<table>
<tr><td colspan="2">Energy Source: Hydroelectricity</td></tr>
<tr><td colspan="2">Definition: Hydroelectricity is electricity created by running water. This is most commonly done using dams.</td></tr>
<tr><td>Benefits:
- Canada has a plethora of fresh water, so we have a lot of places we can rely on it</td><td>Drawbacks
- You can’t drink the water in the dams</td></tr>
<tr><td colspan="2">How is this energy source being used in Canada?
This energy is being used to power typical things in life, like city lights or technologies.</td></tr>
<tr><td colspan="2">What role could this energy source have in the future?
Since Canada has the most freshwater in the world, we can put it to use and rely more on hydroelectric energy, while minimizing the amount of oil we use.</td></tr>
<tr><td colspan="2">Provide two reliable sources for people who would like to learn more about this energy source:
https://energyiq.canadiangeographic.ca/energy/hydroelectricity/
https://www.youtube.com/watch?v=g8HmRLCqDA</td></tr>
</table>

Energy Source: Natural Gas

Definition: A non-renewable energy source found in deep underground rock formations. Natural gas is usually used for heating, cooking, and electricity.

Benefits:

- Produces less pollution than other fossil fuels
- There is an abundant supply of natural gas around the globe
- Safe and easy to store compared to some other fossil fuels, can be stored for a long time
- Cheap
- Light and easy to transport
- Very versatile
- Predictable and controllable

Drawbacks:

- Is a non-renewable energy source
- Volume is 4 times of gasoline, so you need to spend more on transporting it
- It releases carbon dioxide, carbon monoxide and other carbon compounds
- It is not easy to use
- Is highly inflammable and can be explosive
- The infrastructure needed to use natural gas is very expensive

How is this energy source being used in Canada?

- Transportation fuel
- Used to make fertilizers(for farming)
- Space heating
- Heating water
- Cooking
- Generating electricity
- Drying clothes
- Provides outdoor lighting

What role could this energy source have in the future?

- Natural gas will probably still be used in the future, though the use will most likely decline as the use of renewable energy sources become more prominent.

Provide two reliable sources for people who would like to learn more about this energy source:

- https://www.conserve-energy-future.com/pros-and-cons-of-natural-gas.php
- https://www.nationalgeographic.org/encyclopedia/natural-gas/

FUN FACTS:

- When cooled to -163 degrees celsius, natural gas becomes a liquid
- The natural gas dug out of the earth today was formed about 100 million years ago
- Utility companies add mercaptan to natural gas to give it a rotten egg smell
- In about 500 BC, the Chinese discovered places where natural gas seeped to the surface, and used it to boil seawater.

Energy Source: Nuclear Energy

Definition: It is the energy released during nuclear fission/fusion and is used to generate electricity.

Benefits

- No greenhouse gas emissions. Nuclear Energy does not create waste because it does not burn anything and the energy is caused by atoms being separated which causes energy. This means all nuclear energy production is clean. It has a small carbon footprint.
- As said before, Nuclear Energy does not use a lot of land because you don't need that much as only a hint of uranium can create a lot of energy.
- High power output. A bit of uranium can create a lot of energy because it is radioactive and when in nuclear fission normally (fusion is not used as commonly), the separation causes a lot of energy to be released.(Which can later be transferred to electrical energy.
- Reliable energy source
- Long lasting: Some uranium can be used for a long time to power a thing because of how much energy it can release, so you don't have to use a lot of uranium at a time.

Drawbacks

- Uranium is non-renewable. You cannot create uranium like poof, when you're using uranium after you use it, you cannot get it back.
- High upfront cost: Making the Nuclear Power Plant costs a lot, because of the amount of money you have to use to make a safe, reliable, and working nuclear plant.
- Nuclear energy has waste: The waste caused by nuclear fission is unremovable.
- Malfunctions can be catastrophic: They can cause disasters as big as things like fukushima, and look how disastrous that was. That got Japan into Chaos. Not just a little though, but A LOT.
- Nuclear energy could cause physical harm.

How is this energy source being used in Canada?
Canada is the second largest producer of uranium. They are also in the exporting industry of uranium. In 2018 15 percent of all electricity produced in Canada was Bruce Nuclear Generating Station. It is located in Ontario and has been running since 1977. This is because there are huge uranium deposits in Ontario.

What role could this energy source have in the future? Radiation from radioactive materials has a very long lasting radiation. Uranium supplies could last up to 80 years before the radiation grows weak. More powerful sources of radiation like Plutunium or Thornium could last up to 500 years. This could power 5 generations. Due to the fact that radiation lasts for very long, in the future, it will be possible for humans to improve the lifetime of radiation and could be able to amplify the radiational power causing stronger energy for a longer time. But this does not mean that radioactive materials will last forever but nuclear energy does provide a huge energy boost.

Provide two reliable sources for people who would like to learn more about this energy source:

https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/minerals-metals-facts/uranium-and-nuclear-power-facts/20070

https://www.nationalgeographic.org/encyclopedia/nuclear-energy/#:~:text=Encyclopedic%20Entry%20Vocabulary-,Nuclear%20energy%20is%20the%20energy%20in%20the%20nucleus%2C%20or%20core,in%20an%20atom's%20dense%20nucleus.

Energy Source: Coal	
Definition: A combustible black or dark brown rock consisting mainly of carbonized plant matter, found mainly in underground deposits and widely used as fuel.	
Benefits: Cheapest out of all fossil fuels, easy to access through mining	**Drawbacks:** Non-renewable, health safety from the impacts of coal mining,
How is this energy source being used in Canada? Coal is used for electricity generation, creating steel and cement, and different industrial and residential applications. 7.4% of energy created in Canada is used by coal, but because the governments wants to reduce coal-fired electricity, energy produced by coal will be stopped by 2030.	
What role could this energy source have in the future? Coal energy will continue to play as a significant role in power generation because of easy accessibility and lower costs, however, some research says that coal will be used less and less because of how it's non-renewable/sustainable. Because there are no futher demands for coal and we are working towards a more environmentally friendly world, coal might be replaced by other longer sustaining energy sources.	
Provide two reliable sources for people who would like to learn more about this energy source: https://en.wikipedia.org/wiki/Coal-fired_power_station https://www.usgs.gov/faqs/what-coal-used#:~:text=Coal%20is%20primarily%20used%20as,a%20turbine%2C%20which%20produces%20electricity https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/minerals-metals-facts/coal-facts/20071	

A Green Powered Canada

Energy Source: Biomass

Definition: Biomass is similar to coal, however, instead of being fossil fuels that are being burnt, plant-related items and organic material are burnt. There are different ways of harvesting energy from Biomass. You can burn biomass and use the steam/fumes to spin a turbine, you can burn it along with coal to produce energy, you can use Pyrolysis(heat biomass at high temperatures in an oxygen-deprived environment) but there are many more ways of harvesting Biomass.

Benefits:
Not as harmful as Coal, also is available in large quantities. Biomass' main(or second largest) source are the byproducts of deforestation(which is not really friendly to nature, but ignore it). If it's also **sus**tainably managed, then it can be considered as a carbon-neutral renewable energy source.

Drawbacks:
Might produce greenhouse gases although it has no impact from a short-term point of view. However, on the long-term point of view, burning Biomass itself is Carbon neutral. Transporting Biomass releases Carbon, so technically, on the long-term point of view, the full process of Biomass energy generation releases carbon into the atmosphere.

How is this energy source being used in Canada?
BC is the only country in Canada currently that uses Biomass on a large scale. 6% of BC's power supply is provided by Biomass. Some places in the north of Canada burn wood to provide heat and energy.

What role could this energy source have in the future?
Biomass provides a more environment friendly alternative to fossil fuels, and as a result can lead to a greener future, however as mentioned above, biomass's main source is the byproduct of deforestation, so it cannot independently support an entire country or most of the world.

Provide two reliable sources for people who would like to learn more about this energy source
https://www.nrcan.gc.ca/maps-tools-and-publications/maps/energy-maps/16872
https://energyiq.canadiangeographic.ca/energy/biomass/
https://energyiq.canadiangeographic.ca/energy/biomass

Energy Source: Geothermal	
Definition: Geothermal energy is energy made from the earth's heat, found in deep layers of the earth. It is a renewable source with benefits, however, it comes with some disadvantages.	
Benefits: Geothermal energy has many benefits. Geothermal energy is an example of renewable energy. Renewable energy sources naturally replenish themselves and never run out. Since geothermal energy is a naturally occurring resource, there is no fuel required and fuel is very harmful to the environment. Geothermal energy is also sustainable because it provides a reliable energy source compared to sun and wind. This is because it is easy to tap into.	Drawbacks Geothermal energy may seem like it does nothing to the environment, but it does. For example, when digging up geothermal energy. On the earth's surface, there are lots of gases that are stored and when we take the geothermal energy those gases are released, and they cause pollution. But the good thing is that the gases that are released are less harmful than the gas emissions from fossil fuels
How is this energy source being used in Canada? Canada is not used commercially, despite Canada having geothermal power plants being used. Canada has many cheaper sources of energy, so they don't want to waste money. Renewable sources can often be more expensive, and less accessible. It is occasionally used for agriculture or industrial purposes, however, not to the public.	
What role could this energy source have in the future? There might be a chance that geothermal energy catches on, and becomes more accessible in the future. It does come with risks, however, those might end up being solved later on. The role of geothermal energy might not become as used, since it isn't very profitable, and people love money.	
Provide two reliable sources for people who would like to learn more about this energy source: https://www.energy.gov/eere/articles/5-things-know-about-geothermal-power https://cleanenergycanada.org/media-brief-geothermal-energy-and-its-potential-in-canada/	

Energy Source: Tidal Energy	
Definition: Power created by Ocean Tides	
Benefits: It is not very bad for the environment so it is very safe to use because it is renewable and natural. It also reduces greenhouse gasses	Drawbacks: The manufacturing of the materials to harness tidal energy causes some environmental issues. The manufacturing companies release greenhouse gasses into the air.
How is this energy source being used in Canada? It is being used for electricity in things like cooking a meal or manufacturing materials.	
What role could this energy source have in the future? It reduces some greenhouse gasses so in the future we won't have an earth that is barren.	
Provide two reliable sources for people who would like to learn more about this energy source: #1https://www.nationalgeographic.org/encyclopedia/tidal-energy/#:~:text=Tidal%20energy%20is%20power%20produced,a%20renewable%20source%20of%20energy. #2 https://energyiq.canadiangeographic.ca/energy/tidal/	

<table>
<tr><td colspan="2">Energy Source: Solar Energy</td></tr>
<tr><td colspan="2">Definition: Solar energy is energy that comes from the sun.</td></tr>
<tr><td>Benefits
Almost infinite power
Saves money
Eco-friendly</td><td>Drawbacks
Expensive upfront cost
No energy during the night
Needs a large field or space</td></tr>
<tr><td colspan="2">How is this energy source being used in Canada?
Solar energy is being used in Canada through fields and other places. They are also used in houses, and some houses rely on only solar energy. There is the most solar energy in Ontario.</td></tr>
<tr><td colspan="2">What role could this energy source have in the future? We could create a dyson sphere around the sun (a sphere of solar panels) to harvest essentially unimaginable energy).</td></tr>
<tr><td colspan="2">Provide two reliable sources for people who would like to learn more about this energy source:
Solar Energy | The Canadian Encyclopedia
Solar Energy Basics | NREL</td></tr>
</table>