

Teacher/Parent Activity Guide

Many thanks for choosing to use this activity pack to challenge your Key Stage 2 (KS2) pupils. It aims to promote an understanding of low-carbon energy among young people who may one day consider a career within this growing sector.

The basics

- The activities and materials have been designed with the help of teachers and have been mapped to the **KS2 curriculum**.
- They aim to **engage young people in KS2 (ages 7-11)** in the science behind low-carbon energy, including nuclear, as a basis for developing an interest in the subject and potentially the skills to pursue future career opportunities. **The pack supports STEM subjects** and promotes group discussion, independent thinking and problem-solving skills.
- As well as this Teacher/Parent guide, the pack includes an **Electricity and Me guide** to help pupils complete the activities.
- Each of the six activities can be completed in class or at home and will take approximately **45 to 60 minutes**, although some will require a little advance preparation. Except for the animation, all of the materials can be printed.
- This document and the *Electricity and Me* guide intentionally provide a simple outline of each activity. This is to give you the **flexibility to adapt** the activities to pupil needs and enable them to **demonstrate their unique thinking** as required of each activity.



Running the activities

You will find an outline of each activity within the *Electricity and Me* guide. The KS2 learning outcomes and further information are labelled below for each activity.

Select one of the six core activities. Set the scene by taking your pupils through the PowerPoint or animation in the pack, or both. Activity 6 doesn't require an animation.

Explain the activity, what you want pupils to achieve by the end of the session, and that they'll be required to work in groups and use their initiative to research, plan, design and present.

Each core activity comes with additional levels of difficulty. These are optional and worth considering for further learning.

Provide each pupil with a copy of the *Electricity and Me* guide.



See the *Electricity and Me* guide for the Activity details.



The PowerPoint presentation features explanatory notes.

Activity 1 Calculate your carbon footprint

Tell pupils in advance that they will need to calculate approximately how far they travel each month and by which mode of transport. Also, their home energy usage – they can find this on a bill with the help of a parent/guardian: electricity (kWh), gas (kWh), heating oil (litres), coal/wood (kg).

Through collaborative working, pupils will apply their skills in maths and science to collate data and calculate their own carbon footprint.

Curriculum links to: speaking and listening, maths and science.

⌚ 30 – 60 mins

Activity 2 What is low-carbon energy?

For the purposes of the class discussion, fossil fuels include oil/petroleum, natural gas and coal, while low-carbon energies include solar, wind, nuclear, wave/tidal, hydroelectric and geothermal.

MAGNETIC STICKERS AND LANDSCAPE BOARDS CAN BE REQUESTED ON THE WEBSITE, INSTEAD OF USING PAPER AND GLUE STICKS*.

*Subject to meeting the online criteria.

Through the exploration of new science concepts and geography, pupils will discuss fossil fuels and low carbon energies and their suitability for use in different parts of the UK.

Curriculum links to: speaking and listening, PSHE, science and geography.

⌚ 15 – 60 mins

Activity 3

How much low-carbon energy are we using?

Aim to create a debate among groups after each group has presented their findings.

For parents:

Try challenging the answers your child provides to see why those answers were chosen. Feel free to add your thoughts.

Pupils will use speaking, listening and PSHE skills, to debate the advantages and disadvantages of energy sources in the UK, using statistical data to support key scientific concepts.

Curriculum links to: speaking and listening, PSHE, maths, science and geography.

⌚ 30 – 60 mins

Activity 4

How does nuclear energy really work?

Encourage pupils to take it in turns explaining how they ordered the nuclear process and why. In the discussion afterwards, use each stage to explore key scientific concepts within nuclear power, such as atoms, neutrons, nuclear fission, etc.

PHYSICAL JIGSAW PUZZLES CAN BE REQUESTED ON THE WEBSITE, INSTEAD OF USING PAPER*.

*Subject to meeting the online criteria.

Pupils will extend their KS2 science knowledge of the properties and changes of materials in order to explore the nuclear energy process and related scientific concepts.

Curriculum links to: speaking and listening, PSHE, science and computing.

⌚ 30 – 60 mins

Activity 5

How you can save the planet

Encourage pupils to identify the different forms that energy takes (eg electrical, light, heat, mechanical, etc) and the ways that we use – and waste – it every day. What can they do to reduce wastage (turn taps off)?

Linking science with PSHE, pupils will investigate and discuss ways to reduce energy wastage, encouraging them to make responsible choices and to take action.

Curriculum links to: speaking and listening, PSHE, maths, science and computing.

⌚ 30 – 40 mins

Activity 6

Power your school with low-carbon energy

This activity has two sessions:

1. Show pupils what a simple anemometer looks like using the example in your toolkit, explain how they work and the different elements needed to make them. Ask the pupils to make their own anemometer using the materials that have been provided.
2. Go outside and ask the pupils to test their anemometers by counting how many times the anemometer spins round in one minute. Encourage them to discuss their designs with the class. Why did they choose the design they did? Which model best captured the wind energy by spinning the most? How did its design enable this? Ask them to vote on the best (most effective) one as a group.

Pupils will develop their design, technology and scientific enquiry skills through the making of an anemometer and investigating its use as a practical piece of measuring equipment.

Curriculum links to: speaking and listening, PSHE, maths, science, computing and design and technology.

⌚ 30 – 60 mins per session

You can view further details of the curriculum mapping on the **Horizon** website: www.horizonnuclearpower.com/futures

Before your lesson(s)...

- **Familiarise yourself** with the wider subject matter and online resources available to pupils (eg carbon footprint calculators) as well as the pack materials
- **Make a lesson plan** that breaks the activity into timed sections. Include trigger questions and Did You Knows to prompt discussion
- **Provide internet access** for research activities. However, all activities can be completed without internet access
- **Audio isn't essential** – a subtitled version of the animation is online

On the day...

- **Ensure** the *Electricity and Me* guide is accessible for pupils via a large screen and/or in print
- **Challenge pupils**, if appropriate, to start thinking about one of the follow-on activities for a future session

Checklist of resources

- Activity material (PowerPoint presentation, relevant animation and an *Electricity and Me* guide for each pupil)
- Internet access for pupils in groups
- A large presentation screen (preferable, but not essential)
- Scissors for each group of pupils (for Activity 2 and 4)
- Stick glue for each group of pupils (for Activity 2 and 4)
- Anemometer example and materials (for Activity 6)
- Whiteboard or flipchart (optional)
- Clock or timer (optional)

Background

In the future, Horizon Nuclear Power will be looking for skilled, energetic and enthusiastic people who are looking to work in a dynamic and exciting environment. Our new nuclear power station at Wylfa will create up to 1,000 permanent roles for young people to run the plant for many decades. These jobs will cover a wide variety of roles, some of them might surprise you!

For more information about careers with Horizon Nuclear Power, please visit:
www.horizonnuclearpower.com/futures

