



# BIOMASS

## BIOMASS WEB QUEST

JILL WILLIAMS

<b>Time Frame:</b>	<b>Standards:</b>
45-60 minutes	8-9.PS.1.6.3 Use appropriate technology and math to make investigations. 8-9.PS.1.8.1 Analyze technical writing, graphs, charts and diagrams. 8-9.ES.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, and depletion of natural resources. 7.S.5.3.1 Identify alternative sources of energy.
<b>Objectives:</b>	
Students will use web resources to gain a better understanding of what biomass is and how it is used.	
<b>Background Information:</b>	
<p>“Biomass is any organic matter – wood, crops, seaweed, animal wastes – that can be used as an energy source. Biomass is a renewable source of energy because we can grow more in a short period of time. We use biomass to fuel our bodies, heat our homes, generate electricity and as a transportation fuel.”</p> <p>Taken from The Need Project’s Transparent Energy 2008 pg. 7 <a href="http://www.need.org/needpdf/Transparent%20Energy.pdf">http://www.need.org/needpdf/Transparent%20Energy.pdf</a></p> <p>Need more background information go to: <a href="http://www1.eere.energy.gov/biomass/for_students.html">www1.eere.energy.gov/biomass/for_students.html</a> <a href="http://www.nrel.gov/learning/re_biomass.html">www.nrel.gov/learning/re_biomass.html</a></p>	
<b>Materials:</b>	
Student question sheet with web address - Examples below in additional content. Computer lab with internet access Prizes for students (come up with variety of categories- Completely finished, Most thorough, etc) I would suggest something for each one of the students	
<b>Procedure:</b>	
<ol style="list-style-type: none"><li>1. Give students some background in biomass energy.</li><li>2. After giving a little background, tell them they are going to be finding out the rest of the information on their own in an internet scavenger hunt. They will need to find the answers to the questions on the web site provided.</li><li>3. Set a time limit (25-30 minutes) and tell the students when to start.</li></ol>	

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4. When the time is up, have the students hand in their question sheets with their answers. It is easier if you have them come up one at a time or by row so you can look over the assignments.
5. Hand out the prizes. One suggestion is to have the student answer a question on what was being researched.
6. Reemphasize any points you want to make. As an extension of this assignment, challenge the students to create a design to use biomass energy to do something in their homes.

### Assessment:

Question sheets with the answers  
Participation

### Additional Content:

Sample Questions using the website: [www1.eere.energy.gov/biomass/for\\_students.html](http://www1.eere.energy.gov/biomass/for_students.html)

1. What is biomass?
2. Is biomass energy renewable or nonrenewable? Why?
3. What do we use biomass for?
4. Where does biomass receive its energy?
5. How much energy does biomass provide in the United States?
6. Where does this biomass energy come from?
7. How does biomass release its energy to be used by us?
8. Could we (people in the United States) increase our use of biomass energy?
9. What are waste-to-energy plants?
10. How is it used in the United States?
11. What do waste to energy plants burn?
12. How much waste does it take to equal the same amount of heat energy produced by coal?
13. What is ethanol?
14. How is ethanol produced?
15. What is ethanol used for? What are the advantages? What are the disadvantages?
16. What is E10 and how is it used?
17. Where are good biomass resources in the United States? Where are better wood resources? Where are better agriculture resources?
18. Is burning biomass for energy creating air pollutants?
19. How does biomass compare to fossil fuel in the amount of air pollutants?
20. Is there an increase or a decrease of carbon dioxide created by biomass?



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### References:

The Need Project's Transparent Energy 2008 pg 7  
<http://www.need.org/needpdf/Transparent%20Energy.pdf>

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