

Introductory Level

LESSON 1: Sources of Energy

Introduction: Sources of Energy

In this activity you will learn where electrical power is made in the state of New Mexico and near where you live. Electrical power can be made from different **sources**. A source is where something comes from.

An energy source is what makes the energy at a power plant. A **power plant** is a place that makes electricity for a group of people, such as a city or town.

Examples of energy sources are:

- coal
- natural gas (methane)
- nuclear
- biofuels
- sun
- wind
- water
- geothermal

Some sources, like sun and wind energy, are **renewable**. Renewable means the energy can easily be replaced without running out. Other sources, like coal and natural gas, are **non-renewable**, which means once it is used it is gone.

In addition to being renewable or non-renewable, energy sources also have other qualities. Some energy sources have to be mined from the ground. Some sources must be burned to make energy. Burning can pollute the air and water, mostly with carbon dioxide (the greenhouse gas linked with climate change), but sometimes also with other **toxic** or poisonous chemicals. Some energy sources do not pollute when they are used to make energy.

All of these things are important to think about with energy and how we choose to use it.

Now you are going to play a game to learn more about different energy sources.

1. You will either draw a card or your teacher will give you a card.

2. After everyone has drawn a card, you will take turns to either read your card out loud to the class or act out the information on the card. Everyone in the class or your group will try and guess which source of energy you are (such as coal). When it is other people's turn to read their card, you will try to guess the source of energy they represent. You can refer to the list "Examples of Energy Sources" on page 1 to help you.
3. After the class has guessed what type of energy source you are, go stand by the sign in your classroom that has your energy source name on it. So, if you are coal, go stand by the sign that reads coal.
4. Some of you will have cards with only "R - Renewable Energy Source" or NR - Nonrenewable Energy Source" written on them. After the sources of energy, such as coal, have been identified, the teacher will ask "Is it renewable or nonrenewable?" If that source of energy is nonrenewable and you have a card with "NR - Nonrenewable" on it, then quickly raise your hand and, with the teacher's permission, say "nonrenewable!" If that source of energy is renewable and you have a card with "R - Renewable" on it, then quickly raise your hand and, with the teacher's permission, say "renewable!" If you are the first to respond and give the correct answer, then the teacher will call on you to move over to the section of the room labeled with the corresponding energy source.

Energy Souce Game Cards

(For the teacher to cut and distribute to students)

NR

Source Card

Put on the black clothing or cloth and read:

"I am black or dark grey and mined from the ground. What am I?"

(Let the class try to guess that you are COAL. Once the class guesses, then go stand by the sign that reads coal.)

NR

Source Card

Read:

"It takes millions of years for the earth to make me from dead plants. What am I?"

(Let the class try to guess that you are COAL. Once the class guesses, then go stand by the sign that reads coal.)

R - renewable

R - renewable

NR - non renewable

NR - non renewable

NR

Source Card

Hang the flames sign around your neck, hold up the CO2 sign and the toxic symbol sign and read:

"I make energy when I am burned. When I am burned I make carbon dioxide and release toxic chemicals like mercury. What am I?"

(Let the class try to guess that you are COAL. Once the class guesses, then go stand by the sign that reads coal.)"

R

Source Card

Gather the following items and read:

"I am made from these types of things, so there is a lot of me in this world. What am I?"

(Let the class try to guess that you are a BIOFUEL. Once the class guesses, then go stand by the sign that reads biofuel.)

R

Source Card

Get a "Clean Air" sign and hang it around your neck. Read the following:

"I will be around as long as the earth is around. When I am used for energy I do not make carbon dioxide. What am I?"

(Let the class try to guess that you are GEOTHERMAL. Once the class guesses, then go stand by the sign that reads geothermal.)

R

Source Card

Get a "Clean Air" sign and hang it around your neck. Get the animals sign and hold onto it. Read the following:

"I do not make carbon dioxide. Or pollute the air. I am important for animals to live. What am I?"

(Let the class try to guess that you are WATER. Then go stand by the sign that reads water.)

R

Source Card

Read the following:

"I make energy by turning wheels or turbines when I fall from one height to a lower height. What am I?"

(Let the class try to guess that you are WATER. If they need another hint, tell them dams are one way to make you fall and create energy, then go stand by the sign that reads water.)

R

Source Card

Put on the red clothing or cloth and read:

"I live beneath the earth and am made of heat. I am most available where there are volcanoes and hot springs. What am I?"

(Let the class try to guess that you are GEOTHERMAL. Once the class guesses, then go stand by the sign that reads geothermal.)

R

Source Card

Read the following:

"I make energy by turning wheels or turbines when I fall from one height to a lower height. What am I?"

(Let the class try to guess that you are WATER. If they need another hint, tell them dams are one way to make you fall and create energy, then go stand by the sign that reads water.)

R

Source Card

Put on the red clothing or cloth and read:

"I live beneath the earth and am made of heat. I am most available where there are volcanoes and hot springs. What am I?"

(Let the class try to guess that you are GEOTHERMAL. Once the class guesses, then go stand by the sign that reads geothermal.)

R

Source Card

Put on the blue clothing or cloth and read: "I am a natural resource. There is a lot of me in some areas, but not very much in the desert. What am I?"

(Let the class try to guess that you are WATER. Once the class guesses, then go stand by the sign that reads water.)

R

Source Card

Without talking, act out the following clues one-by-one, in order. Try the first one, if no one guesses, act out the second clue:

- sway your body and run around the classroom
- hold your hair out and act like you are being pushed backwards;
- make a wind-blowing sound

(Let the class try to guess that you are WIND. Once the class guesses, then go stand by the sign that reads wind.)

R

Source Card

Read the following clues. Stop after each one and give people a chance to guess:

"New Mexico gets a lot of me in the springtime."

"As long as the earth is around, I will be too."

(Let the class try to guess that you are WIND. Once the class guesses, then go stand by the sign that reads wind.)

R

Source Card

Get a "Clean Air" sign and hang it around your neck. Read the following:

"When I am used for energy I do not make carbon dioxide or other pollution, but I sure can carry a lot of dust. What am I?"

(Let the class try to guess that you are WIND. Once the class guesses, then go stand by the sign that reads wind.)

R

Source Card

Put on the yellow clothing or cloth and read:

"I am all over the place in New Mexico. New Mexico has a lot of me – over 300 days a year! What am I?"

(Let the class try to guess that you are SOLAR.
Once the class guesses, then go stand by the sign that reads solar.)

R

Source Card

Get a "Clean Air" sign and read:

"When I am used for energy I do not make carbon dioxide or other pollution You do need to protect your skin from me. What am I?"

(Let the class try to guess that you are SOLAR.
Once the class guesses, then go stand by the sign that reads solar.)

NR

Source Card

Give the following clues, one-by-one until the class guesses what you are.

"I occur naturally in the ground or from decomposing trash."

"I am pumped out and put into tanks or burned.
I am neither solid or liquid."

(Let the class try to guess that you are NATURAL GAS.
Once the class guesses, then go stand by the sign that reads natural gas.)

NR

Source Card

Hang the flames sign around your neck, hold up the CO2 sign, hold up the toxic symbol sign and read:

"I am toxic by myself."

"I burn cleaner than coal but still make carbon dioxide."

(Let the class try to guess that you are NATURAL GAS. Once the class guesses, then go stand by the sign that reads natural gas.)

NR

Source Card

Hang the "clean air" sign around your neck. Hold the toxic symbol sign in your hands. Read the following clues:

"I do not make carbon dioxide, but if I leak from the power plant I can be very dangerous. Once my fuel is used, the toxic waste must be stored for a very long time. What am I?"

(Let the class try to guess that you are NUCLEAR.
Once the class guesses, then go stand by the sign that reads nuclear.)

NR

Source Card

Hang the radioactive symbol sign around your neck and see if the class can guess what you are.

If they do not guess then read the clues:

"This energy is from radioactive material (uranium) mined from the ground. What am I?"

(Let the class try to guess that you are NUCLEAR.
Once the class guesses, then go stand by the sign that reads nuclear.)

R - renewable

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