What Energy Source Should BC Invest In?

One of the great crises of our time and the future of every student in this classroom is the energy crisis. According to energy.gov, "primary energy sources take many forms, including nuclear energy, fossil energy -- like oil, coal and natural gas -- and renewable sources like wind, solar, geothermal and hydropower. These primary sources are converted to electricity, a secondary energy source, which flows through power lines and other transmission infrastructure to your home and business." This variety of types of energy generation make it challenging to decide which one is the best. And what decides what is the 'best'?

Introduction

You are running for city council in a medium-sized city on Vancouver Island or in Inland BC. Using your knowledge of energy transformation and research of the pros and cons of your chosen energy source, put together a presentation for the citizens of your town to help convince them that your source is the best use of their investment.

Task: Your group must select **one** energy source and investigate different aspects of that source and create an engaging presentation (video, podcast, Powerpoint) to show off your information.

Each group will have a different energy source.

A works cited list is required for this project, either at the end of the Powerpoint or on a separate piece of paper.

Suitable energy sources include:

- Solar (photovoltaic) panels for generating electricity
- Solar heating
- Solar thermal
- Wind turbines
- Geothermal
- A biofuel used for transport (such as bioethanol or biodiesel)
- Biogas for generating electricity and producing heat energy
- Petrol for transport
- Tidal power
- Wave power
- Nuclear power
- Coal
- Natural gas
- Hydroelectric power

Common menu bar links. (2005, March 23). Retrieved from https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2005023-eng.htm
Energy Sources. (n.d.). Retrieved from https://www.energy.gov/science-innovation/energy-sources

Glossary

Energy Project Terms

https://www.pbs.org/newshour/extra/lessons-plans/exploring-alternative-energy-sources/

- **Renewable resource:** natural resource that is depleted at a rate slower than the rate at which it regenerates (i.e. solar energy)
- **Non-renewable resource:** resources for which there are no ways to replenish the supply (i.e. fossil fuels)
- **fossil fuels**: also known as mineral fuels, they are hydrocarbon containing natural resources such as coal, petroleum, and natural gas
- **solar energy:** harnessing the energy produced by sunlight
- **wind power:** using the kinetic energy of the wind or wind turbines to extract the wind's energy
- **hydropower:** energy obtained from flowing water
- **geothermal energy:** electricity generated by utilizing naturally occurring geological heat sources
- **hydrogen fuel cells**: electrochemical cell in which the energy of a reaction between fuel, such as liquid hydrogen, and an oxidant, such as liquid oxygen, is converted into electrical energy
- nuclear energy: energy released from the nucleus of an atom creating a nuclear reaction
- **LED**: light emitting diodes: a semiconductor device that emits light using a variety of inorganic materials
- **greenhouse gasses:** gaseous components of the atmosphere including carbon dioxide and ozone, among others. They contribute to the greenhouse effect
- global warming: an increase in the average temperature of the Earth's atmosphere and oceans, increasing the greenhouse effect

Day 1: Brainstorm

Day 2, 3, 4 – Research / work on PowerPoint

What do we need to find out about our energy resource?

Some factors to consider:

1. What is the science and technology behind the resource?
    a. How does this energy resource work? What devices are used?
    b. What are the main energy transformations and energy transfers that take place? (This should include a flow chart showing the energy transformations that occur.)
    c. Is this energy resource classified as renewable or non-renewable, and why?

2. How is the energy resource used?
    a. Is this energy resource used in our province, and if so, to what extent? (Is it a large-scale energy resource, or just used on a small scale? Where in our province is it used?)

3. Is this energy resource used across the world and if so, to what extent? Which countries are the main ones using it? Is there a reason why some countries are using it and others are not?

4. What are the benefits and problems associated with this energy resource?
    a. What are the main advantages of using this energy resource? Will increased use of the resource help reduce global warming?
    b. What health and safety concerns are associated with this energy resource?
    c. What environmental concerns are associated with this energy resource?

5. What does our community think about this resource?
    - What are the views of members of your school and/or local community on the setting up and using the energy resource to supply electricity or other useful forms of energy, especially if it were to be established nearby?

6. What is the likely future of the resource?
    - Is the energy resource likely to be a useful and widely used energy source for your country and across the world in the future? Why?

7. You may also think of other questions that suit your energy resource.

Research Notes

Energy Source:

Sources Consulted	**Possible Biases**
Example	example

	How does it work?	Main Transformations/ Transfers (include charts &diagrams)	Devices
Notes			
	Renewable/Non-renewable	Used in our province? Large/small-scale?	Used elsewhere?
Notes			

Pros What are the main advantages of using this energy resource? Will increased use of the resource help reduce global warming?	**Cons** • What health and safety concerns are associated with this energy resource? • What environmental concerns are associated with this energy resource?
Example:	*Example:*

Areas of Feasibility

- What are the views of members of your school and/or local community on the setting up and using the energy resource to supply electricity or other useful forms of energy, especially if it were to be established nearby?

- Is the energy resource likely to be a useful and widely used energy source for your country and across the world in the future? Why?

Conclusion: Should we invest in this source?

Day 5, 6. Presentations to the class. I would like for you to make a video, a Powerpoint presentation, or podcast to convince the council of your proposal. You will present your findings to the class. I expect the presentations to take 7-15 minutes per group. The rubric is attached on the back of this page.