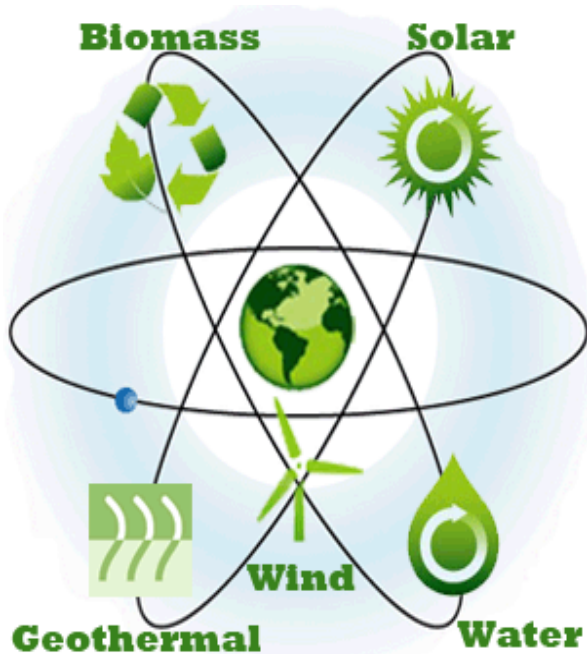
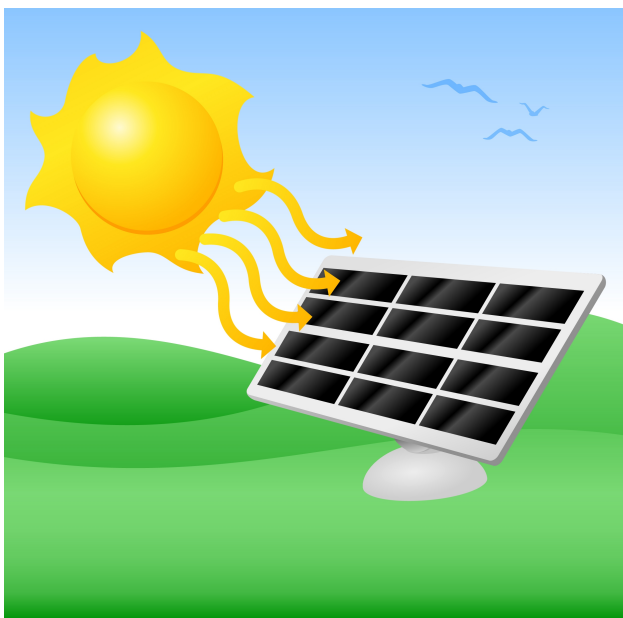


# Alternative Energy Sources



The population recently reached the six billion mark and will continue to grow at an exponential rate in the future. As the population increases, so will the demands for resources like food, water, and electricity. Renewable, clean, and efficient power is increasingly important as limited fossil fuel sources slowly disappear, and pollution becomes more of an issue. However, the industry has already begun to answer many of the tough questions about where our power will come from in the future. Today we are exploring alternative sources of power, and using new technology to make old sources more efficient.

Power companies today have many methods of making power more efficiently. Today, there are several ways of generating power. Nuclear, hydroelectric, wind, solar, coal, oil and gas, are the most significant methods.



## SOLAR POWER:

Many people believed solar power would solve the world's energy problems. After all, if we could harness all of the sun's energy that hit the earth in a one minute period it could power the entire planet for a year. In fact, only a hundredth of a millionth of one percent of the sun's power even arrives at the planet.

## WIND POWER:

Wind power is one of the most promising prospects for the future. It is inexpensive and fairly reliable. Wind turbines are placed high above the ground to take advantage of faster, less turbulent air flows.

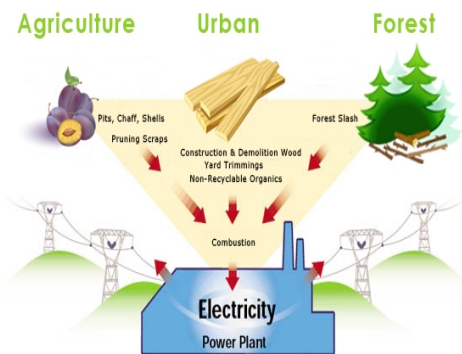


## NUCLEAR POWER:

Nuclear power is also an interesting alternative to fossil fuels. It is cheap, efficient, and clean. Nuclear energy is generated as fission unleashes the energy stored in the atom.

## HYDROELECTRIC POWER:

Hydroelectric facilities utilize water, a renewable resource, to turn turbines. They are absolutely pollution free, but can disrupt the river and ocean habitats where they are constructed.



## BIOMASS:

Biomass is an organic matter that can be used to make fuels, chemicals and other products, as well as provide heat or electricity. For example, wood is one of the oldest and most commonly used examples of biomass. Burning it produces heat to give us warmth.

Other sources include plants, aquatic plants, animal waste, organic compounds from municipal and industrial waste, which can be used to produce fuels and chemicals, as well as power.

## HYDROGEN FUELS:



Hydrogen fuels are also a promising alternative for the future. Hydrogen fuel cells, which combine hydrogen and oxygen to produce electricity, are currently used for NASA's space vehicles because they are light weight and release a lot of energy.

## NATURAL GAS:

The traditional sources of power are fossil fuels. They include coal, oil, and natural gas. Of them all natural gas is the cleanest while coal (which provides 51% of America's electricity) generally causes the most environmental pollution in the form of smog, soot, acid rain, and toxic metal compounds.



## GEOHERMAL:



Geothermal energy is the heat from the Earth. It's clean and sustainable. Resources of geothermal energy range from the shallow ground to hot water and hot rock found a few miles beneath the Earth's surface, and down even deeper to the extremely high temperatures of molten rock called magma.

## FUTURE:

In the future we will have to take advantage of many different kinds of power to meet our needs. Using renewable and clean sources of power will become extremely important as the demands for power increase. Solar, wind, hydroelectric, hydrogen fuel cells, geothermal, natural gas, biomass and nuclear power provide promising alternatives to fossil fuels, and with time may be able to fully meet our energy needs.

**Alternative Energy Sources Research**  
**7th/8th Earth Science:**  
**RESEARCH PAPER**  
**Due: Wednesday, October 19th**

Instructions:

- You, and a partner, are asked to write a **COMBINED** Research Paper. Each of you should investigate, research and answer the following 5 questions in each category.  
(2 categories per group member)
- Please use **COMPLETE** sentences. Please proofread your work. Please **DO NOT** write the paper in a question/answer format - use paragraph style writing.
- The paper should read smoothly - there should not be any distinction of who wrote what section.
- **BOTH** group members are expected to do equal work and research for the given topic. This will be reflected in your final grade.
- Please research the following topic and answer each of the following questions in each category.
- The research paper should **BE TYPED** and use normal font and normal font size (Times New Roman - 12pt.)
  - Margins should be at 0.75 inch.
- The paper is double-spaced and should be more than 5 pages, but not more than 7 pages.
- You also need to include a minimum of eight references (**THIS IS NOT INCLUDED** in the 5 -7 pages stated above). This means two references per research section - 4 references per writer.
  - You may include pictures, but this **DOES NOT** count toward the six page expectation. Visuals always make papers more interesting and appealing to the reader.... (ME!)

YOUR PARTNER: \_\_\_\_\_

TOPIC CHOSEN: \_\_\_\_\_

(Pick one of the "green" areas of environmental science discussed in class)  
Please address the following questions:

**PAGE 1 - INCLUDE TITLE and your names and Date**

**Also,** briefly describe your choice of improving planet earth by the choice of the alternate energy topic chosen. Why did your group choose this topic?

**PAGE 1 and 2 -- Scientist:** You are concerned with understanding and explaining how this energy source works. Focus on the efficiency, usability and practicality of using this energy source. Here are some questions you will have to answer in your research paper:

1. How is this source of power processed to harness the energy?
2. What is the source of power or raw materials for this energy source?
3. What are the by-products from this energy source?
4. Does this technology effectively utilize our natural resources?
5. Is it possible to use this energy source in our area of the country?

**PAGE 3 and 4: Environmentalist:** You are concerned with the effects of this technology on nature. You want to explain how this new project would impact the natural surroundings. You would ideally want to see something that will use but not consume natural resources in such a way that future generations of both humans and other species will not be adversely affected by this technology. Here are some questions you will have to answer in your research paper:

6. Are there any harmful wastes produced by this technology?
7. Does this technology consume natural resources which can not be renewed?
8. Will natural habitats be adversely affected by this technology?
9. Are there any concerns to public health and safety?
10. What are the consequences of using these energy resources regarding damaging, or improving planet earth?

**PAGE 4 and 5 : Economist:** You are concerned about how much the technologies will cost. You want an energy source which is both efficient and cost effective; something that will make a return on the initial investment to put the technology in place. You would like the project to be feasible and affordable over a long term, with the opportunity for some profit-making. Here are some questions you will have to answer in your research paper:

11. How much does the cost of this energy source compare to the current cost of fossil fuels in this area?
12. What capital investment must be made in order to start and use this technology?
13. Is there a potential to save money by using this technology over the long term?
14. Are there any beneficial by-products produced by using this energy source?
15. Are any extra employment opportunities created by this technology?

**PAGE 5 and 6: Historian/Sociologist:** You are concerned with how this energy source has been used around the world. Humans have always used energy to improve their quality of life. Many different types of energy have been used in different regions and at different times in history. Here are some questions you will have to answer in your research paper:

16. When was this energy source first discovered or invented?
17. Where in the United States or other countries is this energy source being used?
18. How easily do you think our community would accept using this new energy source?
19. How much energy is currently produced using this technology?
20. How has this technology affected the lives of the people who use it?

**PAGE 6 or 7:** List 6 - 8 (3 - 4 each) Fun facts about your "green" energy source

**PAGE 8:** REFERENCE PAGE --- Please follow the samples given in class for the correct way to cite resources.