



Junior Get Moving! Journey Activity Plan 2

Purpose: When girls have earned this award, they'll know about efficient use of energy in their meeting places and communities.

Planning Guides Link: Leadership

Activity Plan Length: 1.5 hours

Involve Family and Friends: Participation from family and friends can enrich your troop's Girl Scout experience, both for the girls and for you. Use the suggestions below to make it easier for you to connect with additional support.

- Before the meeting
 - Send a note to families to find those with interest or expertise in the topic. Ask them to lead or support a specific activity/activities, or to lead the meeting.
 - Offer this activity plan as a starting place; point out that they may choose alternative activities using the Customize It! section as a guide. For example: If an activity plan directs girls to sit outside and observe animal habitats, you may choose to go to the zoo and learn about animal habitats there, instead.
- At home:
 - Encourage families to ask questions about their girls' badge activities. Some examples that work for any badge include: *What did you learn? What surprised you? What does it make you think of trying next?*
- Throughout the Year:
 - Suggest to the girls and their families ways that they may share or display their Girl Scout accomplishments. Possibilities include a bulletin board, a scrapbook, a special memories box or family sharing time.

Girls Take the Lead: Include girl leadership through long-term planning, short-term meeting prep and specific activities at meetings.

- Long Term Planning
 - If you use "Plan Your Junior Year", share this with the girls at the start of the year. Have them ask friends and family to help out with specific meetings or activities. Let the girls brainstorm ways to make the plans their own, such as thinking of related field trip activities. If a girl has experience with a field trip, ask her to be assistant tour guide.
 - If you are adapting the "Plan Your Junior Year", get the girls' input on which badges to choose. Offer just a few choices in each category or timeframe to make decisions easier. Every girl should have at least one badge or journey she's excited about.
- Short Term Planning
 - Ask a family to help lead a badge. Make sure they have access to activity plans and any resources you might have. Keep additional requested materials to a minimum.
 - Choose two helpers to stay after a meeting for 15 minutes. Give them each an activity to introduce and either instruct or help guide at the next meeting.
 - Before a meeting, ask everyone to vote on some aspect of the activity: draw posters or perform skits, open with a song or game, etc.
 - Use a rotating list of helper tasks, called a 'kaper chart', to share responsibilities. Examples include acting as emcee of the meeting, leading an opening game, bringing a snack next meeting or taking attendance.

- At the Meeting
 - During the opening, have 1-2 girls share their answers to a get-to-know-you question.
 - Have girls fulfill their kaper chart responsibilities.
 - Try to find something in each activity that you can let girls decide or manage.

Customize It: If your group wants to expand work on this award or simply try different activities, go for it! There are many ways to complete this award, including: completing the activities as listed in the *It's Your Planet—Love it!*: Get Moving Journey, completing this activity plan, attending a council-sponsored event or customizing activities. Pick the one(s) that work best for your group. Girls will know they have earned the Investigate Award if:

- They have learned about energy use in buildings
- They work with their families to improve energy use in their home
- They have worked together with others to investigate a building's energy use and proposed a way to improve its efficiency

Girls can continue their Get Moving Journey by earning the remaining Innovate Award.

Moving to Take Action: To complete the Get Moving! Journey, girls plan and carry out a Take Action project that addresses the root cause of a community issue in a sustainable way. During the process, here are some things to think about.

- Girls should play an active part in determining the “what, where, when, how and why” of their project, but Girl Scout Juniors will need your support and guidance throughout the process.
- Help girls scale the project to a manageable size, so they can have a successful experience. Even if the project has a small scope, what they are doing is important.
- Take Action projects are different from community service projects. Take Action projects pick up where short-term community service projects leave off and are long-term solutions, rather than a short-term ones. Take Action Projects are also:
 - measurable (can be evaluated in a concrete way, such as number of people involved or number of recycling bins placed in the park)
 - sustainable (continues on, even after the girls' specific role in it is complete)
 - identify the root cause of an issue (addresses the underlying problem(s) that are causing an issue to occur). Created to address the root cause of a community issue.

Examples:

Community Service	Take Action
Take part in a park clean-up.	Organize a park clean up with your neighbors.
Assemble and give first-aid kits to flood victims.	Teach younger kids about severe weather procedures and have them help you make first aid kits to give to flood victims.
Plan a meeting for a younger troop.	Mentor younger girls on healthy friendships.
Make and donate blankets to an animal shelter.	Teach younger kids about the responsibilities of owning a pet and have them help you make blankets to donate to the animal shelter.

- It's up to the girls to find a Take Action project that they are passionate about, but to get started, here are a few ideas:
 - Family project: Girls work with their families to track their current energy usage. Then together they set a budget and choose the best low or no cost methods to improve their efficiency. At the end of the month, they compare their electricity, heating and water bills to the same time last year.
 - School project: Girls share information on electricity use at home and school through posters and flyers. Then they challenge classrooms or class teams to adopt the most electricity saving methods within the school or in their homes, with an in-class free period for the winner.
 - Community project: Sponsor a Clean Laundry Day in the summer to encourage people in the neighborhood to hang their laundry out to dry instead of using a dryer and using cold or warm water when possible.

- Municipal project: Girls determine the most common places in their community where kids arrive by car but could travel by bike or public transportation. They meet with city council members or other civic leaders to present a plan for making biking or bussing easier or safer for more kids, such as selected bike lanes or changes in stops.

Tips and Tools

- Check out ways to stay safe using Safety-Wise at <http://gsrv.gs/safetywise>.
- Ensure that your activities are accessible to everyone. Ask in advance if any special accommodations need to be made. If you have questions regarding specific adaptations, please contact River Valleys at 800-845-0787.

Resources

- This lesson plan has been adapted from the *It's Your Planet—Love It: Get Moving Journey*, which can be used for additional information and activities.
- Check out additional badges from the *Junior Girl's Guide to Girl Scouting* for related topics in energy, engineering, innovation or ecosystems.
- The Energy Star website has pages for kids to explore energy use at home: <http://gsrv.gs/1gzSV5E>
- The City of St Paul has teacher and student info related to the new Fire Station Number One facility, as well as a video and information about tours of their green roof, at <http://gsrv.gs/1HGw1zh>
- The US Green Building Council has given grants to a number of schools for education programs related to green buildings, and has links to many of their curricula and programs here: <http://gsrv.gs/1JcHdel>
- Great River Energy's Information Kiosk includes Green Calculators in the Live Data section to figure out the savings from making certain changes in your home, and a video tour of their new LEED facility: <http://gsrv.gs/1En8t26>
- If your building manager can supply answers to the questions on pages 70–71 in the adult guide or reproduced below, you can go to energy.trane.com to enter your data and compare the building to others. Use the username "Girl Scouts" and the password "Trane" to enter your data.

Getting Started

Time Allotment: 10 minutes

Materials Needed:

- Optional: Girl Scout Promise and Law printed out on poster board

Steps:

- Welcome everyone to the meeting.
- Recite the Girl Scout Promise and Law. Use repeat-after-me or say it as a group if girls know it by heart.

Girl Scout Promise	Girl Scout Law
<i>On my honor, I will try:</i> To serve God and my country, To help people at all times, And to live by the Girl Scout Law.	<i>I will do my best to be</i> honest and fair, friendly and helpful, considerate and caring, courageous and strong, and responsible for what I say and do, <i>and to</i> respect myself and others, respect authority, use resources wisely, make the world a better place, and be a sister to every Girl Scout.

- Play a game so girls get to know each other better, and also be "energized." Use the example below, if needed.
 - Exercise Name Game: Start the group off with your name and a physical activity you like to do: "My name is Susan and I like to play tennis." Start acting out playing tennis, and have everyone do it with you for ten seconds. Then stop everyone, so that they can hear the next person say her name and give the next activity.

Activity #1: Review Energy Pledges and Energy Innovators

Journey Connection: Sessions 1, 2, and 3

Time Allotment: 10 minutes

Materials Needed:

- Writing utensils
- Paper

Steps:

- Remind the girls about the energy saving pledges they took home to their families in the first activity plan. Have them turn to a neighbor and share one way their families succeeded in being more energy efficient.
- Now, have them think about the people that they found who worked with energy issues. Each girl will draw a portrait of one of their "energy innovators" in their energy-related role. They might have a uniform or protective clothing, be holding tools that help them with their task, or just be surrounded by the benefits of their work with energy.
- Girls who were not at the last meeting and didn't interview anyone can think of a job or role that works with energy and draw a picture of how they think this person is an energy innovator.

Activity #2: Building Biography

Journey Connection: Session 5—Investigate Award

Time Allotment: 15 minutes

Prep Needed:

- Well in advance: Connect with someone at the building where you hold your meetings. If you cannot find someone to talk to your group, you can consider moving your meeting time or finding a building where you can find a personal connection with the building manager.
- Find out what things the building manager can tell you about the building, and help guide your girls' questions that direction. Topics may include: main energy use (type of heating and cooling systems, major appliances, peak use times in building, biggest single energy drain); ways the physical building limits energy use (type and amount of insulation, types of lighting, timers, window shades and draft blockers, low flow or dual-flush toilets); and systems people use to be better energy managers (water conservation plans, recycling, computer use policy).

Materials Needed:

- Sticky notes
- Writing utensils
- Thank-you card materials

Steps:

1. Introduce the guest speaker to the girls and let them know that s/he will be sharing this building's energy story. Girls will find out how and where energy gets used in the building, and how both physical things in the building and people's actions make it work.
2. Hand out a few sticky notes and a writing utensil to each girl.
3. The speaker should begin with what she wants to share about the building.
4. If girls think of questions, they should write them down on sticky notes right away, while the questions are still fresh in their minds.
5. Allow time for questions after the speaker is done sharing the building's energy story. There may not be time for all questions; anything that isn't asked will be collected up on the wall, and you can return to them later if time allows.

Activity #2: Alternatives

1. Visit Great River Energy's Information Kiosk at <http://gsrv.gs/1En8t26> to find out what their new facility looks like, what efficient practices were put into place and view Systems Animations. If you were able to get answers from a building manager but not a visit, you can enter the information at the Trane website as listed in the Resources section at the beginning of the activity plan: energy.trane.com. Use the user name "Girl Scouts" and the password "Trane."
2. If you have internet and printer access outside of the meeting space, you can print out the mural poster and activities from this site: <http://gsrv.gs/1DK3X3c>. The mural shows a classroom that demonstrates both efficient and non-efficient energy use.

Activity #3: Meet an Energy Innovator

Journey Connection: Session 7

Time Allotment: 10 minutes

Prep Needed:

- Look through the profiles of energy innovators so you are familiar with the stories. They are available at the end of this activity plan, or in the Get Moving! Girl Books, pages 24, 34, 40, 41, 42-43, 50, 67, 83, 84.
- Make copies of the innovator profiles, or tell girls to bring their Journey books to the meeting.

Materials Needed:

- Innovator profiles
- Large paper
- Markers

Steps:

1. Divide the girls into small teams and give them each an innovator profile. Teams can read one profile and discuss their highlights or other ideas they think of after reading it.
2. Have the girls take turns sharing one thing from their innovator's profile or project description that they thought sounded fun, surprising, or inspiring.
3. If they are getting stuck, ask them to share one thing they liked about what they've already done on the Get Moving! Journey. Record responses on the big paper, or have the girls add their responses themselves.

Activity #4: Becoming Building Detectives

Journey Connection: Sessions 4 and 5

Time Allotment: 20 minutes

Prep Needed:

- Gather materials and supplies.
- Look for magazines with pictures of houses, home improvement projects, or articles on energy efficiency. Bring them with you to the meeting. Print out a copy of the Easy Energy Action Plan from the Department of Energy at <http://gsrv.gs/1PkTNHi>.
- Resources include:
 - *The Earth Book* by Todd Parr
 - *Miss Fox's Class Goes Green* by Eileen Spinelli and Anne Kennedy
 - *Winston of Churchill: One Bear's Battle* by Jean Okimoto and Jeremiah Trammell
 - *National Geographic Kids* magazine for tips and articles
 - *Home Energy* magazine, also online www.homeenergy.org
 - Home improvement project guides from home improvement stores
 - Webpages:
 - Kids Saving Energy: <http://www.eia.gov/kids/>
 - TVA Kids: <http://gsrv.gs/1Na9sdt>
 - Energy games and parent guide: www.energyhog.org

Materials Needed:

- Books, magazines or catalogs with energy efficient appliances; waste reduction ideas; green buildings; or energy saving tips
- Paper
- Drawing utensils
- Whiteboard or large paper
- Marker
- Copies of energy audit questions from page 70 and 71 in the adult how-to guide, or see the Home Energy Audit questions at the end of this activity plan.

Steps:

1. Hand out the sheets of paper and drawing utensils, and distribute reference materials between tables.
2. Now that girls know some of the ways buildings use energy and what people do to use it wisely, how can they use what they know? The building manager knows her building well, but what should girls look for in other buildings and how?
3. Brainstorm on the large paper or whiteboard some things that girls should find out if they were to investigate a building. They might want to find out what appliances or lights stay on and drain electricity, or what windows or doors have drafts, or how much water is used by certain jobs or appliances. Give the girls a few minutes to generate a significant list.
4. Some of the questions create other questions. For example, girls might want to know how much it costs to heat a building in the winter, but that number doesn't really mean much unless it's compared to the average cost of heating that type of building in winter. If there are questions like this on the girls' list, put a star by them so girls know it's only part of the picture.
5. Now that girls have their questions, their job is to find answers. They might need to set up experiments, and test and compare products or methods to each other. They might have to interview

someone like the building manager or a parent. They might have to write a survey to ask other people or invent a tool that measures something.

6. Each girl should choose a question (or invent a new one) and on her paper, and she should design a way of testing for the answer to that question. It might be a comparison chart of room temperatures at different times, a tissue paper ribbon to detect drafts, a grid for setting out measuring cans to see if the lawn is getting the right amount of water or a plan for measuring how much non-recycled packaging enters the building.
7. Have the girls share their testing device or plan with the other girls at their tables.
8. Let the investigation begin! Each girl will take the test she designed and do some detective work on her own building. It will probably be her home, but if the family may have a connection at another building that they would like to use (for example, if someone's workplace or church has been involved in energy saving plans). Girls should plan to use their testing devices, if practical, or ask for help in finding the answers. Send home copies of the example Home Energy Audit questions.

Activity #5: Take Action Plan

Journey Connection: Session 6 and 7

Time Allotment: 15 minutes

Prep Needed:

- Review the "Moving to Take Action" section at the beginning of the activity plan. Think of some possible categories for the Take Action project, to help girls get started.

Materials Needed:

- Papers and posters from previous activities
- Large paper
- Markers

Steps:

1. Tell girls now is their chance to use everything they've learned and experienced so far to pick an energy issue that they want to work on for their Take Action project. The first step will be brainstorming ideas and voting on the possibilities. Ask girls to think of specific, concrete steps they could take to help their community become smarter energy users.
 - If the girls are having a hard time thinking of things, share the examples in the "Moving to Take Action" section, remind them of what they have already learned on their Get Moving! Journey, and have girls think of the different places they go-how to they be use energy better?
2. Once you have a few solid ideas to choose from, take a vote and choose a final project to move forward with.
3. Divide the girls into three groups. Give each group a piece of large paper and a marker.
4. Assign one group to list possible places and organizations in the community that could be involved or help with the project. Have a second group generate a list of supplies and equipment needed, adding where and how to get them if there's time. Tell the third group to develop ideas of how to share or promote the project.
5. Bring the groups back together to report their results.

Wrapping Up

Time Allotment: 10 minutes

Materials Needed:

- Optional: Make New Friends printed on poster board

Steps:

1. Instruct girls to get into a Friendship Circle. Have girls stand in a circle and cross their right arms over their left, holding hands with the person on each side of them.
2. Sing "Make New Friends."

Make New Friends

Verse One	Verse Two	Verse Three
Make new friends, but keep the old. One is silver, the other is gold.	A circle is round, it has no end. That's how long, I will be your friend.	You have one hand, I have the other. Put them together, We have each other.

3. After the song, ask everyone to be quiet.
4. Assign one girl to start the friendship squeeze by gently squeezing her neighbor's hand with her right hand. Then, that girl squeezes with her right hand. One by one, each girl passes the squeeze until it travels around the circle. When the squeeze returns to the girl who started, she says "Goodbye Sister Girl Scouts" and the girls unwrap and face outward instead of inward.
5. Optional: Have girls make a wish after their hand has been squeezed and before they pass the squeeze along. Girls can also put their right foot out into the circle when they receive the friendship squeeze, so that everyone can see it travel along the circle.

More to Explore

Field Trip Ideas:

- Visit a store that sells home appliances. Compare stickers on energy use for one type of appliance, such as refrigerators. What was the range of answers? Which was the most efficient? What does that efficiency cost up front—that is, even though it saves money in the long run, how much more does the efficient appliance cost to buy?
- Go to a grocery store or other large retail store and compare packaging on similar items. Where could a shopper make a big difference in reducing packaging waste?
- Visit a regional recycling center or community compost facility.

Speaker Ideas

- Invite family members to your meeting to do the activities with you.
- Have a gardener come to a meeting to talk about what plants need to grow, what plants are best for our area and how gardens and green space are healthy for people.

Suggestions

Do you have any suggestions to improve this activity plan? Do you have ideas for other possible badge-earning activities? Please email troopsupport@girlscoutsvr.org.

Family Follow-Up Email

Use the email below as a template to let families know what you did at the meeting today. Feel free to add additional information, including:

- When and where you will be meeting next
- What activities you will do at the next meeting
- Family help or assistance that is needed - especially in finding speakers, which could be experts or just people willing to talk about what they have done in their home or work
- Supplies or materials that girls will need to bring to the next meeting
- Reminders about important dates and upcoming activities

Hello Girl Scout Families:

We had a wonderful time today exploring building energy use on our way to earning the Investigate Award.

We had fun:

- Finding out what energy buildings use and how
- Inventing a way to test energy questions ourselves
- Deciding on a way to share our new energy skills to improve our community with a Take Action project

Continue the fun at home:

- Answer questions for your Girl Scout as she organizes an energy audit of your home. She has specific questions to ask in addition to the general questions on the energy audit handout. Work together to

find the answers. At the end, talk about what else could be changed to make your home more energy efficient. It may not be doable right now, and that's fine.*

- Make a nutritious snack together.
- Find a family activity to do outdoors that gets everyone moving.
- Look through the *It's Your Planet—Love It! Get Moving* Journey with your Junior to find other activities you can try at home.

*Completing this activity is part of earning the Investigate Award.

Thank you for bringing your Junior to Girl Scouts!

Home Energy Audit

You and your family may not have answers to all of these questions; find out as much as you can, or put in your best guesstimate.

Building History

Year built:

Number of people typically using space each day:

Square footage of space you use that is heated/cooled:

If part of larger building, total square footage:

Is the building air-conditioned? If only part, how much square footage?

What type of heating /cooling systems do you have? What type of fuels?

What updates did you make or do you know of that would have made the building more energy efficient?

What do you think has been the biggest single energy user in your building over the past year?

Energy Bills

Fill in the following information. Then, go to the Energy Star website (www.energystar.gov/) under "Home Improvement," and choose "Assess Your Home" to enter your information and compare your energy use to similar homes in your region.

Direct link: <http://gsrv.gs/1HGwK3h>

ZIP code:

Number of people at home:

Square footage:

Types of energy used

Check if used

	total units annually	total cost annually
<input type="checkbox"/> electricity	_____ kilowatt hours	\$_____
<input type="checkbox"/> natural gas	_____ therms or CCF	\$_____
<input type="checkbox"/> fuel oil	_____ gallons	\$_____
<input type="checkbox"/> wood	_____ cords	\$_____
<input type="checkbox"/> kerosene	_____ gallons	\$_____
<input type="checkbox"/> propane	_____ gallons	\$_____
<input type="checkbox"/> coal	_____ pounds	\$_____
<input type="checkbox"/> other		\$_____

Energy Details

Are there any timers or programmable thermostats to control energy use?

Do you lower the temperature at certain times of day, or when you leave the house?

Are any lights on motion sensors?

Does your building have elevators, or does your home have any stair lifts or similar equipment?

What kind of hot water heater do you have? What is the temperature?

What energy source is used for cooking?

Looking from the outside, what percentage of wall space is covered by windows?

What else do you know about your windows (overall U-value, tinting/shading coefficient, glazing, weather stripping, storm window use, etc.)?

How are the walls constructed (overall R-value)?

How is the roof constructed (overall R-value)?

Do any of your appliances have Energy Star ratings?

How much energy does your freezer or refrigerator use, on average (find your model and estimate at <http://gsrv.gs/1N3pvKT>)?

Is your refrigerator/freezer side-by-side or top-bottom? Does it have a water or ice dispenser in the outer door?

Building Energy Audit

Enter the following data on Trane's website (energy.trane.com) to compare the building's energy use with similar facilities in our region. Answer as completely as you can.

Building History

Year built:

Location (city, state, ZIP):

Type (commercial, school, government, etc):

Number of people typically using space each day:

Numbers of hours each week building is used:

Months per year building is used:

Square footage of space you use that is heated/cooled:

If part of larger building, total square footage:

Is the building air-conditioned? If only part, how much square footage?

What type of heating /cooling systems do you have? What type of fuels?

What updates did you make or do you know of that would have made the building more energy efficient?

Besides electricity, what fuel(s) are used to heat/cool the building?

Energy Bills

Types of energy used

Check if used

___ electricity

___ natural gas

___ fuel oil

___ wood

___ kerosene

___ propane

___ coal

___ other

total units annually

_____ kilowatt hours

_____ therms or CCF

_____ gallons

_____ cords

_____ gallons

_____ gallons

_____ pounds

total cost annually

\$ _____

\$ _____

\$ _____

\$ _____

\$ _____

\$ _____

\$ _____

\$ _____

Energy Details

Does the building have an automation system?

How much do you lower the temperature at night or off-peak times?

Do you have any indoor day lighting sensors and/or occupancy controls?

Does your building have elevators or escalators? How many?

What kind of hot water heater do you have? What is the temperature?

What energy source is used for commercial cooking?

Looking from the outside, what percentage of wall space is covered by windows?

What else do you know about your windows (overall U-value, tinting/shading coefficient, glazing, weather stripping, storm window use, etc.)?

How were the walls constructed (overall R-value)?

How was the roof constructed (overall R-value)?

What is the efficiency of the heating system?

How much of the building is mechanically cooled?

How efficient is the cooling system?

If the building has a chiller plant, what type of chillers are used?

Jenni Larmore

Innovation: Paw Power Dog Park

Jenni Larmore's town needed a place where dog owners could exercise their pets and socialize, so she created one. Paw Power Dog Park, in Clermont, Florida, spreads over four acres and is shaded by 100-year-old oak trees. The park's five sections accommodate dogs of all sizes and activity levels. Each area has an agility course and stations for drinking, waste and washing.

To get started, Jenni surveyed pet shop owners, veterinarians, and dog owners about their needs and desires. She then presented a proposal to the Lake County Parks and Trails Department that included the concept, location, blueprints, projected costs, and a project work plan. "I am super convincing when I really believe in something and can convey that to people when I speak to them," Jenni says.

And so, the work began. Jenni enlisted members of the Girl Scouts of Citrus Council and recruited other volunteers through community bulletins. A perimeter fence was installed, the land was cleared of vines and debris, and brick pavers were laid to level the ground. Discarded fire hydrants and tires got new life in the park. A fund-raising dog wash paid for agility equipment.

Dozens of volunteers spent more than 136 hours over 13.5 months to make Paw Power a reality. Even young Girl Scouts helped by spray-painting the decals that mark the park's various sections. Jenni began her project in fall of 2005 as an eleventh grader. It earned her a Girl Scout Gold Award and a 2008 National Young Woman of Distinction honor. Since then, she has spent many more "rewarding hours" working there.

What is innovative about Jenni's idea? What positive risks did she take?

Abbe Hamilton

Innovation: Saying No To Styrofoam

"If I go out to a restaurant and I'm thinking about takeout, I'll ask what kind of container they use," says Abbe Hamilton. "I'm not willing to contribute to the Styrofoam problem anymore." Commonly used for fast food and takeout, Styrofoam has been known to litter beaches, parks, and waterways around the world.

At South Hadley High School in Massachusetts, Abbe joined with students, staff, and the Department of Environmental Protection to replace Styrofoam with compostable paper products. When Abbe started, her high school of 750 students produced 135 pounds of garbage and 20 pounds of recyclables each day. That added up to 85 percent garbage, 15 percent recyclables, and no compost. To cover the cost of compostable plates and cups, Abbe applied for and received a state grant. Now plates and cups are mixed with food waste and transported to a farm to be combined with manure and eventually sold as fertilizer.

After one year, her school's six bags of daily trash were reduced to two bags, and the daily garbage pickup was cut to once a week. Total garbage was reduced by 66 percent! The cafeteria waste is now 40 percent recycling, 35 percent compost, and just 25 percent garbage. Abbe's project earned her a Girl Scout Gold Award and the honor of being a 2008 National Young Woman of Distinction.

What values is Abbe living? (Think about all the lines of the Girl Scout Law!) How does her project create lasting changes on Earth?

Akua Lezli Hope
Innovation: Paper from Nature

Did you know that paper can be made from weeds, sunflowers, cattails, carrot tops, and the little brown stems on banana peels? Akua Lezli Hope, an artist and writer in upstate New York, makes paper out of all of these and more.

Akua grew up in Harlem in New York City, where she was a Girl Scout. “We were poor, but I always had crayon and paper and tools. And I was always told, ‘You can do anything you want to.’” Akua was always very creative, playing the bassoon and cello, singing in choruses, and writing poems and stories, which used lots of paper. “And then I fell in love with the paper itself,” she says.

At first, Akua used shredded paper to make papier-mâché for sculpting. But then she focused on making paper and started experimenting. After all, most paper comes from trees, so why not use plants, especially those that might otherwise go to waste, to make beautiful, handmade paper? “Wild growing things make fantabulous paper,” she says. “Cattail heads make dark brown paper that looks like leather. Silkweed paper is glossy and golden and strong. The outer skin of the milkweed makes a great resilient paper.”

For Akua, paper is the most satisfying expression of her creativity. “Paper appeals to so many senses,” she explains. “It appeals visually and to the sense of touch and the sense of smell. And when you’ve made a good piece, it’s crisp and you can hear it. You feel it and you can use it.”

How could you use items you have around your home to create something new?

Cindy Endahl
Innovation: Recycle Cindy Bags and Purses

It would probably be best if the world just stopped making plastic bags. Until then, Recycle Cindy, a.k.a. Cindy Endahl, is turning them into hard-wearing fashion purses and chic messenger bags.

How does she manage that? With imagination, a crochet hook, and a ball of yarn – make that “plarn,” yarn made from one-inch strips of ordinary plastic shopping bags that are knotted together. Cindy uses 12 to 15 bags to make a mini shoulder bag and 45 to 50 to create a large tote. It takes her one to five hours to complete a project, depending on how large and complicated it is.

Cindy is a deputy clerk in Newport, Washington. One day she spotted a woman with an unusual crocheted bag on her arm and learned that it was made from plastic shopping bags. An avid crocheter since she taught herself a few basic stitches as a girl, Cindy set out to make one of her own.

She not only mastered the techniques and made herself a cute bag, but she created new styles of handbags and dreamed up other plarn items, like baby bibs, coasters, and water bottle holders. She started posting the patterns for her creations on myrecycledbags.com in 2006.

What’s innovative about what Cindy does? How does her work inspire other people?

Nancy Judd

Innovation: Recycle Runway

Imagine one-of-a-kind fashions made from 75 percent trash. That's right, trash! Soda cans, plastic grocery bags, old phone books, junk mail, even rusty nails and salvaged car parts are transformed into elegant gowns, cocktail dresses, and other garments. One evening gown, made from 12,000 pieces of crushed recycled glass and leftover upholstery material, is glittery enough for the Oscars. A backless cocktail dress has shimmering fringe made from aluminum cans. The dress itself was a shower curtain! Like real high-fashion gowns, these are hand-sewn and take up to 400 hours to make.

The designer behind this Recycle Runway collection is Nancy Judd. She came up with the idea for a "Trash Fashion" contest while working as an administrator in recycling for the city of Santa Fe, New Mexico, in 2000. "In fashion, there is huge waste when you consider how frequently clothes are discarded," Nancy says. "I'm striving to change the way people think about the environment through changing the way they think about waste." Her garments have been commissioned by major corporations and the entire collection has traveled the country as an educational art exhibit.

Nancy learned to sew as a child. As a college student, she noticed that a garbage receptacle near a soda machine was filled with aluminum cans. She got permission to put a recycling bin nearby, which led to an independent study in recycling methods.

One project Nancy is most excited about is her Eco-Youth dress: a Scarlett O'Hara-style ball gown decorated with hundreds of strips of recycled office paper. One each strip of paper, Students have written a specific commitment to preserve the environment by recycling. "Making art is one of the most spiritual experiences I have in my life," Nancy says. "I have a great sense of something larger than myself when I am in the creative process. It's one of the best feelings ever."

How does Nancy educate and inspire other people? What can you learn from her? Why is it important to educate and inspire other people to care about Earth?

Mireya Mayor

Innovation: turning dance skills to wildlife biology

Remember the shiny-eyed, long-tailed "party animals" from the movie Madagascar? Those were lemurs. Mireya Mayor studies lemurs in the wild and has a lot in common with them. Lemurs rely on their agility to leap acrobatically through the rainforest canopy. As a primatologist working in the rainforest, Mireya draws on her experience as a ballet dancer and a cheerleader for the Miami Dolphins.

"Having danced in ballet for so many years actually helped me get around the rainforest," she says. "You need a lot of balance and flexibility, and you need to be very quick on your feet."

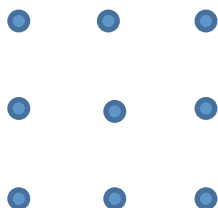
In college, Mireya took an anthropology course. Right away, her curiosity was piqued. In 1996, she went to Guyana in South America to study primates. Mireya, who has never been camping, found herself clambering through jungles, trying to avoid "snakes and tarantulas that would somehow appear on my backpack!" A year later, in Madagascar, Mireya and a colleague discovered the world's smallest primate, the pygmy mouse lemur. It weighs less than an ounce. Mireya's efforts led Madagascar to triple its protected regions and establish a \$50 million conservation fund.

How has something you have learned prepared you for something else entirely? What do you want to learn to help prepare you for life?

Sarah Susanka

Innovation: Making houses 'Not So Big'

Sarah Susanka is an architect and a writer. She loves solving problems. When she was a 10-year-old growing up in England, her teacher gave the class a puzzle to solve: Without taking your pencil off the paper, and using only four straight lines, connect the dots shown (three rows of three evenly spaced dots). Sarah spent hours working on the problem. She knew there had to be an answer, yet she couldn't find it. Can you?



One night, Sarah awoke with the answer clear in mind. "What I discovered was that, if I stayed within the box created by the dots, I couldn't solve the problem," she says. "Once I broke the confines of the outline, the problem solved itself."

Her "thinking outside the box" led her to found the Not So Big movement, which has been embraced worldwide for its philosophy of building better, not bigger, houses. Sarah's home in Raleigh North Carolina, built in 1977, is an example of what she calls "tightening up energy-efficiency." She made the house less leaky by replacing the insulation and installing an energy-efficient heating and cooling system. Such simple changes, along with energy efficient lights, are a "big part" of saving energy today, Sarah says.

Have you ever thought "outside the box" to solve a problem? How can you use your creativity to be more energy efficient?

Denise Gray

Innovation: engineering parts for electric cars

Imagine a car that will be able to travel 40 miles gas-free and emissions-free. That's what Denise Gray is working on. Denise, an electrical engineer, is in charge of the battery that will power the Volt, a new electric car from General Motors. It can be recharged by plugging it in to any electrical outlet.

If the trip is longer than 40 miles, Denise explains, "a small internal combustion engine will get you to your location so you don't have to worry about running out of power." The engine won't power the wheels, though, as it does in a traditional car. It will power a generator that recharges the batteries.

"I've always been fascinated with advanced technology and doing things differently," Denise says, "whether making transmissions or improving fuel efficiency or using a battery as an energy source."

Denise's interest was sparked while growing up in Detroit. "When I was in middle school, I had a teacher who told me I was really good in math and science and told me to go into engineering," she says.

Electrical engineering captured her imagination. And it's not just the science that delights Denise. "It's the battery as a microcosm of all the different engineering disciplines – so you meet people with different skills coming together for a common cause."

What is innovative about Denise's project? What would your dream car be able to do, and how could you make it more energy efficient?

Robin Chase

Innovation: Making each car count

Robin Chase was at a café with a German friend in 1999 when she learned that in some German cities, people could rent for just a few hours. Robin realized that car sharing was a way to reduce pollution and also save money while enjoying the convenience of a car when it was needed.

It was exactly what Robin needed, too. She grew up in Swaziland in Africa, where she was a Girl Guide, and was living in Cambridge, Massachusetts, with three children and her husband, who took the family car to work each day. "I wanted a car every once in a while but I did not want to own one," Robin says. "The light bulb went off in my head."

Most people drive their cars for only two of the 24 hours in a day, she explains. That's not using resources very wisely. Zipcar, the company Robin and her friend started, is now the largest car-sharing company in the world. "Zipcar is all about making efficient use of a car and conserving resources." Since the Zipcars are shared, each one is able to stand in for more than 15 cars that might normally be out on the road.

Robin's newest venture is goloco.org. It's a ride-sharing network that lets people share travel plans via e-mail so they can share rides, too. Robin believes it's important for the environment "to get more people into the cars that are already on the roads."

What is innovative about Robin's project? How will her project create lasting impact?