YEAR 9 GEOGRAPHY – SUSTAINABLE LIVING

1 KEY VOCABULARY

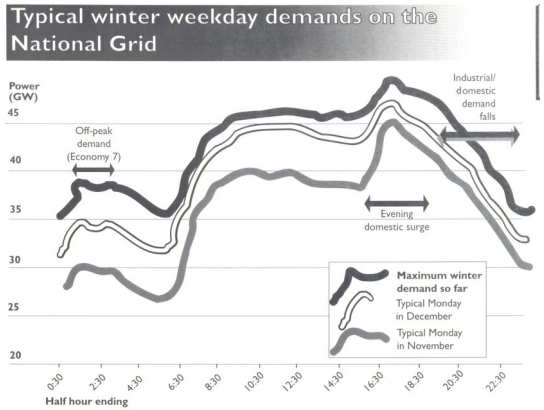
Sustainability	A way of living that ensures we gain what we need now without destroying the environment for future generations.
Energy	A form of power
Consumption	The amount of energy that we use in our day to day lives.
National Grid	A system of electric cabling that supplies electricity all round the UK.
Thermal Power Station	A form of making electricity through burning a fuel to heat water to steam to drive a turbine to turn a generator.
Fossil Fuels	A Carbon based fuel formed from the dead remains of plants and animals millions of years ago
Renewable energy	Energy that can be re-used, at lasts indefinitely.
Nuclear energy	A chemical reaction to provide heat for a thermal power station with no burning of fossil fuels.
Carbon Footprint	A measure of all the greenhouse gases that we produce in our day to day lives.
Eco-house	A house that is designed to have a low impact on the environment, especially with Carbon emissions.

2 THE NATIONAL GRID

A System built in 1930's to enable electricity to be transported via a series of cables and pylons to every house in the UK. It means that regional generators can supply electricity to anywhere in the UK. Suppliers have to create the electricity when it is needed as electricity cannot be stored on the grid.

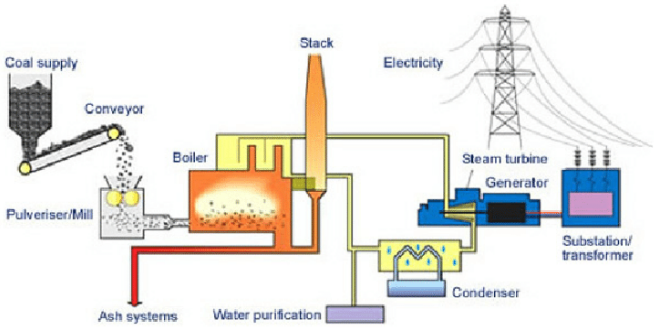
3 ELECTRICITY USE

- Electricity use is higher in Winter
- Peak Use is during the evening.
- Use is lower at night.
- Off Peak use at night increases as some people take advantage of cheaper 'off peak' electricity.
- The National grid must predict use of electricity.
- Graphs like this help them to predict the use.
- The weather will make a difference to use.
- Major events like football matches will affect use.



4 MAKING ELECTRICITY

- Fuel is burned.
- Water is heated to steam in a boiler.
- The steam is under pressure.
- The Stream drives a turbine.
- The turbine spins a generator
- This generator makes electricity.
- Waste and Carbon Dioxide are outputs from the system.
- The cooled water is reused or released into rivers.



5 PROBLEMS WITH THERMAL POWER STATIONS

Noisy, Fossil fuels release Carbon Dioxide (a greenhouse gas), warm water released can cause Eutrophication, they encourage humans to dig for more fossil fuels, waste ash covers the ground and stops ecosystem growth. Transporting fossil fuels can lead to environmental disasters like oil spills.

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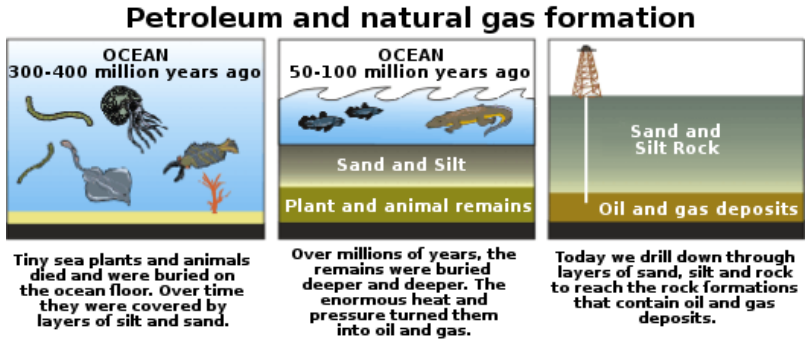
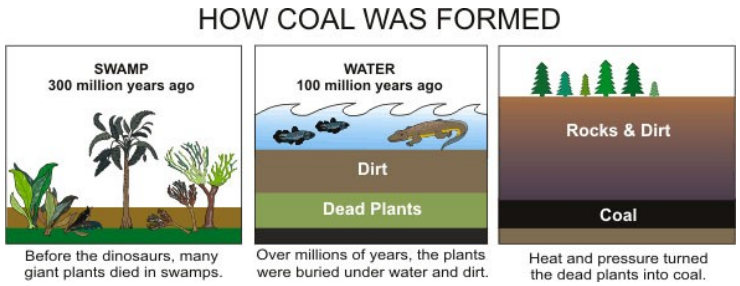
6 HOW FOSSIL FUELS ARE MADE.



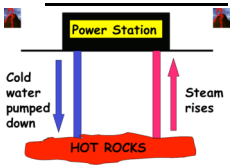


7 RENEWABLE ENERGY

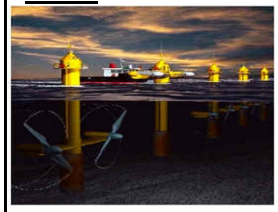
Solar

Hydroelectric Power

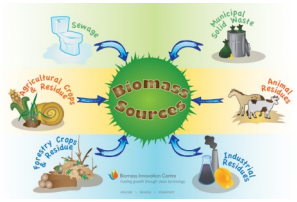
Geothermal



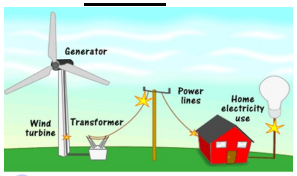
Tidal



Biomass



Wind



Wind turns blades that spin a shaft, which connects to a generator and makes electricity. The electricity is delivered through power lines to homes, businesses and schools.

8 NUCLEAR ENERGY

Nuclear energy originates from the splitting of uranium atoms in a process called fission. At the power plant, the fission process is used to generate heat for producing steam, which is used by a turbine to generate electricity.

Nuclear fission → Heat water to make steam → Steam turns turbines → Turbines turn generators → Electrical power

Advantages	Disadvantages
Little pollution	Reactor meltdown – can cause environmental damage and loss of life
Technology is available does not need to be developed	Radiation – cancer, sickness and mutation
Costs about the same as coal so electricity is not expensive	Uranium is a scarce resource – may only last for 30-60 yrs depending on demand
Safe ??? Chances of an accident are low.	A lot of money has to be spent on safety

9 REDUCING CARBON FOOTPRINT

Install wall insulation
Electricity powered by renewable energy
Use public transport
Buy locally produced vegetables
Provide cycle lanes
Support farmers to grow organic produce
Higher taxes on goods and activities that produce higher levels of carbon emissions
Work with the European Union, G8 and UN to find ways to reach an agreement on action to reduce climate change
Pledge to cut carbon emissions
Invest in public transport
Electricity powered by renewable energy
Build energy efficient homes
Wash clothes at a lower temperature
Ban light bulbs that are not energy efficient