



**Instructor:** Jason Thiriot- Colorado River Commission of Nevada, Natural Resources Analyst



# Sustainability

## PRIMER PACKET

### Objective of Primer Packet:

To help scout understand and learn about sustainability and the importance of being good stewards of our environment. [According to the BSA Merit Badge Series *Sustainability*]

## Sustainability Checklist

### TO DO

### With Family

<input type="checkbox"/> Write down own words meaning of "Sustainability"	<input type="checkbox"/> Have family write what they think "sustainability" means- TAKE NOTES
<input type="checkbox"/> Develop/ Implement plan to reduce household waste- Record results for <b>2 WEEKS</b>	<input type="checkbox"/> As a family, choose 3 ways to reduce water consumption
<input type="checkbox"/> Draw a rough sketch how you would design a sustainable community	<input type="checkbox"/> As a family, Implement the water reducing ideas for <b>1 MONTH</b>
<input type="checkbox"/> Be familiar with fossil fuels, solar, wind, nuclear, hydropower, and geothermal energy sources	<input type="checkbox"/> Report to family results of 2 week household waste reduction efforts
<input type="checkbox"/> Develop/ Implement plan to reduce electricity- Record results for <b>1 MONTH</b>	<input type="checkbox"/> As a family, examine NV Energy bills (3 different months)
<input type="checkbox"/> Implement power reducing ideas for <b>1 MONTH</b>	<input type="checkbox"/> As a family, choose 3 ways to reduce power consumption
<input type="checkbox"/> Keep a log of the "stuff" your family purchases- Identify if item is "need" or "want" <b>2 WEEKS</b>	<input type="checkbox"/> As a family, choose and discuss any 2 of the following: Plastic waste, Electronic Waste, Composting, Species decline, World population, Climate change
<input type="checkbox"/> <b>After completing requirements 1-4,</b> have a family meeting. Discuss what your family has learned about what it means to be a sustainable citizen. Talk about the behavioral changes and life choices your family can make to live more sustainably.	

#1) Before starting work on any other requirements--- Write in your own words the meaning of “**Sustainability**”.



HINT: The word “sustain” something means to keep it or to continue it.

Have a family meeting, and ask family members to write down what they think “**Sustainability**” means. Be sure to take notes. You will need this information again for requirement 5.



A large, empty rectangular box with a blue border, intended for students to write their definitions of sustainability and notes from a family meeting.

**#2) WATER:** Develop & implement a plan that attempts to reduce your family's water usage.  
Choose 3 ways to help reduce consumption.



SUGGESTION: Especially in Southern Nevada, the main focus should be on OUTDOOR water usage.

Three ways family is going to reduce water consumption.

1.	
2.	
3.	

How to prevent water waste tips (SNWA)

[http://www.snwa.com/consv/waste\\_prevent.html](http://www.snwa.com/consv/waste_prevent.html)

Video clip on preventing water waste

<http://www.snwa.com/apps/video/index.cfm?cid=30&vid=195>

**Example:** Don't leave water running – limit showers to 5 minutes or less, check for broken sprinklers, check the watering clock and make sure it isn't over watering, only wash dishes when the dishwasher is full, etc....

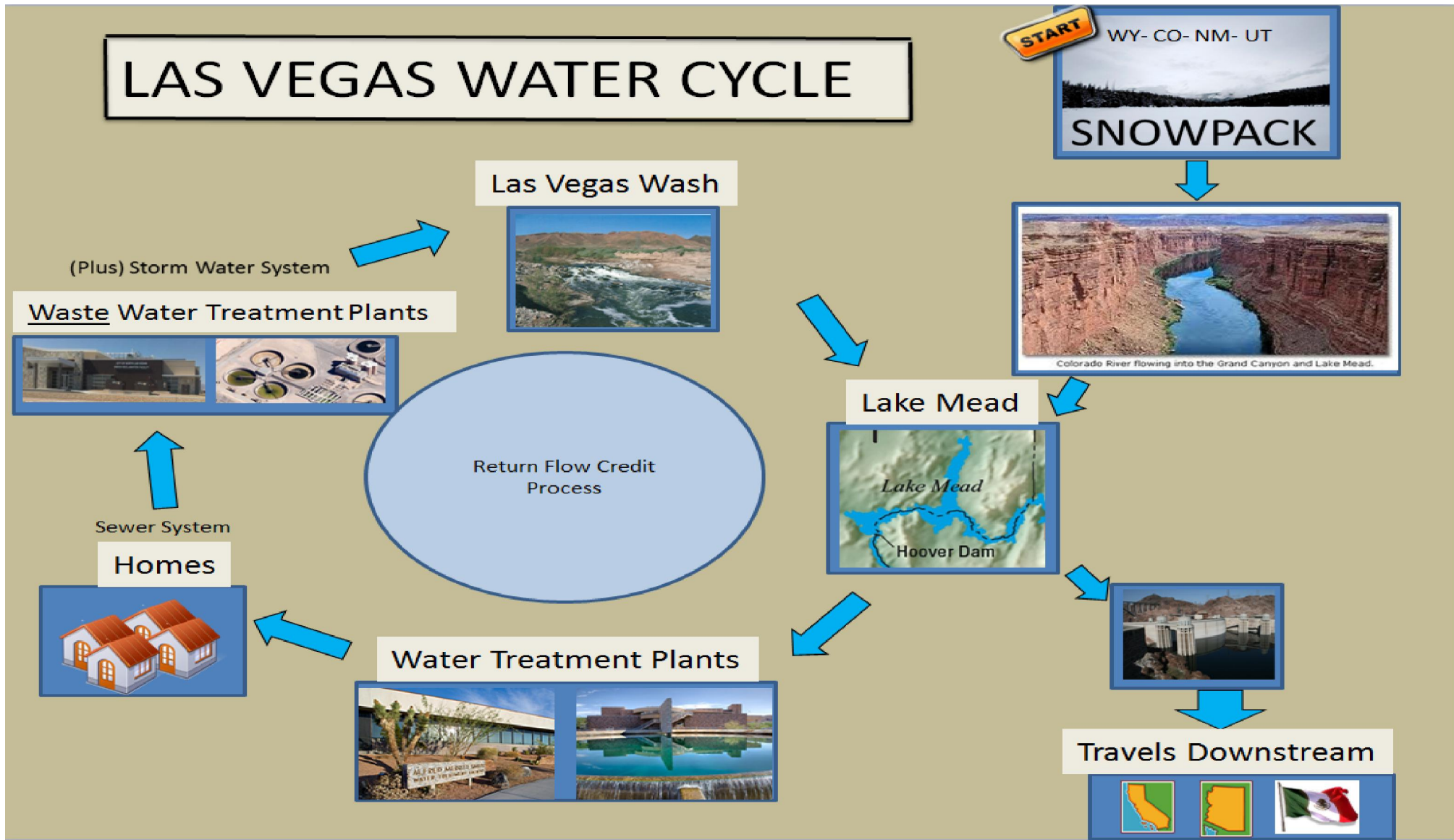
**WATER:** Implement Family Water Reduction Plan for 1 Month

OBSERVATION:





**WATER:** Using a diagram you have created, explain to your counselor how your household gets its clean water from a natural source and what happens with the water after you use it. Include water that goes down the kitchen, bathroom, and laundry drains, and any runoff from watering the yard or washing the car.



**WATER:** Tell two ways to preserve your family's access to clean water in the future

#1) \_\_\_\_\_

#2) \_\_\_\_\_

## Food: Develop and implement a plan that attempts to reduce your household food waste



HINT: More than 60% of food waste can be avoided.

Example: Plan ahead when going to the grocery store- have a list, pay attention to portion sizes, plan meals that include eating leftovers, etc...

Establish a baseline and then track and record your results.  
Be sure to take notes. You will need this information again for requirement 5.



WEEK 1

**Food:** Develop and implement a plan that attempts to reduce your household food waste--- Continued



WEEK 2

A large, empty rectangular box with a blue border, intended for writing a plan to reduce household food waste.

Report your results to your family. What observations did you obtain?

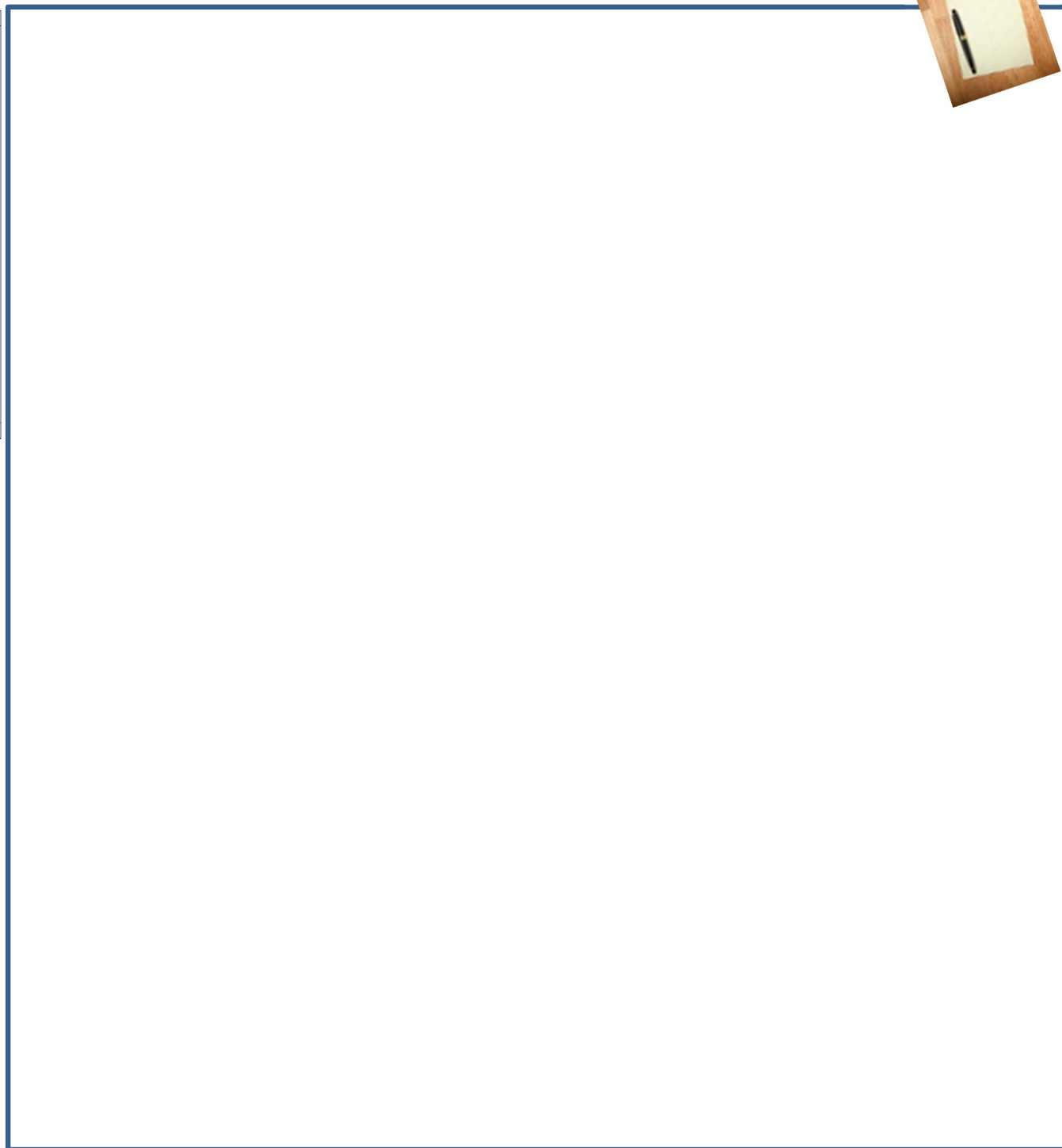


A large, empty rectangular box with a blue border, intended for reporting results and observations to family.

**COMMUNITY:** Draw a rough sketch depicting how you would design a sustainable community



**Housing**  
**Work Locations**  
**Shops**  
**Schools**  
**Transportation**  
**Pollution**  
**Energy Sources**  
**Natural Resources**  
**Economy**





**ENERGY:** Develop and implement a plan that attempts to reduce consumption for one of your family's household utilities.

SUGGESTION: **NV Energy Bill** -----OR you can use Southwest Gas.

As a family, choose 3 ways to help reduce consumption and be a better steward of this resource.

1.	
2.	
3.	

Tips for lowering your electric bill (NV ENERGY)

<https://www.nvenergy.com/home/saveenergy/energytips.cfm>



Example: Turn off lights and appliances when not in use. Don't forget your computer. Most new computers have sleep settings. In the cooling season, close blinds and drapes during the day to keep heat out. , etc....

**ENERGY:** Implement Family Energy Reduction Plan for 1 Month

OBSERVATION:

**ENERGY:** Examine your family's utility bills [Example NV Energy for **three months** (Past or current)]

HINT: Line item by line item-- How to read your NV ENERGY electric bill

[https://www.nvenergy.com/home/customer/billdescription\\_south.cfm](https://www.nvenergy.com/home/customer/billdescription_south.cfm)



OBSERVATION:

ACCOUNT NUMBER: 1300118692113 Page 1 of 2

**NV Energy**  
nvenergy.com

Service Address: NORTH LAS VEGAS, NV 89031

Customer: 001100  
Phone: 18358

07/2013  
AR 899

Next Meter Read Date	Due Date	TOTAL AMOUNT DUE
Sep 24, 2013	Sep 13, 2013	\$283.94

PREVIOUS BALANCE	PAYMENTS	ADJUSTMENTS	BALANCE FORWARD	CURRENT CHARGES
\$340.73	\$340.73CR	\$ 0.00	\$ 0.00	\$283.94

**IMPORTANT MESSAGE:** A deposit may be assessed after 3 late charges in 12 consecutive months. If a payment is returned, or if service has been disconnected for non-payment. The deposit is based on the actual usage of the account. For further information visit our website at [nvenergy.com/tue15south](http://nvenergy.com/tue15south).

Don't forget to sign up for Paperless Billing. Enroll in MyAccount at [nvenergy.com](http://nvenergy.com).

**Notice of General Consumer Sessions:**  
Customers of Nevada Power Company (NVC) and NV Energy are invited to a General Consumer Session conducted by the Public Utilities Commission of Nevada (PUCN). Customers are given an opportunity to appear and be heard on any issue concerning a public utility regulated by the Commission. Public comments may be limited to ten (10) minutes per person at the discretion of the Commission. If within 15 minutes after the start of the Consumer Session, no member of the public has appeared to participate as comment, the Consumer Session may be informed of the discretion of the Commission. The sessions will be held in Southern Nevada: Monday, December 10, 2013, 1:00 p.m. and 5:00 p.m., Hearing Room A, Public Utilities Commission of Nevada, 8075 West Claude, Suite 200, Las Vegas, Nevada 89148. Representatives of the utilities and the PUCN will be available to answer questions. For details, call the PUCN at 702.456.2600.

The Energy Assistance Program (EAP) may help pay your bill. Call (702) 496-1404 or visit [dws.nv.gov](http://dws.nv.gov) to see if you qualify.

Thank you for maintaining an excellent payment record. We look forward to serving you in the future.

**ELECTRIC - RESIDENTIAL SERVICE**

Service	Service Period	Bill	Meter Readings	Meter	Billing		
Meter Number	Category	From	To	Previous	Current	Multiplier	Usage
0000095758	KWH	Jul 26	Aug 29	3461	3692	1	2,221

**Usage Summary:**

Category	Usage
DEFERRED ENERGY ADJ.	7.24 CR
TEMP GREEN F	1.58
RENEWABLE EI	4.00
ENERGY EFFIC	7.46
BASIC SERVICE CHARGE	10.00
LOCAL GOVERNMENT FEE	13.46
UNIVERSAL ENERGY CHARGE	87
<b>TOTAL ELECTRIC SERVICE AMOUNT</b>	<b>\$283.94</b>

**Usage History:**

Usage History	No. Days	KWH	Avg KWH Per Day	Avg Cost Per Day
THIS MONTH	30	2,221	74.0	9.46
LAST MONTH	29	2,695	92.9	
LAST YEAR	29	2,425	83.6	

**Avg KWH Per Day By Month:**

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001100  
18358

253.79  
7.24 CR  
1.58  
4.00  
7.46  
10.00  
13.46  
87

**TOTAL ELECTRIC SERVICE AMOUNT**  
**\$283.94**

**Avg KWH Per Day By Month:**

As a family, choose and discuss **TWO** of the following: Plastic Waste, Electronic Waste, Composting, Species decline, World population, Climate change

- 1.
- 2.




## Topic #1

OBSERVATION:

## Topic #2

OBSERVATION:



**After completing requirements 1-4, Have a family meeting:** Discuss what your family has learned about what it means to be a sustainable citizen. Talk about the behavioral changes and life choices your family can make to live more sustainably.



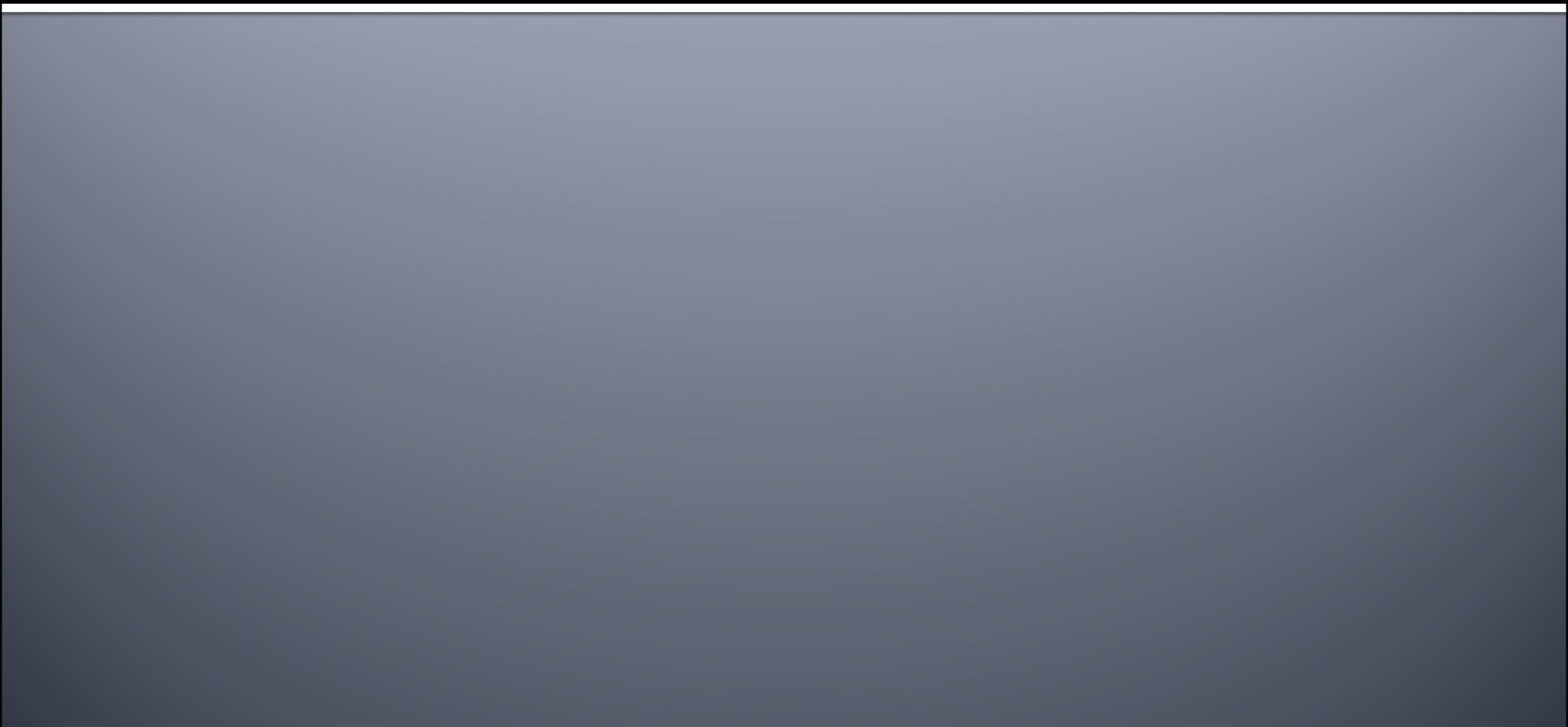
OBSERVATION:

A large, empty rectangular box with a blue border, intended for recording observations from the family meeting.



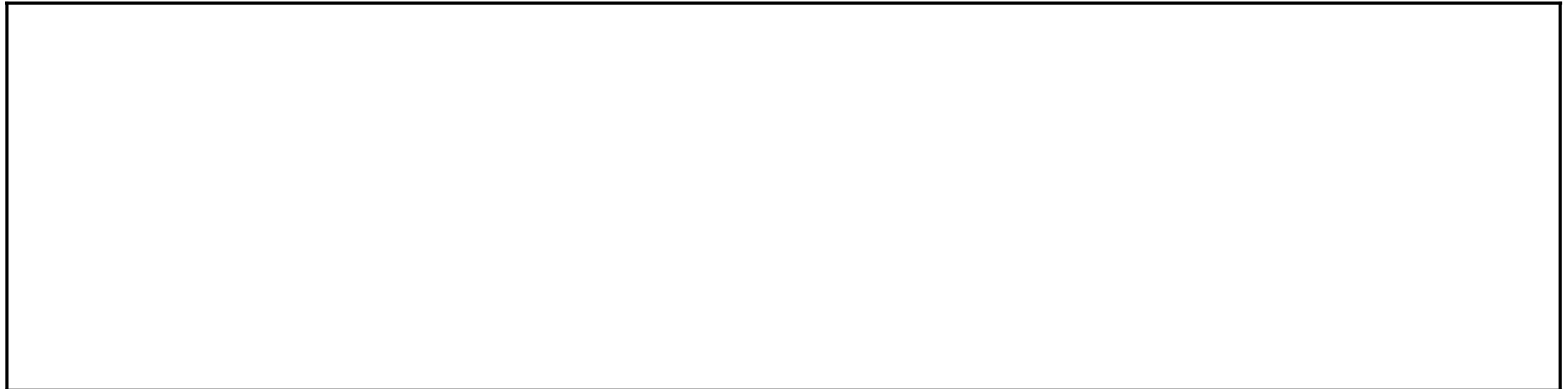
# Additional Resources

Sustainability Merit Badge



**Energy.** Learn about the sustainability of different energy sources, including fossil fuels

Fossil Fuels



## U.S. Department of Energy: Learning About Fossil Fuels - For Younger Students

<http://www.fossil.energy.gov/education/energylessons/>

The screenshot shows the U.S. Department of Energy website. The header includes the U.S. Department of Energy logo and navigation links for Science & Technology, Energy Sources, Energy Efficiency, The Environment, Prices & Trends, National Security, and Safety & Health. The main content area is titled "Learning About Fossil Fuels - For Younger Students" and features sections for Coal, Oil, and Natural Gas. Each section includes an "Energy Lesson" and "Fossil Energy study guides". A cartoon character, Dr. H. Carbon, is introduced on the right side of the page.

**U.S. DEPARTMENT OF ENERGY**

SCIENCE & TECHNOLOGY ENERGY SOURCES ENERGY EFFICIENCY THE ENVIRONMENT PRICES & TRENDS NATIONAL SECURITY SAFETY & HEALTH

**FOSSIL ENERGY**

You are here: Educational Activities > Energy Lessons

**Learning About Fossil Fuels - For Younger Students**

**Coal**  
Coal is our most abundant and lowest cost fuel for making electricity. New technology is making it cleaner.

- an **Energy lesson**
  - Part 1: Cleaning Up Coal
  - Part 2: The Clean Coal Technology Program
  - Part 3: Knocking the NOx Out of Coal
  - Part 4: A "Bed" for Burning Coal?
  - Part 5: The Cleanest Coal Technology - A Real Gas
- Fossil Energy study guides**
  - Introduction to Coal
  - How Coal Formed
  - History of Coal Use
  - Coal Mining and Transportation

**Oil**  
We still have a lot of oil left in the ground. Learn how we can get more of this valuable fuel from underground rocks.

- an **Energy lesson**
  - Part 1: Looking Down an Oil Well
  - Part 2: Squeezing Oil Out of the Earth
  - Part 3: Washing More Oil From Rocks
  - Part 4: Soap, Bugs and Other Ways to Produce Oil

**Natural Gas**  
We've all seen the blue flame on top of a gas stove or beneath a gas furnace. But where do we get the gas that fuels the flame?

Introducing...  
**Dr. H. Carbon**  
who will reveal some fascinating facts about fossil fuels.

Dr. H. Carbon will appear in this spot throughout several of the following pages to ask you questions about fossil fuels (and give you the answers).

**Renewable Energy:** Energy that comes from resources that are continually replenished such as sunlight, wind, rain, tides, waves, & geothermal heat.



Solar

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Wind

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Nuclear

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Hydropower

--



Geothermal

--

## Recycle City

Learning tool from the EPA (Environmental Protection Agency)

Design Sustainable Communities: Learning about Sustainable Communities with Recycle City

<http://beyondweather.ehe.osu.edu/issue/we-change-earths-climate/learning-about-sustainable-communities-with-recycle-city>



- Don't be a Carbon Sasquatch – Schoolhouse Rock Earth

[http://www.youtube.com/watch?v=XEu4\\_xi1WEY](http://www.youtube.com/watch?v=XEu4_xi1WEY)



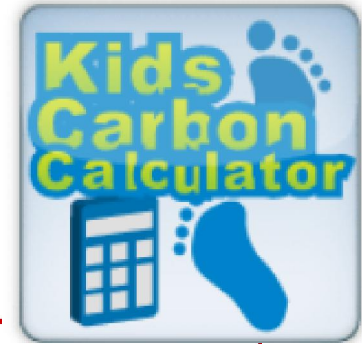
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Schoolhouse Rock Earth Dont Be a Carbon Sasquatch

# Carbon Calculator

<http://www.cooltheworld.com/kidscarboncalculator.php>

- **Carbon footprint** – It's the latest buzz word being thrown around by everyone from politicians to college kids but what exactly is it? Well, roughly defined it's the amount of green house gas emitted by a person or population over a certain period of time. To make a long story short, the more of these gasses that we let into the atmosphere, the worse it is for the environment.



## Your carbon footprint:

Travelling to school	216	kgs CO <sub>2</sub> a year
Watching television	182	kgs CO <sub>2</sub> a year
Leaving TV on standby	11	kgs CO <sub>2</sub> a year
Using the computer	21	kgs CO <sub>2</sub> a year
Lights in the bedroom	83	kgs CO <sub>2</sub> a year
Showers	200	kgs CO <sub>2</sub> a year
Baths	0	kgs CO <sub>2</sub> a year
Home total	496	kgs CO <sub>2</sub> a year
Going on holiday	1377	kgs CO <sub>2</sub> a year
<b>Your total</b>	<b>2089</b>	<b>kgs CO<sub>2</sub> a year (2.1 tonnes)</b>



# Video of composting--Natures way of recycling

- <http://www.bing.com/videos/search?q=how+composters+work&view=detail&mid=803ADFCB4B8FA71F3B89803ADFCB4B8FA71F3B89&first=0&FORM=NVPFVR>



## Las Vegas Leftovers go to Hog Farm – America’s Heartland

Bob Combs, owner of R.C. farms,

### PIG FARM

<http://www.bing.com/videos/search?q=rc+pig+farms+in+las+vegas+nv&view=detail&mid=689CD5298D43A8331E26689CD5298D43A8331E26&first=0&FORM=NVPFVR>



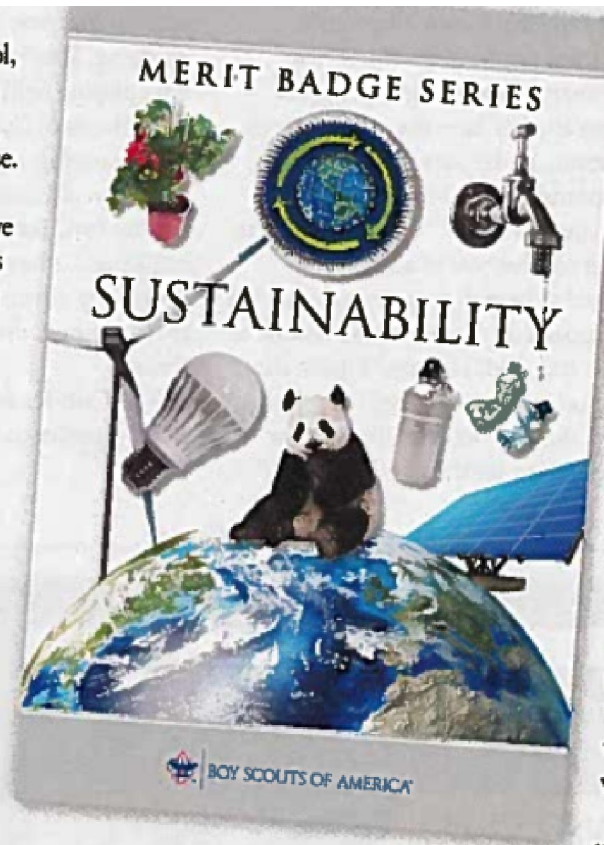
**JUST AFTER JON HARMON GRADUATED** from high school, the Eagle Scout from Portola Valley, Calif., started acting a little strange around the house. “He was chasing us around turning the water off when we were washing our hands,” says his father, Scott, also an Eagle Scout. “I was getting a little frustrated.”

That frustration led to several conversations, which led the elder Harmon to think about what it means to live sustainably. It also prompted him to propose a merit badge in sustainability. “I realized that ... [other Scouting families] could learn about how important it is to live sustainably, too.”

Five years later, the Sustainability merit badge debuted at this summer’s national jamboree. And on Jan. 1, it will join the list of Eagle-required merit badges as an alternative to Environmental Science.

The new badge begins and ends with a family meeting in which family members discuss what they can do to live more sustainably. In between, the Scout undertakes projects, often alongside his family, to understand the big picture regarding topics such as water, food, energy, and transportation, as well as waste reduction, species decline, world population, and climate change.

To learn more about the badge, we talked with four Scouters who served on the Sustainability Merit Badge Task Force: Scott Berger of Scotch Plains, N.J., chairman of the Sustainability



Leadership Team overseeing the merit badge’s development and chairman of the Merit Badge Maintenance Task Force; Scott Harmon of Portola Valley, chairman of the content team; Steve Bowen of El Centro, Calif., a member of the National Advancement Committee; and David Disney of Kansas City, Mo., a member of the National Executive Board.

#### WHAT IS SUSTAINABILITY?

“Sustainability is more of a new way of thinking as opposed to the science in the Environmental Science merit badge,” Berger says. “The idea is not just to conserve but to truly be stewards of our environment, our energy sources, and more—to think in terms

not just of having enough for our lifetime but enough for future generations.”

**WHY DO THE REQUIREMENTS FOCUS SO MUCH ON SCOUT-SIZE PROJECTS?** “It’s a hard concept for a Scout to feel that he himself, as a single person, can have an impact on the world, but he certainly can have an impact within his own family,” Berger says. “We’re hoping to bring [sustainability] down to a level where a Scout can feel he can make a difference, where his actions matter.”

**CAN A SCOUT EARN THIS BADGE IF HE LIVES IN AN URBAN AREA?** Yes, says Berger. “There are a lot of things we’ve done to make this badge viable for any Scout, regardless of where he’s living,” he says.

#### WHO CAN COUNSEL THIS BADGE?

Bowen suggests science teachers as potential council-approved counselors. Disney recommends seeking out people who are leading other sustainability efforts in your community.

#### WHAT IMPACT CAN THIS BADGE HAVE?

“Many young people are concerned about that and don’t know how to approach it. This gives them a path,” Disney says. Harmon adds, “We really want to empower the Scouting movement to make a difference, to make a visible difference in the world outside Scouting.” ♣



**FIND MORE** on the Sustainability merit badge at [scoutingmagazine.org/sustainability](http://scoutingmagazine.org/sustainability).