INSPIRE

TEACHER NOTES

WE'VE GOT THE POWER!

QUICK ACTIVITY

KS2

SAVE INK - don't print this first page!

EDF ENERGY HPC CGN

Lesson overview

This activity reinforces students' knowledge about our reliance on energy; their understanding of the different renewable and non-renewable sources that make up our energy mix; and key features of how we use natural resources to generate electricity.

Learning objectives

- Understand how electricity is generated from different energy sources
- Distinguish between renewable and non-renewable energy sources
- Learn about the processes for generating electricity from different energy sources
- Identify different jobs in the low-carbon energy sector

Subjects

Science
Geography
PSHE

Gatsby Benchmarks

2: Learning from career and labour market information: Find out about jobs in the low-carbon energy industry – and why they are a good career option for today's young people

Timings

- Warm-up (optional): 10 mins
- Main activity: 35 mins
- Careers in energy: 15 mins

Materials and set-up

This **Activity Pack** contains the following materials:

- Teacher notes
- Student worksheet

This activity can be used in the classroom, led by a teacher. Or share the Teacher notes and Student worksheet with families who are home schooling.

This quick activity is a good follow-up to **The Energy Pick n Mix activity**

WARM-UP (optional)

(10 mins)

Watch this film from **BBC Teach** to recap on how electricity is generated and the different energy sources we use.

THE MAIN ACTIVITY

(35 mins)

Part 1: Fill in the blanks

Use the words below to complete the sentences.

turbines
copper wire
electricity
generator
magnet

In power stations, electricity is created by spinning a **magnet** inside a coil of **copper wire**. This is called a **generator**. It's connected to a series of **turbines**, which are spinning really fast and cause it to spin fast too. This creates **electricity**.

HPC Inspire

We're Hinkley Point C's Education Programme in Somerset and the wider South West region. And we're here to help young people take advantage of the huge opportunities that the construction and operation of HPC has to offer. We do this through a range of fun and innovative activities: including hands-on STEM workshops, careers assemblies and online learning resources.

Part 2: Match it up

Draw a line to connect the energy source with the correct picture.

Solar power

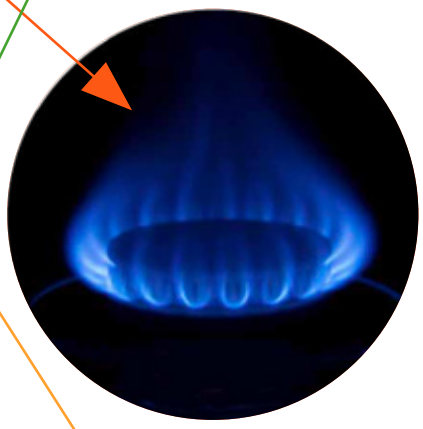
Nuclear power

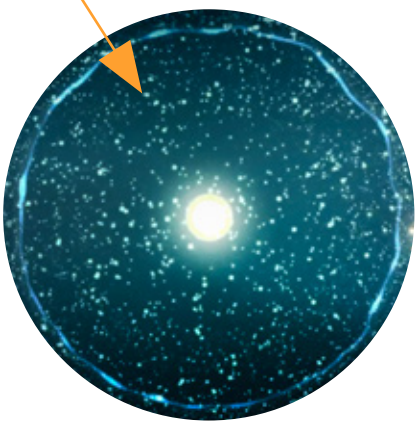
Wind power

Hydro power

Gas power

Wave power





Forfeit time! Hold your arms out and spin round five times like a wind turbine

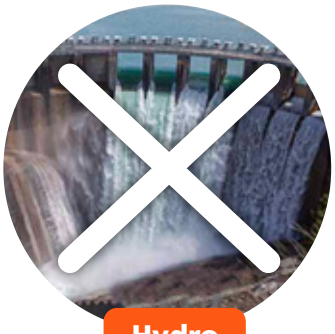
Part 3: Spot the renewable

Energy sources are either renewable or non-renewable.
Put a cross through the images that show a renewable energy source.

Clue: *Renewable energy sources will never run out; they are a natural source of energy. Non-renewable energy sources won't last forever, as they're based on materials we get from the Earth.*


Solar


Wind


Hydro


Nuclear

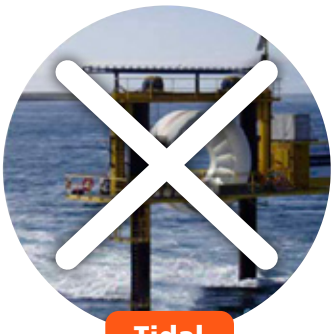

Wave


Bio fuel


Coal


Gas


Geothermal

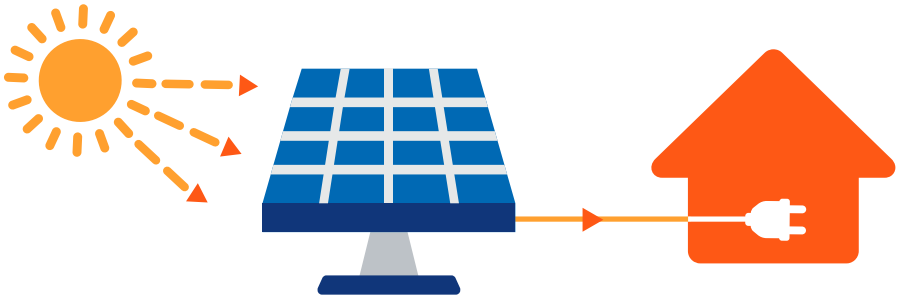

Tidal


Oil

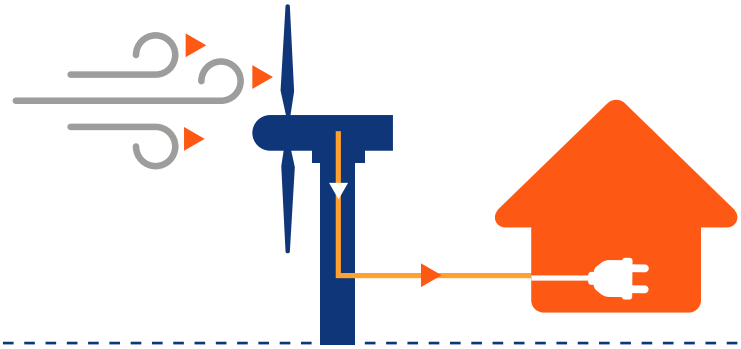
Forfeit time! Clap your hands really fast for 30 seconds – how hot do they feel? This is one way of creating heat and releasing energy.

Part 4: The generation name game

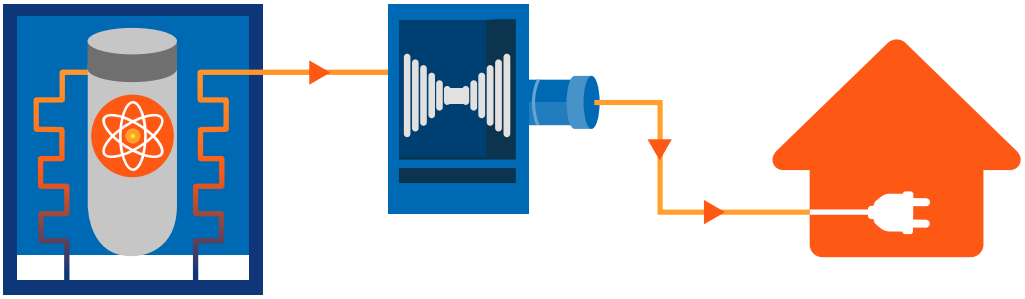
Use the diagrams to fill in the blanks in each sentence.



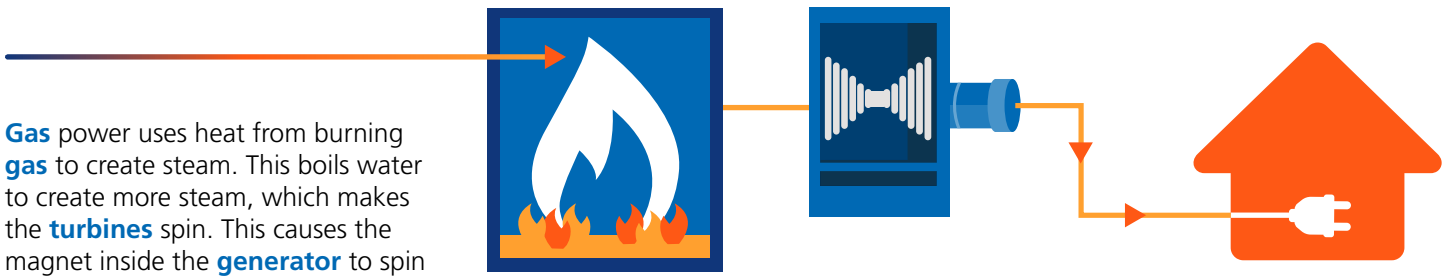
Solar power converts the heat from the **sun** into **electricity** using **solar panels**.



Wind power uses the movement of the wind to spin a **generator** inside the turbine. This creates **electricity**, which travels through **cables/wires** to homes and businesses.



Nuclear power uses heat from a **nuclear reaction** to create steam. This boils water to create more steam, which makes the **turbines** spin. This causes the magnet inside the **generator** to spin too, creating **electricity**.



Gas power uses heat from burning **gas** to create steam. This boils water to create more steam, which makes the **turbines** spin. This causes the magnet inside the **generator** to spin too, creating **electricity**.

Forfeit time! Jiggle on the spot really quickly for 20 seconds like a uranium atom

CAREERS IN ENERGY

15 mins

Job matchmakers

There are all sorts of jobs in the energy industry, particularly in the low-carbon sector producing renewable and nuclear power. Generating all our electricity from low-carbon sources will help the UK achieve its goal of net-zero carbon emissions by 2050.

Can you match up these job descriptions with the right person? Draw a line to connect them.

Repair and maintain equipment in a nuclear power station

Fit and repair solar panels

Provide technical advice and support on a construction site

Repair and maintain wind turbines

Wind turbine technician

Wind turbine technicians work on wind farms. They maintain and repair the equipment, so the turbines continue to work properly. It's a varied and manual job that involves problem solving (working out why something's not functioning) and being able to follow safety guidelines. You could be dealing with very large machinery. Working 80m off the ground. Or out at sea on an offshore wind turbine.
Find out more on the National Careers Service.

Site engineer

As a site engineer on a construction site like Hinkley Point C, you could be involved in anything from checking the layout and technical design of the new power station; to checking that health and safety guidelines are being followed; and organising the materials and people on site.
Read more on this website.

Nuclear technician

Nuclear technicians carry out an important role in maintaining the equipment in a nuclear power station. It involves hands-on work repairing and maintaining machines and tools. So you'll need to be able to work methodically and pay attention to details. As you'll be working in a nuclear power station, you'll need to follow strict safety and security rules.
Find out more on the National Careers Service.

Solar panel technician/installer

Solar power technicians fit and maintain solar panels on homes or large solar farms. You will need to work methodically, problem solve and know how to work with electricity safely. The job involves working outside – although there could be some work in a lab, depending on the role – and will involve travelling to different sites.

Useful links

BBC Teach clip about how electricity is generated: https://www.bbc.co.uk/teach/class-clips-video/primary-science-how-is-electricity-made/zfhfgwx

Hinkley Point C: https://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c

Find out about different jobs in nuclear power: https://careers.edfenergy.com/content/Early-Careers-at-EDF-Energy/?locale=en_GB

Different roles in wind energy: https://www.facesofwindenergy.com

BBC Bitesize on fossil fuels and renewable energy: https://www.bbc.co.uk/bitesize/topics/zshp34j/articles/zntxgwx

Discover what happens inside a nuclear reaction in this film: https://www.youtube.com/watch?v=3iQBMyGmg-8&list=PLXeIrBe86r_K1Czba0ZOnMbkGChwu7pYb&index=7&t=0s

Curriculum links

Science: Electricity

Geography: Human and physical geography – describe and understand key aspects of: human geography, including types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

Find out more about **Hinkley Point C** and **careers in the nuclear industry**

THE MAIN ACTIVITY

Part 1: Fill in the blanks

Use the words on the right to complete the sentences.

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electricity
generator
magnet

In power stations, electricity is created by spinning a _____ inside a coil of _____ . This is called a _____ . It's connected to a series of _____, which are spinning really fast and cause it to spin fast too. This creates _____.

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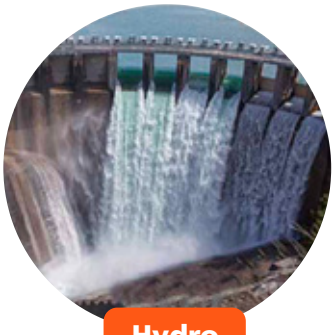
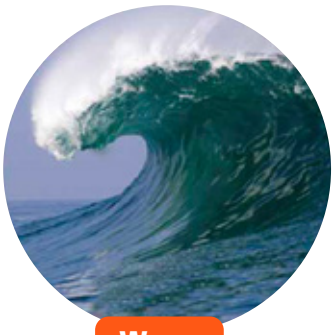

Hydro


Nuclear


Wave


Bio fuel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Geothermal


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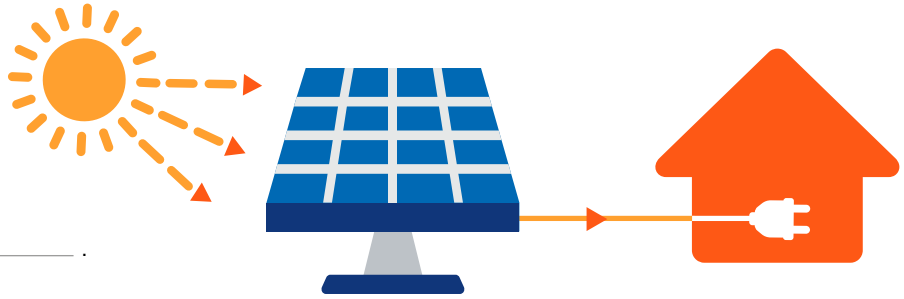
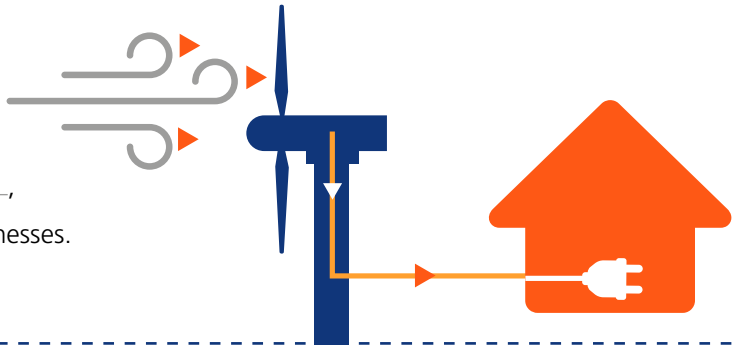


_____ power converts the heat from the _____ into _____ using _____ .



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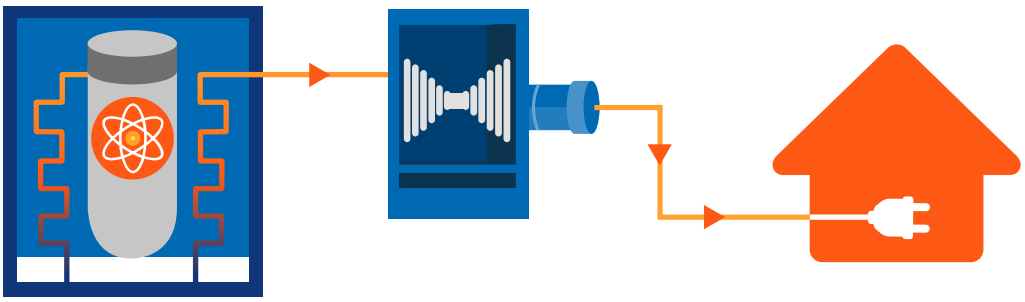

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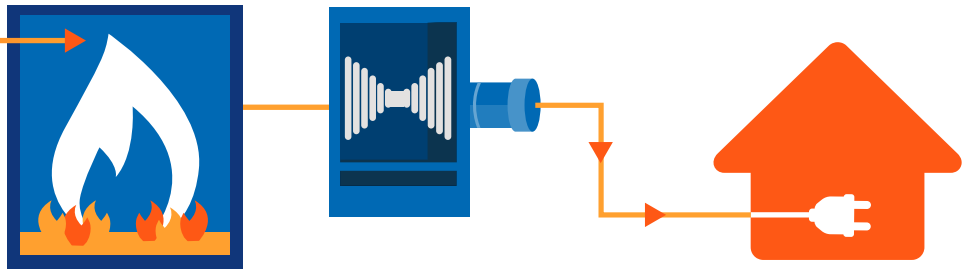

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