



# How Big Is Your Carbon Footprint?

The size of your carbon footprint indicates how much impact you have on the environment.

## **Overview**

Complete the Carbon Footprint Survey and color a footprint to show the relative size of your family's impact on the environment.

## **Greenhouse Gases and Our Carbon Footprint**

The light and heat from the sun support life on Earth and provide energy needed for plants to grow. Energy from the sun drives the Earth's weather and climate. The Earth absorbs some of the energy it receives from the sun and radiates (sends out) the rest back toward space. However, certain gases in the atmosphere, called greenhouse gases, absorb some of the energy radiated from the Earth and trap it in the atmosphere. These gases act as a blanket, making the Earth's surface warmer than it otherwise would be.

In the past 100 years or so, humankind has created machines, factories, and vehicles that have greatly increased the amount of greenhouse gases in our atmosphere. This increased level of greenhouse gases means more heat is held in the atmosphere and the Earth is getting warmer. These warmer temperatures are causing changes around the world on land, in the oceans, and in the air. This could upset the delicate balance that sustains life.

Whether we realize it or not, we all emit carbon dioxide, one of the greenhouse gases, through our day-to-day activities. The amount we emit is referred to as our "carbon footprint." The bigger the footprint, the more carbon dioxide that comes from each of us as a result of the choices we make.

Climate change caused by excess greenhouse gases and a big carbon footprint can cause:

- Heat waves that damage crops, stress livestock, and make life difficult for people.
- More air pollution, which is linked to allergies, asthma, and other health problems.
- Severe storms and flooding due to higher sea levels.
- Loss of habitat as the climate changes, particularly in Arctic regions.

Families can help reduce their carbon footprint by focusing on four major areas: housing and household energy use, transportation, personal habits, and recycling. In this game, you'll have the chance to estimate the relative size of your family's carbon footprint as well as learn easy ways you can help reduce it.

***Materials:***

- Carbon Footprint Survey sheet, one per family team
- Carbon Footprint drawing
- Crayons, markers, or colored pencils in the suggested colors

The Carbon Footprint Survey will ask a series of questions that will direct the participant to color lines around the footprint drawing. The more greenhouse gases you produce, based on your answers, the bigger the carbon footprint grows. Different color crayons will represent the four categories of behavior surveyed:

- Housing and Home Energy: **RED**
- Transportation: **BLUE**
- Personal Habits: **GREEN**
- Recycling Habits: **BROWN**

# Carbon Footprint Survey: How Big Is Your Family's Carbon Footprint?

Some of our lifestyle choices and day-to-day activities emit excess carbon dioxide and other greenhouse gases into the atmosphere. The amount of greenhouse gases we produce is referred to as our "carbon footprint." Too much carbon dioxide and other greenhouse gases in our atmosphere can lead to unnatural climate change, which can have a harmful effect on our planet. Take this survey to get a sense of the size of your family's carbon footprint.

## Housing and Home Energy

1. If you live in a single-family home, color 4 rings **RED**; if you live in an apartment or other type of home, color 2 rings **RED**.
2. If you **don't** use energy-efficient ENERGY STAR certified light bulbs such as CFLs (compact fluorescents), color 1 more ring **RED**.
3. If your home **doesn't** have a programmable thermostat, color 1 more ring **RED**.
4. If you are **not** familiar with the ENERGY STAR label for energy-efficient products, color 1 more ring **RED**.

## Transportation

5. For every small car in your family, color 1 ring **BLUE**.
6. For every medium or large car in your family, color 2 rings **BLUE**.
7. If you **don't** regularly change the air filter on your car and check the tire pressure, color 1 more ring **BLUE**.
8. For every airplane trip you've taken in the past year,

color 1 more ring **BLUE**.

## Personal Habits

9. If you are a vegetarian, color 1 ring **GREEN**; if you are **not** a vegetarian, color 2 rings **GREEN**.
10. If you **never** eat organic food, color 1 more ring **GREEN**.
11. If you take baths, run the faucet while brushing your teeth or washing dishes, or water your lawn several times a week, color 1 ring **GREEN**.

## Recycling and Waste

12. If you usually recycle your household trash, color 1 ring **BROWN**; if you **never** recycle, color 2 rings **BROWN**.
13. If you **never** compost your yard and kitchen waste, color 1 more ring **BROWN**.

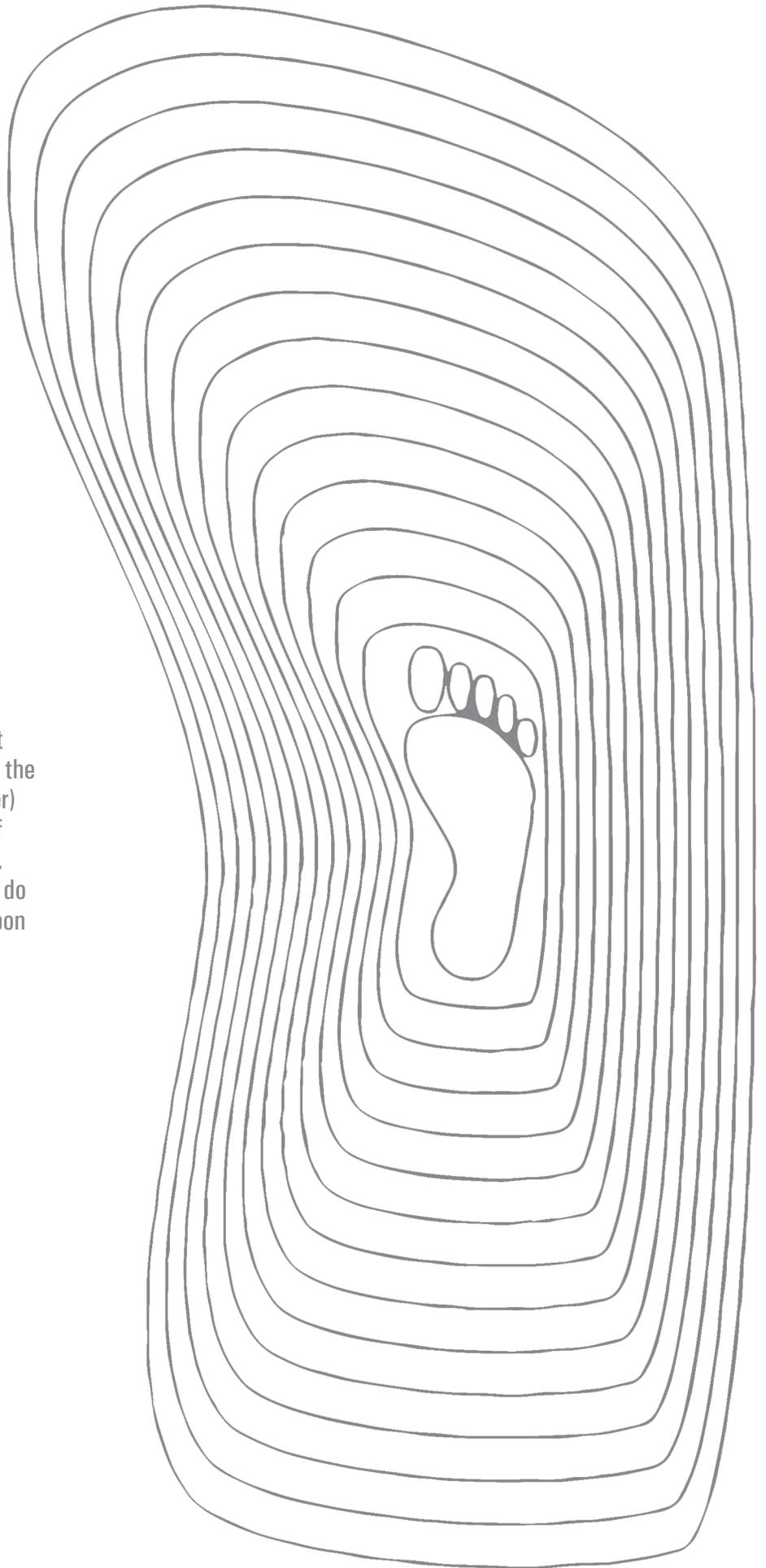
***Now read on to learn what you can do to reduce the size of your carbon footprint.***

# What can you do to reduce the size of your carbon footprint?

1. Single-family homes generally consume more energy per resident than multifamily housing such as apartment buildings. But no matter where you live, there are things you can do to reduce the amount of energy your home uses, thus reducing your carbon footprint.
2. Energy-efficient, ENERGY STAR certified light bulbs such as CFLs and LEDs consume less electricity than conventional incandescent light bulbs. Change your household lights to ENERGY STAR and you'll save money on your household energy bills, too.
3. A programmable thermostat turns your home's heating or air conditioning up and down automatically, depending on the time of day. When your home's energy system is working efficiently, it wastes less energy, thus reducing your carbon footprint.
4. ENERGY STAR certified products such as lighting, appliances, and electronics, use less energy. When purchasing new products look for the ENERGY STAR label to save energy, save money, and reduce your carbon footprint.
5. All gasoline-powered automobiles emit carbon dioxide. The larger the car, the more carbon dioxide is emitted. Cars that are properly maintained are more energy efficient. Be sure to regularly change the air filter and make sure the tires are always properly inflated. Virtually all modes of transportation consume energy, thus they impact your carbon footprint.
6. The growing, processing, packaging, delivery, and distribution of food requires energy from farms, factories, trucks, grocery stores, and more. Because a vegetarian diet does not include meat, a vegetarian tends to have a smaller carbon footprint than does a nonvegetarian.
7. The production of organic food puts less stress on the environment, so your carbon footprint is smaller if you tend to eat organic food.
8. Water that goes down our drains and sewers must be processed through water treatment plants, even if the water is clean. Using only the amount of water you really need helps reduce your carbon footprint.
9. Recycling is good for the environment because it keeps excess waste out of landfills and trash incinerators. If you recycle on a regular basis, your carbon footprint is smaller.
10. Composting is good for the environment because it keeps kitchen and garden waste out of the trash and it encourages natural gardening practices. If you compost at your house, your carbon footprint is smaller.

## Your Carbon Footprint

Based on the Carbon Footprint Survey, color the rings around the footprint (start from the center) to estimate the relative size of your family's carbon footprint. What can you and your family do to reduce the size of your carbon footprint?





# Trash or What? Relay Race

Have players rush to deposit the index cards showing unwanted items into the correct bin.

**What you'll need:**

- Two sets of 20 index cards labeled with typical items destined for the trash, recycling bin, or compost heap (each set of game cards should be a different color)
- Three boxes, one each marked "Recycle," "Trash," and "Compost"
- Tables to hold boxes and cards

**How it works:** Place the boxes on a table some distance away from the players. Players form two lines. Separate the game cards by color. Assign a card color to each team and place a pile of game cards face down on a table next to each line. The first player in each line picks the first card from his or her stack, runs to deposit it in the correct box, then runs back to the line and tags the next player who does the same. The winning team is the one that places the most cards in the correct boxes in the least amount of time.

**What you'll learn:** Reusing, recycling, and composting all save energy and resources. Many household items can be recycled or composted.

## LIST OF ITEMS

Note: Check with your local trash and recycling office to see what items you can recycle in your community.

- Compost**
- banana peel
  - apple core
  - grass clippings
  - eggshells
  - coffee grounds
  - wilted flowers
  - potato peels

- Trash**
- candy bar wrapper
  - disposable diaper
  - wet paper towel
  - used paper plate
  - disposable foam
  - drink cup
  - incandescent light bulb

- Recycle**
- cereal box
  - newspaper
  - scrap paper
  - pasta box
  - plastic milk jug
  - plastic water bottle
  - soft drink can



# Team ENERGY STAR Challenge

## **What you'll need:**

- Included list of categories and answers
- Two desk bells
- Moderator
- Scorekeeper
- Prizes for winners

**How it works:** Organize players into two teams of four. If you have high participation, increase the number of pairs on each team. The moderator announces the number of rounds to be played (up to ten) and starts the game by naming the first category. The team to ring its bell first and give three correct responses in each category earns six points and wins the round. The opposing team is given the opportunity to guess at the remaining responses on the written list, earning two points for each correct response. Once the round is over, read out the remaining items on the list (some lists include more than three items), then start the next round. Finish the game with the bonus question asked to both teams. The team with the most points at the end of the game wins.

**What you'll learn:** Top ways to save energy and other environmental tips.

**Variations:** Make the game easier for young children and players who aren't familiar with ways to save energy in one or both of the following ways:

- Give hints: The moderator offers one hint per item on the list.
- Alter the rules so each team is required to choose just one or two correct answers per category.

# Categories and Answers for Team ENERGY STAR Challenge

## ***NAME 3 OF THE TOP CONTRIBUTORS TO CLIMATE CHANGE***

1. Power plants
2. Cars
3. Trucks
4. Airplanes
5. Buildings
6. Homes

## ***NAME 3 OF THE TOP WAYS TO SAVE ENERGY AT HOME IN ADDITION TO USING ENERGY STAR PRODUCTS***

1. Add insulation
2. Seal air leaks
3. Properly program your thermostat
4. Turn off lights when not in a room
5. Turn off electronics when not in use
6. Put computers in sleep mode

## ***NAME 3 WAYS TO GO GREEN AT SCHOOL***

1. Remember to turn off the lights when you leave the classroom
2. Recycle paper in the classroom
3. Recycle bottles and cans and other recyclables in the cafeteria
4. When you print from the computer, print double-sided
5. Write on the front and back of a sheet of paper

## ***NAME 3 OF THE TOP PLACES IN HOMES THAT ARE MOST LIKELY TO BE DRAFTY***

1. In the attic, if finished, or near the entrance to the attic if unfinished
2. In the basement
3. Near doors that go outside
4. Near windows
5. Underneath baseboards
6. Around wall sockets or light switches
7. Near plumbing and other fixtures that connect to the outside

## ***NAME 3 OF THE TOP WAYS TO HELP PREVENT HEAT LOSS THROUGH WALLS OR CEILINGS***

1. Add insulation
2. Seal cracks with caulk
3. Use spray foam in a can
4. Weatherstrip windows and doors
5. Replace windows
6. Install attic hatch cover
7. Keep doors and windows closed

## ***NAME 3 OF THE TOP MOST USED LIGHTS IN THE HOME***

1. Kitchen ceiling light
2. Living room table and floor lamps
3. Bathroom vanity
4. Outdoor porch or post lamp
5. Bedroom nightstand

## ***NAME 3 OF THE TOP WAYS YOU CAN SAVE WATER IN THE HOME***

1. Look for the WaterSense label on products that use water, such as toilets and faucets
2. Fix leaks around the house; fixing small leaks in your house could save 200 gallons of water per week
3. Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month
4. Wash only full loads of dishes and clothes, or be sure to lower the water settings for smaller loads
5. For a cool refreshment, keep a pitcher of water in the refrigerator instead of running the tap until it is cold
6. Be sure to water your yard or garden only when needed and water during the cooler morning hours to reduce evaporation
7. Set sprinklers to water lawns and gardens only—check that you're not watering the street or sidewalk

### **NAME 3 THINGS YOU CAN COMPOST\*\***

1. Animal manure
2. Cardboard rolls
3. Clean paper
4. Coffee grounds and filters
5. Cotton rags
6. Dryer and vacuum cleaner lint
7. Eggshells
8. Fireplace ashes
9. Fruits and vegetables
10. Grass clippings
11. Hair and fur
12. Hay and straw
13. Houseplants
14. Leaves
15. Nutshells
16. Sawdust
17. Shredded newspaper
18. Tea bags
19. Wood chips
20. Wool rags
21. Yard trimmings

### **Not Compostable\*\***

1. Black walnut tree leaves or twigs: Release substances that might be harmful to plants
2. Coal or charcoal ash: Might contain substances harmful to plants
3. Dairy products (e.g., butter, egg yolks, milk, sour cream, yogurt): Create odor problems and attract pests such as rodents and flies
4. Diseased or insect-ridden plants: Diseases or insects might survive and be transferred back to other plants
5. Fats, grease, lard, or oils: Create odor problems and attract pests such as rodents and flies
6. Meat or fish bones and scraps: Create odor problems and attract pests such as rodents and flies
7. Pet wastes (e.g., dog or cat feces, soiled cat litter): Might contain parasites, bacteria, germs, pathogens, or viruses harmful to humans
8. Yard trimmings treated with chemical pesticides: Might kill beneficial composting organisms

\*\*U.S. Environmental Protection Agency, Office of SolidWaste, [epa.gov/compost](http://epa.gov/compost); updated March 10, 2014

### **BONUS QUESTION:**

#### **Ask to both teams; each team gets three guesses**

Buying energy-efficient products that carry the ENERGY STAR label for your home can save one-third on your energy bill. Name three ENERGY STAR certified products you can find in a home.

#### Lighting

1. Light bulbs
2. Light fixtures
3. Decorative light strings

#### Home Electronics

1. TVs
2. DVD players
3. Cordless phones
4. Battery chargers
5. Digital-to-analog converter boxes
6. Home audio systems and stereos
7. Set-top boxes
8. External power adapters

#### Office Products

1. Computers
2. Monitors
3. Photocopiers and fax machines
4. Digital duplicators
5. Multifunction printers/scanners/all-in-ones

#### Appliances

1. Refrigerators
2. Washing machines
3. Dishwashers
4. Freezers
5. Room air cleaners

#### Heating and Cooling

1. Room air conditioners
2. Windows
3. Dehumidifiers
4. Furnaces
5. Ceiling fans
6. Heat pumps
7. Boilers
8. Central air conditioners
9. Insulation
10. Ventilating fans
11. Water heaters