

6

Incredible Energy

Subject Area

The World of Science & Technology

Topics & Curriculum Links

types of energy (Science)

how energy is converted (Science)

materials and products (Science; Technology)

conductors and insulators (Science)

tools and machines (Technology)

plants and animals (Science)

natural resources (Science)

sound and light (Science)

types of fuel (Science)

pollution; protecting the environment (Science; Civics)

saving energy (Science; Civics)

places and countries (Geography)

quantities and measurements (Mathematics)

Vocabulary

daily activities; products; machines; weather; parts of the body; forms of water; clothes; buildings; animals; materials; transportation; numbers; measurements; countries

Grammar

present simple; present continuous; past simple; future simple; present perfect; question forms; imperative; passive; adjectives; prepositions; adverbs

Teaching Ideas

See also [pages 6–7](#) for general ideas that you can adapt. Or go to www.oup.com/elt/teacher/readanddiscover

READ & TALK An Energy Survey

After completing Project 1, students collect the energy information from the class. They can do this by listening to each student giving their information in turn, or by collecting the information in a big version of the chart on page 52 of the Reader. Then they make a class display to show all the different machines that students use, what they use them for, and for how long.

READ & TALK An Energy Debate

After completing Project 2, students work in small groups. Ask each group to think about what is the best way to save energy. Then in turn, each group presents their arguments. The other groups can ask questions and argue back. Give a prize for the most convincing argument!

Activities Answers

Page 36–37 1 1 false 2 true 3 true 4 false 2 1 energy 2 kinetic 3 Wind 4 sailing boats 5 Potential 6 stored 3 1 When we stretch a rubber band, we give it energy. 2 When we jump on a trampoline, this stretches its springs. 3 When we stretch a trampoline this gives the springs potential energy. 4 When springs can't be stretched any more, potential energy is converted into kinetic energy. 4 1 potential 2 energy 3 kinetic 4 potential 5 kinetic

Page 38–39 1 1 Heat energy from the sun makes Earth warm. 2 Inside our body, heat energy keeps us warm. 3 We can use heat energy to make our homes warm. 4 When heat is added to something its temperature gets higher. 5 When something is cold it has a low temperature. 2 1 atoms 2 molecules 3 small. 4 more 3 1 solid molecules 2 gas molecules 3 liquid molecules 4 1 cooler 2 conduction 3 temperature 4 materials 5 wood 5 1 We have to stop heat moving from the inside to the outside. 2 They stop heat moving from warm places to cold places. 3 Because heat moves slowly through the air. 4 The jacket holds air next to our body and this stops heat leaving our body.

Page 40–41 1 Things that are transparent: windows, water, air Things that are opaque: walls, trees, doors 2 1 Sound and light are types of energy that travel in the air. 2 Sound happens when something vibrates. 3 When a drum vibrates, it makes the air around the drum vibrate, too. 4 The vibrations of sound travel through the air in all directions. 5 The vibrations of sound in the air are called sound waves. 3 1 Sounds lose energy and get stronger weaker when they move. 2 To send sounds from one place to another, light sound waves are converted into radio waves. 3 Radio waves are visible invisible. We can't see them. 4 Cell phones convert radio waves back into sound waves so that we can see hear the sounds. 4 1 true 2 false 3 true 4 false 5 false 6 true 5 free answers

Page 42–43 1 1 fuels 2 potential 3 energy 4 kinetic 5 powders 6 sound 7 first 8 sparks 9 chemicals The secret word is: fireworks 2 1 We use chemical energy from food to live, to move, and to grow. 2 Plants convert light energy from the sun into chemical energy. 3 Plants store chemical energy. 4 Animals eat plants to use some of the chemical energy from the plant. 5 In food chains, energy from food moves from one living thing to another. 3 1 sun 2 energy 3 dissolves 4 chemicals

Page 44–45 1 1 heat energy 2 light energy 3 sound energy 4 kinetic energy 2 1 electrons 2 electricity 3 lightning 4 movement 3 1 true 2 false 3 false 4 true 5 true 4 1 In a toaster, electricity is used to cook bread. 2 Metal wires in a toaster slow down the electricity so that some of its energy is converted into heat. 3 In a hairdryer, electric wires give us heat. 4 Electricity turns a fan to push heat out of a hairdryer to dry hair. 5 In a lamp, electricity makes a wire so hot that it become white and glows. 5 1 They use batteries. 2 Because they can store electricity. 3 When we turn on a machine. 4 Because the chemicals inside are dangerous.

Page 46–47 1 1 fuels 2 coal 3 oil 4 ancient 5 jungles 6 earth 7 heat 8 mud 9 animals 10 plants 2 1 gas 2 plants 3 oceans 4 miners 5 ground 6 mostly 7 oil 3 1 What do large power stations use to make electricity? They use the chemical energy in coal. 2 Why do people burn coal in a coal power station? They use the heat energy to boil water. 3 What type of energy does steam from boiling water have? It has kinetic energy. 4 In a power station, what does steam turn? It turns a turbine. 5 How does a turbine help to make electricity? It turns a generator. 4 1 false 2 true 3 true 4 true

Page 48–49 1 1 Fossil fuels are made from plants and animals that lived millions of years ago. 2 Fossil fuels are non-renewable. 3 Oil will run out in 40 to 70 years. 4 Gas will run out in 50 to 150 years. 2 1 Fossil fuels make different gases that make the air clean dirty. 2 Air pollution is good bad for plants, animals, and people. 3 Power stations and vehicles stop make air pollution. 4 Air pollution is worse in cities where there are few many cars. 5 In some cities, people wear a mask over their bicycle face. 3 1 Heat from the sun warms Earth. 2 Some heat bounces off Earth and goes back into space. 3 Greenhouse gases stop some heat going back into space. 4 Greenhouse gases store heat and keep earth warm. 4 1 air 2 climate 3 warming 4 fires 5 ice 6 uranium 7 invisible

Page 50–51 1 1 We need to use fewer fossil fuels. 2 Renewable energy comes from wind, water, and sunlight. 3 Renewable energy will not run out. 4 People use solar energy heat from the sun to warm water. 5 Solar panels in a roof use heat from the sun to warm water. 6 Photovoltaic cells convert sunlight into electricity. 2 1 air 2 turbines 3 tall 4 blades 5 propeller 6 generator 3 1 It has kinetic energy. 2 Water turns turbines that turn generators to make electricity. 3 It holds the water. 4 The potential energy is converted into kinetic energy. 5 It makes electricity for about 1.3 million people. 4 free answers