

# Economize Energy (Eco-En) Patch Program



## Description

The Economize Energy (Eco-En) patch program is designed to help girls learn to use resources wisely and to protect and improve the world around them. The goal of the program is to create awareness for the need to conserve energy and to provide Girl Scouts with activities that can make a difference at home, camp, in the community and the natural world.

## Requirements

The requirements are the same for each level of Girl Scouting. A girl must complete at least one activity from each of the four groups: home, camp, community and the natural world. Activities should be selected based upon the girl's ability, understanding and interest. For additional resources and activities refer to GSUSA's Journeys (appropriate age level).

Recognition

## Economize Energy Facts

- The U.S. Department of energy tracks national energy consumption in four broad sectors: industrial, transportation, residential, and commercial. The industrial sector has long been the country's largest energy user.
- The United States consumes more total energy than any other country.
- The majority of this energy is derived from non-renewable fossil fuels: petroleum, coal and natural gas.
- Renewable energy is derived from solar, wind, geothermal, biomass and hydroelectric power.
- The definition for energy is the capacity or power to do work, such as the capacity to move an object (of a given mass) by the application of force. Energy can exist in a variety of forms, such as electrical, mechanical, chemical, thermal, or nuclear, and can be transformed from one form to another. It is measured by the amount of work done, usually in joules or watts.

## Home

1. In the average U.S. home, lighting accounts for about 20% of the electric bill. Ask girls to research different types of energy efficient light bulbs. What can each family do to make the switch?
2. Ask the girls to make an energy checklist of things that use electricity. To save energy, remember to:
  - Turn off lights when you leave a room
  - Run the washer with cold water
  - Toss a dry towel into the dryer with wet clothes helps reduce drying time
  - Add your own
3. Check for energy vampires that zap energy around the home such as Wii, TV, computer, and cell phone charger. View the video on energy vampires at [www.ameren.com](http://www.ameren.com) (search for "energy vampires").
4. Define Energy Star and what it means. Have the girls do an in home energy audit to find out if their appliances are energy efficient. If not, how can they conserve energy? Find out more, visit [www.energystar.gov](http://www.energystar.gov).
5. Food energy is expressed in calories. Have girls chart the total number of calories they consume each day for one week. Troop members can plan nutritious snacks for troop meetings. For healthy eating information visit [www.americanheart.org](http://www.americanheart.org). Calories are burned doing various activities, visit [www.aolhealth.com](http://www.aolhealth.com) and have the girls see how much they need to eat compared to how much they consume in a day.

6. To get water to our homes it takes a lot of energy. Two to three percent of the world's energy consumption is used to treat and pump water to our homes. To conserve your water use:
- Listen for dripping faucets and running water in toilets. Fixing a leak can save 300 gallons a month.
  - Turn off water while brushing your teeth and save 25 gallons a month.
  - Run the washing machine and dishwasher only when full and save up to 1,000 gallons a month.
- Ask your parents to check the current water bill. Keep track of the different things you are doing to reduce the bill and check the next water bill to see how many gallons you saved. Find out more ways to conserve water, visit [www.epa.gov/watersense/kids/](http://www.epa.gov/watersense/kids/).

### **Economize Energy Facts**

- There are many things we can do to use less energy and use it more wisely. Two main ways to save energy are energy conservation and energy efficiency.
- Energy conservation is any behavior that results in the use of less energy.
- Energy efficiency is the use of technology that requires less energy to perform the same function. About 75% of electricity used to power games and appliances is used while they are turned off. These are known as "energy vampires."
- A family of four in the United States uses 400 gallons of water daily.
- The recommended calorie intake per day for an average 4-8 yr old is 1,200, 9-13 yr old is 1,600 and 14-18 year old girl is 1,800 calories.

### **Camp**

1. Learn about leave no trace principle (LNT) and use it the next time you go camping.
  - Plan ahead and prepare
  - Travel and camp on durable surfaces
  - Dispose of waste properly
  - Leave what you find
  - Minimize campfire impacts
  - Respect wildlife
  - Be considerate of other visitors

Resources are available on LNT from GSEM include a soft paths DVD and LNT activity kits.

2. Hiking while at camp is a "natural" thing to do. Girls could identify energy sources available to them at camp. Are the sources of energy the same as those around your neighborhood? If not, what are the differences?
3. A fun thing to do is study plant and animal life at camp and the environmental factors that determine their growth and livelihood.
4. Girl Scout camps and parks should be litter free. On your next camping trip or day outing, give each group of girls a small litterbag and instruct them to collect all the litter that they find. Did the girls notice more litter in one area compared to another? What could be some contributing factors?
5. How does cooking in the outdoors differ from cooking at home? Discuss with the girls how energy from the sun's rays can be used? The following experiment will work if the sun is shining and it is a warm day. Take a plate filled with tortilla chips sprinkled with cheese in the sun. How long did it take to melt the cheese? What would happen if you put the chips and cheese in aluminum foil? Experiment cooking in a reflector oven. How to and recipes can be found in the Out of doors PEP Packet, available from GSEM Resource Center.
6. Plan a camping weekend or a backyard camp experience without creature comforts, such as no electricity, flush toilets, gas stoves or furnaces. How can you get to your campsite—backpack, bicycle, or canoe? What else can you think of?

### **Economize Energy Facts**

Plants absorb the sun's energy in a process called photosynthesis. In the process of photosynthesis plants

convert radiant energy from the sun into chemical energy in the form of glucose (sugar) which gets passed onto the animals and people that eat them.

Trees can reduce summer temperatures significantly. Shading the roof of a cabin from the afternoon sun by large trees can reduce temperatures inside by as much as 8 to 10 degrees Fahrenheit.

### Community

1. Is your troop curious about going green? Find out how GSEM is going green. Learn more about sustainable living options. Visit [www.girlscoutsem.org](http://www.girlscoutsem.org) and [www.ourearth.org](http://www.ourearth.org).
2. Recycle, reduce, reuse! Find out how your community handles recyclable materials. If there isn't a recycle center or pick up what can Girl Scouts do as a take action project with their families, school and community?
3. What does litter have to do with energy conservation? Well, it takes lots of human energy to clean up litter, not to mention the fuel used by machinery. Involve your troop in cleaning up a park or playground. How can girls continue to make a difference? Visit [www.kab.org](http://www.kab.org).
4. Gasoline is one fuel made from oil (a fossil fuel) most cars driven by consumers in America use gasoline. List as many ways those consumers can conserve this important source of energy. What is an alternative fuel vehicle? Ask girls to name or identify the way vehicles are powered (e.g. gasoline, diesel fuel, natural gas, hybrid, Flex fuel, ethanol). Where do you find these energy sources, how efficient are they, etc.? Visit [www.energyquest.ca.gov/transportation](http://www.energyquest.ca.gov/transportation).
5. Have you ever considered a career in energy? Explore careers in energy; find out jobs descriptions, which include information such as daily activities, skill requirements, salary and training required. Visit [www.getintoenergy.com](http://www.getintoenergy.com) and [www.ameren.com](http://www.ameren.com).
6. Building community awareness of the need to conserve energy is a big job. Troop members could print their own Economize energy (ECO-En) newsletter of basic energy facts and typical energy zappers around the home and community. Ask a local school or church group if your troop could attend a meeting and discuss energy consumption, distribute the Eco-En newsletter to those present. Visit [www.eia.doe.gov](http://www.eia.doe.gov) for energy conservation ideas.

### **Economize Energy Facts**

- Recycling saves energy and natural resources through conservation.
- It almost takes less energy to make a product from recycled materials than from new materials. For example, using recycled aluminum scrap to make new aluminum cans uses 95% less energy than using the raw material, bauxite ore.
- Cleaning up litter in the U.S. costs hundreds of dollars per ton, about ten times more than the cost of trash disposal, for a cost totaling about \$11 billion per year.
- In 2007, there were 249 million vehicles (cars, buses, and trucks) in the United States. That equals more than three motor vehicles for every four people.

### **Natural World**

1. Scientist always reminds us that there is a great supply of energy waiting to be tapped beneath our feet. This source of energy is hot water and steam from inside the earth. Old faithful in Yellowstone National Park is one source of hot water. How many hot springs can your troop identify? In which states are they?
2. The troop can make its own recycled paper. Directions can be found in Eco-Art available from GSEM resource center or [www.nwf.org/forests/papermaking](http://www.nwf.org/forests/papermaking) once you have made your paper, think of some uses for it. Do you think the effort was worth it? Was it a valuable learning experience for the girls?
3. A power outage is short or long term loss of electric power to an area. There are many causes of power failures in an electricity network. What are some causes? List some health and safety concerns. How can you prepare for a power outage? Find out what utility companies do and some conservation techniques. Answering these questions will make girls think about our energy resources and their attitudes and priorities in case of energy loss.
4. Americans mostly depend on fossil fuels such as coal, natural gas and oil to produce energy. Fossil fuels

were formed from decaying plants and animals before dinosaurs roamed the earth. Make a fossil fuel chart to show how each is refined and used. What is the anticipated supply of each fossil fuel? For example, how oil wells are drilled, how crude oil is refined and its uses. Visit [www.eia.doe.gov](http://www.eia.doe.gov).

5. Renewable energy plays an important role in the supply of energy. When renewable energy sources are used, the demand for fossil fuels is reduced. Pinpoint a renewable energy source such as hydropower solar or biomass. To find out about renewable energy visit [www.ameren.com](http://www.ameren.com).
6. Borrowing books, CDs and DVDs is a great way to protect the environment, save resources and money. By reusing items you can save energy, water, trees, and metals, etc. Chances are the item you want can be checked out at your local library. Can you think of other places and other items to reuse? Set up a book, CD, DVD exchange with your troop.

### **Economize Energy Facts**

Geothermal energy is a renewable energy source because heat is produced from within the earth. The US generates more geothermal electricity than any other country. By using materials more than once, we conserve natural resources. Recycling paper saves trees and water. Making a ton of paper from recycled stock saves up to 17 trees and uses 50 percent less water. The average American produces more than 1,600 pounds of waste per year. Today we can burn garbage in special waste-to-energy (biomass) plants and use its heat energy to make steam to heat buildings or to generate electricity.

*Upon completion the Eco-En patch may be purchased in the Girl Scout Shop.*

Girl Scouts of Eastern Missouri

Economize energy

Eco-en

Participant evaluation

Number of Girl scouts completing Eco-En \_\_\_\_\_

Program age level of Girl scouts (circle one) D B J C S A

Troop \_\_\_\_\_ District : \_\_\_\_\_ Neighborhood: \_\_\_\_\_

1. How did you learn of this program?

Email/blast \_\_\_\_\_ www.girlscoutsem.org \_\_\_\_\_ other \_\_\_\_\_

2. Indicate which activities were completed in each section

Camp

- |                               |   |
|-------------------------------|---|
| _____1. Leave no trace        | _____2. Hiking                            |
| _____3. Plant and Animal Life | _____4. Litter at Camp                    |
| _____5. Outdoor Cooking       | _____6. Camping without Creature Comforts |

Community

- |                                 |                                      |
|---------------------------------|--------------------------------------|
| _____1. Going Green             | _____2. Recycle, Reduce and Reuse    |
| _____3. Litter in the community | _____4. Vehicle fuel sources         |
| _____5. Careers in energy       | _____6. Building Community Awareness |

Home

- |                         |                          |
|-------------------------|--------------------------|
| _____1. Lights at home  | _____2. Energy checklist |
| _____3. Energy vampires | _____4. Energy Star      |
| _____5. Food energy     | _____6. Water usage      |

Natural World

- |                          |                              |
|--------------------------|------------------------------|
| _____1. Hot Springs      | _____2. Recycled Paper       |
| _____3. Power outage     | _____4 Fossil Fuels          |
| _____5. Renewable energy | _____6. Book/CD/DVD Exchange |

Would you recommend this program to another troop? Yes \_\_\_\_\_ No \_\_\_\_\_

Answer the following questions about the girls:

Do the girls show increased confidence they can use resources wisely?  
Yes \_\_\_\_\_ No \_\_\_\_\_

Have the girls indicated they intend to use new skills to reduce energy use?  
Yes \_\_\_\_\_ No \_\_\_\_\_

Did the girls identify energy issues on which they could take action?

Yes\_\_\_\_\_No\_\_\_\_\_

Are the girls more confident they can influence positive change?

Yes\_\_\_\_\_No\_\_\_\_\_

Are the girls more aware of the people in their community who will help them?

Yes\_\_\_\_\_No\_\_\_\_\_