
<td>1,386r</td>
<td>1,417</td>
</tr>
<tr>
<td>Hydro-electric stations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural flow (4)</td>
<td>1,398</td>
<td>1,399</td>
<td>1,400</td>
<td>1,400</td>
<td>1,401</td>
</tr>
<tr>
<td>Pumped storage</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
</tr>
<tr>
<td>Wind (4) (5)</td>
<td>3,276r</td>
<td>3,947r</td>
<td>4,528</td>
<td>4,917r</td>
<td>5,517</td>
</tr>
<tr>
<td>Solar (4)</td>
<td>288r</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewables other than hydro, wind and solar (6)</td>
<td>1,226r</td>
<td>1,424r</td>
<td>2,166r</td>
<td>2,911</td>
<td>2,471</td>
</tr>
</tbody>
</table>

### Other generators (1)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total capacity of own generating plant (7)</td>
<td>7,423r</td>
<td>7,430</td>
<td>8,718r</td>
<td>9,098r</td>
<td>9,899</td>
</tr>
<tr>
<td>Of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional steam stations (8)</td>
<td>2,373r</td>
<td>2,045r</td>
<td>2,108r</td>
<td>2,171r</td>
<td>2,098</td>
</tr>
<tr>
<td>Combined cycle gas turbine stations</td>
<td>2,037r</td>
<td>1,905</td>
<td>1,813</td>
<td>1,616r</td>
<td>1,460</td>
</tr>
<tr>
<td>Hydro-electric stations (natural flow) (4)</td>
<td>158r</td>
<td>163r</td>
<td>169r</td>
<td>186r</td>
<td>206</td>
</tr>
<tr>
<td>Wind (4) (9)</td>
<td>608r</td>
<td>905r</td>
<td>1,094r</td>
<td>1,238r</td>
<td>1,457</td>
</tr>
<tr>
<td>Solar (4)</td>
<td>298r</td>
<td>499r</td>
<td>940r</td>
<td>1,333r</td>
<td>1,622</td>
</tr>
<tr>
<td>Renewables other than hydro, wind and solar (6)</td>
<td>1,949r</td>
<td>1,914r</td>
<td>2,594r</td>
<td>2,554r</td>
<td>3,056</td>
</tr>
</tbody>
</table>

### All generating companies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total capacity</td>
<td>89,301r</td>
<td>84,596r</td>
<td>84,412r</td>
<td>81,026r</td>
<td>78,279</td>
</tr>
<tr>
<td>Of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional steam stations (8)</td>
<td>30,897r</td>
<td>25,186r</td>
<td>23,390r</td>
<td>20,885r</td>
<td>16,725</td>
</tr>
<tr>
<td>Combined cycle gas turbine stations</td>
<td>35,150r</td>
<td>34,872r</td>
<td>33,807r</td>
<td>31,696r</td>
<td>31,766</td>
</tr>
<tr>
<td>Nuclear stations</td>
<td>9,946</td>
<td>9,906</td>
<td>9,937</td>
<td>9,487</td>
<td>9,497</td>
</tr>
<tr>
<td>Gas turbines and oil engines</td>
<td>1,651</td>
<td>1,639</td>
<td>1,643</td>
<td>1,386r</td>
<td>1,417</td>
</tr>
<tr>
<td>Hydro-electric stations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural flow (4)</td>
<td>1,556r</td>
<td>1,561r</td>
<td>1,569r</td>
<td>1,586r</td>
<td>1,607</td>
</tr>
<tr>
<td>Pumped storage</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
<td>2,744</td>
</tr>
<tr>
<td>Wind (4)</td>
<td>3,884r</td>
<td>4,851r</td>
<td>5,622r</td>
<td>6,156r</td>
<td>6,973</td>
</tr>
<tr>
<td>Solar (4)</td>
<td>298r</td>
<td>499r</td>
<td>940r</td>
<td>1,621r</td>
<td>2,023</td>
</tr>
<tr>
<td>Renewables other than hydro, wind and solar (6)</td>
<td>3,175r</td>
<td>3,338r</td>
<td>4,760r</td>
<td>5,465r</td>
<td>5,527</td>
</tr>
</tbody>
</table>

(1) See paragraphs 5.62 to 5.69 for information on companies covered.
(2) See paragraph 5.76 for definition. Data before 2006 are based on declared net capacity.
(3) Includes gas fired stations that are not Combined Cycle Gas Turbines, or have some CCGT capability but mainly operate as conventional thermal stations.
(4) Small-scale hydro, wind and solar photovoltaics capacity are shown on declared net capability basis, and are de-rated to account for intermittency, by factors of 0.365, 0.43 and 0.17 respectively. See paragraph 5.77.
(5) From 2007, major wind farm companies are included under Major Power Producers, see paragraph 5.64.
(6) For Major Power Producers, this includes bioenergy; for other generators, this includes bioenergy, wave and tidal.
(7) "Other generators" capacities are given in declared net capacity terms, see paragraph 5.77.
(8) For other generators, conventional steam stations include combined heat and power plants (electrical capacity only) but exclude combined cycle gas turbine plants, hydro-electric stations and plants using renewable sources.
(9) Falls in capacity in 2007, 2010 and 2012 due to re-classification of capacity to Major Power Producers.
(10) Stations on Supplemental Balancing Reserve, ie. those that are closed but available for times of high demand such as winter, are classed as having zero capacity.
### 5.8 Major Power Producers Plant capacity - England and Wales, Scotland, and Northern Ireland

<table>
<thead>
<tr>
<th>Major power producers in England and Wales (1)</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total transmission entry capacity (2)</td>
<td>68,840r</td>
<td>65,019r</td>
<td>63,348r</td>
<td>59,425r</td>
<td>57,897</td>
</tr>
<tr>
<td>Of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional steam stations:</td>
<td>24,007</td>
<td>19,821</td>
<td>17,962</td>
<td>15,394</td>
<td>13,567</td>
</tr>
<tr>
<td>Coal fired</td>
<td>19,616</td>
<td>18,331</td>
<td>16,472</td>
<td>15,274</td>
<td>13,447</td>
</tr>
<tr>
<td>Oil fired</td>
<td>2,338</td>
<td>1,370</td>
<td>1,370</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mixed or dual fired (3)</td>
<td>2,053</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Combined cycle gas turbine stations</td>
<td>30,915</td>
<td>30,765</td>
<td>29,792</td>
<td>27,876</td>
<td>28,102</td>
</tr>
<tr>
<td>Nuclear stations</td>
<td>7,657</td>
<td>7,617</td>
<td>7,648</td>
<td>7,198</td>
<td>7,208</td>
</tr>
<tr>
<td>Gas turbines and oil engines</td>
<td>1,261</td>
<td>1,191</td>
<td>1,195</td>
<td>938</td>
<td>969</td>
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<tr>
<td>Hydro-electric stations:</td>
<td>141</td>
<td>141</td>
<td>141</td>
<td>141</td>
<td>141</td>
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<tr>
<td>Natural flow</td>
<td>1,257</td>
<td>1,258</td>
<td>1,259</td>
<td>1,259</td>
<td>1,260</td>
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<tr>
<td>Pumped storage</td>
<td>740</td>
<td>740</td>
<td>740</td>
<td>740</td>
<td>740</td>
</tr>
<tr>
<td>Wind (4)</td>
<td>1,493</td>
<td>1,716</td>
<td>1,881</td>
<td>2,001r</td>
<td>2,266r</td>
</tr>
<tr>
<td>Solar</td>
<td>8r</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewables other than hydro and wind (5)</td>
<td>54</td>
<td>54</td>
<td>86</td>
<td>109</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10,602</td>
<td>9,630</td>
<td>9,827</td>
<td>9,977r</td>
<td>7,931</td>
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</table>

### 5.9 Capacity of other generators

<table>
<thead>
<tr>
<th>Capacity of own generating plant (1) (2)</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td>Undertakings in industrial and commercial sector:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil and gas terminals and oil refineries</td>
<td>1,019</td>
<td>1,019</td>
<td>917</td>
<td>875</td>
<td>863</td>
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<tr>
<td>Iron and steel</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>314</td>
<td>206</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1,061</td>
<td>815</td>
<td>767</td>
<td>714</td>
<td>661</td>
</tr>
<tr>
<td>Engineering and other metal trades</td>
<td>644</td>
<td>199</td>
<td>199</td>
<td>171</td>
<td>171</td>
</tr>
<tr>
<td>Food, drink and tobacco</td>
<td>442</td>
<td>438</td>
<td>457</td>
<td>464</td>
<td>469</td>
</tr>
<tr>
<td>Paper, printing and publishing</td>
<td>467</td>
<td>470</td>
<td>508</td>
<td>499</td>
<td>397</td>
</tr>
<tr>
<td>Other (3)</td>
<td>3,371</td>
<td>4,072</td>
<td>4,581</td>
<td>5,802</td>
<td>7,029</td>
</tr>
<tr>
<td><strong>Total industrial, commercial and domestic sector</strong></td>
<td>7,317</td>
<td>7,327</td>
<td>7,744</td>
<td>8,838</td>
<td>9,796</td>
</tr>
<tr>
<td>Undertakings in transport sector</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td><strong>Total other generators</strong></td>
<td>7,420</td>
<td>7,430</td>
<td>7,847</td>
<td>9,098r</td>
<td>9,899</td>
</tr>
</tbody>
</table>

(1) See paragraphs 5.62 to 5.69 for information on companies covered
(2) See paragraph 5.76 for definition. Data before 2006 are based on declared net capacity
(3) Includes gas fired stations that are not Combined Cycle Gas Turbines, or have some CCGT capability but mainly operate as conventional thermal stations.
(4) From 2007, major wind farm companies are included under Major Power Producers, see paragraph 5.64
(5) Bioenergy only.

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## 5.10 Plant loads, demand and efficiency

### Major power producers (1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Simultaneous maximum load met (2) (3)</th>
<th>of which England and Wales</th>
<th>Scotland</th>
<th>Great Britain</th>
<th>Northern Ireland</th>
<th>Maximum demand as a percentage of UK Major Power Producers' capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>57,490</td>
<td>53,420</td>
<td>53,858</td>
<td>52,753</td>
<td>52,909</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>53,420</td>
<td>51,811</td>
<td>51,169</td>
<td>51,000</td>
<td>51,169</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>53,858</td>
<td>52,516</td>
<td>51,100</td>
<td>51,169</td>
<td>51,169</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>52,753</td>
<td>51,100</td>
<td>51,169</td>
<td>51,169</td>
<td>51,169</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>52,909</td>
<td>51,169</td>
<td>51,169</td>
<td>51,169</td>
<td>51,169</td>
</tr>
</tbody>
</table>

### Plant load factor (2) (4)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined cycle gas turbine stations</td>
<td>30.3</td>
<td>28.0</td>
<td>30.5</td>
<td>31.7</td>
<td>48.8</td>
</tr>
<tr>
<td>Nuclear stations</td>
<td>70.7</td>
<td>73.8</td>
<td>66.6</td>
<td>75.1</td>
<td>78.4</td>
</tr>
<tr>
<td>Pumped storage hydro</td>
<td>12.3</td>
<td>12.0</td>
<td>12.0</td>
<td>11.4</td>
<td>12.3</td>
</tr>
<tr>
<td>Conventional thermal and other stations (5)</td>
<td>57.0r</td>
<td>61.0r</td>
<td>57.2r</td>
<td>52.7r</td>
<td>37.7</td>
</tr>
<tr>
<td>of which coal-fired stations (6)</td>
<td>56.9</td>
<td>58.1</td>
<td>50.7</td>
<td>39.3r</td>
<td>16.5</td>
</tr>
<tr>
<td>All plant (7)</td>
<td>46.2r</td>
<td>46.1r</td>
<td>44.8r</td>
<td>45.5r</td>
<td>47.0</td>
</tr>
<tr>
<td>System load factor (8)</td>
<td>66.3r</td>
<td>70.7r</td>
<td>67.0r</td>
<td>68.3r</td>
<td>67.3</td>
</tr>
</tbody>
</table>

### Thermal efficiency (9)

**Gross calorific value basis**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined cycle gas turbine stations</td>
<td>47.2</td>
<td>47.7</td>
<td>47.2</td>
<td>48.0</td>
<td>49.5</td>
</tr>
<tr>
<td>Coal fired stations</td>
<td>35.8</td>
<td>35.8</td>
<td>35.9r</td>
<td>35.6r</td>
<td>35.0</td>
</tr>
<tr>
<td>Nuclear stations</td>
<td>39.8</td>
<td>39.3</td>
<td>39.6</td>
<td>39.1</td>
<td>40.0</td>
</tr>
</tbody>
</table>

---

(1) See paragraphs 5.62 to 5.69 for information on companies covered.
(2) Load met by transmission network, net of demand met by embedded generation. See paragraph 5.78 for definitions.
(3) Data cover the 12 months ending March of the following year, e.g. 2016 data are for the year ending March 2017.
(4) Load factors for renewable sources, including wind and hydro, can be found in Table 6.5.
(5) Conventional steam plants, gas turbines and oil engines and plants producing electricity from thermal renewable sources.
(6) Includes both coal-fired stations, and dual/mixed fired stations that mainly use coal.
(7) Includes wind (from 2008) and natural flow hydro, using capacity that has not been de-rated for intermittency.
(8) Average electricity available as percentage of maximum demand. See paragraph 5.78.
(9) See paragraph 5.79 for definition of thermal efficiency.
5.11 Power Stations in the United Kingdom
(operational at the end of May 2017)

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Station Name</th>
<th>Fuel</th>
<th>Installed Capacity (MW)</th>
<th>Year of commission or year generation began</th>
<th>Location Scotland, Wales, Northern Ireland or English region</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES</td>
<td>Ballylumford C</td>
<td>CCGT</td>
<td>616</td>
<td>2003</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td></td>
<td>Kitroct</td>
<td>Coal / oil</td>
<td>520</td>
<td>1981</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td></td>
<td>Ballylumford B</td>
<td>Gas</td>
<td>540</td>
<td>1968</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td></td>
<td>Ballylumford B OCGT</td>
<td>Gas oil</td>
<td>116</td>
<td>1968</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td></td>
<td>Kilroot</td>
<td>Gas oil</td>
<td>142</td>
<td>1981</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td>British Energy (now part of EDF)</td>
<td>Dungeness B</td>
<td>Nuclear</td>
<td>1,050</td>
<td>1983</td>
<td>South East</td>
</tr>
<tr>
<td></td>
<td>Hartlepool</td>
<td>Nuclear</td>
<td>1,180</td>
<td>1984</td>
<td>North East</td>
</tr>
<tr>
<td></td>
<td>Heysham 1</td>
<td>Nuclear</td>
<td>1,155</td>
<td>1984</td>
<td>North West</td>
</tr>
<tr>
<td></td>
<td>Heysham 2</td>
<td>Nuclear</td>
<td>1,230</td>
<td>1988</td>
<td>North West</td>
</tr>
<tr>
<td></td>
<td>Hinkley Point B</td>
<td>Nuclear</td>
<td>955</td>
<td>1976</td>
<td>South West</td>
</tr>
<tr>
<td></td>
<td>Hunterston B</td>
<td>Nuclear</td>
<td>965</td>
<td>1976</td>
<td>Scotland</td>
</tr>
<tr>
<td></td>
<td>Sizewell B</td>
<td>Nuclear</td>
<td>1,198</td>
<td>1995</td>
<td>East</td>
</tr>
<tr>
<td></td>
<td>Torness</td>
<td>Nuclear</td>
<td>1,185</td>
<td>1988</td>
<td>Scotland</td>
</tr>
<tr>
<td>British Solar Renewables</td>
<td>Bradenstoke Solar Park</td>
<td>Solar</td>
<td>70</td>
<td>2015</td>
<td>South West</td>
</tr>
<tr>
<td>Carrington Power</td>
<td>Carrington</td>
<td>CCGT</td>
<td>900.0</td>
<td>2016</td>
<td>North West</td>
</tr>
<tr>
<td>Centrica</td>
<td>Barry</td>
<td>CCGT</td>
<td>235</td>
<td>1998</td>
<td>Wales (2)</td>
</tr>
<tr>
<td></td>
<td>Glanford Brigg</td>
<td>CCGT</td>
<td>150</td>
<td>1993</td>
<td>Yorkshire and the Humber (2)</td>
</tr>
<tr>
<td></td>
<td>Langage</td>
<td>CCGT</td>
<td>905</td>
<td>2010</td>
<td>South West</td>
</tr>
<tr>
<td></td>
<td>Peterborough</td>
<td>CCGT</td>
<td>240</td>
<td>1999</td>
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<tr>
<td></td>
<td>South Humber Bank</td>
<td>CCGT</td>
<td>1,310</td>
<td>1998</td>
<td>Yorkshire and the Humber</td>
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<tr>
<td>Coolkeeragh ESB Ltd</td>
<td>Coolkeeragh</td>
<td>CCGT</td>
<td>408</td>
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<td>Northern Ireland</td>
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<tr>
<td></td>
<td>Coolkeeragh OCGT</td>
<td>Gas oil</td>
<td>53</td>
<td>2006</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td>Corby Power Ltd</td>
<td>Corby</td>
<td>CCGT</td>
<td>401</td>
<td>1993</td>
<td>East Midlands</td>
</tr>
<tr>
<td>Cubico Sustainable Investments Limited</td>
<td>Broxted Solar Park</td>
<td>Solar</td>
<td>32</td>
<td>2015</td>
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<td>Owl's Hatch Solar Park</td>
<td>Solar</td>
<td>51.9</td>
<td>2016</td>
<td>South East</td>
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<tr>
<td>Cumbria Wind</td>
<td>Beckburn</td>
<td>Wind</td>
<td>31</td>
<td>2017</td>
<td>North West</td>
</tr>
<tr>
<td></td>
<td>Burntoft Halli</td>
<td>Wind</td>
<td>30</td>
<td>2016</td>
<td>Scotland</td>
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<tr>
<td></td>
<td>Conisbrough</td>
<td>Wind</td>
<td>48</td>
<td>2016</td>
<td>Scotland</td>
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<tr>
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<td>Falloso Rig</td>
<td>Wind</td>
<td>144</td>
<td>2012</td>
<td>Scotland</td>
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<td>Wind</td>
<td>36</td>
<td>2012</td>
<td>North East</td>
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<td>Longpark</td>
<td>Wind</td>
<td>38</td>
<td>2009</td>
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<td>62</td>
<td>2014</td>
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<tr>
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<td>Barrow</td>
<td>Wind (offshore)</td>
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<td>2006</td>
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<td>Burbo Bank</td>
<td>Wind (offshore)</td>
<td>90</td>
<td>2009</td>
<td>North West</td>
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<td>Gunfleet Sands 1</td>
<td>Wind (offshore)</td>
<td>108</td>
<td>2010</td>
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<td>Gunfleet Sands 2</td>
<td>Wind (offshore)</td>
<td>65</td>
<td>2010</td>
<td>South East</td>
</tr>
<tr>
<td></td>
<td>Lincs</td>
<td>Wind (offshore)</td>
<td>270</td>
<td>2012</td>
<td>East</td>
</tr>
<tr>
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<td>Warney 1</td>
<td>Wind (offshore)</td>
<td>184</td>
<td>2011</td>
<td>North West</td>
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<tr>
<td></td>
<td>Warney 2</td>
<td>Wind (offshore)</td>
<td>184</td>
<td>2011</td>
<td>North West</td>
</tr>
<tr>
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<td>West of Duddon Sands</td>
<td>Wind (offshore)</td>
<td>389</td>
<td>2014</td>
<td>North West</td>
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<tr>
<td></td>
<td>Westermost Rough</td>
<td>Wind (offshore)</td>
<td>210</td>
<td>2016</td>
<td>South East</td>
</tr>
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<td>Drax Power Ltd</td>
<td>Drax - coal units</td>
<td>Coal</td>
<td>1,980</td>
<td>1974</td>
<td>Yorkshire and the Humber (1)</td>
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<tr>
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<td>Drax - biomass units</td>
<td>Biomass</td>
<td>1,980</td>
<td>1974</td>
<td>Yorkshire and the Humber (1)</td>
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<tr>
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<td>Gas oil</td>
<td>75</td>
<td>1971</td>
<td>Yorkshire and the Humber (1)</td>
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<td>Blackbum Meadows</td>
<td>Biomass</td>
<td>33</td>
<td>2016</td>
<td>Yorkshire and the Humber</td>
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<td>Steven's Croft *</td>
<td>Biomass</td>
<td>50</td>
<td>2007</td>
<td>Scotland</td>
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<td>CCGT</td>
<td>56</td>
<td>2002</td>
<td>Yorkshire and the Humber</td>
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<td></td>
<td>Sandbach</td>
<td>CCGT</td>
<td>59</td>
<td>1999</td>
<td>North West</td>
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<tr>
<td></td>
<td>Thornhill</td>
<td>CCGT</td>
<td>50</td>
<td>1998</td>
<td>Yorkshire and the Humber</td>
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For footnotes see page 146.
## 5.11 Power Stations in the United Kingdom
(operational at the end of May 2017)\(^{(1)}\) (continued)

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For footnotes see page 157
## 5.11 Power Stations in the United Kingdom

(operational at the end of May 2017)\(^{(f)}\) (continued)

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For footnotes see page 150.
### 5.11 Power Stations in the United Kingdom
(operational at the end of May 2017)\(^{(1)}\) (continued)

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Station Name</th>
<th>Fuel</th>
<th>Installed Capacity (MW)</th>
<th>Year of commission or year generation began</th>
<th>Location Scotland, Wales, Northern Ireland or English region</th>
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**Other power stations**

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<th>Installed Capacity (MW)</th>
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<td>Other generators solar photovoltaics and wave tidal</td>
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For footnotes see page 757.
5.11 Power Stations in the United Kingdom  
(operational at the end of May 2017) (1) (continued)

**Interconnectors**

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<td>England - Netherlands</td>
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<tr>
<td>Northern Ireland - Irish Republic</td>
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</table>

**Footnotes**

1. This list covers stations owned or operated by Major Power Producers, apart from non-thermal renewable sites under 30MW capacity (which are included in the database tab); other power stations (including many renewable sites and auto-generators) are included in the sub table on page 149.

2. Capacity reduced in 2013, with these stations typically now operating as Open Cycle Gas Turbines.

3. Total capacity is 1,840 MW but because of transmission constraints only 1,180 MW can be used at any one time.

* indicates CHP plant
## 5.12 Plant installed capacity, by connection - United Kingdom

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<th></th>
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<th></th>
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</thead>
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<td>Installed capacity (1)</td>
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<td>72,213</td>
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<td>Oil</td>
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<td>1,370</td>
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<td>490</td>
<td>490</td>
<td>-</td>
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<tr>
<td>Nuclear - PWR</td>
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<td>1,213</td>
<td>1,226</td>
<td>1,228</td>
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<td>3,176</td>
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<td>2,838</td>
<td>2,838</td>
<td>2,903</td>
</tr>
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</table>

| Distribution Network - Great Britain |       |       |       |       |       |
| Installed capacity (1) | 13,985| 15,652| 19,355| 24,643| 27,730|
| Coal (2)              | 589   | 28    | 33    | 22    | 22    |
| CCGT                 | 2,563 | 2,539 | 2,586 | 2,363 | 2,231 |
| Oil                  | 468   | 446   | 265   | 374   | 302   |
| Diesel Engines        | 134   | 134   | 138   | 138   | -     |
| OCGT                 | 196   | 105   | 90    | 90    | -     |
| Conventional Thermal Gas | 707   | 833   | 883   | 835   | 882   |
| Hydro                | 473   | 487   | 494   | 539   | 597   |
| Onshore Wind         | 3,840 | 4,221 | 5,103 | 5,713 | 6,377 |
| Offshore Wind        | 599   | 975   | 994   | 1,379 | 1,666 |
| Bioenergy            | 2,160 | 2,344 | 2,693 | 2,968 | 3,194 |
| PV                   | 1,757 | 2,846 | 5,362 | 9,429 | 11,763|
| Wave/Tidal           | 5     | 6     | 7     | 8     | 13    |
| Other Fuels (4)      | 732   | 695   | 864   | 789   | 714   |

| Transmission Network - Northern Ireland |       |       |       |       |       |
| Installed capacity (1) | 2,395 | 2,395 | 2,395 | 2,395 | 2,375 |
| Coal (2)              | 520   | 520   | 520   | 520   | 500   |
| CCGT                 | 1,024 | 1,024 | 1,024 | 1,024 | 1,024 |
| OCGT                 | 311   | 311   | 311   | 311   | 311   |
| Conventional Thermal Gas | 540   | 540   | 540   | 540   | 540   |

| Distribution Network - Northern Ireland |       |       |       |       |       |
| Installed capacity (1) | 497   | 647   | 798   | 912   | 1,114 |
| Hydro                | 8     | 9     | 9     | 9     | 10    |
| Onshore Wind         | 458   | 582   | 689   | 731   | 886   |
| Bioenergy            | 23    | 28    | 37    | 64    | 82    |
| PV                   | 6     | 27    | 62    | 106   | 136   |
| Wave/Tidal           | 1     | 1     | 1     | 1     |       |

| Transmission Network - Total UK |       |       |       |       |       |
| Installed capacity (1) | 81,909| 76,393| 74,608| 70,943| 69,649|
| Coal (2)              | 25,811| 20,736| 18,873| 17,013| 14,257|
| CCGT                 | 33,091| 31,829| 30,904| 30,468| 30,878|
| Conventional Thermal Gas | 540   | 540   | 540   | 540   | 540   |
| Oil                  | 2,725 | 1,370 | 1,370 | -     | -     |
| Nuclear - Magnox      | 490   | 490   | 490   | -     | -     |
| Nuclear - PWR         | 1,191 | 1,198 | 1,198 | 1,198 | 1,198 |
| Nuclear - AGR         | 7,550 | 7,685 | 7,720 | 7,720 | 7,720 |
| OCGT                 | 1,292 | 1,423 | 1,387 | 1,248 | 1,199 |
| Hydro                | 1,213 | 1,213 | 1,226 | 1,228 | 1,228 |
| Onshore Wind         | 1,805 | 2,713 | 2,747 | 2,777 | 3,068 |
| Offshore Wind        | 2,397 | 2,721 | 3,017 | 3,176 | 3,628 |
| Bioenergy            | 976   | 1,647 | 1,817 | 2,226 | 2,460 |
| Pumped Storage       | 2,828 | 2,828 | 2,828 | 2,828 | 2,900 |
| of which, good quality CHP | 2,169 | 2,113 | 2,141 | 2,178 | 1,376 |

| Distribution Network - Total UK |       |       |       |       |       |
| Installed capacity (1) | 14,425| 16,299| 20,023| 25,555| 26,843|
| Coal (2)              | 589   | 28    | 33    | 22    | 22    |
| CCGT                 | 2,567 | 2,539 | 2,586 | 2,363 | 2,221 |
| Oil                  | 468   | 448   | 265   | 374   | 302   |
| Diesel Engines        | 134   | 134   | 138   | 138   | -     |
| OCGT                 | 196   | 105   | 90    | 90    | -     |
| Conventional Thermal Gas | 707   | 833   | 883   | 835   | 882   |
| Hydro                | 482   | 496   | 503   | 549   | 607   |
| Onshore Wind         | 4,099 | 4,803 | 5,789 | 6,445 | 7,263 |
| Offshore Wind        | 599   | 975   | 994   | 1,378 | 1,666 |
| Bioenergy            | 2,163 | 2,372 | 2,731 | 3,023 | 3,276 |
| PV                   | 1,759 | 2,873 | 5,424 | 9,535 | 11,899|
| Wave/Tidal           | 7     | 9     | 9     | 9     | 13    |
| Other Fuels (4)      | 732   | 695   | 864   | 789   | 714   |
| of which, good quality CHP | 3,863 | 3,811 | 3,752 | 3,754 | 3,596 |

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(1) See paragraph 5.76 for definition.
(2) Includes mixed fuel stations (coal/oil, coal/gas) and co-firing coal stations.
(3) Includes 48 MW of Sough Heat and Power’s mixed fuel capacity (remaining 13 MW included under coal).
(4) Includes coke oven gas, blast furnace gas, other gas/liquid/solid waste and waste heat from high temperature and chemical processes.