



**Summary:** Students will act as reporters assembling a newspaper on biomass energy.

# Biomass Gazette

**Grade Level:** 9–12 (7–8)

**Subject Areas:** Environmental Education, Language Arts, Science, Social Studies

**Setting:** Classroom, Computer lab, Library

## Time:

Preparation: One hour

Activity: One–two weeks

**Vocabulary:** Bioenergy, Biomass

## Academic Standards:

**Common Core ELA:** RL.9–12.1, RI.9–12.1, W.9–12.2&4–8

**NGSS:** HS-ESS3-4

DCI: ESS3.A: Natural Resources, ESS3.C: Human Impacts on Earth Systems, ETS1.B: Developing Possible Solutions

CCC: Influence of Engineering, Technology, and Science on Society and the Natural World

**WI Env Literacy & Sustainability:**

C1.B.m, EX2.C.i, EX4.B.i, EX4.B.m, EN6.C.i

## Materials

- Resources and reference materials about bioenergy resources
- Computer lab with Internet access

## Resources:

National Corn Growers Association  
[www.ncga.com/home](http://www.ncga.com/home)

Wisconsin Biofuels Association  
<http://wibiofuels.org/associate-members/>

EPA Alternative Fuels  
[www.epa.gov/renewable-fuel-standard-program/alternative-fuels](http://www.epa.gov/renewable-fuel-standard-program/alternative-fuels)

## Objectives

Students will be able to

- describe how bioenergy works;
- provide examples of biomass energy use in Wisconsin; and
- describe how a news article is different than an essay.

## Background

### Points of Journalism:

Writing a news article is different from writing an essay. In a news article, there is no conclusion. The reader should be able to stop reading the story at any time and still know what the story is about. The headline of a story is usually short and should send a message about the article. The headline can be clever, as long as the cleverness does not interfere with the message. The lead is the first sentence of a story and is one of the most important parts of the article. If the reader likes the lead, then he/she will continue to read the story. The lead usually contains six elements: the who, what, why, when, where, and how of the story. The most important information of the article should be at the beginning and the least important at the end. Paragraphs should be short and concise; two to three sentences are usually enough.

When writing a news article, every good journalist must keep journalism ethics in mind. Ethics deal with what is good/bad and moral/immoral. Journalists have four basic rules to follow, according to the Society of Professional Journalists:

1. **Seek truth and report it**–“Journalists should be honest, fair, and courageous in gathering, reporting, and interpreting information.”
2. **Minimize harm**–“Ethical journalists treat sources, subjects, and colleagues as human beings deserving of respect.”
3. **Act independently**–“Journalists should be free of obligation to any interest other than the public’s right to know.”

4. **Be accountable**–“Journalists are accountable to their readers, listeners, viewers, and each other.”

## Biomass

Biomass is any plant-derived organic matter available on a renewable basis, including dedicated energy crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, animal wastes, municipal wastes, and other waste materials. These sources can provide energy in the form of electricity, heat, steam, and fuels.

Some biomass topics include:  
(\* indicates a more difficult topic.)

**Direct burning**–Burning biomass only for energy. *Examples: Wood burner, pellet stove.*

**Co-firing**–Burning biomass along with a fossil fuel. *Example: Combining coal and biomass to generate energy.*

**Anaerobic digestion**–Bacteria decomposes biomass in liquid to produce biogas in an airtight vessel or enclosure. Biogas is then used to generate energy. *Example: Anaerobic digesters are being used on farms to generate biogas from animal waste.*

**Bio-fuels**–Alternative fuels made from biomass; used for transportation. *Examples: Biodiesel and ethanol.*

**\*Gasification**–The solid form of biomass is heated up and it changes into a gas. The gas is then changed into other fuels or burned in a boiler. The gas can be used as a substitute for natural gas.

**\*Pyrolysis**–Pyrolysis uses a process similar to gasification except it eliminates the presence of oxygen altogether.

Biomass is a controversial topic. When writing their articles, it is important for students to understand what makes a good article (see **Points of Journalism** in **Background**). Before reporting, they should verify that their information is from a reputable source and make sure they address both sides of the

story. See **Resources** for more information on biomass.

NOTE: For examples of newspaper articles on biomass, see the following newspapers: *The Country Today*, *Agri-View*, *Wisconsin Farmer*, or *The Agriculturist*.

## Procedure

### Orientation

Ask students where people get news (TV, newspapers, radio, etc.). Ask them what makes a good story. List this on the board. Ask students what rules they think a reporter must follow in order to do a good job reporting a story (see *Points of Journalism*). List these on the board.

Ask students if they think renewable energy is a newsworthy topic. What might make renewable energy headline news? Have students look through newspapers and see if renewable energy is mentioned.

Tell students they are going to be assembling a newspaper about bioenergy, or energy made from biomass. Make sure students understand the components of a good article and the ethics of journalism. Have students explore newspapers (or on-line papers) looking for information on energy use in Wisconsin and throughout the world. Have them analyze their articles utilizing the Points of Journalism. Have students identify the ways in which information is given to the reader. Is it always text, or are charts, graphs, and pictures used to tell a story as well? When discussing new, innovative, or advanced topics (including biomass energy in Wisconsin), journalists are challenged to help the public understand technical concepts in a clear manner. Remember, a picture speaks a thousand words. Use diagrams and illustrations to help explain. Think of other strategies journalists use to educate the public in an interesting manner.

### Steps

1. Provide students with a brief background on biomass energy (see **Background**). Discuss the differences between the different types of bioenergy.
2. Have students break into groups and select a topic to write about. See list of "Selected Topics" for suggestions. (\*indicates a more difficult topic.)

#### Selected Topics:

- basic bioenergy facts
- alternative fuel-ethanol
- alternative fuel-biodiesel
- \*positive and negative aspects of bioenergy use
- energy from landfill gases
- energy from cow/pig/poultry waste
- energy from wood

- \*how businesses use their waste
- wood for energy (paper mills and other businesses that use wood)
- biomass energy use worldwide

3. Encourage the groups to assign tasks to each group member (e.g., researcher, writer, editor), making sure that one member acts as the graphic designer. The editors and graphic designers should meet to establish guidelines for font style and size, length of each article, etc. They may need to research this topic by visiting the local newspaper or talking to the school newspaper advisor.
4. Provide the groups with time to research their topic in the library and computer lab.
5. Have students hand in their articles in one week. Edit their reports and have students make recommended changes.

### Closure

Discuss the results of their research and publication. What do students know about biomass energy use in Wisconsin as well as the rest of the world? What is their opinion of its use? Have the class discuss how to distribute their production. How might they use this publication to educate others in the community about renewable energy?

## Assessment

### Formative

Did students find and write up information on their selected topic?

### Summative

Have students perform Internet searches for other articles on biomass energy. Then have them analyze the article for parts, ethics, and intrigue within the story.

## Extensions

This can be repeated in other classes with different renewable topics (solar, wind, hydro, and geothermal). The newspapers can be shared and discussed in other classes.

Ask students to identify whether any biomass resources are being used in their community. What government agencies or utilities could they contact to find out? What makes biomass energy a good or poor choice for their community?



# Biomass Gazette



## STUDENT PAGES

For this project you will be researching different types of biomass energy and will be putting together a newspaper that includes articles from each member in your group. You will be responsible for your own article and for the final layout of the newspaper.

In your article you should: (see grading rubric)

- Define your topic
- Describe how it works
- Explain where/how it is produced
- Provide examples of uses in Wisconsin
- Include graphs/charts/pictures
- Include an interview (extra credit)
- Include a headline, lead, and short paragraphs
- Use correct spelling and grammar
- Keep the reader's attention

Writing a news article is different from writing an essay. In a news article there is no conclusion. The reader should be able to stop reading the story at any time and still know what the story is about.

The headline of a story is usually short and sends a message about the article. The headline can be clever, as long as the cleverness does not interfere with the message.

The lead is the first sentence of a story. It is one of the most important parts of the article. If the reader likes the lead, then he/she will continue to read the story. The lead usually contains six elements: the who, what, why, when, where, and how of the story.

The most important information of the article should be at the beginning and the least important at the end. Paragraphs should be short and concise; two to three sentences are usually enough.

When writing a news article, every good journalist must keep journalism ethics in mind. Ethics deal with what is good/bad and moral/immoral. Journalists have four basic rules to follow, according to the Society of Professional Journalists:

1. **Seek truth and report it**–“Journalists should be honest, fair, and courageous in gathering, reporting, and interpreting information.”
2. **Minimize harm**–“Ethical journalists treat sources, subjects, and colleagues as human beings deserving of respect.”
3. **Act independently**–“Journalists should be free of obligation to any interest other than the public's right to know.”
4. **Be accountable**–“Journalists are accountable to their readers, listeners, viewers, and each other.”

**Biomass** is defined as any plant-derived organic matter available on a renewable basis, including dedicated energy crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, animal wastes, municipal wastes, and other waste materials. These sources can provide energy in the form of electricity, heat, steam, and fuels.

Some biomass topics include: (\* indicates a more difficult topic.)

**Direct burning**–Burning biomass only for energy.  
Examples: Wood burner, pellet stove.

**Co-firing**–Burning biomass along with a fossil fuel.  
Example: *Combining coal and biomass to generate energy.*

**Anaerobic digestion** –Bacteria decomposes biomass in liquid to produce biogas in an airtight vessel or enclosure; biogas is then used to generate energy.  
Example: *Anaerobic digesters are being used on farms to generate biogas from animal waste.*

**Bio-fuels**–alternative fuels made from biomass; used for transportation. Examples: *Biodiesel and ethanol.*

\***Gasification**–The solid form of biomass is heated up and it changes into a gas. The gas is then changed into other fuels or burned in a boiler. The gas can be used as a substitute for natural gas.

\***Pyrolysis**–Pyrolysis uses a process similar to gasification except it eliminates the presence of oxygen altogether.



## Biomass Grading Rubric

		Easily understood by reader	Hard to understand for some readers	Most readers won't understand	Too difficult to understand
<b>Research</b>	<i>Definition of topic</i>	<b>15</b>	<b>10</b>	<b>5</b>	<b>0</b>
	<i>Describes how it works</i>	<b>15</b>	<b>10</b>	<b>5</b>	<b>0</b>
	<i>Explains where/how it is produced</i>	<b>15</b>	<b>10</b>	<b>5</b>	<b>0</b>
	<i>Examples of uses in Wisconsin</i>	<b>15</b> More than one good example	<b>10</b> One example	<b>5</b> One example, but not in Wisconsin	<b>0</b> No examples given
<b>Extra Credit</b> 😊	<i>Interview</i>	<b>10-9</b> Excellent	<b>8-7</b> Good	<b>6-1</b> Poor	
<b>Graphs Charts Images</b>	<b>10-9</b> Easily understood and related to the topic	<b>8-7</b> Not easy to understand and/or not quite related to the topic	<b>6-5</b> Takes too much time to understand and/or not quite related to the topic	<b>4-3</b> Too difficult to make sense or and/or not related to the topic	<b>2-0</b> Doesn't make sense at all, or not related to the topic
<b>Headline</b>	<b>10-9</b> Captured attention, catchy	<b>8-7</b> Somewhat catchy	<b>6-5</b> Average	<b>4-3</b> Could be better	<b>2-0</b> Poor
<b>Lead</b>	<b>10-9</b> All info; gets attention	<b>8-7</b> All info; loses attention	<b>6-5</b> Missing some info; loses attention	<b>4-3</b> Missing a lot of info loses attention	<b>2-0</b> Missing most info; reader gets bored and stops reading
<b>Layout Spelling Grammar</b>	<b>10-9</b> Article form; good spelling and grammar	<b>8-7</b> Loses article form; some spelling and grammar mistakes	<b>6-5</b> Not in article form; a lot of spelling/grammar mistakes	<b>4-3</b> Reads like an essay; many spelling/grammar mistakes	<b>2-0</b> Format is wrong; spelling and grammar are poor
<b>Paragraphs</b>	<b>20-18</b> Short, concise, easy to understand; reader remains interested	<b>17-16</b> Short, not very concise, easy to understand; reader loses some interest	<b>15-14</b> Too long, not concise, not easy to understand; reader gets bored	<b>13-12</b> Run-on paragraphs, not concise, hard to understand; reader stops before finish	<b>11-0</b> Sentence/paragraph structure very poor, reader stops reading immediately
<b>Keeps Attention</b>	<b>20-18</b>	<b>17-16</b>	<b>15-14</b>	<b>13-12</b>	<b>11-0</b>

Participation: **25 Points**

Total Individual Grade