

Earth Day & Renewable Energy



WHAT ARE RENEWABLE ENERGY SOURCES AND WHAT BENEFITS DO THEY OFFER THE PLANET?

Essential Questions



- What is renewable energy?
- What are renewable energy sources?
- What benefits do renewable energy sources offer the planet?
- What is Earth Day? How can I help?

Objectives



- I can engage in a discussion about renewable energy.
- I can ask and answer questions about renewable energy sources.
- I can state facts about renewable energy sources.
- I can identify ways to use renewable energy to benefit the earth.

Vocabulary



Renewable Energy: Renewable energy comes from natural sources that can replenish themselves, like wind, sun, and water.



Carbon Footprint: The total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.



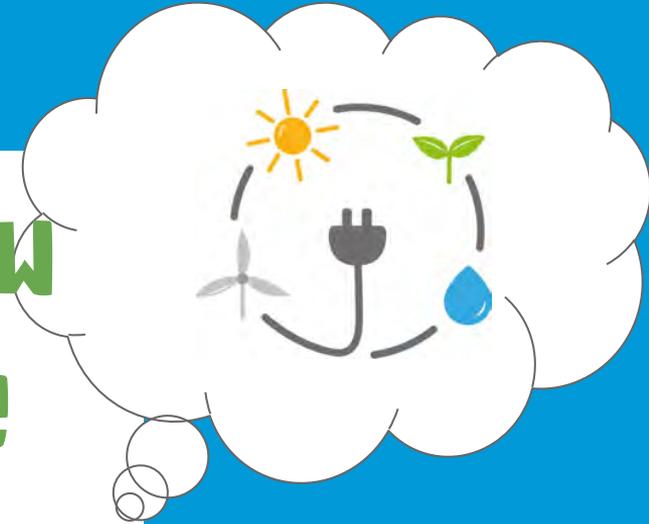
Hydropower: Hydropower generates electricity by using water flow to drive turbines.



Solar Power: Solar power uses panels to capture sunlight and convert it into electricity.



What Do You Know About Renewable Energy?



Renewable Energy: Renewable energy comes from natural sources that can replenish themselves, like wind, sun, and water.

Let's learn facts about renewable energy!



Think Pair Share

What do you know about renewable energy?



With your partner:

- Think about the topic.
- Pick a question.
- Share your thoughts.



What I **k**now?

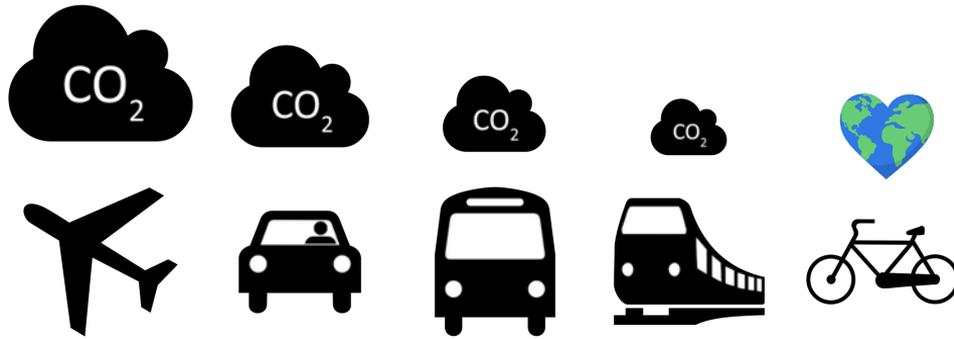
What I **w**onder?

What I **l**earned?

Carbon Footprint



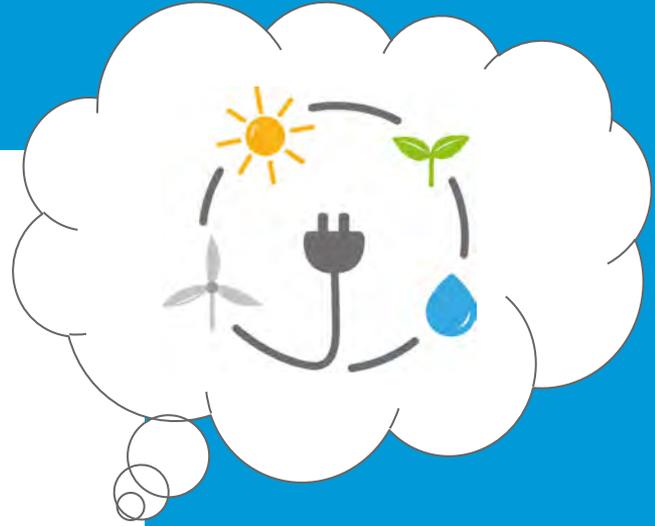
As we investigate renewable energy sources, think about ways we can use renewable energy to reduce our carbon footprint.



Carbon Footprint: The total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.



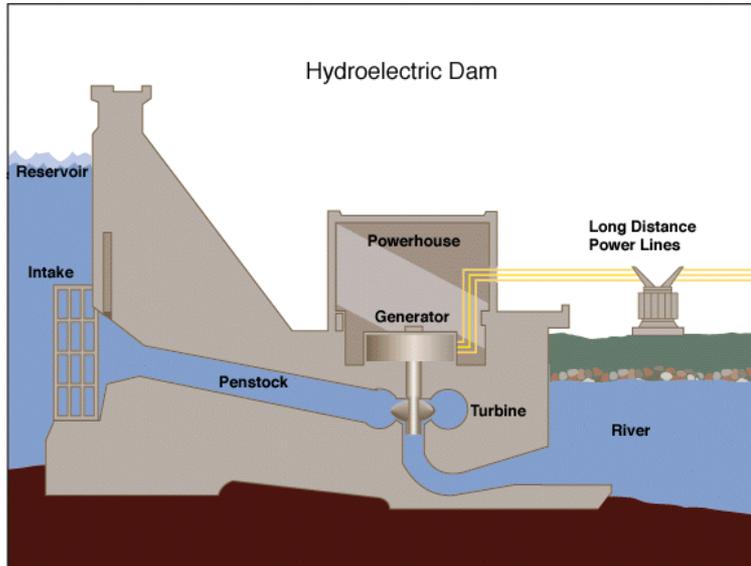
Renewable Energy Sources



Hydropower



Hydropower generates electricity by using water flow to drive turbines.



Source: Tennessee Valley Authority (public domain) EIA.gov

What do you notice? What do you wonder?

**Have you ever seen a source of
hydropower in real life?**

How can hydropower benefit the planet?

Solar Power



Solar power uses panels to capture sunlight and convert it into electricity.

What do you notice? What do you wonder?



Have you ever seen objects that generate power from the sun?

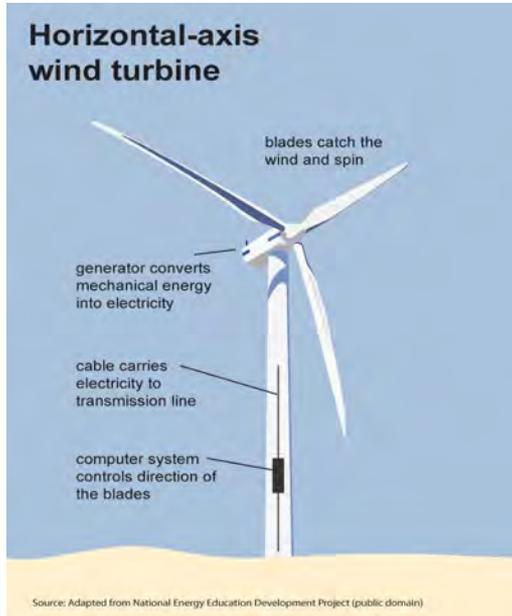
What did it look like? Where did you see it? How was it being used?

How can solar power benefit the planet?

Wind Power



To generate electricity, large blades are used to catch wind and spin turbines.



Have you ever seen objects that generate power from the Wind?

Where did you see it?

What do you notice? What do you wonder?

How can wind power benefit the planet?

Renewable Natural Gas

What is renewable natural gas?

Renewable natural gas is methane derived from organic waste through anaerobic digestion:

- Reduces greenhouse gas emissions compared to conventional natural gas. Renewable natural gas is not a fossil fuel. It is produced from organic waste when bacteria consume the waste.
- It is typically produced at landfills, wastewater treatment plants, or specially built organic waste recycling plants called anaerobic digestion plants.
- The use of renewable natural gas to meet people natural gas, electric, and steam needs, reduces greenhouse gas emissions from conventional natural gas drilling and at landfills and wastewater treatment plants.

Renewable Natural Gas

How is renewable natural gas used?

Renewable natural gas can be purified and injected into the existing natural gas system, and then used for space heating, cooking, and/or hot water, or to produce renewable electricity or steam.

Why is renewable gas important?

- A reliable source of renewable energy that is not dependent on the wind or sun.
- Helps reduce emissions from agriculture and waste, which account for 10% of New York State's greenhouse gas emissions.
- A greener natural gas supply.
- By investing early in renewable natural gas, we jumpstart our clean energy future.

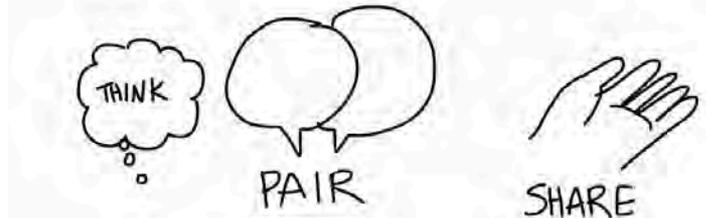
Think Pair Share

What facts did you learn about renewable energy?



With your partner:

- Think about the topic.
- Pick a question.
- Share your thoughts.



What I **k**now?

What I **w**onder?

What I **l**earned?

What is earth day?

Earth day is a special day for everyone to celebrate the planet and learn how to take care of it.

How can you help with earth day?

Join clean-ups, plant trees, and learn about recycling and saving energy at home.

Based off of what you've learned about renewable energy, how can renewable energy benefit the planet? How can you use earth day to share what you know about renewable energy and its benefits?

Happy Earth
Day!



EARTH DAY & RENEWABLE ENERGY

Name: _____

Date: _____



Find the words in the word bank below.

G	R	D	J	T	N	I	R	P	T	O	O	F	H	C
Y	J	R	E	D	C	P	A	S	O	B	K	M	Y	L
S	A	A	E	I	I	E	T	Z	O	K	P	E	D	P
A	U	R	O	N	F	A	C	Y	Z	L	P	D	R	F
S	V	B	N	R	E	I	F	Y	U	T	A	H	O	T
E	J	T	A	K	G	W	R	S	U	S	W	R	P	N
A	Q	X	N	A	A	A	A	U	S	Q	W	Z	O	A
R	L	Z	A	E	X	C	N	B	P	A	L	M	W	A
T	B	S	E	I	N	F	A	I	L	Q	W	B	E	K
H	R	A	R	N	M	E	D	R	C	E	U	I	R	R
V	J	Q	O	K	P	F	R	E	B	J	M	G	N	X
V	I	G	B	R	U	X	D	G	L	O	R	U	Z	D
Y	U	S	I	S	I	B	B	V	Y	G	N	G	L	Y
C	B	I	C	Q	J	J	E	V	X	E	I	L	Z	Y
O	P	E	N	A	H	T	E	M	L	V	O	R	Y	H

ANAEROBIC
ENERGY
METHANE
RENEWABLE

CARBON
FOOTPRINT
ORGANIC
SOLAR

WIND
EARTH
HYDROPOWER
PURIFIED



EARTH DAY & RENEWABLE ENERGY

Name: _____

Date: _____



Use the clues to fill in the crossword puzzle.

Down:

- 1. Renewable natural gas is methane that comes from organic waste through _____ digestion.
- 2. This is a renewable natural gas that comes from organic waste.
- 5. This type of power is collected by using large blades to spin turbines.
- 7. Renewable natural gas helps _____ emissions from agriculture and waste.
- 8. This footprint is the total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.

Across:

- 3. This is the day we celebrate and learn about the planet.
- 4. This type of energy is generated by using water flow to drive turbines.
- 6. Landfills, yard waste, sludge, and food waste are all examples of _____ sources.
- 9. This type of energy is derived from natural sources and can be replenished faster than it can be used.
- 10. This is the type of power that is gathered by using panels pointed at the sun to capture sunlight.



Name: _____ Date: _____



Earth Day & Renewable Energy

1. Renewable energy is generated from fossil fuel?

- True
- False

2. _____ are a source of renewable energy.

- a. Coal and Oil
- b. Windmills and Solar Panels
- c. Sun and soil
- d. All of the above

3. Renewable energy comes from _____ that can replenish themselves, like wind, _____, and _____.

4. _____ generates electricity by using water flow to drive turbines.

- a. Wind Power
- b. Solar Power
- c. Hydropower
- d. Sun Power

5. To generate electricity, _____ are used to catch wind and spin turbines.

- a. Solar panels
- b. Dams
- c. Large blades
- d. Landfills

6. Kids, adults and families around the world can participate in Earth Day.

- True
- False

Name: _____ Date: _____

7. Solar power uses _____ to capture _____ and convert it into electricity.

8. Carbon footprint is the total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.

- True
- False

9. Renewable natural gas

- a. Is produced at landfills, wastewater treatment plants or anaerobic digestion plants.
- b. Is methane derived from organic waste through anaerobic digestion.
- c. After being purified can be injected into existing natural gas systems and used for space heating, cooking or to produce renewable electricity or steam.
- d. All of the above

10. Renewable natural gas is a reliable source of renewable energy that is dependent on the wind or sun.

- True
- False

11. _____ is a day to celebrate the _____ and learn how to take care of it .

12. How can you help with earth day?

- a. Throw trash in the river.
- b. Plant trees and recycle.
- c. Keep lights on in rooms that are not being used.
- d. Join teams to clean up neighborhoods.
- e. Both b and d

Lesson: Earth Day & Renewable Energy

Objectives:

I can engage in a discussion about renewable energy.

I can ask and answer questions about renewable energy sources.

I can state facts about renewable energy sources.

I can identify ways to use renewable energy to benefit the earth.

Focus: What is renewable energy? What are renewable energy sources? What benefits does renewable energy offer the planet?

Vocabulary:

- **Renewable Energy:** Renewable energy comes from natural sources that can replenish themselves, like wind, sun, and water.
- **Carbon Footprint:** the total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.
- **Hydropower:** Hydropower generates electricity by using water flow to drive turbines.
- **Solar Power:** Solar power uses panels to capture sunlight and convert it into electricity.

Questions and Answers:

1. Renewable energy is generated from fossil fuel?

True or **False**

2. _____ are a source of renewable energy.

- a. Coal and Oil
- b. **Windmills and Solar Panels**
- c. Sun and soil
- d. All of the above

3. Renewable energy comes from _____ that can replenish themselves,

natural sources

like wind, _____, and _____.

sun

water

4. _____ generates electricity by using water flow to drive turbines.

- a. Wind Power
- b. Solar Power
- c. **Hydropower**
- d. Sun Power

5. To generate electricity, _____ are used to catch wind and spin turbines.

- a. Solar panels
- b. Dams
- c. Large blades
- d. Landfills

6. Kids, adults and families around the world can participate in Earth Day.

True or False

7. Solar power uses _____ to capture _____ and convert it into electricity.
panels sunlight

8. Carbon footprint is the total amount of greenhouse gases, including carbon dioxide, that are emitted by our actions.

True or False

9. Renewable natural gas.....

- a. Is produced at landfills, wastewater treatment plants or anaerobic digestion plants.
- b. Is methane derived from organic waste through anaerobic digestion.
- c. After being purified can be injected into existing natural gas systems and used for space heating, cooking or to produce renewable electricity or steam.
- d. All of the above.

10. Renewable natural gas is a reliable source of renewable energy that is dependent on the wind or sun.

True or False

11. _____ is a day to celebrate the _____ and learn how to
Earth Day planet

take care of it.

12. How can you help with earth day?

- a. Throw trash in the river.
- b. Plant trees and recycle.
- c. Keep lights on in rooms that are not being used.
- d. Join teams to clean up neighborhoods.
- e. Both b and d