



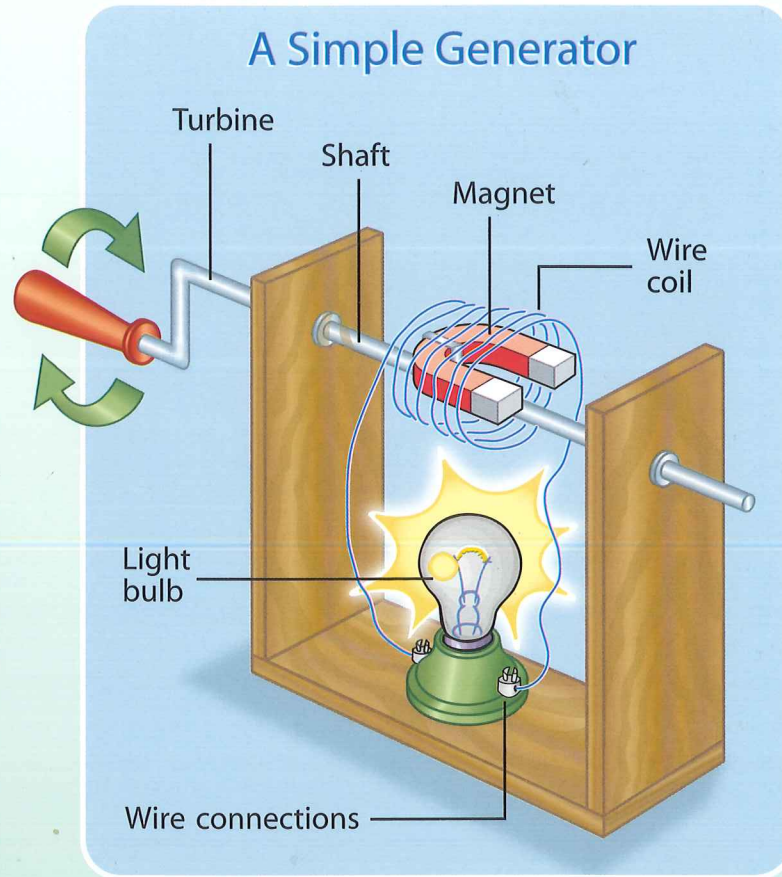
- 1 Think about all of the times you've flicked a power switch. Maybe you're turning on a light or getting ready to watch television. Whatever you are switching on, you are using electricity. But have you ever thought about where electricity comes from?

Electricity is made by generators. To the right is a basic picture of a generator.

- 2 An electric current is made when a magnet is spun around inside a coil of wire. A turbine creates the turning power for this electricity to be made. In this picture the turbine is a hand crank. When the crank is turned it generates enough electricity to switch on a light bulb. The amount of electricity generated is affected by both the speed the crank turns at as well as how many coils are around the magnet.

On our small model, a person is needed to turn the turbine. A person needs food to have the energy to turn the turbine fast enough. Now, imagine if the turbine was bigger — you'd need a lot more fuel to make it move.

- 3 Fuel for the turbine can come in many forms - a very common one is the burning



of fossil fuels, such as coal. However, coal supplies will not last forever, and burning them for energy makes pollution. There are other fuel sources that are *renewable*. This means that they do not run out and they do not cause pollution. Renewable energy comes from the world around us - through the sun, the wind

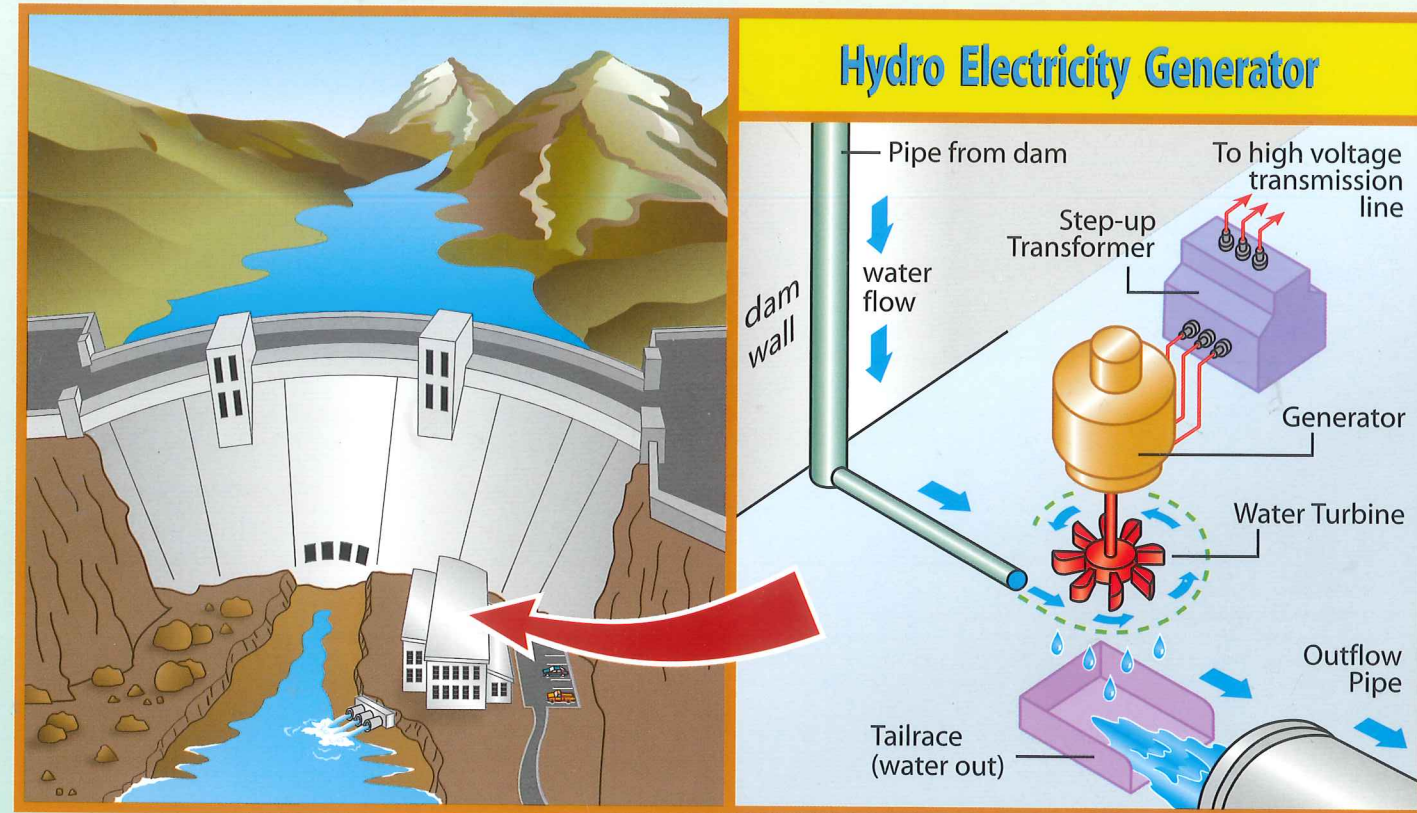
and water. Energy made from water is called *hydroelectricity*. This is how it is produced.

- 4 Water falls from the sky and runs off into creeks and rivers. Large walls, called dams, are built to collect this water. Dams are built high above sea level. Water always moves towards sea level because of gravity. This means the water is constantly pushing against the dam, creating pressure.
- 5 When the water is released from the dam, it moves through pipes. Imagine a large amount of pressure suddenly escaping through a small pipe. This makes the water rush downhill very quickly. A turbine shaped like a bladed paddle-steamer wheel sits in the way of the water. As the water hits

the turbine, it makes the turbine spin at great speed.

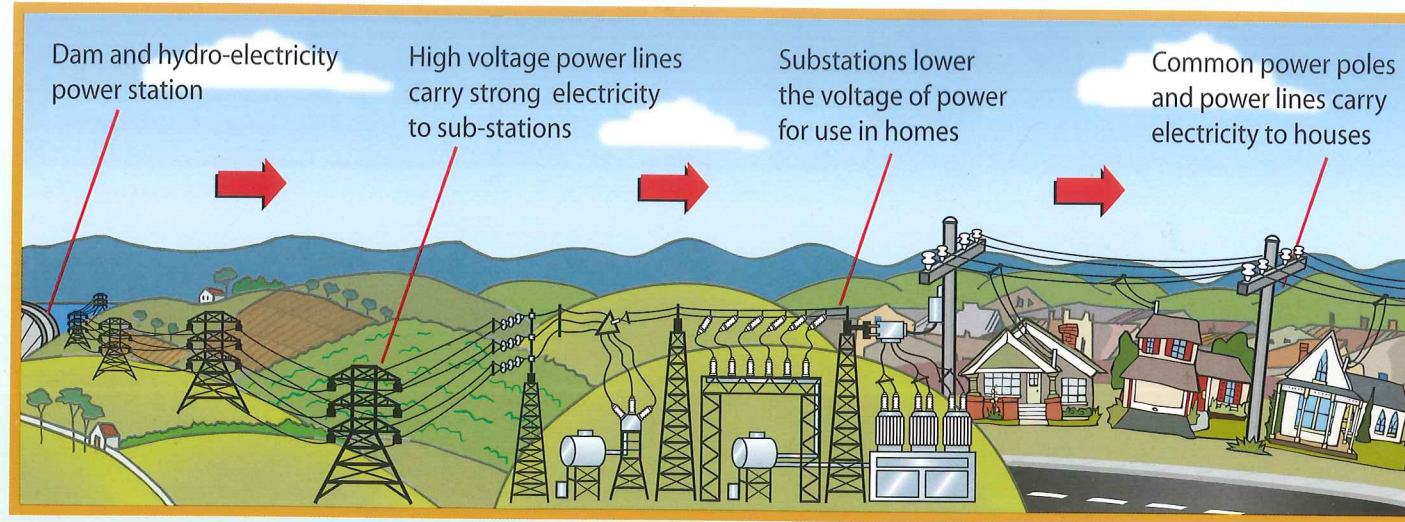
In the picture below, the turbine is attached to a generator (like the magnet and wires) by a shaft. So, instead of a hand turning the crank, you have a shaft spinning very fast, which will turn the magnet around fast enough to produce a lot of electricity.

- 6 High voltage transmission lines take this electricity from the generator towards a city or town. These lines are a lot like the water pipes in the dam — there is more electricity in the generator and it "wants" to get to the city. This creates a type of "pressure", which causes the electricity to flow. The proper term for electrical pressure is voltage.



7 Once in a city or town, the electricity enters a substation. The substation uses a device, called a transformer, to lower the voltage of the power. This is so it can be sent through smaller wires without damaging them.

Finally, these smaller wires enter your house where the voltage is lowered again. This makes it safe for you to turn your light, TV or other appliances on and off.



Questions

- Electricity is made by a
 - switch.
 - turbine.
 - generator.
- Turbines can be powered by
 - water.
 - burning coal.
 - both water and coal.
- Which power source is bad for the environment?
 - water
 - wind
 - fossil fuels
- Voltage is a term for
 - electrical pressure.
 - generating electricity.
 - the speed of a turbine.
- A transformer
 - increases the voltage.
 - lowers the voltage.
 - increases turbine speed.
- What is not attached directly to the generator when producing hydro-electricity?
 - a turbine
 - high voltage transmission lines
 - water pipes

Vocabulary

Find words in the text that match the meanings below. The word is in the section shown in brackets.

- A device for turning off and on (1)
- Harmful fumes that contaminate the air (3)
- Continuously (4)
- Connected to something (5)
- Household electrical machines (7)

Grammar

Articles (*the, a, an*) are words that are situated before a noun to show a specific or general thing. E.g. **the** cat, **a** table, **an** apple.

Add an **article** to these sentences below from the text.

- Maybe you're turning on ____ light.
- ____ electric current is made.
- A person is needed to turn ____ turbine.
- This makes ____ water rush downhill very quickly.

Back To The Text...

- In section 1 the word *light* is used as
 - a noun.
 - a verb.
- Key words are important words that help you understand the main ideas. Which of the following is a key word in section 4?
 - sky
 - dams

- The purpose of this text is
 - to persuade.
 - to explain.

Cloze

Electricity from the Wind

Choose **five** of the following words to complete this cloze passage.

atomic energy electricity hydro cities sources blades wind

Many governments are now looking for renewable 19 of energy. Wind farms are one means of harnessing wind 20. Several countries have now installed clusters of 21 turbines, called wind farms. The turbines are connected to huge 22 that spin in the wind. Wind is kinetic energy and is converted into 23 and sent on to the power grid for use.

Challenge Option

Research: Find 3 other forms of clean energy. List them.

