

Name: _____

Electricity Unplugged

(Investigating the Parts, Process, and Products of Making Electricity)

Overview

This survey asks you to think about how electricity is produced. The questions will challenge you to explore what you know and hopefully get you to ask questions about the things that you do not know!





Part 1: Student Electricity Production Systems Survey (Assessing prior knowledge)

- 1) Circle whether each of the following statements is True or False.
- a) True or False All electricity production has an impact on the environment.
 - b) True or False To date, all commercial nuclear power plants use energy from fission to produce electricity.
 - c) True or False The way in which electricity is delivered to our homes depends upon the fuel used to make it.
 - d) True or False Electricity production systems have a few common components.
 - e) True or False Where you live determines how your electricity is produced.
 - f) True or False In Pennsylvania, consumers choose their own electricity supplier.
 - g) True or False Using coal to produce electricity is a sustainable process.
 - h) True or False Some non-renewable resources can take a million years to be created.
 - i) True or False The choices and decisions made by consumers have no impact on how electricity is produced.

Please note any other questions or interests you have about electricity production below.





Part 2 (Electricity Production Systems)

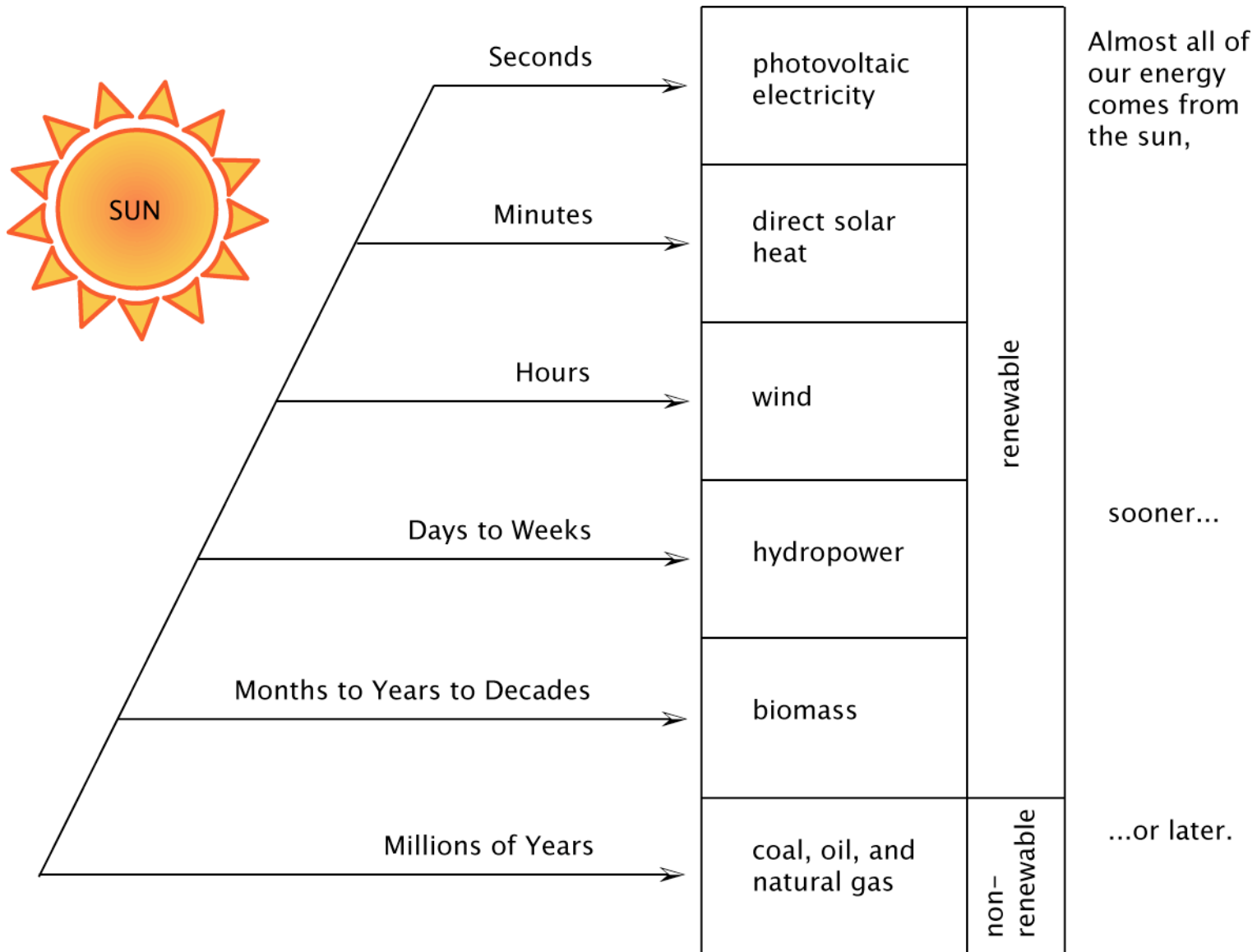
1) For each resource, check off which components are being used in the production of electricity.

Electricity Production Component	Electricity Production Resource			
	Coal 	Nuclear 	Hydroelectric 	Wind 
Boiler				
Reactor				
Reservoir				
Stack				
Steam generator				
Pennstock				
Rotor blades				
Turbine				
Gearbox				
Condenser				
Generator				
Transformer				
Cooling water condenser				
Cooling tower				
Transmission lines				

Additional Notes:

2) List the pros and cons for each form of electricity production, be sure to include whether they are renewable or nonrenewable. Use the chart provided below to record your answers.

	Electricity Production Resource			
	Coal 	Nuclear 	Hydroelectric 	Wind 
Environmental Implications				
pros				
cons				



Adapted from http://www.ase.org/uploaded_files/educatorlessonplans/fossil.pdf by E. Diefendorf

Part 3: The Environmental, Economic, Social Products of Electricity Production

Overview

In this section, you will work with a team to think deeply about producing electricity. You will need to think about how making electricity affects the natural world (ENVIRONMENTAL), how money cycles through your community (ECONOMIC), and what role electricity plays for your community (SOCIAL). Please work with your team to answer the following questions and be prepared to share your ideas with the rest of the class.

[Hint: You may want to make some visuals if you think it might be helpful for you to explain or for others to understand.]

1) Analyzing Environmental Products

- a) Think back to Part 2...What are some environmental products of producing electricity?

Choose two (2) of the environmental products you named and describe the reason why they may be good or bad for the environment. If you more information, take a peek at the Powerscorecard website: <http://www.powerscorecard.org/issues.cfm>.

- b)

2) It's time to think a little bit about **economics**. Brainstorm some ideas about how you think producing electricity might affect the way that money cycles in your community.

<p><u>Brainstorming Area</u></p>

Additional Resources: Energy Glossaries

For definitions of the following words and more...

Renewable resource
Nonrenewable resource
Electricity
Coal
Nuclear
Hydroelectric
Wind
Environmental
Social
Economic

...take a look at the links below.

Energy Glossary

http://www.eia.doe.gov/glossary/glossary_main_page.htm

Source: Department of Energy

Solar Glossary

http://www.eere.energy.gov/solar/solar_glossary.html

Source: Department of Energy

Wind Glossary

<http://www.otherpower.com/glossary.html>

Source: ForceField, a small business in Colorado