

# Energy for the Future



photo courtesy Kansas Department of Commerce

## Mini Fact:

Iceland gets almost all of its energy from hot water beneath the Earth's surface.



## Wind energy

As with hydropower, wind energy is captured by a motor called a **turbine**. A turbine works the opposite way a fan does. A fan uses electricity to turn fan blades to make a breeze. In a turbine, the wind (or water) turns the blades and creates electricity.

People are grouping wind turbines together to form **wind farms**. These farms can create energy for a whole city.

## Geothermal energy

**Geothermal** means "heat of the Earth." Far below the ground is the very hot outer **core**, or center, of the Earth. It is so hot that the rock and metals there are **molten**, or hot liquid.



This heat can boil water, which becomes steam. This steam can be used to work turbines to make electricity.

## Ocean energy

Energy also exists in the **ocean**.



- The regular up-and-down motion of the waves can push a machine up and down.

- Incoming and outgoing tides can push water through a turbine to create electricity.

- At the top of the ocean, the water is a lot warmer than it is deep under the surface. This difference in temperature can be used to create electricity.

## Resources



### On the Web:

- [climatekids.nasa.gov/menu/energy](http://climatekids.nasa.gov/menu/energy)

### At the library:

- "Onion Juice, Poop, and Other Surprising Sources of Alternative Energy" by Mark Andrew Weakland

## Try 'n' Find

Words that remind us of alternative energy are hidden in this puzzle. Some words are hidden backward or diagonally, and some letters are used twice. See if you can find:



ALTERNATIVE, BIOFUELS, COAL, CORE, ENERGY, ETHANOL, FARM, FOSSIL, GAS, GEOTHERMAL, GREENHOUSE, HYDRO, MOLTEN, OCEAN, OIL, RENEWABLE, SOLAR, TURBINE, WAVES, WIND.

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

## Cook's Corner

### Black Bean Salad

#### You'll need:

- 1 (15-ounce) can black beans, drained and rinsed
- 1 cup cherry tomatoes, halved
- 1 cup red bell pepper, chopped
- 2 tablespoons purple onion, minced
- 2 tablespoons cilantro, chopped
- 3 tablespoons lemon juice

- 2 tablespoons olive oil
- 2 tablespoons rice vinegar
- 1 teaspoon cumin
- 1/4 teaspoon salt
- 1/4 teaspoon pepper



#### What to do:

- Combine beans, tomatoes, bell pepper, onion and cilantro in a medium bowl.
- Mix remaining ingredients in a small jar; cover and shake vigorously.
- Pour dressing over bean mixture and stir gently until evenly mixed.
- Chill for one hour to blend flavors.

\* You'll need an adult's help with this recipe.

1. A machine that works when a breeze turns its blades (8-letter noun)

\_\_\_\_\_

2. Items that store an electrical current (9-letter plural noun)

\_\_\_\_\_

3. Light or direct rays from the sky (8-letter noun)

\_\_\_\_\_

4. A stream of liquid that drops from a higher place (9-letter noun)

\_\_\_\_\_

- Jim saw a red \_\_\_\_\_ turning on a hill.
- \_\_\_\_\_ can power cars, flashlights and even toys.
- A small lizard rested on a wooden gate in the \_\_\_\_\_.
- Melting snow caused a \_\_\_\_\_ that splashed over the rocks.

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Study the definition. When you know the missing word, fill in the letter boxes and the sentence blanks.

Answers: Windmill, Batteries, Sunshine, Waterfall.

## Mini Jokes



**Frank:** Where is the ocean the deepest?  
**Frannie:** At the bottom!

## Eco Note



**Nuclear** energy is made by splitting atoms of the mineral **uranium** in a nuclear reactor. This process, called **fission**, does not make greenhouse gases. But it does produce radioactive waste that remains dangerous for centuries. No one has figured out how to dispose of the waste, so it is just buried. Like fossil fuels, stocks of uranium are limited. One day they will run out, so these fuels are considered nonrenewable.

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## For later:

Look in your newspaper for articles or ads about renewable energy sources. Which source would work best in your area?

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