

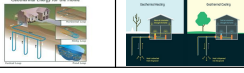


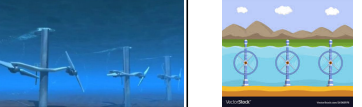


Energy Types



1. Lithosphere (dig or mine for them)

Fossil fuels (thermal power plant)	Nuclear power plant	Geothermal
		
<p>Coal, oil and natural gas are burned in power plants</p>	<p>Radioactive element (uranium) is mined and when the atom is split a tremendous amount of energy is created</p>	<p>From the internal heat of the Earth where hot magma lies, a fluid is circulated deep underground, heated, and then returned to surface.</p>
<p>Non-renewable</p>	<p>Non-renewable</p>	<p>Renewable</p>
<p>-reliable -abundant now -natural gas is methane (biogas) - burning methane for energy is less harmful than releasing it into the atmosphere.</p>	<p>- 1 kg of uranium produces as much energy as 2 500 000 kg of coal. - abundant - reliable</p>	<p>- Reliable - can heat and cool - extremely efficient - no alternate source of energy needed</p>
<p>- *only one to cause GW. - Emits a lot of CO₂ into air -Will run out one day</p>	<p>- waste water put in soil -meltdown releases huge amounts of radiation</p>	<p>- initially very expensive - need space to build -cannot be used everywhere.</p>

2. Hydrosphere (water)

Hydroelectricity	Wave and ocean current	Tidal
Derived from movement of falling water causing turbines to spin.	Energy obtained from the flow of ocean tides when underwater turbines spin.	Electricity can be generated from tides when energy from a high tide is collected
		
Renewable	Renewable	Renewable
<ul style="list-style-type: none"> - reliable - no alternate source of energy needed - main source of energy in Quebec 	<ul style="list-style-type: none"> - does not take a lot of space in water/land - waves are predictable 	<ul style="list-style-type: none"> - waves are predictable - saves land space - quiet
<ul style="list-style-type: none"> - damages ecosystem - causes floods - kills wildlife or causes them to migrate 	<ul style="list-style-type: none"> - need alternate energy source - can hurt aquatic species and migrations 	<ul style="list-style-type: none"> - needs alternate energy source - takes up a lot of water space - can hurt aquatic species and migrations

3. Atmosphere (air)

Wind turbines	Sun
<p>As blades turn, they activate an electric generator</p>	<p>The sun's energy is captured causing electrons to flow creating current electricity.</p>
	
Renewable	Renewable
<ul style="list-style-type: none"> - Can be built on existing farms 	<ul style="list-style-type: none"> -easy to use and maintain
<ul style="list-style-type: none"> - noise pollution - takes up land - can't be built everywhere - needs alternate source of energy - kills birds 	<ul style="list-style-type: none"> - takes up land - expensive initially for private use -needs alternate source of energy

Recap:

- **Fossil fuels is the only one which contributes to global warming.**
- **Fossil fuels are coal, oil and natural gas.**
- Nuclear power plants does not contribute to fossil fuels, but a nuclear meltdown can have devastating effects.
- Geothermal, hydro, wave, tidal, solar and wind are all renewable.

Past exam questions

1. Which of the following technologies uses an energy source derived from the lithosphere?

- A) Tidal barrage
- B) Wind turbine
- C) Photovoltaic cell
- D) Coal-fired plant

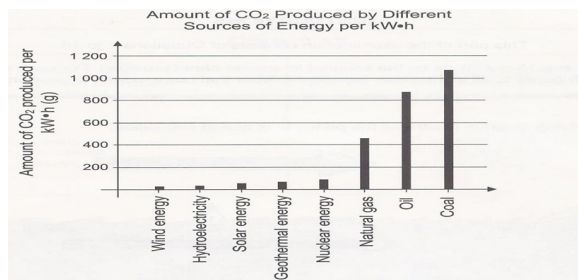
2. A community in Gaspé is researching the environmental impacts of different energy sources. Below is a list of possible environmental impacts

- 1. Tidal barrages can disrupt marine life.
- 2. Tidal power plants and coal power plants release greenhouse gases.
- 3. Nuclear power plants create no greenhouse gases.
- 4. Flooding is a concern in the building of hydroelectric dams.

Which of the above statements are true?

- A) 1, 2 and 3
- C) 1, 3 and 4
- B) 1 and 4
- D) 2 and 3

3. The use of energy sources generates greenhouse gas emissions. The graph below shows the amount of greenhouse gas, CO₂, produced by different sources of energy per kilowatt-hour.



According to this graph, which of the following statements is true?

- A) Coal produces less greenhouse gas than all the other fossil fuels combined.
- B) Only renewable energy sources produce less than 200 g of CO₂ per kilowatt-hour.
- C) Each energy source from the lithosphere produces more than 400 g of CO₂ per kilowatt-hour.
- D) Solar energy produces less greenhouse gas than the main energy source from the atmosphere.