Can We Transition to Renewable Energy?

Team Name: Energy Archers

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Summary: Our world is too dependent on non-renewable energy sources like fossil fuels. Eventually they will run out. The larger problem is that the green houses gases hurt our environment. Our question was can we transition to renewable energy sources? Do we have the supplies, do we have the knowledge? Do we have the infrastructure? For our project we studied renewable energy energy sources: wind, geothermal, hydroelectric, biomass and solar energy. We each researched one energy source. We each made a presentation, either a powerpoint slideshow or display board. We each made a model to demonstrate how our renewable energy source works. We presented our project at the Forest Hills Science and Innovation Expo.

Our Goal

Problem: Can we transition to renewable energy sources? Do we have the supplies? do we have the knowledge? Do we have the infrastructure?

Goal: To research renewable energy sources. To understand their benefits and limitations.

Results: We should be working towards transitioning toward using more renewable energy sources, and faster than we currently are. As we see climate change worsen, transitioning to renewable energy sources is more important. We need all of them (the different energy sources) working together.

Energy Sources	Potential To Expand Use in the U.S.	Possible Type of Expansion
Biomass	There is great potential to expand	Waste (trash) incineration power plants
Geothermal	There is limited potential to expand because of the geography	
Hydropower	There is great potential to expand	Wave snakes-off coast electric power generation
Solar	There is potential to expand	Solar rooftop-solar panels on individual homes have economic benefits
Wind	There is some potential to expand	A lot of the open areas that have sustained winds already have wind turbines. There could be more off the coast.

Biomass





BIOMASS

- · Biomass energy is produced from organic material meaning it comes from once living things like plants.
- Biomass energy is renewable. · Ways to make energy with biomass-
- · Direct burning Thermochemical conversion to produce solid, gaseous, and load
- Chemical conversion to make liquid fuels
- Biological conversion to make liquid or gaseous fuel Some examples of what may be used-
- Garbage Paper mill residue Lumber mill scrap
 - BACKGROUND in the sur. Plants abund sun's energy through p

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BACKGROUND

What happens to the trash in a landfill? If it is buried under landfill waste, the organic material such as fruit and vegetable food scraps will rot without oxygen. This process- called anaerobic decomposition-happens when bacteria help decompose organic material. When bacteria break down organic waste, the process releases methane and other gases such as carbon dioxide. These gasses are known as biogases and can be used as a source of energy.

EXPERIMENT

veberries

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JLTS

Make blogas by creating anaerobic environments to test the amount of methane different types of food

Onions on trol

MATERIALS

4 balloons	Marker	Teaspo
4 plastic bottles	Blueberries	Blender
Таре	Onion	Kitcher
Funnel	Bleach	

PROCEDURES

HYPOTHESIS

Ons R

BIOMASS PROS

- · Biomass is a clean, renewable energy source,
- Its initial energy comes from the sun, and plants or algae biornass can regrow in a relatively short amount of time.
- Trees cross and parbage are consistently available and can be managed sutainably.
- A draw and pay facilitation of the second state of the second stat

Geothermal







Hydropower









Solar





















Solar Energy

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Resources: https://www.eia.gov/kids/energy-sources/solar/

https://www.need.org/wp-content/uploads/2021/11/Intermediate_Solar.pdf

What is Solar Power/Energy?

Every day of the year the sun radiates a colossal amount of energy, hence solar energy. Only a small part of visible radiant energy (visible light) that the sun emits can reach earth, but thats all we need. This is considered renewable energy because the sun will never run out of solar energy. The solar energy can shoot down to a surface, but you need a way to "put it to work." we need a way to trap the heat and transfer it into a working energy ergo we made solar panels. The way we convert solar energy to electricity is through 2 processes 1:Solar Thermal Electricity 2:Photovoltaic Electricity.

How you can use Solar power?

he most common use of solar power is in solar field,. But you can use solar panels on your houses too. Many people have converted to water solar panels too, and their water heating bill went down by 50%! Another benefit of solar is that Solar energy systems do not produce air pollutants or carbon dioxide. Buildings also have no effect on the environment when using solar panels. Although these all sound congenial there are ways you have to protect them. Think about how the snow or hail could affect your solar panel! If your solar panel somehow gets covered too it wont work as well.





How is this going to help gain renewable energy

If more people understood how these cost less and are more convenient lots of people would convert. Think about how florida and australia, and all the sunny paradises could benefit from solar power. Gasses are a very efficient and sustainable way to make energy, and we should not completely stop using gas but renewable energy like this is super good for the enviro

Wind





Wind

By: Aryo Arefi My google doc: https://docs.google.com/document/d/1viXVcv4u-VXymi5_fiRNEBiKO8Hv573Ura3O3qhbmEs/edi



What kind of source is wind?

- Wind=renewable energy
- Wind turbines=help farmers save money
- Wind turbines: are beneficial to China the most because they are fueling higher energy use



History of Wind Turbines

- Wind Turbines : Thousands of years of history
- Wind Turbines helped every part of the world be a better place
- Wind Turbines=held for many purposes

Ancient Iranian Windmill





Old Windmill

Benefits of Wind Turbines

- Wind Turbines=reduce the risks of climate change
- More Wind Turbines=lowers chance of greenhouse gasses being destroyed
- Wind Turbines=cheap
- Wind Turbines=source of reliable income for farmers
- Wind Turbines=producing a lot of energy for cars,homes, and lights.
- Wind Turbines=working humans
- Environmentalists love the idea of wind turbines
- Wind energy=saving endangered species



Forest Hills School District Science & Innovation Expo.







