Forecasting Demand

National Grid owns the high-voltage electricity transmission network in England and Wales, which includes some 4,500 miles of overhead lines and around 340 substations, and also operates the system across Great Britain.

Whenever we switch on a television, turn the lights on or use electrical appliances, we rely on electricity which has passed across the electricity transmission network. Unlike gas or water, electricity cannot be stored in large quantities. It is National Grid's job to match the generation capacity of power stations with demand – minute by minute, 24 hours a day, 365 days a year.

As system operator, National Grid's role is to keep the frequency at 50Hz and ensure that the amount of electricity supplied always equals the amount demanded. It's a bit like trying to keep a car at 50mph while driving up and down hills.

Who is National Grid?

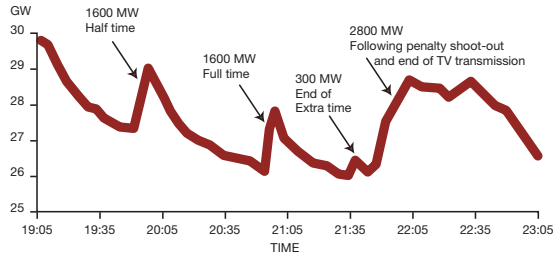
National Grid is one of the world's largest utilities, focused on delivering energy safely, reliably, responsibly and efficiently. We own and operate gas and electricity transmission and gas distribution networks in the UK and US and electricity distribution networks in the US. We also have a number of businesses operating in related areas such as metering, LNG importation and interconnectors.

Managing the System

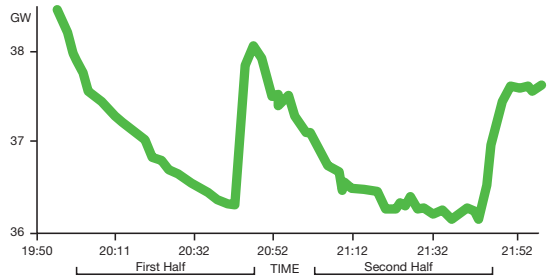
The electricity transmission system for the whole of Great Britain is run by National Grid's central control centre who 'balance' the system around the clock. Rapid or unexpected changes in demand add to this complex task and we need to carefully plan, forecast and manage for these occasions. National Grid's specialist forecasting team use their knowledge and various tools to predict what electricity demand will be. Key things considered include weather forecasts and historical data.

The most common surges in electricity demand are related to tv events eg soaps or world cup football matches. During an advert break or at the end of a programme, National Grid gear up for a increase in demand when people turn on their kettles for a cup of tea, switch on the lights or reach for a drink from the fridge. For a short but dramatic period this almost instant increase can be as high as 10% of existing demand. The biggest ever 'tv pick-up' recorded to date was after England's world cup semi-final against West Germany in 1990, when demand soared by 2,800 megawatts – equivalent to more than a million kettles being switched on!

England Vs Germany 1990, World Cup Semi-Final, Kick Off 19:00



England Vs Sweden 2006, World Cup 2006 First Round, Kick Off 20:00



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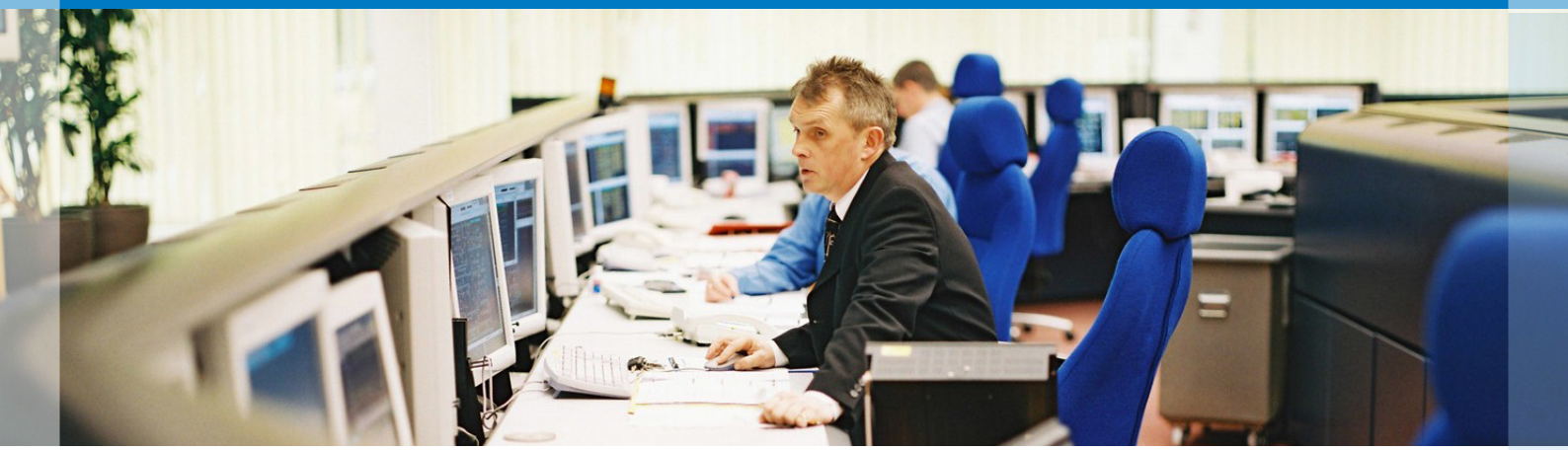

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How do your everyday activities affect demand?

Follow us through a typical winter day and discover how National Grid anticipates your demand for electricity

3:00

Who on earth needs electricity at this time of the morning?

Three o'clock in the morning. Although demand levels are still well below those of daytime, this is one of the busiest times for National Grid. Industries are working, and many domestic electrical appliances – from washing machines to storage heaters – are operating on timers to take advantage of cheap rate electricity.

7:30

Wakey, wakey, rise and shine!

Time to get up! The alarm clocks begin to ring across the country. Demand rises as a bleary-eyed nation turns on its radios, kettles and toasters and faces a new day.

10:00

Hard at work

Demand has been increasing throughout the morning as people arrive at work and children go to school.

By 10am, the demand curve flattens as activity reaches its normal daytime level.

17:30

Rush hour for the National Grid!

In winter, the daily peak in electricity demand occurs at around 5.30pm. People arriving home from work and turning on heating and domestic appliances, much of industry is still running, shops and offices are still open, and lights are coming on all over the country as darkness falls.

20:00

Sit down, put your feet up and relax!

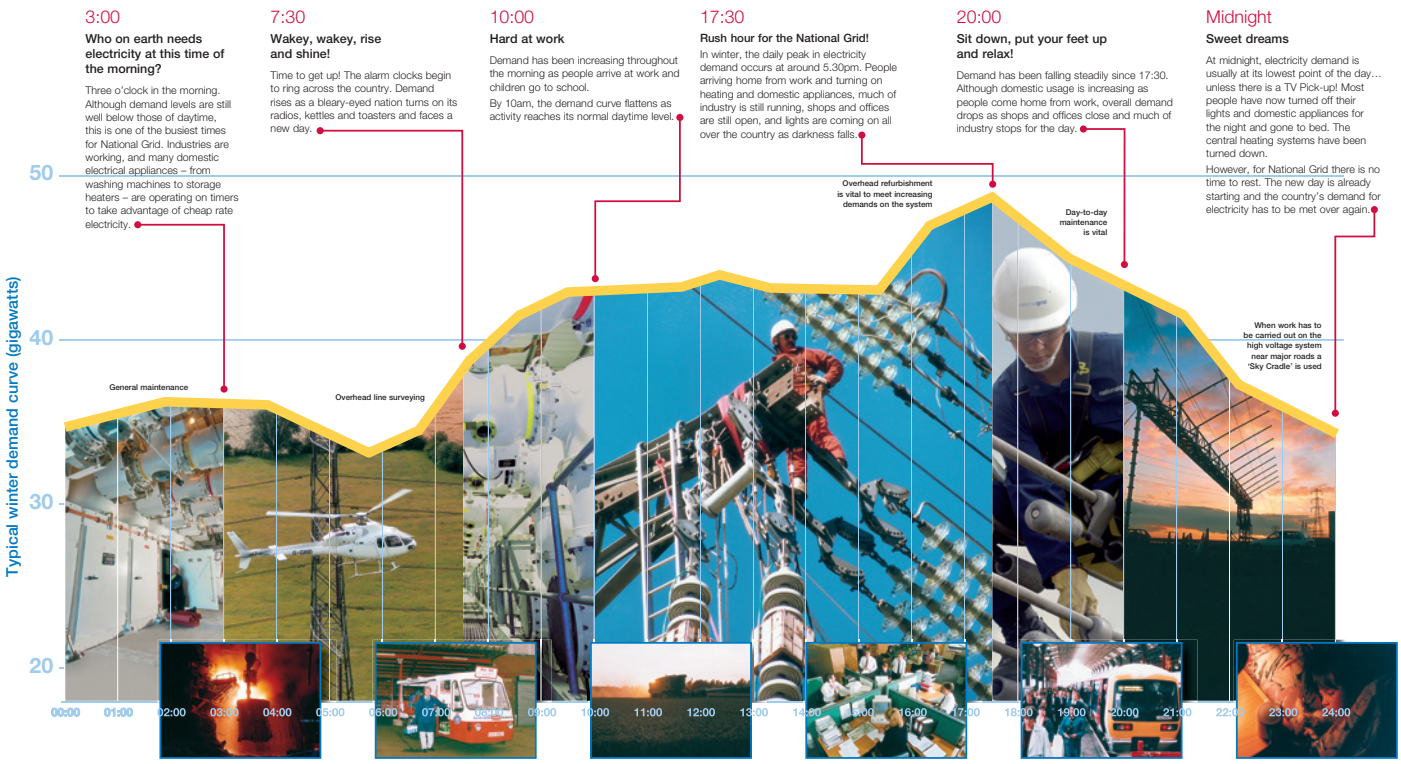
Demand has been falling steadily since 17:30. Although domestic usage is increasing as people come home from work, overall demand drops as shops and offices close and much of industry stops for the day.

Midnight

Sweet dreams

At midnight, electricity demand is usually at its lowest point of the day… unless there is a TV Pick-up! Most people have now turned off their lights and domestic appliances for the night and gone to bed. The central heating systems have been turned down.

However, for National Grid there is no time to rest. The new day is already starting and the country's demand for electricity has to be met over again.



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