# Energy facts

Week 1

DAY 1

## DID YOU KNOW? At the end of a TV programme there is often a sudden increase in the amount of electricity that's used in people's homes. Why do you think this could be?

- Surges in demand totalling 4,348 MW were recorded for the Brazil games during the 2014 World Cup, equivalent to 1.75 million kettles being switched on.
- The record for a single match though goes to the 1990 World Cup semi-final between Italy and Argentina, which saw a 2,000 MW surge in demand afterwards, equivalent to 800,000 kettles being switched on.
- To ensure we have enough power for these surges, the National Grid instructs hydroelectric plants to increase their output and, if needed, to buy in additional electricity from France.

**Watch a short film about this on the BBC website.**

DAY 2

## DID YOU KNOW? The water you use at home has an impact on your family's energy bill.

- Most families spend up to a fifth of their heating bill on warming up the water for showers, baths and taps.
- If everyone in your family spent one minute less in the shower every day, you could save £10 per person a year on your home's energy bills.
- Other ways in which your family could save energy include installing water-saving products (like water-efficient showerheads) and insulating your home's hot water cylinder with a special jacket.

**Find out what you could do to save water in our Find the missing litres quick activity.**



Sources: **Day 1**: www2.nationalgrid.com/Mediacentral/UK-Press-releases/2014/World-Cup-fans-switched-on-to-Brazil/
**Day 2**: www.energysavingtrust.org.uk/home-energy-efficiency/energy-saving-quick-wins

# Energy facts

Week 1

DAY 3

## DID YOU KNOW? Older appliances typically use more electricity.

- Older appliances are more likely to have developed faults that prevent them working as efficiently as younger models.
- A freezer with a faulty thermostat could cost an extra £45 a year to run.
- When buying a new appliance, shoppers should check the energy rating, but also bear in mind its size. For instance, choosing an A+++ fridge freezer over an A+ unit could save about £190 in energy bills over the lifetime of the product. But a smaller A-rated fridge might use less energy than a larger A+ rated fridge.

DAY 4

## DID YOU KNOW? In 2015, 21% of the UK's electricity came from nuclear power.

- Nuclear power comes from uranium, a radioactive metal, which releases lots of energy when the millions of parts it's made from (called atoms) fall apart. This generates a lot of heat energy, which can be used to power a turbine.
- There are currently nine nuclear power stations in the UK.
- What do you think are the pros and cons of nuclear energy?

**Want to know more about nuclear energy? Watch our film featuring Busta and Pong.**

DAY 5

## DID YOU KNOW? 17% of people in the world don't have access to electricity.

- Energy poverty is a lack of access to modern energy services. These services are defined as household access to electricity and clean cooking facilities (e.g. fuels and stoves that do not cause air pollution in houses).
- Could you go for a week or even a day without electricity? Think about how your day-to-day life would be very different.

**Use our Energy presentation to explore this topic in more detail.**



Sources: **Day 3**: www.energysavingtrust.org.uk/about-us/news/brits-could-save-£17-billion-year-switching-appliances-standby, www.energysavingtrust.org.uk/home-energy-efficiency/home-appliances **Day 4**: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/540933/Chapter_5_web.pdf **Day 5**: www.iea.org/topics/energypoverty/

# Energy facts

## Week 2

DAY 6

**DID YOU KNOW?** Birds can sit on electricity cables without being electrocuted. Why do you think this is?

- An electrical current is the movement of electrons. When a bird has both feet planted on a wire, the electrons don't need to travel through its body. However, should the bird touch another wire or the electricity pole with one foot, it creates a path for the electrons to move through the bird's body and... ZAP!
- The movement of electrons through a device like your TV gives it the energy to display images and produce sound.
- People working on electricity cables use insulating materials to protect themselves from being electrocuted, such as industrial rubber gloves. An insulator is something which doesn't carry an electric current very well.

DAY 7

**DID YOU KNOW?** The UK is the windiest country in Europe, and has over 6,900 wind turbines.

- Wind energy is generated both onshore (land) and offshore (sea).

**Find out about building an offshore wind farm in our film.**

- The first offshore wind farm in the UK was a near-shore installation in Blyth harbour, north east England, which started operating in 2001.
- If you include small to medium-sized wind turbines – which are popular with farmers and landowners – the figure for the number of wind turbines in the UK comes in at more than 34,000.

**Could your school have a wind turbine?**
**Have a look at our Will Wind Work lesson plan.**



Sources: **Day 6**: engineering.mit.edu/ask/how-do-birds-sit-high-voltage-power-lines-without-getting-electrocuted, powerup.ukpowernetworks.co.uk/under-11/conductors-and-insulators.aspx **Day 7**: http://www.renewableuk.com/page/UKWEDhome, http://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Docs/small_medium_wind_uk_market_.pdf

# Energy facts

## Week 2

DAY 8

### DID YOU KNOW? Electric cars have been around for 180 years.

- The first ever commercially available car with rechargeable batteries was introduced back in 1881. By the end of the First World War though, petrol cars had become more reliable and petrol was more available, so the electric car died out.
- These days there are thought to be over 10,000 electric vehicles in the UK. Have you seen any charging points near you?
- Released in Japan in 1997, the Toyota Prius became the world's first mass-produced hybrid electric vehicle.

**To find out more about the pros and cons of electric vehicles, take a look at our Electric Vehicles lesson plan.**

DAY 9

### DID YOU KNOW? More than half a home's energy bill goes on heating and hot water.

- Installing devices that help control a home's heating – such as a room thermostat, programmer and thermostatic radiator valves – could save households £80 to £165 a year.
- Many homes are too warm; ideally a thermostat should be set between 18 and 21 degrees. What temperature is your home's thermostat set at?
- New smart heating controllers enable people to control their heating (and, in some cases, hot water) from their mobile phone. It means they don't have to be at home to control when their heating (and hot water) turn on and off.

DAY 10

### DID YOU KNOW? The number of gadgets people have in their kitchens has increased by 58% since 2010.

- More than twice as many households now own smoothie makers, electric juicers and ice cream makers, compared to six years ago!
- All of these gadgets require electricity to run – and if they're left in standby mode, they could be wasting energy too.
- Using a bowl to wash up, only filling the kettle with the amount of water you need and putting lids on saucepans can all help to save energy in the kitchen – why do you think this is?



Sources: **Day 8**: breakingenergy.com/2014/09/15/the-history-of-the-electric-car/, www.efficientenergysaving.co.uk/electric-car-facts.html **Day 9**: www.energysavingtrust.org.uk/home-energy-efficiency/heating-and-hot-water, www.energysavingtrust.org.uk/home-energy-efficiency/energy-saving-quick-wins **Day 10**: www.energysavingtrust.org.uk/about-us/news/gadgets-add-£600-million-uk-energy-bill

# Energy facts

## Week 3

DAY 11

### DID YOU KNOW? Insulating a house can make it warmer and more efficient.

- Homes can be insulated from above (the roof), below (the floorboards) and the sides (the walls and windows).
- In an uninsulated house, a quarter of heat is lost through the roof... what a waste of money!
- Homes can be insulated with a variety of materials. One of the most common insulation materials is made from recycled bottles.
- The Energy Saving Trust estimates that a family living in a typical three-bedroom semi-detached house could save £310 a year on their energy bills by installing insulation in their roof and walls. Do you know if your home has been insulated?

DAY 12

### DID YOU KNOW? The coal that powers electricity today is made from plants and trees that existed millions of years ago (before the time of dinosaurs!)

- Coal contains energy that plants absorbed from the sun millions of years ago.
- The main element of coal is carbon. But it also contains hydrogen, oxygen, nitrogen and sulphur.
- Burning coal releases energy and this is used to heat water. This generates steam, which drives a turbine to generate electricity.

**Coal has been mined around the world through history but how much should we use in the UK? Download our Energy Mix activity or hold an energy debate to analyse the pros and cons of coal versus other energy sources.**



Sources: **Day 11**: www.energysavingtrust.org.uk/home-insulation/roof-and-loft; www.renewableenergyhub.co.uk/types-of-insulation.html

# Energy facts

Week 3

DAY 13

## DID YOU KNOW? Appliances left in standby mode still use electricity.

▶ In some cases, the appliance might be waiting to be activated by a remote control – like a TV – or consuming power to keep a light on. The appliance won't stop drawing power until it has been switched off at the plug.

▶ Rules within the EU mean that electrical products sold since 2010 cannot have a standby power greater than 1W, however, standby continues to be a problem because we're using more electronic devices than ever before.

▶ More than three-quarters of people in a recent survey admitted to leaving at least two devices on standby regularly.

▶ Leaving your TV and games console on standby all the time could add an extra £80 to your family's electricity bill, so switch them off!

**Why not carry out an undercover audit to find out how many appliances are left on at school?**

DAY 14


## DID YOU KNOW? By 2020, every home in England, Wales and Scotland should have a smart meter.

▶ A smart meter measures the amount of electricity and gas that's used. Unlike a traditional meter, however, it sends this information back automatically to your supplier. This means that you no longer need to take meter readings.

▶ Most smart meters come with a monitor that lets you see how much energy you're using, how much it costs and how much energy you've used in the past, so you can be smarter about how you use energy overall.

DAY 15

## DID YOU KNOW? By 2040, the world's energy supply is expected to be equally split between low-carbon sources (nuclear and renewables), oil, natural gas, and coal.

▶ Renewables are expected to make up nearly half of the global increase in power generation, and will overtake coal as the main source of electricity.

▶ Wind power is the biggest contributor to growth in renewables-based generation, followed by hydro power and solar technologies.



Sources: **Day 13**: www.energysavingtrust.org.uk/about-us/news/gadgets-add-£600-million-uk-energy-bill, www.energysavingtrust.org.uk/about-us/news/brits-could-save-£17-billion-year-switching-appliances-standby **Day 14**: www.smartenergygb.org/en/the-bigger-picture/about-the-rollout **Day 15:** stateofgreen.com/en/news/world-energy-outlook-2014, www.iea.org/Textbase/npsum/WEO2014SUM.pdf

# Energy facts

## Week 4

### DAY 16

**DID YOU KNOW?**
**You can no longer buy incandescent light bulbs in the UK.**

- Traditional light bulbs (also known as incandescent light bulbs) create light by passing an electric current through a filament, which heats it up so it glows. The problem is they are very inefficient, only converting about 5% of the electricity they use into light you can see. They stopped being sold in the UK at the end of 2012.
- Compact Fluorescent Lamps (CFLs) and Light Emitting Diodes (LEDs) are more energy efficient. CFLs, for example, use up to 80% less electricity than traditional bulbs – but can last up to ten times longer.
- Using new energy-efficient light bulbs – like CFLs and LEDs – could save homes £45 a year on their energy bills. But remember, even switching off lights when they're not needed could save your family about £7 a year.

**Find out how many lights are left on in school with our Switch On to Switching Off activity.**

### DAY 17

**DID YOU KNOW?**
**Laptops use 85% less electricity than desktop computers.**

- Choosing a laptop over a desktop PC could save up to £17 per year on a home's energy bills.
- Entertainment equipment – like TVs and games consoles – typically makes up about 10% of a home's electricity bill, with computers, laptops and printers adding on another 5%.
- To avoid wasting energy, make sure that you use any power-saving settings available on your computer and never leave your computer, monitor or printer in standby mode.



Sources: **Day 16**: www.energysavingtrust.org.uk/home-energy-efficiency/lighting, www.energysavingtrust.org.uk/about-us/news/brits-could-save-£17-billion-year-switching-appliances-standby **Day 17**: www.energysavingtrust.org.uk/home-energy-efficiency/home-appliances, www.energysavingtrust.org.uk/about-us/news/gadgets-add-£600-million-uk-energy-bill, www.uswitch.com/energy-saving/guides/tvs-computers-laptops/

# Energy facts

## Week 4

### DAY 18

**DID YOU KNOW?**
**The International Space Station is powered by an acre of solar panels (about the size of a football pitch).**

- The solar panels on the ISS have a longer wingspan than a Boeing 777 jet plane.
- 52 computers control the systems on the spaceship and the electric wiring on board measures a mega eight miles!

**To find out more about how solar power works, download the Solar power electricity generation poster.**

### DAY 19

**DID YOU KNOW?**
**Electricity bills are based on the amount of Kilowatt-hours used over a period of time.**

- Kilowatt-hours measure the amount of energy used by an appliance when it is turned on.
- A home's electricity bill is worked out by multiplying the total amount of electrical units used over a period of time (the total number of kWh) by the price per kWh of electricity.
- A recent survey found that 40% of under-35s didn't know that electricity is measured in Kilowatt-hours.

**Find out more in our What is a kWh information sheet.**

### DAY 20

**DID YOU KNOW?**
**Poo can be used as a source of energy. In some countries around the world it's used as a fuel for cooking and heating.**

- Generating power from poo produces a lot less carbon dioxide than burning fossil fuels.
- Scientists are also studying panda poop to see if it can help us turn plants into fuel for greener cars in the future!

**How much do you know about biofuels? Find out more in our Energy information pack.**



Sources: **Day 18**: www.nasa.gov/mission_pages/station/main/onthestation/facts_and_figures.html **Day 19**: www.energysavingtrust.org.uk/about-us/news/energy-literacy-warning-only-7-cent-young-people-understand-bills **Day 20**: news.nationalgeographic.com/news/energy/2013/09/130910-panda-poop-might-help-turn-plants-into-fuel/, www.nature.com/nclimate/journal/v3/n2/full/nclimate1683.html