



Employees: Do You Know Your Carbon Footprint?

Calculating Your Carbon Contribution

From driving a car to working on a computer, the majority of the actions we perform everyday result in the production of greenhouse gases (GHGs). Unfortunately, these gases contribute to climate change and there are things we can do to take responsibility for what we can control, our personal carbon footprint. The Carbon Footprint calculator allows you to estimate your carbon footprint by calculating your carbon dioxide emissions. By reducing carbon dioxide emissions as a result of your activities, you can help slow the rate of GHG emissions and help keep the planet green.

EPA Carbon Footprint Calculator

The U.S. Environmental Protection Agency's Carbon Footprint Calculator is a simple tool to help you estimate your GHG emissions.

To calculate your carbon footprint go to: www.epa.gov/climatechange/ghgemissions/ind-calculator.html

Reducing Your Carbon Emissions

While many of our activities will continue to produce carbon dioxide emissions, we can make choices to reduce the amount of GHGs our activities produce. The Department of the Interior is committed to reducing GHG emissions and preserving the natural environment. There are things that you, as an employee, can do to reduce your carbon footprint and even save money along the way. Below are guides to help you reduce your carbon footprint:

[Home Energy Savings](#)

[Electronics and Appliances](#)

[Lighting](#)

[Climate-Friendlier Transportation](#)

[Waste Management](#)

[Water Conservation](#)



Carbon Footprint: Home Energy Savings

Heating, Ventilation, and Air Conditioning (HVAC) Systems

As much as 50% of your home's energy use goes to heating and cooling. There are many components that contribute to the energy efficiency of your home's HVAC system. These include the structure's "envelope," duct system, the type of furnace and air conditioning system, as well as maintenance, which is the responsibility of those of us living or working in the structure.

Air Filters

The purpose of an air filter is quite simple—to remove particles from the air. Filters are rated by their ability to remove particles. Filter efficiencies are measured using the ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) Dust Spot Rating.

To maintain the best possible air quality, homes should use either medium-efficiency pre-filters along with high efficiency surface filters (ASHRAE Dust Spot Rating of 85-95%) or high efficiency extended surface filters alone (ASHRAE Dust Spot Rating of at least 85%) without pre-filters. The latter is actually the most cost effective approach to minimizing energy consumption and maximizing air quality in modern HVAC systems used in home environments.

Filters require regular maintenance. As a filter gradually becomes clogged with particles, air flow through the filter is reduced. For many homes, the best choice filter is a medium efficiency, pleated filter as this type of filter has reasonable removal efficiency, and will last for a longer duration of time without high levels of clogging. Filters should be replaced every three months at a minimum.

Ducts

Ducts are an integral part of a forced-air system such as a furnace, heat pump, or central air conditioner, whose job is to circulate heated or cooled air evenly throughout a structure. Poorly performing ducts can leak conditioned air and reduce your system's efficiency by as much as 20%, by causing it to work harder to keep your indoor environment at a comfortable temperature. Ducts are commonly concealed in walls, ceilings, attics, basements, or crawl spaces, which can make them difficult to access and repair. The U.S. Environmental Protection Agency (EPA) recommends using a professional contractor for duct improvements. You can improve duct performance by sealing leaks and insulating them in attics and crawl spaces. This will improve your system's overall performance, your comfort, and indoor air quality.

Sealing and Insulation

Insulating a home's envelope can save up to 20% on heat and cooling costs, or up to 10% on a building's energy bill for the entire year. Different types of insulation include fiberglass (batt and blown forms), cellulose, rigid foam board, spray foam, and reflective insulation, also known as a radiant barrier. All of these insulation types are highly efficient. Insulation performance is measured by what is called an R-value, the insulation's ability to resist heat flow. A higher R-value indicates more insulating power. Different R-values are recommended for walls, attics, basements, and crawl spaces depending on a building's location in the country. For most attics, insulation is recommended to have an R-value of 38 (twelve to fifteen inches) and up to R-49 in the coldest climates.



Common Air Leaks—duct register; attic hatch; recessed lighting; plumbing vent stack; dropped soffit; vent fan; dryer vent; outdoor faucet; crawlspace; sill plate; top plate. It is important to examine these locations for possible air leaks.

ENERGY STAR (http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_sealing)

Temperature Controls Using a Programmable Thermostat

Room thermostats must be properly located in order to maintain thermal comfort. Problems may result if thermostats are located improperly. Homeowners should frequently check thermostats to assure that they are functioning properly.

- Do not install thermostat near heating or cooling registers, appliances, fireplaces, lighting, doorways, or areas that receive direct sunlight or drafts; instead, install them on interior walls.
- A programmable thermostat will help conserve energy.
- Change the batteries in the thermostat at least once each year if battery operated.

A programmable thermostat is ideal for people who are away from their homes for set periods of time throughout the week. There are a few models of this type of thermostat:

- 7-Day Model: This model is most appropriate for those whose schedules change on a daily basis. This model allows for maximum flexibility as it can be programmed differently for each day of the week with up to four temperature periods per day.
- 5 and 2-Day Models: This model is the best choice for individuals who work Monday through Friday. This model uses the same schedule during the week and a different schedule on Weekends.

Recommended Program for Thermostat Settings for a Home

Setting	Time	Winter Settings	Summer Settings
Wake	6:30 am	68° F	78° F
Day (Leave home)	8:30 am	Lower 8-10° F	Raise 8-10° F
Evening (Return home)	4:30 pm	68° F	78° F
Sleep	10:30 pm	Lower 8-10° F	Raise 8-10° F

For more Information:

“Heating and Cooling Efficiently.” ENERGY STAR. http://www.energystar.gov/index.cfm?c=heat_cool.pr_hvac
 “HVAC Systems and Indoor Air Quality.” EPA. http://www.epa.gov/iaq/largebldgs/pdf_files/appenb.pdf



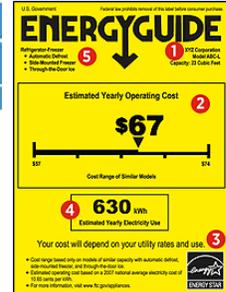
Carbon Footprint: Electronics and Appliances

Reducing Electronic Energy Consumption

From computers to washing machines, electronic appliances and devices utilize a lot of power and can drive up electricity bills. From changing everyday behavior to buying more efficient electronics, proper usage of electronic devices can greatly reduce energy consumption and save money.

Picking Energy Efficient Appliances

When you shop for an appliance, remember that there are two prices: the *price of the appliance* and the *cost to operate it*. It is recommended to purchase ENERGY STAR certified products. Not only do these products use less energy, they also cut the cost of your electricity bill, saving you money over time. Also, look for the yellow EnergyGuide label on appliances as it will provide an estimated yearly operating cost. The EnergyGuide label can help you to compare appliance[s] to purchase.



Tips for Efficient Usage

If you are not in need of replacing an electronic appliance, there are ways to reduce your energy usage.

Home Electronics Tips:

- Turn off all electronics (DVD player, TV, monitors) that are not in use.
- Turn down the brightness of your TV; it can cut power use by as much as 15%
- Use a power strip. Although an electronic device may be “off,” it is still using electricity. A power strip completely disconnects the device from the power source when it’s not in use.

Kitchen Appliance Tips:

- Be sure your dishwasher is full when you run it.
- Scrape, don’t rinse, off large pieces of food in order to save water and avoid multiple dishwashing.
- Avoid using the “rinse hold” cycle as it uses 3-7 gallons of hot water per cycle.
- Let dishes air dry.
- Do not set refrigerators and freezers too cold.
 - Recommended 37°-40°F for the fresh food compartment and 0° F for the freezer
- Make sure the refrigerator doors are sealed airtight.
- Cover food as the released moisture makes the refrigerator use more energy to cool it.

Laundry Tips:

- Wash clothes in cold water and use cold water detergent.
- Wash and dry full loads. Otherwise, adjust the water level setting.
- Consider air drying on a clothesline or drying rack. Some clothing manufacturers recommend it.
- Clean the lint screen after every dryer load to improve air circulation and prevent fire hazards.

Computer Power Management

Controlling the power management settings on each individual computer ensures as much energy efficiency as possible. Most computer operating systems are equipped with ENERGY STAR settings. If you are able to control the personal settings on your computer(s), try the following power management settings to conserve energy.

EPA Power Management settings include the following power profiles for optimal energy usage:

- Turn off Monitor = 5 minutes of inactivity;
- Turn off Hard Disk = 10 minutes of inactivity;
- Standby = 15 minutes of inactivity;
- For assistance with adjusting your computer power management settings, visit http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_users.

Recycling Electronic Products

When replacing a computer, TV or other electronics, it is highly recommended to recycle the old electronic device as it contains many toxic components.

The Department of the Interior offers a small electronics recycling program with the US Postal Service. More information can be found at <https://sites.google.com/a/ios.doi.gov/usps-federal-recycling-program/>.

The program is divided into two major categories:

- 1) Recycling programs on a national level for official federal agency equipment at the agency's location is generally coordinated through the agency's property managers. Please contact property managers for additional information before recycling official equipment.
- 2) A recycling program for federal agency employees' disposal of their employee owned property from home. If the employees owned electronic property is marketable and can be remanufactured, then the employee will be given an offer for the device and provided with an estimated date of payment.

These US Postal Service services are free to use.

The web link for reporting electronics for recycling is at <http://BlueEarth.USPS.gov>.

The website is simple to use to report electronics for recycling. Report the number and type of devices; write down the USPS tracking number provided and the serial number for each device for future reference, print out the USPS shipping labels. Use any available box. Tape it up. Place the shipping label on the package. Multiple items can be shipped in a box, but you must keep the weight for each box under 70 pounds.

The US Postal Service will pick up the package from your home where USPS delivers or picks up mail.

For More Information:

“Save Energy at Home.” ENERGY STAR.

http://www.energystar.gov/index.cfm?c=products.pr_save_energy_at_home

“Tips: Home Office and Electronics.” Department of Energy.

<http://energy.gov/energysaver/articles/tips-home-office-and-electronics>

“Tips: Kitchen Appliances.” Department of Energy.

<http://energy.gov/energysaver/articles/tips-kitchen-appliances>

“Tips: Laundry.” Department of Energy.

<http://energy.gov/energysaver/articles/tips-laundry>

“Tips: Shopping for Appliances.” Department of Energy.

<http://energy.gov/energysaver/articles/tips-shopping-appliances>

“Tips: Electronic Product Recycling.” EPA.

<http://www.epa.gov/epawaste/conserve/materials/ecycling/donate.htm>.



Carbon Footprint: Lighting

Energy Efficient Lights

Use of energy efficient lighting in the home can increase productivity and reduce energy consumption. One no-cost way to improve lighting is to use natural daylight from windows and skylights. However, if additional light is needed, you can take advantage of the new energy-efficient lighting options available. The energy to power traditional incandescent bulbs costs 5 to 10 times the original purchase price of the bulb itself. Newer alternatives to incandescent bulbs, such as Compact Fluorescent Lights (CFL) and Light Emitting Diode (LED) bulbs, have revolutionized energy-efficient lighting.

Compact Fluorescent Lights (CFL)

CFLs are simply miniature versions of full-sized fluorescents. They fit standard lamp sockets, and give off light that looks just like the common incandescent bulbs. They give off a warm, inviting light instead of the "cool white" light of older fluorescents. The new electronically ballasted CFLs don't flicker or hum, either.



Efficiency: CFLs produce just as much light, use 50 - 80% less energy, are four times more efficient, and last up to 10 times longer than incandescent bulbs.

Cost: Although initially more expensive, there are cost savings in the long run because CFLs use 1/3 the electricity and last up to 10 times as long as incandescent bulbs. A single 18 watt CFL used in place of a 75 watt incandescent will save about 570 kWh over its lifetime. At 8 cents per kWh, that equates to a \$45 savings!

Reduced Air and Water Pollution: Replacing a single incandescent bulb with a CFL will keep a half-ton of CO₂ out of the atmosphere over the life of the bulb.

Versatile: CFLs can be applied nearly anywhere that incandescent lights are used, inside and outside. However, cold temperatures may reduce the lighting level and life span of the bulb. Specially designed CFLs can be used for recessed lighting and dimmable applications.

Special Handling / Disposal: CFL bulbs contain a small amount of mercury which is released when the bulb is broken. Special care must be taken if the bulb is broken. Dispose of burned out bulbs at your local recycling center or be dropped off at Home Depot, Lowes, or other large home improvement stores.

Light Emitting Diode (LED)

LEDs are small, solid light bulbs which are extremely energy-efficient. New LED bulbs are grouped in clusters which have broadened the applications for LED use in the home. Recent improvements in manufacturing have lowered the cost of LEDs, which has expanded their application.

Efficiency: LEDs use a fraction of the wattage of incandescent bulbs. They last 10 times as long as compact fluorescents and 133 times longer than a typical incandescent! They also do not cause heat build-up and save money in maintenance and replacement costs because the bulbs last for years.



Cost: Although the cost keeps going down, LEDs are still priced higher than CFLs and incandescent bulbs. However, the cost is recouped over time in energy savings and the reduced frequency of replacing the bulbs. It can take as little as 2 years for an LED light bulb to recover its cost, and LED light bulbs' lifespans can reach up to 15 years.

Versatile: LEDs are available for use in standard and dimmable applications. LEDs are extremely durable. Look for Energy Star®, UL, and FCC product certifications to ensure high quality bulbs.

Special Handling / Disposal: No special handling or disposals are required with LEDs.

For More Information:

“Tips: Lighting” Department of Energy. <http://energy.gov/energysaver/articles/tips-lighting>



Carbon Footprint: Climate-Friendlier Transportation

Going From Point A to Point B with Less Pollution

With over 250 million cars and thousands of airplane flights in the United States, we are a nation of travelers. Unfortunately, transportation is also one of the biggest contributors of greenhouse gas (GHG) emissions. Fortunately, there are ways to reduce amount of pollution we create without sacrificing our mobility.

Driving Tips

- Reduce weight – having an extra 100lb in your car reduces fuel economy by up to 2%.
- Drive sensibly – aggressive driving uses more fuel. Rapid acceleration and braking reduces gas mileage and can burn an extra 125 gallons of gas per year.
- Slow down – at high speeds, exceeding the speed limit by a mere five miles per hour results in an average fuel economy loss of 6%.
- Avoid idling – idling for more than 10 seconds uses more fuel and produces more carbon dioxide than restarting the engine.

Car Maintenance Tips

- Keep your car tuned up – it can save up to 165 gallons of gas and over \$400 annually.
- Keep tires inflated and aligned – low tire pressure and improper tire alignment wastes over 2 million gallons of gasoline in the United States each day. Save about a tank of gas a year by keeping your tires properly inflated.
- Use the right oil – thicker than required oil will reduce your gas mileage.

Tips to Reduce Driving

- Share a ride – carpool and use public transportation when possible. You will save money, reduce congestion, and reduce your personal GHG emissions.
- Just park it – if you're going to a nearby location, walk or bike instead.
- Use shades – during the summer, park in the shade. Use windshield shades to keep summer heat from baking your car and to help keep frost away in the winter.
- Move your feet – walk, ride a bike, or take the train when your car is not necessary.
- Avoid the rush – plan trips during off hours when fewer cars are clogging the roads.
- Combine Trips – make one big trip for all of your errands instead of several small trips.

Tips When Traveling

- Pack lightly – every 15 lbs of luggage on a 5,000 mile flight adds 50 lbs of carbon dioxide emissions.
- Choose a non-stop flight and fly during the day to reduce environmental impact.
- Use public transportation where possible.
- Try staying at environmentally friendly hotels and eat at local restaurants.

For More Information:

“Gas Mileage Tips.” *Department of Energy*. <http://www.fueleconomy.gov/feg/drive.shtml>

“Save Money at the Pump.” *Federal Trade Commission*.

<http://www.ftc.gov/bcp/edu/microsites/energysavings/savegas/flash.html>



Carbon Footprint: Waste Management

Reduce, Reuse, Recycle

Every day, we produce a lot of waste, some of which is unnecessary. In addition, much of the waste we produce does not have to end up in a landfill; it can be reused or recycled into other products. By reducing, reusing and recycling, we can help reduce unnecessary waste disposal and save money.

Benefits of Reducing and Reusing

- Saves natural resources – waste is not spontaneously created, but it is the result of usage. By reducing waste, we are managing resources more effectively. As a result, the demands for natural resources will be much less and the planet's resources will be used more efficiently.
- Reduces toxicity of waste – using nonhazardous or less hazardous items is a method of pollution prevention. By reducing the amount of toxic materials used, we prevent them from going to the landfill and harming the environment.
- Reduces costs – what is good for the environment can be good for the pocket as well. By reducing and reusing, we can eliminate the need to continuously buy new products.

Benefits of Recycling

- Reduces the need for landfills and incineration.
- Conserves natural resources such as timber, water, and minerals.
- Decreases emissions of greenhouse gases that contribute to global climate change.
- Prevents pollution caused by the manufacturing of products from virgin materials.
- Helps sustain the environment for future generations.
- Saves energy.

Steps to Recycling a Product

- Contact or visit your local recycling center (call 1-800-CLEANUP to find the nearest center) and then set up your recycling bins accordingly.
- Understand what you can and can't recycle from your recycling center,
- Put bins in place – Once you know your local recycling center's collection policy, place products in the proper bin
- Keep it convenient and consistent: the easier it is for you and your family to recycle, the more it will happen. Keep recycle bins next to trash cans to avoid runarounds.

Composting

Composting is a convenient, beneficial and inexpensive way to handle organic waste and help the environment. It reduces the volume of garbage, enriches soil and saves money. The following is a list for different types of composting:

- Backyard or onsite composting
- Vermicomposting
- Aerated (Turned) Windrow Composting
- Aerated Static Pile Composting

- In-Vessel Composting

To learn more about composting and how to properly make compost, visit the EPA website at <http://www2.epa.gov/recycle/composting-home>.

For More Information:

“Reduce, Reuse Recycle.” US Environmental Protection Agency. <http://www2.epa.gov/recycle>

“Earth 911.” <http://earth911.com/>



Carbon Footprint: Water Conservation

Protecting Our Water for the Future

With the US population increasing every year, the demand for water is increasing as well, and many states are facing water shortages. Therefore, it is crucial to reduce water usage to ensure future generations have access to clean water.

Toilets—*Low Flow, High-Efficiency*

Toilet use is the largest portion of indoor water used in a household. In 1992, Congress passed legislation requiring that all toilets sold in the United States be more efficient. A change to high-efficiency toilets reduces water use by more than 50% and total indoor water use by approximately 16%. It is recommended to replace toilets that are more than eighteen years old with new, high-efficiency models.

If something prevents you from being able to install a low-flow, high-efficiency toilet(s) in your home, try the following tips to reduce water usage from your current toilet(s):

1. Check toilets for leaks: Put a few drops of food coloring in your toilet tank. If, without flushing, the color appears in the bowl within thirty minutes, you have a leak that should be repaired.
2. Create a dam in your toilet: To reduce water waste, put an inch or two of sand or pebbles inside two plastic bottles to weigh them down. Fill the bottles with water and put them in your toilet tank, safely away from the operating mechanisms. Or, buy an inexpensive tank bank float booster. This may save ten or more gallons of water per day. Be sure at least three gallons of water remain in the tank so it will flush properly to prevent the need for multiple flushes.
3. Check to make sure that your toilet's flapper valve doesn't stay open after flushing.

Reducing Faucet Water Usage

If it is not possible to replace the faucets in your home with water saving models, try the following tips to conserve water in the bathroom and in the kitchen:

- Install aerators. This could save as much as one gallon every minute that faucets are in use.
- Turn the faucet off while lathering up hands and brushing teeth.
- Place a pitcher of water in the refrigerator instead of letting the tap run to get a cool drink.
- Select one glass to use for drinking each day. If you do this, your dishwasher will take longer to fill up, and it will not need to be run as frequently.
- Thaw foods in the refrigerator or in a bowl of cold water instead of using running water.
- Let pots and pans soak instead of letting the water run while you clean them.
- Scrape the food on your dishes into the garbage or compost bin instead of using water to rinse.
- When washing dishes by hand, use the least amount of detergent to minimize water usage.

Reducing Outdoor Water Use

- Use a rain barrel, where state or local jurisdictions allow, to capture runoff from the roof and store the water for later landscaping use.
- Opt for drip irrigation instead of sprinklers in gardens and flower beds.
- Inspect sprinklers for leaks and check that they spray the landscape, not roads or sidewalks.
- Use regionally appropriate, native plants; they require little water beyond regular rainfall.

- Use timers on sprinklers to avoid overwatering.

For More Information:

“WaterSense.” Environmental Protection Agency. <http://www.epa.gov/watersense/>