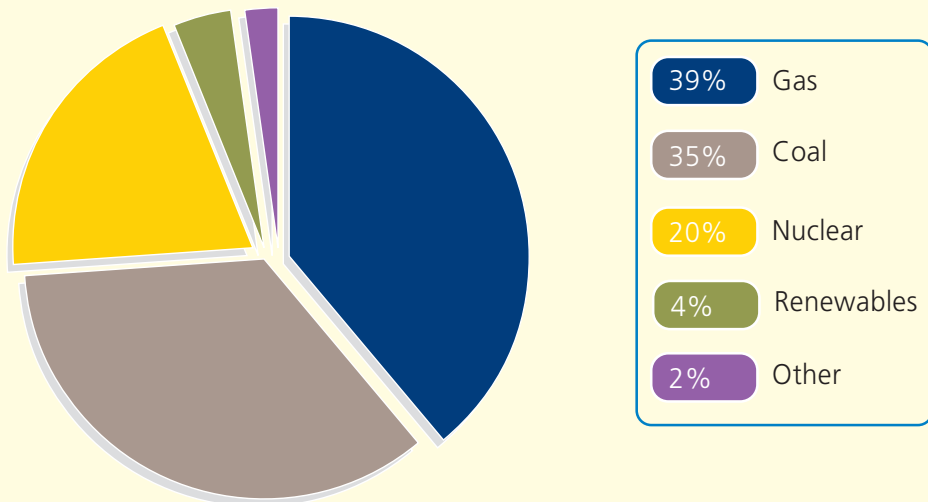


Electricity generation: facts and figures

Where does our electricity come from?

Britain's electricity comes from a variety of generating sources including renewables, coal, oil, gas and nuclear, as demonstrated in the pie chart below.

Fuel used in electricity generation



Source: Digest of UK Energy Statistics 2005

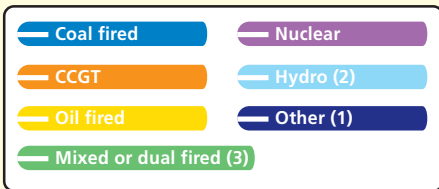
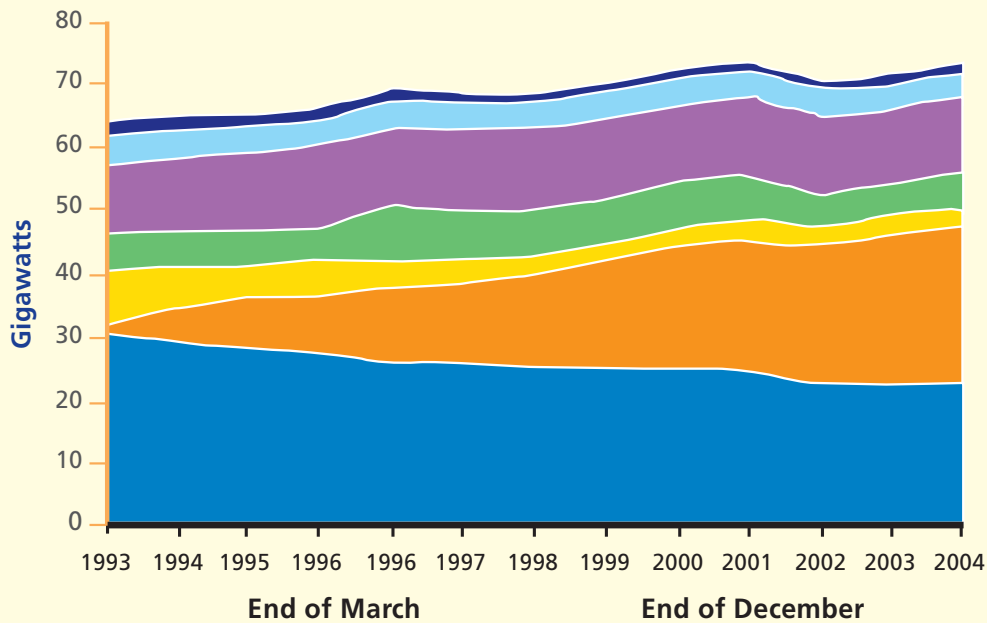
How is our power produced?

Gas, coal and nuclear power stations provide 'base load' generation, ie they are able to generate continuously throughout the day. However, gas and coal-fired power stations are also flexible in that they can vary their output to help match varying demand throughout the day. Gas, coal and other stations not required to generate continuously typically start up and shutdown one or two times per day to satisfy peak demand periods. Nuclear power stations, however, operate at maximum output whenever they are available.

How many power stations are there?

In total, there are more than 2,000 electricity generating stations in the UK. A large number of them use renewable technology. However, these stations tend to be much smaller than conventional power plants and they only provide around 3 per cent of total generation capacity. Increasingly, renewable electricity generation is being used to meet climate change targets. Under the Renewables Obligation, administered by Ofgem, the Government has set a target for all electricity suppliers to source more than 15 per cent of their power from renewable sources by 2016.

Generating capacity of major power producers, 1993-2004



- (1) Gas turbines, oil engines and renewables other than hydro
 (2) Natural flow and pumped storage
 (3) Includes gas fired stations that are not Combined Cycle Gas Turbine (CCGT)

Source: Digest of UK Energy Statistics

How much electricity do we use?

The basic units for measuring electric power are watts, kilowatts (1000 watts) and megawatts (one million watts). Energy from electricity is generally measured in kilowatt hours, megawatt hours and gigawatt hours (kWh, MWh, GWh).

For example:

- A kWh hour equates to the use of 1,000 watts of electricity for a full hour, or ten 100 watt light bulbs all lit for a full hour.
- A MWh equals 1,000 kilowatt hours – enough to supply the average power requirement for around 2000 homes for an hour.
- A GWh is one million kilowatt hours of electricity - enough to power a third of the UK's chemical industry for an hour, or around one million homes for an hour.

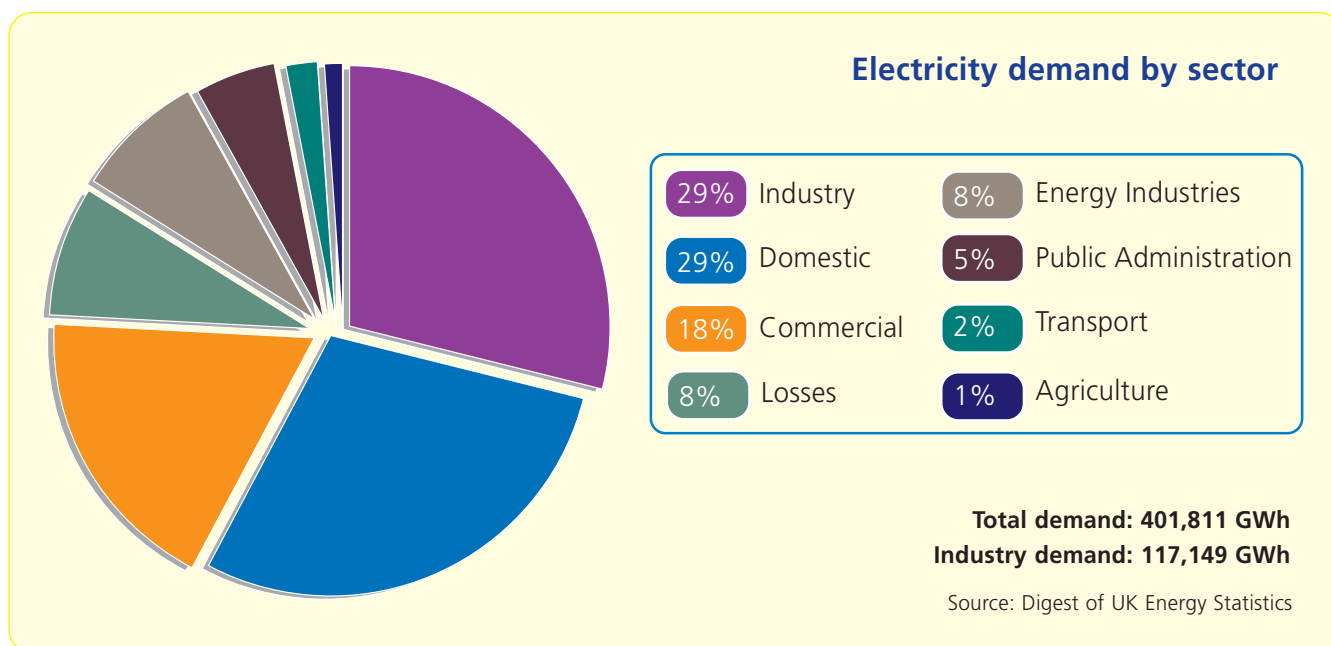
Household energy consumption

The power required by individual homes varies considerably - ranging from very little overnight, to peaks in excess of 10 kW when electric showers and energy-hungry cookers and heaters are operating.

The average household uses around 3,300 kWhs of electricity and 20,500 kWhs of gas per year.

How much electricity do different sectors use?

The pie chart below shows the most up-to-date figures for electricity use by sector. The current peak demand for electricity in Great Britain is 61.9 GW. Great Britain's total generating capacity is 75.3 GW.



Electricity transmission and distribution networks

Large electricity generators connect to the national grid, a system of high-voltage wires which transport electricity around Britain. Smaller generators connect to the lower voltage distribution networks.

Some major industrial users take their electricity straight off the grid, but electricity for most commercial and industrial premises, and all domestic use, reaches our homes via the 14 lower voltage distribution networks across Britain, which are connected to the grid itself.

How big is the electricity network?

The high-voltage transmission system comprises more than 24,600 kms of high-voltage overhead lines and over 1,000 km of underground cables. National Grid Electricity Transmission Ltd owns the network in England and Wales and Scottish and Southern Energy Power Distribution and Scottish Power Transmission own the networks in northern and southern Scotland respectively.

Approximately 800,000 kilometres of overhead and underground power lines also make up the 14 low-voltage distribution networks.

No system in the world can deliver a 100 per cent guarantee that there will never be any power cuts. However, Ofgem's analysis shows the transmission grid is 99.9997 – 99.9999 per cent reliable. Power cuts on the distribution networks have also fallen by 16 per cent since an incentive scheme was introduced by Ofgem in 2002.

What role does the energy industry play in the national economy?

The energy industry plays an important role in the national economy, making up around 3.2 per cent of UK Gross Domestic Product (GDP). Almost 140,000 people are directly employed across the energy sector (around 4 per cent of total

industrial employment) and the energy industry also attracts around 5.8 per cent of total UK investment.

How is electricity traded?

Electricity is freely traded at the wholesale level in Great Britain via various mechanisms including power exchanges (e.g. UKPX), forward and futures markets, through brokers and bilaterally.

These mechanisms offer various different ways of trading electricity at the wholesale level. For example, they enable electricity to be traded on the spot market for imminent periods, or on the forward market for future periods.

They also enable electricity to be traded for specific half hours or for much longer durations. It is through these mechanisms that generators sell their output to suppliers, who then sell

the electricity to customers. Traders can also buy and sell electricity at the wholesale level.

Commercial incentives exist to encourage market participants to balance electricity supply and demand via the trading mechanisms mentioned above. In the event that supply and demand do not match, National Grid, as the system operator for Great Britain, buys or sells electricity to ensure that the system is balanced in real time.

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