Forever Green

Girl Scouts Forever Green
is a global effort to encourage girls to Take Action to improve the environment and protect natural resources

girl scouts
forever green

Making a difference starts with you

GIRL SCOUTS FOREVER GREEN Activity Guide

Purpose: When girls earn this patch, they will learn know how to use resources wisely and will help make the world a better place.

General Instructions:

This Guide provides a variety of activities from simple to complex to accommodate girls at all age and interest levels.

Ask the girls to select and complete **at least one** activity from Steps 1, 2, and 3 in this Guide. Girls may complete as many activities as they choose, but need to do at least one activity from each of Steps 1, 2, and 3 to earn the patch.

Next, register completed activities on the GSUSA Girl Scouts Forever Green (GSFG) website – located at http://girlscouts.org/gsforevergreen/.

Complete the Forever Green patch order form and evaluation online at www.girlscoutsccc.org under Troop Activity Resources, print the confirmation, and take to the local council shop or SU meeting to receive a free patch**.**

Note: This activity guide is tied to a GSUSA grant initiative. To receive the special edition GSCCC Forever Green patch shown below, girls must complete three activities, register on the GSUSA site, and complete the patch order form and evaluation. Patch program runs from May 2013 through March 2014.

GSCCC Special Edition Forever Green Patch

Want to do more? Take the Pledge described in Step 5 and continue the adventure by applying lessons learned toward earning awards in the *It's Your Planet – Love It!* Journeys.

Step 1: Energy Conservation

Almost every way we make electricity today, except for the emerging renewables and nuclear, puts out CO2. And so, what we're going to have to do at a global scale is create a new system. And so, we need energy miracles.
~ Bill Gates

Learn about ways to save energy at home and in the community.

Goal: Encourage sustainable behavior change, reduce the carbon footprint, and save energy and money.

CHOICES – DO ONE (or more)

- **Calculate energy consumption in the home.** Use one or more of the methods below to calculate energy consumption.
  - Take a look at the families' last electric bill - call the local electric company or log-on to the electric company's Website (for example, Southern California Edison www.sce.com)
  - Use the chart on the Appendix to estimate electric usage - look up the appliances used in the home and add up the annual total cost
  - Search on-line and visit a site such as: www.csgnetwork.com/elecenergycalcs.html to calculate usage.

- **Explore ways to save energy.**
  - Brainstorm energy saving ideas with fellow Girl Scout Troop/Group members
  - Visit some of the sites listed below for more ideas
    - www.EnergyStar.gov/kids
    - www.energyquest.ca.gov/saving_energy
    - www.kidsenergyzone.com/
    - www.alliantenergykids.com
    - www1.eere.energy.gov/kids/smart_home.html
  - As a troop, decide on one or more ways to save energy and make a pledge and a plan for fulfilling the pledge
  - Girls can write the pledge on a small card that can carry with them as a reminder

- **Work together to create an Energy Survey to conduct at home, school or in other buildings.** The activity above might provide ideas for what to include on the survey.

- **Power Down.** Have a troop meeting that uses no external power or fuel. Try it at home.

- **Take Action. Implement an energy savings project in the community.** Identify low or no cost energy saving measures that could the implemented at a school, library, church or other public building and advocate to have the changes made. As a troop, offer to help make the changes.

Water is the driving force of all nature.
~Leonardo da Vinci

Step 2: Water Conservation

Learn about the important role water plays in sustaining life on this planet and about the importance of conserving and improving water resources – especially through preservation of aquifers and watersheds.

Goal: Encourage an understanding of the water all around and how to protect valuable water resources.

CHOICES – DO ONE (or more)

- **Watch "Water Cycle by Bill Nye" or "Water Cycle" on You Tube.** Discuss the water cycle and how it can be affected by our actions.

- **Create a Watershed Model.** Generally, watersheds are described as the land that drains water from an area into its waterways such as streams and rivers. Watersheds can be large or small, draining a single valley or the entire basin. In this activity, girls explore what a watershed is and how it works.
  - **Materials:** For this activity, girls will need various sizes of rocks, a shallow plastic wash basin or tub (about 12 x 18 inches and 10 inches deep), heavy paper or a plastic tarp, a permanent marker, and a sprinkling can or spray bottle (to simulate rain).
  - **Procedure:** Place some rocks in the wash basin to build mountains and valleys. Cover with heavy paper or a plastic tarp. Guess the route "rainwater" (from the sprinkling can or spray bottle) will take and where it will pool and be stored. Mark the predicted route with a permanent marker. Then test the predictions by spraying or sprinkling the area and observing the path of the water.

- **Create a Watershed filtration model.** A healthy watershed not only stores but also filters water for a river or stream. When water hits the Earth and percolates through the soil into the water table, soil, rocks, and sand filter out many of the impurities carried by the water. To see how this might work, try the following activity.
  - **Materials:** Girls will need a flower pot with a drainage hole; a few cotton balls; some sand, soil, and gravel; and some muddy water.
  - **Procedure:** Plug the hole in the flower pot with cotton balls to represent subsoil, and fill the pot with a mixture of the sand, soil, and gravel. Slowly pour some muddy water into the pot and observe. The water running out of the drainage hole will be relatively clean.

- **Create a Model Aquifer.** Follow the instructions in the Appendix to this Guide to create a model aquifer.

- **Water, Water Everywhere.** Explore/demonstrate the scarcity of usable water on the planet with the "Water, Water Everywhere" described in the Appendix to this Guide.

- **Take Action – Learn about and advocate for the local watershed.** Talk to the local water conservation district and find out what needs to be done to support the local watershed. Consider producing a PSA – or writing letters to the editor or local government officials, or talking to school and community groups - about storm drain run-off or the importance of preserving local wetlands. What other ways can girls take action?

Americans use an average 29 billion single-use plastic water bottle each year.

Step 3: Reduce Waste

Learn about the effects of waste on our environment and discover ways to reduce waste.

Goal: Reduce the amount of waste produced by girls, families, troop, and the community.

CHOICES – DO ONE (or more)

- **Make a troop/group pledge to reduce food waste.** On average, Americans waste about 20% of the food they purchase. That adds up to about 48 million tons of food each year. Together, brainstorm ways to reduce food waste and make a pledge to try one or more of the ideas.

- **Make a reusable lunch bag from an old t-shirt.** Cut the sleeves and collar out of a small t-shirt. Sew a double seam across the bottom to form a bag. For a “no-sew” version, use a strong rubber band or sturdy hair-tie to gather and seal the bottom of the shirt. Use the bag to take a "no-waste lunch" lunch to school. A “no-waste” lunch is one where nothing ends up in the trash. Fill the bag with a lunch stored in reusable containers, include a reusable ice pack, a reusable water bottle, cloth napkin and utensils – bring them home and wash and reuse them.

- **Build a model “lasagna garden.”** A “lasagna garden” isn’t about what to grow for dinner, it’s a composting method. Use the instructions in the Appendix to learn how to build a model “lasagna garden.” Research online or take a field trip to a local composting facility to learn more about the benefits of composting.

- **Visit the local food bank and learn how the organization is helping the community reduce food waste**. Many food banks accept donations of day-old bakery products, non-perishable products, and fresh fruit and vegetables that are not spoiled, but don’t meet the store’s quality standards. Some even accept garden produce or sponsor “gleaning” programs – where volunteers collect fruits and vegetables missed during the harvesting process. Find

out how girls can help to encourage donations to the food bank.

- **Find out if there is a "gleaning" program in the local area.** "Gleaning" is the process of going back through a commercial field to pick the fruit and vegetables missed by the mechanized equipment.

- **Take Action - Advocate increasing recycling opportunities available in the community.** Contact a local waste management provider and local government officials to open a discussion about curb-side kitchen green waste recycling and/or carton recycling. Take the plan into the community to build support for the idea.

BONUS:

- **Take Action – Spread the word.** Girls are encouraged to share the Forever Green program and experience at a local Earth Day, school, Service Unit event or community event.

Step 4: Girls Register Activities on GSUSA Forever Green Website

Visit the Girl Scouts Forever Green website to register activities and look for ways to continue the GS Forever Green journey http://girlscouts.org/gsforevergreen/.

- Make it Count – Log into the registration page and record r activities. Some activities may not fit the categories provided by GSUSA. Use the free form space at the bottom to list activities girls have completed.

- While visiting the site, check out the GS Forever Green Environmental Impact Calculator.

Complete the patch order form and evaluation, print the confirmation page. Take this page to the local council shop or next Service Unit meeting to receive a patch. Questions? programs@girlscoutsccc.org

Note: This activity guide is tied to a GSUSA grant initiative. To receive the special edition GSCCC patch, participate in three activities, register on the GSUSA site, and then complete the online patch order form and evaluation. The program period runs from May 2012- March 2014.

Step 5: Girls Continue the Girl Scout Forever Green Commitment

Print the attached Pledge Cards on cardstock or heavy paper. Ask each girl to commit to one ongoing activity in each category. Visit the Girl Scouts Forever Green website to record pledges online.

Explore *It's Your Planet – Love It!*

Many of the activities presented in this guide relate to the *It's Your Planet – Love It!* Journey series. For example:

- **Daisies** – *Between Earth and Sky* - Firefly and Clover awards (pages 14-15 in the Adult How to Guide) – plus the *Use Resources Wisely* petal
- **Brownies** – *WOW: Wonders of Water* - Save Water and Share Water awards (pages 10-11 in the Adult How to Guide)
- **Juniors** – *Get Moving* – Energize, Investigate, and Innovate awards (pages 8-9 in the Adult How to Guide)
- **Cadettes** – *Breathe* - Aware award - protecting the environment and saving energy improves air quality (pages 10-11 in the Adult How to Guide)
- **Seniors** – *Sow What* - Steps toward the Harvest award - sustainable gardening, water conservation (pages 8-9 in the Adult How to Guide)
- **Ambassadors** – *Justice* - Steps toward the Sage award - video discussions (pages 8-9 in the Adult How to Guide)

In addition, the **Take Action** activities suggested in this guide could inspire Bronze, Silver, or Gold Award projects.

Appendix

Electrical Usage Calculator

Appliance	Approx. Appliance Wattage	Average Monthly Use - Hours	Average Monthly Kilowatt Use	Multiply by Local Rate	Annual Energy Cost
Air Conditioner - Central (2.5 TONS)	3500	300	1050		
Air Conditioner - room (9,000 BTU)	1050	350	367.5		
Blender	390	20	7.8		
Christmas Lights	250	60	15		
Clothes Dryer	5000	30	150		
Clothes Washer	500	30	15		
Coffee Maker	900	10	9		
Computer - CPU and Monitor	6.5	720	4.68		
Computer - Wireless Router	7	720	5.04		
Crock Pot	200	64	12.8		
Dishwasher	1800	30	54		
Fan (Portable)	115	200	23		
Food Freezer	350	400	140		
Furnace Fan Motor - (Intermittent)	350	160	56		
Hair Dryer (Portable)	1800	6	10.8		
Lawn Mower	1500	16	24		
Light Bulb - Compact Fluorescent 13W (60W Equiv)	13	120	1.56		
Light Bulb - Fluorescent (2 Tubes 4ft.)	96	120	11.52		
Light Bulb - Incandescent	60	120	7.2		
Oven - Microwave	1500	5	7.5		
Oven - Toaster	1500	2	3		
Oven/Stove - Electric	5000	100	500		
Refrigerator	500	275	137.5		
Stereo/CD	360	30	10.8		
Swimming Pool Filter Motor - 1.5 HP	2100	600	1260		
Swimming Pool Heater	5000	600	3000		
Television - Cable/Sattelite or DVR Box	33	720	23.76		
Television - CRT 32"	200	120	24		
Television - LCD 32"	125	120	15		
Television - Plasma 42"	301	120	36.12		
Vacuum Cleaner- Portable	800	4	3.2		
Video game - Nintendo Wii	19	720	13.68		
Video game - PlayStation 3	197	720	141.84		
Video game - Xbox 360 Elite	203	720	146.16		
Water Heater - typical family of 4	4500	85	382.5		

Appendix

Model Aquifer

Groundwater

Groundwater is water that is found underground in the spaces and cracks between soil, sand and gravel. Often hidden from view, in this activity you will "see" what groundwater looks like and learn some basic groundwater vocabulary.

Materials Needed

- 2 clear cups
- Sand, gravel and aquarium rock
- Pitcher of water
- Tablespoon and teaspoon

Vocabulary

groundwater, aquifer, surface water, contamination, water table, saturation zone, infiltration, recharge, porosity, permeability

Procedure

1. Fill 2 cups with layers of sand and gravel to about 3/4 inch from the top of each cup. Remember that in nature, aquifers consist of layers of sand, gravel and rock.
2. In one of the cups, pour water slowly into it. Watch how the water fills the spaces between the particles of sand and gravel. Does the water appear to move faster through the sand or faster through the gravel? Why?
3. Now continue to fill this cup with water to the top (above the top of the sand and gravel). Water that is located above ground, like rivers and lakes, is called surface water. Water below the ground's surface is called groundwater.
4. In the second cup, slowly pour water into the cup until the water line is about one inch below the top of the sand/gravel. Look closely at this line created by the water. This line is called the water table. Water below the water table is called the saturation zone.
5. Now pretend that your pitcher of water is a large rain cloud and pour some more water into your second aquifer until the water table is about 1/2 inch below the surface of the gravel. Your groundwater supply has just been recharged. This is what happens when it rains or snows and water infiltrates (or sinks) into the ground.
6. Explore what happens in drought years. Pour off about 1 tablespoon of water. This represents the amount of water used by the community in a year. Add back 2 teaspoons of water to represent a lower than normal wet season. Continue the cycle of pouring off and adding in water. What happens to the level of the water table?
7. Explore what happens when water consumption increases. Add water to the cup to about a 1/2 inch below the surface of the gravel. Pour off about a tablespoon of water. This represents the water consumption in the first year. Add back about a tablespoon of water. Now, repeat the cycle, but this time, pour off a tablespoon of water PLUS another teaspoon of water. This represents increased water consumption. Repeat the cycle a couple more times, increasing the amount of water poured off each time. What happens to the level of the water table. What causes increased consumption? What can be done to maintain the water table at normal levels?

Appendix

Water, Water Everywhere

There is a finite about of water on Earth. This activity demonstrates how much water is available for different types of activities – and just how little water is available for drinking.

Materials for each group of 4 girls

- Beach towels to sit on
- 1 gallon water jug
- Cup of fast-food ice cubes (optional)
- Clear cups
- Spoons
- Dirt

Procedure

1. Divide the girls into groups (4 per group is recommended)
2. Give each group a gallon of water, a cup of dirt and an empty cup marked at 1/2 cup.
3. Explain that the gallon of water represents all of the water on earth.
4. If using ice cubes, place one small cube for each girl in the cup then have the girls fill the cup with water up to the 1/2 cup mark. Explain that the 1/2 cup represents all of the fresh water on earth.
5. Have each girl scoop the ice cubes (or a spoonful of water) from the cup and put it back into the gallon of water. Explain that the spoonful of water represents the frozen polar ice caps and glaciers in the world – water that's not really available for drinking or growing food.
6. Pour all but a drop of water into the dirt. Explain that this represents water that's in the ground (ground water). This water can be extracted from the ground for farming and drinking after it is purified.
7. Explain that the drop of water left in the cup is all of the water available for drinking and bathing and watering the lawn and doing the dishes and laundry and brushing teeth, etc. – it's the water that comes out of the faucet at home.
8. Have the girls recycle remaining water from the gallon jugs by pouring back into the large containers (if using) or by watering plants at the end of the workshop if you have access to outdoors. Pour the dirt back into its container; let it dry out and start again. Gather up cups for reuse.

Appendix

Lasagna Garden Model

Lasagna gardening is a no-dig, no-till organic gardening method that results in rich, fluffy soil with very little work from the gardener. The name "lasagna gardening" has nothing to do with what you'll be growing in this garden. It refers to the method of building the garden, which is, essentially, adding layers of organic materials that will “cook down” over time, resulting in rich, fluffy soil that will help your plants thrive. Also known as “sheet composting,” lasagna gardening is great for the environment, because you're using your yard and kitchen waste and essentially composting it in place to make a new garden.

Materials Needed

- Repurposed fish bowl, aquarium, large jar or other clear container (note: for individual model gardens, use empty peanut butter or mayonnaise jars)
- Sand, gravel and topsoil
- Kitchen green waste - trimmings from fruits and vegetables, apple cores, used tea bags, coffee grounds, etc. (ask each girl to bring a container of kitchen green waste from home)
- Yard waste - grass clippings, fallen leaves, etc. (ask each girl to bring some yard waste from home)
- Newspaper
- Sod (optional)
- Worms (optional)
- Seedling plants (later)

Procedure

1. Put a layer of gravel, sand, and topsoil to in the bottom of your clear container.
2. If someone you know is installing sod, ask for a piece to layer on top of the base (or ask the local nursery if there is a scrap they are willing to donate).
3. Place three layers of newspaper over the base layer (right on top of the sod if you are using it).
4. Alternate layers of yard and kitchen waste until the container is about ¾ full.
5. Add a layer of top soil.
6. Finish with a mulch of grass clippings or crushed, dry leaves.
7. Thoroughly wet the garden and continue to water it when it gets dry (not too wet – just damp is o.k.).
8. If you are using worms, toss two or three on top of the garden. They will burrow down through the soil. (You can purchase worms at the garden store or sometimes find them on the sidewalk after watering the lawn.)
9. In a few weeks, you will notice that the organic matter will be decomposing. The worms speed the process. If you included a layer of sod, it will decompose as well. A lasagna garden is a good way to convert a section of lawn into a flower or vegetable garden.
10. Once the organic material has at least partially decomposed, you can add plants. (Note: if you make a larger container as a group project, consider turning your garden into a terrarium and watch it continue to flourish.)