Key results show:

Provisional 2019
Total electricity generated in 2019 was 323.7 TWh, a decrease of 2.8 per cent compared to 2018 (332.9 TWh). This reflects decreasing demand for electricity, linked to increasing efficiency. Consumption of electricity in 2019 totalled 294 TWh, down 1.8 per cent compared to 2018. Consumption decreased year on year in all sectors, down 1.8 per cent for the industrial sector, 1.3 per cent for the domestic sector and 2.4 per cent for other final users. (Charts 5.1 & 5.5)

The sources of our electricity also changed in 2019, with lower generation coming from Major Power Producers (MPPs), offset by increased generation from autogenerators and increased imports. (Chart 5.1)

Coal generation decreased substantially in 2019, pushing fossil fuels to an all-time low share of the generation mix at 43.4 per cent. (Chart 5.1)

More than a third (36.9 per cent) of UK generation came from renewable sources in 2019, up from 33.0 per cent in 2018. This was driven by high generation from wind, solar and bioenergy sources and is largely attributable to growing renewable capacity. For the third successive year over half of all generation came from low carbon sources, up to a record 54.2 per cent. (Charts 5.1 & 5.3)

Net imports increased by 11 per cent in 2019 compared to 2018, to 21.2 TWh. This was the highest level on the published data series and accounted for 6.4 per cent of the total electricity supply over the year. (Chart 5.6)

Quarter 4 2019
Total generation was 86.8 TWh in Quarter 4 of 2019, the lowest value for a Quarter 4 in the published data series and a decrease of 0.8 per cent compared to Quarter 4 2018. Demand for electricity was higher over this period (up 0.8 per cent) but the demand was met by increased net imports. (Chart 5.2)

Domestic electricity consumption in Quarter 4 2019 increased by 2.6 per cent compared to the same period in 2018 while consumption by other final users (including commercial) increased by 0.7 per cent. This reflects cooler average temperatures over the quarter. Industrial electricity consumption fell 1.9 percent over the same period. (Chart 5.5)

Renewable electricity generation was 37.4 per cent of total electricity generation in Quarter 4 2019, the highest share for any Quarter 4 on the published data series. Electricity generated from by fossil fuels was 42.2 per cent of the total UK generation in Quarter 4 2019, down 2.1 percentage points compared to the same period in 2018. (Chart 5.2)

Quarter 4 of 2019 saw a substantial rise in net imports compared to the same period in 2018, up 38 per cent to 5.0 TWh. (Chart 5.6)

Relevant tables
5.1: Fuel used in electricity generation and electricity supplied
5.2: Supply and consumption of electricity
5.6: Imports, exports and transfers of electricity

Contacts for further information:

Vanessa Martin  Chrissie Frankland  George Goodman
Electricity Statistics  Electricity Statistics  Electricity Statistics
Tel: 020 7215 2995  Tel: 020 7215 1215  Tel: 0300 068 5046
E-mail: electricitystatistics@beis.gov.uk
Electricity

Chart 5.1 Total electricity generated by fuel type (Table 5.1)

Total electricity generated in 2019 was 323.7 TWh, a decrease of 2.8 per cent compared to 2018 (332.9 TWh). Total generation has been falling overall since 2010, linked to increased efficiency, while warmer temperatures in 2019 reduced demand for electricity compared to 2018. The generation mix changed too, with higher renewable and lower nuclear and coal generation.

More than a third (36.9 per cent) of UK generation came from renewable sources in 2019, up from 33.0 per cent in 2018. This was driven by high generation from wind, solar and bioenergy sources and came despite less favourable weather conditions for wind generation (which carries the bulk of the UK’s renewable capacity) with the lowest average wind speeds since 2012. This means that the growing generation is largely attributable to growing renewable capacity.

The record levels of renewable generation meant that for the third year running over half of all generation came from low carbon sources, improving on the percentage share from 2018 (up from 52.6 per cent to 54.2 per cent). This was despite a fall in the generation from nuclear generators, which dropped 14 per cent to 56 TWh, its lowest value since 2008. This was the result of a series of prolonged outages throughout the year which reduced the UK’s operational nuclear capacity.

Coal generation continued to decrease in 2019, pushing fossil fuels to an all-time low share of the generation mix at 43.4 per cent. In 2019, electricity supplied by coal-fired generators fell almost 60 per cent compared to 2018 to just 6.9 TWh, a record low. The decline of coal is due to plant closures in recent years and coal-generation becoming less economically favourable than gas-fired generation, attributed to low gas prices and higher carbon pricing. Coal generating capacity dropped substantially in 2019 following closures of Unit 1 at Fiddlers Ferry (March 2019), Cottam Power station (September 2019) and Aberthaw Power station (December 2019), leaving only five major coal-fired power stations in operation. Gas generation saw a slight increase in 2019, up 1.4 per cent compared to 2018.

The production of our electricity also changed in 2019, with lower generation from Major Power Producers (MPPs) offset by increased generation from autogenerators and also increased imports as detailed below. Generation by MPPs was 269.0 TWh in 2019, down from 281.4 TWh in 2018, whereas generation from autogenerators increased from 51.5 TWh in 2018 to 54.6 TWh in 2019.

1 Full wind speed data can be found in Table 7.2 at: [www.gov.uk/government/statistics/energy-trends-section-7-weather](http://www.gov.uk/government/statistics/energy-trends-section-7-weather)

For most fuels, the percentage shares of generation were similar between Quarter 4 2018 and 2019. The biggest changes were a 2.7 percentage point (pp) decrease in the share for coal, offset by 1.4 pp increases in nuclear generation and 1.6pp increase in offshore wind which increased the overall share for renewables. These changes saw a 2.1pp decrease in the share for fossil fuels and a 2.0 pp increase in the share for low carbon generation.

Renewable electricity generation was 32.5 TWh in Quarter 4 2019, representing 37.4 percent of total electricity generation. This was slightly down on the record renewable share seen in Quarter 3 but was the highest share for any Quarter 4 on the published data series. Generation was higher for wind and solar (up 1.0 per cent to 20.7 TWh) with the largest increase for offshore wind generation (up 14.5 per cent to 10.2 TWh). The higher generation was largely because of increased capacity for renewable generation3 (up 7 per cent compared to Quarter 4 2018) as Quarter 4 saw less favourable weather conditions for renewable generation than the same period in 20184.

Electricity generated from by fossil fuels was 42.2 per cent of the total UK generation in Quarter 4 2019, down 2.1 percentage points compared to the same period in 2018. This reduction was supported by the record renewable supply and high net imports reducing the need for fossil fuel generated electricity. There was a particularly large decrease in electricity generated from coal in this period, which was down 47 per cent. This continued the downward trend for coal seen throughout 2019. Following the closure of Aberthaw (1590 MW) on the 13th of December 2019 there are now only five remaining major coal fired power stations in the UK.

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3 See Table 6.1 for details.
4 See Table 7.2 for details.
The share of generation from low carbon sources increased again in 2019 to reach 54.2 per cent. This was an increase of 1.6 percentage points compared to 2018. This increased share was driven by increases to renewable generation, with nuclear generation down 2.2 percentage points compared to 2018. The increased renewable generation was largely attributed to growing capacity for renewables as 2019 had less favourable weather conditions for wind generation (which carries the bulk of the UK’s renewable capacity) with the lowest average wind speeds since 2012.

Low carbon generation was 55.4 per cent of generation in Quarter 4 of 2019, up 2.0 percentage points compared to the same period in 2018. As renewable generation was similar to Quarter 4 2018 (up 0.6 per cent), the increase in low carbon generation was driven by an increase in nuclear generation. Nuclear generation was up 7.4 per cent compare to Quarter 4 2018 as the number of plants on outage reduced. During Quarter 4 2019, outages continued at Dungeness B R21 & R22 (statutory outage) and Hunterston B R3 & R4 (graphite inspection outage) and were completed at Hartlepool and Heysham 1.

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5 See Table 6.1 for details.

6 See Table 7.2 for details.
Electricity

Chart 5.4 Fuel used in generation (Table 5.1)

Total fuel used for electricity generation continued to fall in 2019, down to a record low of 61.2 Mtoe. This was a 4.5 per cent reduction compared to 2018 and down by 30 per cent compared to 2010. The reduction in fuel used is attributed to falling demand for electricity as well as shifts towards non-thermal renewables\(^7\), as well as increased supplies from imports.

There have also been substantial changes in the fuel mix over this time, in particular a shift away from fossil fuels. Coal use for electricity generation has dropped from 25.6 Mtoe in 2010 to just 1.9 Mtoe in 2019. Gas has been the dominant fuel used for electricity since 2016 with 23.3 Mtoe used in 2019, but the amount of gas used has declined slowly over the past 4 years, down 9 per cent compared to 2016 and down 1 per cent between 2018 and 2019.

Bioenergy and other fuels were the only categories (apart from non-thermal renewables) where an increase in fuel use was seen between 2018 and 2019. Thermal renewables (bioenergy) now represents 20 per cent of fuel used for electricity generation. In 2019, 12.2 Mtoe of bioenergy fuel was used, up 6.6 per cent since 2018. The use of other fuels also increased in 2019, up 4.8 per cent to 2.4 Mtoe in 2019. This includes the non-renewable component of waste.

Quarter 4 of 2019 saw similar trends to the year as a whole, with a small decrease in fuel use linked to lower generation, increased imports and record renewable generation. Fuel used totalled 16.4 Mtoe in Quarter 4, down 0.3 per cent compared to the same period in 2018.

Although the total fuel used was similar, there was a substantial decrease in the amount of fossil fuels used, down 7.8 per cent in Quarter 4 2019 compared to 2018. Fossil fuels in Quarter 4 2019 totalled 6.8 Mtoe, with 6.0 Mtoe of gas. The decrease in fossil fuel usage comes from a reduction in the amount of coal used, down 43 per cent to 0.7 Mtoe in Quarter 4 2019.

Increases in fuel used were seen for nuclear generators, bioenergy and other fuels in Quarter 4 of 2019, compared to the previous year. Fuel used by nuclear generators rose 7.4 per cent to 3.4 Mtoe as outages were completed at Hartlepool and Heysham 1, while an increase in biomass capacity\(^8\) saw thermal renewable (bioenergy) fuel use increase by 4.4 per cent to 3.2 Mtoe in Quarter 4 2019.

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\(^7\) Note that for wind and other primary renewable sources the fuel used is assumed the same as the electricity generated, unlike thermal generation where conversion losses are incurred.

\(^8\) See Table 6.1 for details.
Total consumption of electricity decreased in 2019 compared to 2018. Total consumption was 294 TWh in 2019, down 1.8 per cent compared to 2018. There were year on year decreases in all sectors, down 1.9 per cent for the industrial sector, 1.3 per cent for the domestic sector and 2.4 per cent for other final users (including the commercial sector).

Levels of domestic and commercial consumption are largely driven by temperatures and were particularly influenced by warmer average temperatures in the first quarter of 2019. Quarter 1 of 2018 saw the ‘Beast from the East’ cold weather, driving up demand for electricity. In contrast Quarter 1 of 2019 was comparatively mild with average temperatures up 42 per cent. This led to an 8 per cent reduction in domestic consumption in the first quarter of the year. While temperatures were relatively similar for the rest of the year, this decrease in Quarter 1 drove the reduction for domestic electricity for the year as a whole. A similar picture was seen for commercial and other users, although consumption showed a lower decrease overall for this sector.
For Quarter 4, total final consumption was slightly higher than in Quarter 4 of 2018, up 0.6 per cent from 78.0 TWh to 78.5 TWh. Domestic and commercial consumption increased, offset by a decrease in industrial consumption.

Domestic electricity consumption in Quarter 4 2019 increased by 2.6 per cent compared to Quarter 4 2018, to 29.6 TWh. There was a rise of 0.7 per cent in consumption by 'other final users', which is largely commercial users. This reflects cooler average temperatures over the quarter\(^9\), increasing the electricity demand for heating. Industrial electricity consumption was the only sector to decrease in Quarter 4 2019 to 23.0 TWh, a reduction of 1.9 percent from Quarter 4 2018.

\(^9\) See table 7.1 for details.
Net imports increased by 11 per cent in 2019 compared to 2018, to 21.2 TWh. This was the highest level on the published data series and accounted for 6.4 per cent of the total electricity supply over the year. Total imports increased by 15 per cent to 24.6 TWh in 2019; total exports were up 52 per cent to 3.4 TWh. The interconnectors with France and the Netherlands both saw a decrease in net imports, down 14 per cent for France and 8 per cent for the Netherlands. This is likely to be partly due to the new interconnector between the UK and Belgium which began operation in January 2019 and had net imports of 5.0 TWh in 2019.

The interconnector between Ireland and Northern Ireland was the only net exporter of electricity in 2019, with net imports of -0.8 TWh. This was substantially higher than in 2018, because of a large increase in exports, up 33 per cent to 1.1 TWh.

Quarter 4 of 2019 saw a substantial rise in net imports compared to the same period in 2018, up 38 per cent to 5.0 TWh. The interconnector with France had the highest net imports (2.4 TWh) with net imports also high on the Netherlands-UK interconnector (1.4 TWh) and on the new Belgium-UK interconnector (1.3 TWh). Though net imports on the France-UK interconnector remained relatively high, they were down by 12 per cent compared to Quarter 4 of 2018, as exports to France rose by over 50 per cent compared to Quarter 4 2018 to 0.4 TWh, the highest level since Quarter 4 of 2017. This follows reductions in France’s nuclear generation (its primary source of electricity) due to multiple outages throughout the period.

The interconnector between Ireland and Northern Ireland was the only net exporter of electricity in Quarter 4 of 2019, with net imports of -0.2 TWh. This was a 6 per cent increase compared to Quarter 4 of 2018.