

Reflecting on 'Could the world run out of electricity?'

In just a few generations, our world has become electrified. With electric cars on every street and computers in every home, electricity is in high demand but not all sources of energy are the same.

Video summary

(Approximate running time: 4 minutes)

- Electricity can be generated by using heat to convert water into steam.
- The steam pushes a turbine, which turns an electrical generator – a simple device made of magnets and a conductor such as a coil of wire.
- A magnetic field moving near a conductor causes electrons to move, creating electricity.
- Wind and moving water can also push on turbines inside a generator.
- Sunlight can generate electricity using special 'solar' cells.
- Fossil fuels (coal, oil, and natural gas) are examples of non-renewable sources of energy.
- Burning fossil fuels creates gases that trap heat, raising temperatures around the globe.
- Uranium is a non-renewable resource used to heat water in nuclear reactors.
- Water (hydro), wind, and solar energy are examples of renewable resources.

Resources

- Multiple choice Q&A worksheet
- Classroom activity: Making a mini turbine
- Digital interactive activity: multiple choice Q&A
- Digital interactive activity: Power my town

Literacy links

- Turbine: A device that turns the movement in a fluid into a rotational force.
- Grid: A network of wires that connects the community to power generators.
- Solar cells: Technology based on materials that turn energy in light into electricity.
- Fossil fuels: Materials that were produced slowly over millions of years from the remains of living things, which are today used in combustion.
- Renewable resource: Resources that replenish at rates faster than we can use them.
- Non-renewable resource: Resources that will eventually be depleted as we use them.

Research tasks: Want to know more?

- Coal has a variety of uses in industry, from heating to metal refining. Produced by compressing dead plant matter millions of years ago, it's an efficient, compact form of fuel. Some estimate that roughly a trillion tonnes of coal is close enough to Earth's surface to be mined. While it would take a while to dig all of it up, releasing its carbon into the atmosphere is raising the average temperature. And once it's all gone – even if it takes centuries – it won't be replaced. Discuss with students their thoughts on burning fossil fuels, asking them what they understand about global warming.
- Solar cells power more than technology here on Earth. Probes, satellites, and rovers on other planets are also powered by the Sun's rays. Ask students to research robots and rovers on Mars, and present their findings on the history of space exploration. Ask them to explain what happened to the Martian rover, Opportunity.

TEACHER NOTES

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Curriculum links

Australian Curriculum Science, year 6

- Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources (ACSSU097)
- Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
- Cross curricular priorities: Sustainability
- General capabilities: Numeracy, Literacy, Ethical understanding

NSW Curriculum Science, stage 3
(years 5 and 6)

- Explains how energy is transformed from one form to another (ST3-8PW-ST)
- Investigates the effects of increasing or decreasing the strength of a specific contact or non-contact force (ST3-9PW-ST)
- General capabilities: Numeracy, Literacy

Victorian Curriculum Science, Levels 5 and 6

- Light from a source forms shadows and can be absorbed, reflected and refracted (VCSSU080)
- Energy from a variety of sources can be used to generate electricity; electric circuits enable this energy to be transferred to another place and then to be transformed into another form of energy (VCSSU081)
- Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)

Worksheet Answers:

Question 1

B) The first coal-fired power station in the world to produce electricity for the general public

Question 2

C) A turbine

Question 3

A) Solar

Question 4

B) More than the previous year

Question 5

B) Non-renewable

Question 6

A) Renewable