

## Electricity usage

### Power patterns

The vast majority of homes and businesses in the UK use electricity. Because electrical energy is easily transformed into lots of different types of energy it is used for:

- **Water heating**
- **Space heating**
- **Running machines or appliances**

As users of electrical energy we plug in and switch on our appliances whenever we like. This means that there are times when we use more electricity than others. This variation can be seasonal – most of us tend to use more electricity in the winter because we have the lights on longer, we heat our homes more and we probably use cookers more often to make hot food.

The variation can also be minute by minute – when we put the kettle on during the ad break or when we put on the immersion heater for that quick shower in the evening. Usage may drop during the day if everyone is out at school and work.

Now imagine these variations multiplied by the 25 million households in the UK and you might see why this can cause problems for electricity suppliers.



### Use it or lose it

The real difficulty in dealing with this variation is that the electricity we use in our homes is alternating current (AC) electricity and it cannot be easily stored.

This means that if electricity suppliers over-produce, the excess is wasted and if they under-produce, the lights go out.

### Keeping the balance

It is the responsibility of the National Grid to keep the fine balance between electricity supply and demand. They can do this in several different ways.

1. Producing demand forecasts. These forecasts take into account everything from weather patterns to TV schedules and are available up to a year in advance.
2. Reserve capacity. Some quick starting power stations, particularly hydroelectric and pumped storage types are kept in reserve as these can start up within minutes and supply power to cope with surges over and above the base load.
3. Export and import. The UK is joined to mainland Europe by two high capacity electricity cables called interconnectors. If the UK has a surplus of electricity at any particular moment it can export to consumers on mainland Europe. If the UK has a deficit, it can import electricity from mainland Europe.