**Topic Overview: Energy Costs and Transfers**

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|  | Ref | Outcome | Achieved | ☺ |
| Emerging | E8SpE1.1 | Know that energy cannot be created or destroyed |  |  |
| E8SpE1.2 | Know that electricity is a form of energy |  |  |
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| E8SpE2.1 | Recall the different forms of energy |  |  |
| E8SpE2.2 | Know the difference between renewable and non renewable energy |  |  |
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| Developing | D8SpE3.1 | Compare the amounts of energy transferred by different foods and activities. |  |  |
| D8SpE3.2 | Describe that electricity is generated by a combination of resources which each have advantages and disadvantages. |  |  |
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| D8SpE4.1 | Describe how some energy is useful and some wasted |  |  |
| D8SpE4.2 | Know that we pay for our domestic electricity usage based on the amount of energy transferred. |  |  |
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| Securing | S8SpE5.1 | Describe how when energy is transferred, the total is conserved, but some energy is dissipated, reducing the useful energy. |  |  |
| S8SpE5.2 | Calculate the cost of home energy usage, using the formula: cost = power (kW ) x time (hours) x price (per kWh). |  |  |
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| S8SpE6.1 | Show how energy is transferred between energy stores in a range of real-life examples. |  |  |
| S8SpE6.2 | Explain the advantages and disadvantages of different energy resources. |  |  |
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| Mastering | M8SpE7.1 | Describe how the energy of an object depends on its speed, temperature, height or whether it is stretched or compressed. |  |  |
| M8SpE7.2 | Compare the energy usage and cost of running different home devices. |  |  |
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| M8SpE8.1 | Represent the energy transfers from a renewable or non-renewable resource to an electrical device in the home. |  |  |
| M8SpE8.2 | Compare the percentages of energy wasted by renewable energy sources. |  |  |
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| M8SpE9.1 | Evaluate analogies and explanations for the transfer of energy. |  |  |
| M8SpE9.2 | Explain why processes such as swinging pendulums or bouncing balls cannot go on forever, in terms of energy. |  |  |

**Keywords**

**Power:** How quickly energy is transferred by a device (watts).

**Energy resource:** Something with stored energy that can be released in a useful way.

**Non-renewable:** An energy resource that cannot be replaced and will be used up.

**Renewable:** An energy resource that can be replaced and will not run out. Examples are solar, wind, waves, geothermal and biomass.

**Fossil fuels:** Non-renewable energy resources formed from the remains of ancient plants or animals. Examples are coal, crude oil and natural gas.

**Chemical energy store:** Emptied during chemical reactions when energy is transferred to surroundings.

**Kinetic energy store:** Filled when an object speeds up.

**Gravitational potential energy store:** Filled when an object is raised.

**Elastic energy store:** Filled when a material is stretched or compressed.

**Dissipated:** Become spread out wastefully.