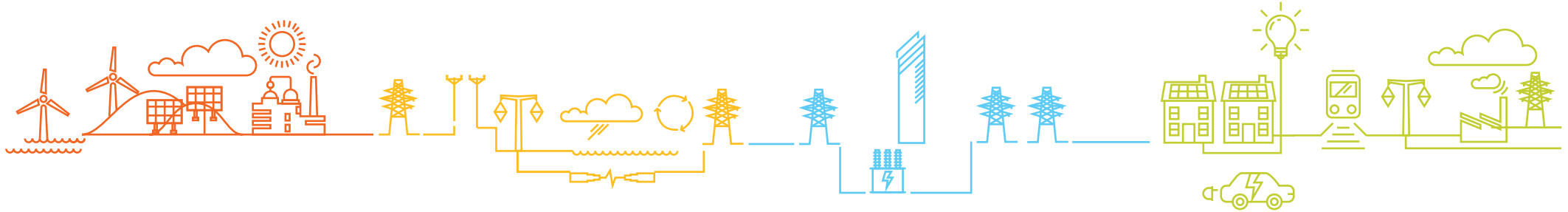


Britain's electricity system and National Grid ESO's role

Powering Britain is a big job. We provide homes and businesses with the electricity they need, when they need it, which involves thousands of people working around the clock. It's a system with many moving pieces and the ESO has to make sure demand and supply are always balanced.

How the energy system works to get power where it's needed



1. Energy generation

Britain's electricity is generated from a wide range of sources, such as renewable energy like solar and wind, and more traditional power stations run on nuclear or gas. We share electricity with our neighbours from abroad, using interconnectors – technology which can transfer energy back and forth between countries.

National Grid ESO do not own or run the power stations but can ask generators to make more power available to meet demand or to reduce output if there is too much supply.

2. The Grid

Once generated, electricity is then transported by the ESO, a legally separate business within the National Grid Group, through the UK's nationwide transmission network. National Grid, the Transmission Owner, owns and operates the network, a system of cables, pylons and substations, designed to carry energy long distances at high voltages. National Grid ESO then operates the electricity system, balancing supply and demand, second by second, 24/7.

3. DNOs and Suppliers

Distribution Network Operators take the electricity from the grid and move it through their own network of power lines and underground cables, taking it to homes and businesses. As they do this, they convert the high voltage electricity that's in the network to the lower voltage electricity that people need.

Suppliers then charge customers for the electricity they use. They buy electricity from generators and then sell it on to customers, competing to supply homes and businesses who are free to choose any supplier they like.

4. Users

Finally, electricity reaches us. After its journey from the generation stations through the grid and DNOs and into the ownership of energy companies, it's ready for us to run our businesses, charge our phones and watch the TV.

Who does what?

National Grid ESO

National Grid Electricity System Operator (ESO) runs the electricity system in Great Britain. We do not generate energy, send it directly to customers, or to sell it, but we ensure that electricity is transported safely, securely and reliably from where it is produced to the DNOs. This includes balancing the system second by second, 24/7, to make sure supply always meets demand. We're kind of like the motorway system for energy, we run high voltage electricity through our systems until it gets to the B roads, which are local distribution networks where smaller operators take it to peoples' doors.

National Grid ESO isn't responsible for building, running or fixing power stations, but they are responsible for ensuring the system is in balance. For instance, during the World Cup when more homes than usual are tuning into to watch their team, the ESO might ask generators to increase capacity or import electricity from abroad, to ensure everyone can watch the game.

As more renewables come onto the system, The ESO is making sure we have a flexible, high performing network that is capable of operating at zero carbon. Our ambition is to be able to operate a zero carbon system by 2025.

Transmission Owner

National Grid owns and operates the high voltage transmission network in England. They essentially own the "motorways" through which energy passes.

Electricity generators

Making the energy we need is the responsibility for generation companies. They produce electricity from a variety of sources, whether solar, gas, wind, nuclear or hydro. They sell the electricity they produce.

Distribution Network Operators

There are 14 licensed Distribution Network Operators (DNOs) in Britain. DNOs take the high voltage power that has been sent to them by the ESO, convert it into lower voltage, and send it out to consumers and businesses via local networks.

Electricity suppliers

Consumers and businesses buy their energy from suppliers, companies who buy from generators and others. They can choose whichever supplier they prefer. Some DNOs are also suppliers but this is not always the case.

Ofgem

The Office of Gas and Electricity Markets (Ofgem), is the independent regulator of the gas and electricity systems. Its job is to ensure the system works for customers and delivers value for money and reliability. Among their responsibilities, Ofgem set the rules on how we balance supply and demand, how we deal with energy security and what should be done to ensure the system works well.

Government

Responsibility for the UK's energy policy ultimately lies with the Government. The Department of Business, Energy and Industrial Strategy sets policy, making choices on investment, security and the rules running the system to make sure the UK has the supplies of energy, heat and light it needs.