



# 4-H Grab and Go: *Renewable Energy Scavenger Hunt*

**Concept:**

Recognize sources of renewable energy.

**Age Level:**

All levels

**Education Standard:**

NSES – Physical Science, Science and Technology

**SET Ability:**

Observe, record, organize, communicate

**Life Skill:**

Learning to Learn, Communication, Wise Use of Resources

**Success Indicator:**

Youth will become aware of increasing uses of renewable energy sources and create a car bingo scavenger hunt game or renewable energy photo scrapbook.

**National 4-H Curriculum:**

*The Power of the Wind*  
([www.4-H.org/curriculum/wind](http://www.4-H.org/curriculum/wind))

**RENEWABLE ENERGY RESOURCES**

- Solar
- Wind
- Biomass
- Hydrogen
- Geothermal
- Ocean
- Hydropower

**Background Information:**

All living things need energy. Plants convert the energy from sunlight through photosynthesis. Animal life (including human life) depends on plants for food energy. Humans also need and use energy for animals and machines that do work for them. For thousands of years people have burned forms of plant life for heating, cooking and light. As time progressed machines were invented that used wind and water power. We have historical evidence of falling water powering grind stones 6000 years ago. Wind pushed sailboats 5000 years ago and windmills were used to grind grain or saw wood more than 2000 years ago. All of these are examples of **renewable energy**.

The late 1700's and the Industrial Revolution brought the use of coal to power steam engines, and this use of energy significantly changed the social and economic structure of Europe and the United States and later the world. Widespread use of natural gas and petroleum (oil) began around this same time. These fossil fuels are deposits of ancient plant materials trapped inside the Earth. They are **non-renewable energy sources** because they take millions of years to form and people are using them much faster than they can be formed.

In the late 1800's Thomas Edison opened the Pearl Street Power Station in New York City and within a few decades fuel demands needed to power electricity producing turbines were increasing. Most electric power plants burn fossil fuels (coal is the most common) to heat water to produce steam that turns the turbines. Nuclear power plants use nuclear fission to heat water for steam and today there are a few solar thermal power plants that heat water by concentrating the sun's rays. Wind turbines use wind instead of steam, and photovoltaic cells produce electricity directly from sunlight.

Fossil fuels are being depleted and burning them is damaging to the environment so we are working to supply more of our energy needs with renewable energy, that is energy generated from sources that can be replaced or that are not used up.



Solar panels at PORTA High School, Petersburg, IL. This school has also installed a 600 kw wind turbine





## Renewable Energy Scavenger Hunt

### QUESTIONS

1. Find out how you can charge your cell phone or MP3 player with wind or solar power.
2. What are some disadvantages of using renewable energy sources? What are some disadvantages of using non-renewable energy sources?
3. Fossil fuels are currently used for transportation and for generation of electricity. How can renewable energy sources provide alternatives?
4. What are some advantages or disadvantages to electric cars?
5. How do the terms "green energy," "renewable energy," and "alternative energy," differ?

### LEARN MORE

- "History of Energy in the United States: 1635-2000" at [www.eia.doe.gov/emeu/aer/eh/frame.html](http://www.eia.doe.gov/emeu/aer/eh/frame.html) is available from the Energy Information Administration. This agency was created by Congress in 1977 to provide unbiased energy information.
- National Renewable Energy Lab (NREL) - Learning About Renewable Energy [www.nrel.gov/learning/](http://www.nrel.gov/learning/)
- Geothermal Education Office <http://geothermal.marin.org/>
- U.S. Department of Energy's Alternative Fuels and Advanced Vehicles Data Center provides information about alternative fuels for transportation <http://www.afdc.energy.gov/afdc/fuels/index.html>

### Look Around:

Where can you see renewable energy resources being used? Where do you see wind working? Solar powered calculators were one of the first uses of PV cells. Where else do you see solar cells? Heat from the earth is geothermal energy. People have cooked with the heat from geysers and enjoyed hot springs for centuries. These are just a few examples of uses for renewable energy sources.



### Activities:

- Create a chart listing types and showing examples of renewable energy sources.
- Photograph examples of how renewable energy is used. Make a scrapbook and include information about each one.
- Create a renewable energy scavenger hunt activity.
- Design and play a Renewable Energy car bingo game. Instead of looking for a red truck or a brown horse, design bingo cards with examples of renewable energy powered devices like solar powered highway sign, wind turbine, wind chime, or solar driveway marker.

