

Power through the window

Which power source might be built in the view you can see from your window?

All the world needs energy, and more energy is needed by more people every day. Electrical energy is needed to supply homes and industry. Electricity cannot be stored and has to be generated as needed from other energy sources. The rate at which other energy is converted into electricity is called power. The structures which generate electricity must be sited somewhere. Which of them could be sited in the view through your window?

Try working out which of the power sources COULD be sited in the view you can see – before you decide if they SHOULD be sited there. Most people wouldn't want to see a power source through their window – but they all have to be sited somewhere!

Coal power station



STEAG coal power plant, Rheinberg, Germany.

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A coal power station could only be sited in the view through your window if there is a working coal mine in your region, since coal is heavy, bulky and expensive to transport for long distances.

Oil-fired power station



An oil power plant in Iraq.

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Oil-fired power stations are mainly sited near oil fields, or on the coast, where oil pipelines or oil tankers bring the oil on shore.

Gas-fired power station

These look similar to coal and oil-fired power stations, but can be sited anywhere where a natural gas pipeline can be brought to the station. Could that be outside your window?

Nuclear power station

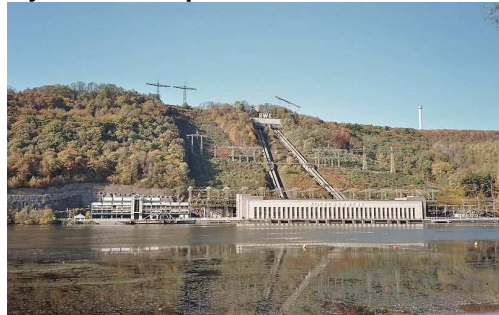


Nuclear power plant in Cattenom, France.

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While nuclear fuel can be taken anywhere, nuclear power stations need a lot of water for cooling purposes, and so are sited by large lakes, large rivers or the sea.

Hydroelectric power station



Koepchenwerk hydroelectric power station near Hagen in Germany.

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Hydroelectric power stations need to have a water reservoir above them to supply the water.

Wind farm



Wind turbines Vendsyssel, Jutland, Denmark.

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Sets of wind turbines are sited in places where they can catch the wind, on hills, wide lowland areas or in shallow seas. Can you see hills, a lowland plain or shallow sea from your window?

Is it possible for one of these power sources to be sited through your window one day?

... and what about one of these power sources?

Solar power station



The first commercial solar power plant at Sanlúcar la Mayor in Spain.

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Solar power plants need plenty of sunshine and a flat area of land for all the solar panels.

Geothermal power plant



Nesjavellir Geothermal Power Plant in Iceland.

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Geothermal power plants are built in areas of geysers and hot springs, using waters from hot areas of the Earth's crust to generate power.

Are you a NIMBY?

Now you have decided which, if any, of these power sources COULD be sited through your window. Which of these do you think SHOULD be sited through your window?

If some of these could be sited there, but you think should not be sited there – you may be a NIMBY. A NIMBY is someone who says Not In My Back Yard – meaning that they think these new

The back up

Title: Power through the window

Subtitle: Which power source might be built in the view you can see from your window?

Topic: Pupils are asked to think about which sorts of power source (power station, wind farm or wave power plant) COULD be built in the view through their window – before considering which of them SHOULD be built there.

Tidal power plant



Dam of the tidal power plant on the estuary of the Rance River, Bretagne, France.

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Tidal power plants are sited on river estuaries that have strong tidal flows.

Wave power plant



The Pelamis wave energy converter being tested at the European Marine Energy Test Centre (EMEC).

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Wave energy plants can only be used in coastal areas with lots of wave power. No commercial wave energy plants have yet been designed.

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things should be built somewhere – but think they should be built near somebody else and not in the view through their own window!

If everybody was a NIMBY, we would have real problems, because no new things could be built anywhere.

So what do you think?

Age range of pupils: 10–19 years

Time needed to complete activity: 15 mins

Pupil learning outcomes: Pupils can:

- describe a variety of different power sources and what these look like;
- explain which of these could be built in their vicinity;
- describe their feelings about which of these should be built nearby.

Context: Pupils are asked to consider which of the commonly available power sources (coal, oil, natural gas, nuclear, hydroelectric or wind) COULD be built near their school/home, before being asked to think about whether the less common power sources would be viable there (solar, geothermal, tidal, wave). They are then asked to give their views on whether one of these SHOULD be built there.

Following up the activity: Whether or not one of these power sources could be built nearby depends largely upon the nature of the power source itself. So each of these sources could be explored in more detail to discover how the energy can be made available and what the original sources of the energy were.

Underlying principles:

- All the energy we use has to be generated somehow and somewhere and has to be matched to the demand at the time.
- There is a range of criteria to be considered, including the views of the public, before the site of any new energy sources is chosen.

Thinking skill development:

Pupils are asked to bridge from the photographs of power sources to the view through the window. Any debates are likely to cause cognitive conflict.

Resource list:

- the stimulus pictures above and imagination.

Source: Devised by Chris King of the Earthlearningidea team.

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