




Review P1.4 Generating electricity

<i>Can you...?</i>			
P1.4.1 Generating electricity			
Describe how a thermal power station generates electricity by heating water to produce steam which turns a turbine coupled to a generator			
Outline how fossil fuels, uranium, plutonium and biofuels can be used as energy sources in thermal power stations			
Outline how water (e.g. waves, tides and falling water) and wind can be used to drive turbines directly			
Describe the advantages and disadvantages of producing electricity directly from the Sun's radiation using solar cells			
Outline how hot water and steam rise to the surface in some volcanic areas, and how this steam can be tapped and used to drive turbines (geothermal)			
Describe situations when small-scale production of electricity may be useful locally, although it may be uneconomical to connect it to the National Grid			
Describe the effects of different energy resources on the environment, including: the release of substances into the atmosphere, production of waste materials, noise and visual pollution, and destruction of habitats			
State that carbon capture and storage is a rapidly evolving technology, and that some of the best natural containers for carbon dioxide storage are old oil and gas fields such as those in the North Sea			
Evaluate different methods of generating electricity, given data such as: start-up times, costs of building, decommissioning and generation, reliability			
Compare the start-up times for different types of fossil fuel power stations			
Describe how pumped storage can be used to meet peak demand and as a means of storing energy for later use			
P1.4.1 The National Grid			
Identify and label the essential parts of the National Grid, and outline how electricity is distributed from power stations to consumers along it			
Relate the size of the voltage to the size of the current for a given power			
Explain how transformers are used to reduce energy loss in the National Grid			
Identify where step-up and step-down transformers are used			
Evaluate ways of matching supply with demand, either by increasing supply or decreasing demand			
Compare the advantages and disadvantages of overhead power lines and underground cables			