

# factsheet

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## National Grid and the electricity industry

The Electricity Act 1989 introduced competitive wholesale and retail electricity markets to Great Britain.

Electricity generators in England, Scotland and Wales compete to sell electricity to suppliers who, in turn, compete to sell this electricity to end consumers. To operate in the wholesale or retail markets, companies need a licence, which has conditions that govern their behaviour.

Electricity generated by large power stations typically needs to be transmitted long distances using high voltage power lines before being distributed locally, at lower voltages, to homes and businesses. Unlike in generation and supply, companies do not compete to transmit or distribute electricity. Transmission and distribution are monopoly activities, as there is only one set of transmission or distribution wires in any given area.

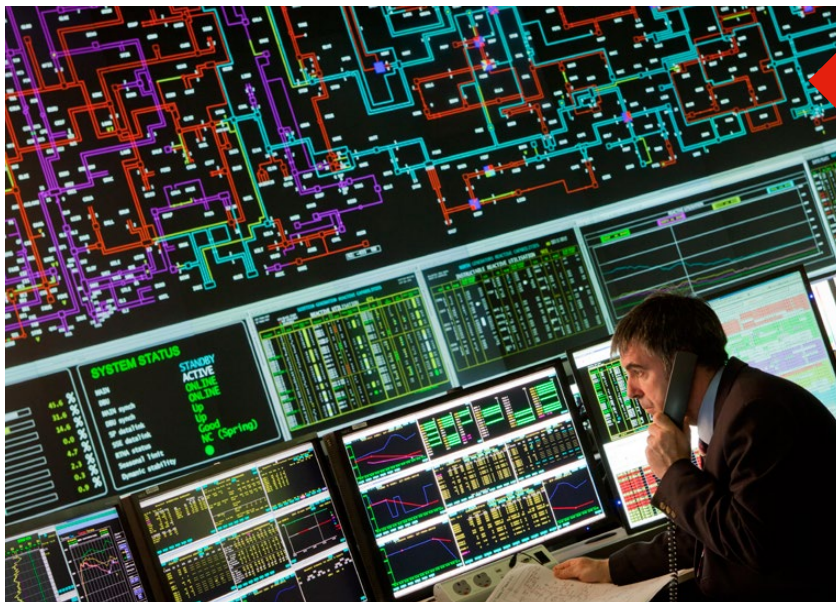
National Grid owns the high voltage electricity transmission system in England and Wales and operates the high voltage electricity network throughout Great Britain. National Grid is the only company licensed to transmit electricity in England and Wales, while in Scotland transmission licences are held by Scottish Power Transmission Limited and Scottish and Southern Energy. The individual companies own the transmission wires and are responsible for planning, developing and maintaining their parts of the system.

There are plans for the development of an offshore electricity transmission grid to accommodate the development of offshore wind farms. National Grid's role as system operator will be extended to the offshore network, but separate companies will build and own parts of the offshore transmission network itself.

### **The role of the electricity regulator**

The electricity market is regulated by the Gas and Electricity Markets Authority (GEMA) which is supported by the Office of Gas and Electricity Markets (Ofgem). The regulator's principal role is to protect the interests of existing and future consumers. Wherever appropriate, it does this by promoting competition. The regulator must take into account a number of factors when carrying out its role. These factors include the need to meet all reasonable demands for electricity; to ensure that licence holders can finance their activities; to contribute to sustainable development; and to consider the interests of certain groups of vulnerable people such as the sick and elderly. The regulator must carry out its role in a way that promotes efficiency and economy, protects the public from danger, and secures a diverse long-term energy supply as well as taking into account environmental matters.

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The regulator carries out its role mainly by making sure that companies meet the conditions of their electricity licences and by proposing changes to licence conditions where appropriate. Because electricity transmission is a monopoly activity, the amount National Grid can charge is limited by its licence conditions. The regulator periodically carries out a review of the amount of money National Grid needs to operate its transmission business efficiently, and proposes changes to the licence conditions in order to limit revenue accordingly.

### **National Grid's role**

National Grid is an international electricity and gas company and one of the largest investor-owned energy companies in the world. It plays a vital role in delivering gas and electricity to millions of people across Great Britain and the north-eastern United States in an efficient, reliable and safe manner.

We have a key role to play in the British electricity market. The costs of transmitting electricity ultimately pass through to consumers in their electricity bills therefore, under Section 9 of the Electricity Act 1989, we have a statutory duty to maintain 'an efficient, co-ordinated and economical' system of electricity transmission.

It is also our job to ensure electricity supplies are sufficiently reliable and meet minimum standards of quality in terms of voltage and frequency. Under our licence, we have to offer terms to connect generators to the transmission system, although it is the generators who decide where they wish to site the generation. We must also maintain our transmission system and manage a programme of asset replacement and investment to ensure its long-term reliability.

We have established a variety of policies to ensure that we carry out our role in a responsible manner. One example of these is our Stakeholder, Community and Amenity Policy, which sets out our commitments for undertaking works on the transmission system.

### **How does the electricity transmission system work?**

The transmission system in England and Wales consists of approximately 7,200 kilometres (4,470 miles) of overhead line, 1,400 kilometres (870 miles) of underground cable operating at 275,000 and 400,000 volts (275kV and 400kV). These extremely high voltages are necessary to enable large quantities of electricity to be transported long distances without incurring excessive losses due to the resistance that is unavoidable in electrical conductors.

There are around 330 substations where power stations and the lower-voltage regional electricity distribution networks connect to the transmission system, and where transmission circuits connect to each other.

Transformers at these substations convert electricity from the lower voltages at which it is generated by the power stations to the higher transmission voltages, and from transmission voltages to the lower voltages at which it is distributed onwards to homes and businesses.

Switchgear in substations also allows power flows to be re-routed in the event of faults at power stations. Faults can interrupt output suddenly and without warning. Faults on transmission circuits may only last seconds or even fractions of seconds and are mainly caused by lightning strikes.