

fact sheets

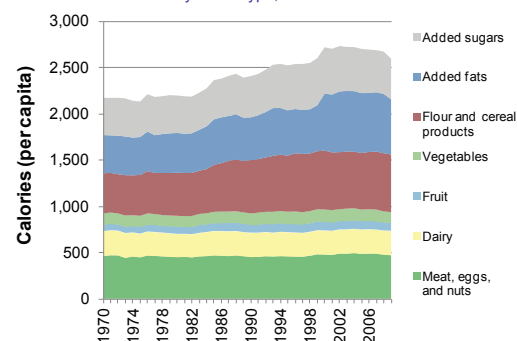
U.S. Environmental Footprint

The U.S. population is expected to grow from 314 million in 2012 to 370 million by 2030.¹ Pressure on the environment will increase unless consumption patterns are significantly adjusted to account for the limited natural resource base. A suite of Factsheets expanding on the topics below are available at: < <http://css.snre.umich.edu/publications/factsheets> >.

Food

- The average American's daily Calorie consumption increased from 2,169 in 1970 to 2,594 in 2009.²
- In 2003, the average American consumed 46 gallons of soft drinks - a 330% increase since 1947. Over this same period, per capita milk consumption decreased 45%, down to 22 gallons per year.³
- The average American consumes about 30 teaspoons of added sugars and sweeteners per day – more than triple the recommended amount.⁴
- U.S. per capita consumption of fats added to food (not naturally present) increased by 53% between 1970 and 2008.²
- More than 73% of U.S. adults are overweight or obese (body mass index of 25 or more), and nearly 20% of children age 6-19 are obese.⁵
- 26% of available edible food is wasted at the consumer level.⁶

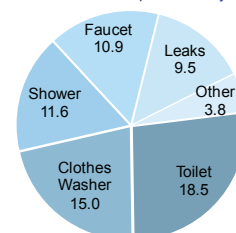
U.S. Daily Per Capita Calorie Intake²
by Food Type, 1970-2009



Water

- In 2005, total water withdrawals in the U.S. for all uses were estimated to be 410 billion gallons per day. The biggest users are thermoelectric power (49%) and irrigation (31%).⁷
- Water use per person was roughly 44% higher in western states than eastern states in 2005, mostly due to crop irrigation in the west.⁷
- Domestic water use was less than 12% of total water use in 2005.⁷
- The average American household uses nearly 70 gallons of water per person per day for bathing, cleaning, and other uses at home (see figure on right). Households with more efficient fixtures and no leaks could drop to their use to 45 gallons per person per day.⁸

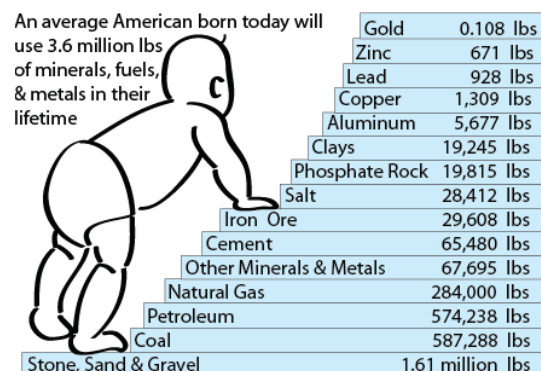
U.S. Household Water Use
Gallons Per Capita Per Day⁸



Material Use and Waste Management

- In 2000, the per capita consumption of all materials in the United States was 23.7 metric tons, 52% more than the European average.¹⁰
- In the last century, raw material consumption (non-fossil fuel or food) increased 5.1 times faster than population.¹¹
- In 2010, the average American generated 4.43 lbs of municipal solid waste (MSW) each day, with only 1.51 lbs recovered for recycling or composting.¹² (For comparison, MSW generation rates (lbs/person/day) are 2.42 in Canada, 3.5 in Germany, and 3.44 in the UK.)¹³
- In 2010, 34% of MSW generated in the U.S. was recovered for recycling or composting, diverting 85 million tons of material from landfills and incinerators – more than double the value from 1990.¹²
- More than 9,000 curbside recycling programs serve 71% of the U.S. population. A greater percentage of people are served in the Northeast than other regions.¹²

Average American Lifetime Material Consumption⁹



¹ U.S. Census Bureau (2012). "U.S. and World Population Clocks" and (2008) "US Population Projections."

² U.S. Department of Agriculture (2012) "Loss-Adjusted Food Availability"

³ USDA Economic Research Service (2011). "Beverages: Per capita availability."

⁴ USDA Economic Research Service (2008), Food Availability (Per Capita) Data System. Dietary Assessment of Major Trends in U.S. Food Consumption, 1970-2005.

⁵ Centers for Disease Control and Prevention (2010) FastStats, <http://www.cdc.gov/nchs/fastats/overwt.htm>.

⁶ Heller, M.C. and G.A. Keoleian (2000) *Life Cycle-Based Sustainability Indicators for Assessment of the U.S. Food System* (CSS00-04).

⁷ Kenny, Joan F. et al. (2009) *Estimated Use of Water in the United States in 2005*. U.S. Geological Survey, Circular 1344

⁸ American Water Works Association (2008) "Water Use Statistics"

⁹ Mineral Information Institute (2008) "MII Baby" <http://www.mii.org/>.

¹⁰ World Resources Institute (2008) *Material Flows in the United States: A Physical Accounting of the U.S. Industrial Ecology*.

¹¹ U.S. Geological Survey (2007) *Effects of Regulation and Technology on End Uses of Nonfuel Mineral Commodities in the United States*.

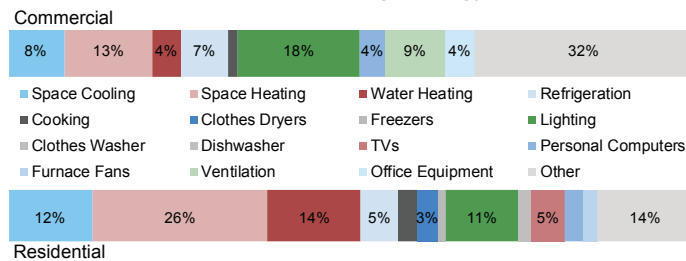
¹² U.S. Environmental Protection Agency (2011) *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010 and Tables and Figures for 2010*.

¹³ Organization for Economic Co-operation and Development (2010) *Factbook 2010: Municipal Waste*.

Residential and Commercial Buildings

- From 1950 to 2011 in the U.S., average residential living trends have been toward bigger homes and fewer occupants:^{14,15}
 - Number of occupants per house decreased by 23%
 - Single occupant homes increased from 9% to 26%
 - Living space per person increased by 229%
 - Home size increased by 152%
- Significant energy savings could be realized by better insulating residential buildings to reduce the space heating and cooling loads, by utilizing energy efficient appliances, and using more efficient lighting in commercial buildings (see figure on right).
- In commercial buildings, average site energy intensity per sq foot decreased by 21% between 1979 and 2003, from 115,000 BTU/sq ft to 91,000 BTU/sq ft.¹⁷
- The amount of U.S. land converted to urban purposes (e.g. from agriculture or forest) increased by 48% from 1982-2003.¹⁸

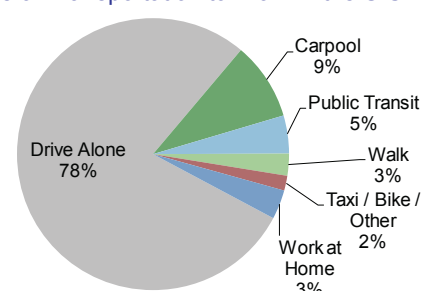
Residential and Commercial Buildings Energy Distribution, 2009¹⁶



Transportation

- In 2010 the U.S. had 242 million vehicles - 32 million more than licensed drivers.²⁰
- Drivers traveled nearly 3 trillion vehicle-miles in the U.S. in 2010, a 40% increase since 1990. This is equivalent to more than 6 million round-trips to the moon.²⁰
- Compared to 1987 models, the average 2011 vehicle's weight increased by 27%; horsepower increased by 93%; and acceleration increased (0-60 mph times dropped 29%). Fuel economy just surpassed 1987 levels in 2009, after declining for many years.²¹
- The average vehicle occupancy for a passenger car is 1.67, compared to 26.6 for an intercity bus. Although the fuel economy of the bus is lower, the average car uses 3.5 times the energy per occupant-mile.²²
- Congestion is a worsening urban problem, causing an additional 4.2 billion hours of travel time and 2.9 billion gallons of fuel use by urban Americans in 2007.²³

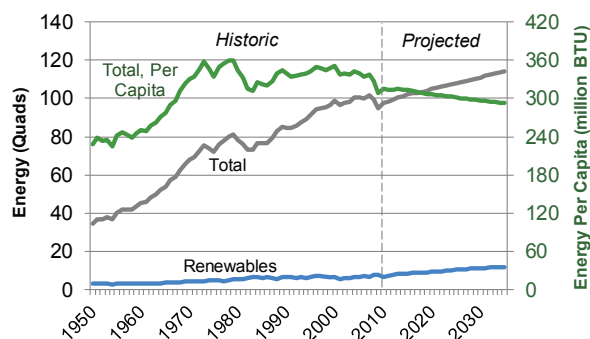
Modes of Transportation to Work in the U.S.¹⁹



Energy

- In 2010, the U.S. spent about \$1.2 trillion on energy, or 8.3% of GDP. Spread over the population, annual costs were \$3,895 per person.¹⁷
- More U.S. energy comes from petroleum than any other source.¹⁷
- Each day, the U.S. per capita energy consumption includes 2.5 gallons of oil, 18 pounds of coal, and 214 cubic feet of natural gas. Residential daily consumption of electricity is 12.5 kilowatt-hours (kWh) per person.¹⁷
- With less than 5% of the world's population, the U.S. consumes 20% of the world's energy and accounts for 21% of world GDP. (To compare, the European Union has 7% of the world's population, uses 16% of the world's energy, and accounts for 25% of world GDP; China has 19% of the world's population, consumes 17% of the world's energy, and accounts for 10% of its GDP).²⁴

U.S. Energy Consumption: Historic and Projected^{16,17}

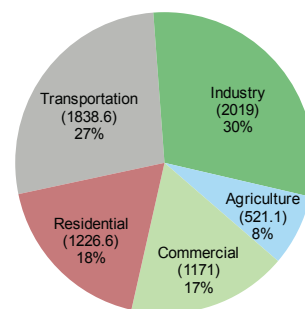


Greenhouse Gases (GHG)

By choosing energy efficient appliances and lighting to reduce electricity consumption, and making smart transportation choices, every individual can immediately help reduce the greenhouse gas emissions they are responsible for. Reduce your footprint!

- In 2010, U.S. GHG emissions were 22 metric tons CO₂-Equivalence per person.²⁵
- From 1990-2010, total annual U.S. GHG emissions increased by 10.5%. The GHG emissions from electricity generation – one third of the U.S. total – are allocated to sectors in the figure according to their electricity consumption.²⁵
- In 2007, the Intergovernmental Panel on Climate Change concluded that “most of the observed increase in global average temperatures since the mid-20th century is very likely (> 90% certainty) due to the observed increase in anthropogenic greenhouse gas concentrations.”²⁶

U.S. GHG Emissions, 2010
(Million Metric Tons CO₂-Equivalence)²⁵



¹⁴ U.S. Census Bureau (2011) Current Population Survey, 2011 Annual Social and Economic Supplement

¹⁵ U.S. Census Bureau (2012) 2011 Characteristics of New Housing.

¹⁶ EIA (2011) Annual Energy Outlook 2011.

¹⁷ EIA (2012) Annual Energy Review 2011.

¹⁸ USDA NRCS (2009) Natural Resources Inventory 2007 Annual NRI.

¹⁹ U.S. Census Bureau (2008) American Housing Survey for the US: 2007.

²⁰ U.S. Department of Transportation/Federal Highway Administration (2012) Highway Statistics 2010. and CSS calculation.

²¹ U.S. Environmental Protection Agency (2012) Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2011.

²² U.S. Department of Energy, Oak Ridge National Lab (2011 and 2003) Transportation Energy Data Book: Edition 30 and Edition 22 and Greyhound Annual 10-K Filing Report for 2002

²³ Schrank, D., Lomax, T. (2009) The 2009 Urban Mobility Report. Texas Transportation Institute.

²⁴ CIA (2012) The World Factbook and EIA (2011) International Energy Outlook 2011

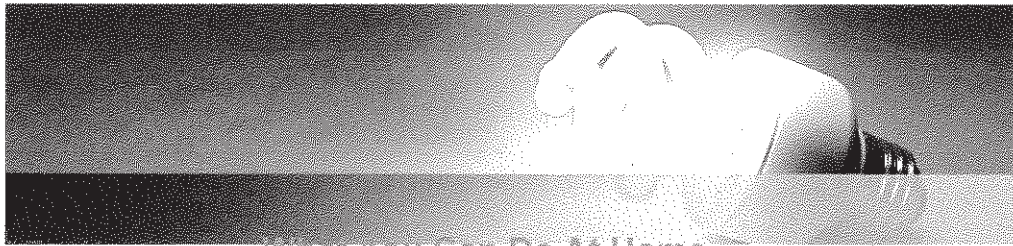
²⁵ U.S. EPA (2012) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2010.

²⁶ IPCC (2007) Climate Change 2007: The Physical Science Basis. Intergovernmental Panel on Climate Change; Eds. S. Solomon et al.; Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA



<http://www.epa.gov/climatechange/wycd/home.html>

Climate Change At Home



Making a few small changes in your home and yard can reduce greenhouse gases and save you money. Explore our list of 10 simple steps you can take to reduce greenhouse gas emissions:

1. Change five lights

Replace your five most frequently used [light fixtures](#) or the [lightbulbs](#) in them with [ENERGY STAR®](#) qualified products and you will help the environment while saving \$70 a year on energy bills. [ENERGY STAR](#) lighting provides bright, warm light; generates 75% less heat; uses about 75% less energy than standard lighting; and lasts from 10 to 50 times longer.

2. Look for ENERGY STAR

When buying new products for your home, look for EPA's [ENERGY STAR](#) label to help you make the most energy-efficient decision. You can find the [ENERGY STAR](#) label on more than 60 kinds of products, including appliances, lighting, heating and cooling equipment, electronics, and office equipment. Over their lifetime, products in your home that have earned the [ENERGY STAR](#) label can reduce greenhouse gas emissions by about 130,000 pounds and save you \$11,000 on energy bills.

3. Heat and cool smartly

Heating and cooling accounts for almost half your energy bill—about \$1,000 a year! There is a lot you can do to drive down this cost. Simple steps like changing air filters regularly, properly using a programmable thermostat, and having your heating and cooling equipment maintained annually by a licensed contractor can save energy and increase comfort, while helping to protect the environment. Depending on where you live, you can cut your annual energy bill by more than \$200 by replacing your old heating and cooling equipment with [ENERGY STAR](#)-qualified equipment.

4. Seal and insulate your home

Reduce air leaks and stop drafts by using caulk, weather stripping, and insulation to seal your home's envelope and add more insulation to your attic to block out heat and cold. A knowledgeable homeowner or skilled contractor can save up to 20% on heating and cooling costs and significantly enhance home comfort with comprehensive sealing and insulating measures.

5. Reduce, reuse, recycle

Reducing, reusing, and recycling in your home helps conserve energy and reduces pollution and greenhouse gas emissions from resource extraction, manufacturing, and disposal. If there is a recycling program in your community, recycle your newspapers, beverage containers, paper, and other goods. Also, composting your food and yard waste reduces the amount of garbage that you send to landfills and reduces greenhouse gas emissions. Visit EPA's [Individual WASTE Reduction Model \(iWARM\)](#) to learn about the energy benefits of recycling, rather than landfilling, common waste products.

Related Links

- [ENERGY STAR](#)
- [EPA's Reduce, Reuse, and Recycle](#)
- [EPA's WaterSense program](#)
- [EPA's GreenScapes program](#)
- [EPA's Household Emissions Calculator](#)

[Printable Version: What You Can Do at Home \(PDF\)](#) (1 pg., 216 KB, [About PDF](#))

Did You Know?

By replacing the five most frequently used lights in your home with [ENERGY STAR](#) qualified lighting, you can save more than \$60 each year in energy costs. If every US household replaced their five highest-use fixtures, or the bulbs in them, with [ENERGY STAR](#) qualified models, the change would prevent the greenhouse gas emissions equivalent to the annual emissions from more than 10 million cars.

6. Use water efficiently

It takes lots of energy to pump, treat, and heat water, so saving water reduces greenhouse gas emissions. Saving water around the home is simple. Three percent of the nation's energy is used to pump and treat water so conserving water conserves energy that reduces greenhouse gas pollution. Reduce the amount of waste you generate and the water you consume whenever possible. Pursue simple water-saving actions such as not letting the water run while shaving or brushing teeth and save money while conserving water by using products with the [WaterSense](#) label. Did you know a [leaky toilet](#) can waste 200 gallons of water per day? Repair all toilet and faucet leaks right away. Running your dishwasher only with a full load can save 100 pounds of carbon dioxide and \$40 per year. Be smart when irrigating your lawn or landscape. Only water when needed, and do it during the coolest part of the day; early morning is best. See [EPA's WaterSense site](#) for more water saving tips.

7. Be green in your yard

Composting your food and yard waste reduces the amount of garbage that you send to landfills and reduces greenhouse gas emissions. EPA's GreenScapes program provides tips on how to improve your lawn or garden while also helping the environment.

8. Purchase green power

Power your home by purchasing green power. [Green power](#) is environmentally friendly electricity that is generated from renewable energy sources such as wind and the sun. There are two ways to use green power: You can buy green power, or you can modify your house to generate your own green power. [Buying green power is easy](#). It offers a number of environmental and economic benefits over conventional electricity, including lower greenhouse gas emissions, and it helps increase clean energy supply. There are a number of steps you can take to create a [greener home](#), including [installing solar panels](#) and researching [incentives for renewable energy in your state](#).

9. Calculate your household's carbon footprint

Use EPA's [Household Greenhouse Gas Emissions Calculator](#) to estimate your household greenhouse gas emissions resulting from energy use, transportation, and waste disposal. This tool helps you understand where your emissions come from and identify ways to reduce them.

10. Spread the word

Tell family and friends that energy efficiency is good for their homes and good for the environment because it lowers greenhouse gas emissions and air pollution. Tell five people and together we can help our homes help us all.

WCMS

Last updated on Thursday, June 14, 2012

Home Energy Checklist

Every home has potential areas to reduce energy usage and save money. The following is a simple checklist of energy conservation/efficiency measures you can do right now. Start today and see how many of these items you can check as DONE!

- ☐ **Turn down the temperature of your water heater** to the warm setting (120°F). You'll not only save energy, you'll avoid scalding your hands.
- ☐ Check if your water heater has an **insulating blanket**. An insulating blanket will pay for itself in one year or less!
- ☐ Heating can account for almost half of the average family's winter energy bill. Make sure your furnace or heat pump receives professional maintenance each year. And look for the **ENERGY STAR®** label when replacing your system.
- ☐ Survey your incandescent lights for opportunities to replace them with **compact fluorescents (CFLs)**. These new lamps can save three-quarters of the electricity used by incandescents. The best targets are 60-100 W bulbs used several hours a day.
- ☐ **Turn off the lights** in unoccupied rooms or consider installing timers, photo cells, or occupancy sensors to reduce the amount of time your lights are on.
- ☐ Install a **programmable thermostat** that can be adjusted to temperatures according to your schedule.
- ☐ **Upgrade leaky windows**. It may be time to replace them with energy-efficient models or to boost their efficiency with weatherstripping and storm windows. The typical home loses more than 25 percent of its heat through windows.
- ☐ Are **insulating curtains** in place? During winter, open curtains on your south-facing windows during the day to allow sunlight to naturally heat your home, and close them at night to reduce the chill you may feel from cold windows.
- ☐ **Clean or replace filters** in your furnace, air-conditioner, and heat-pump. Check them once per month.
- ☐ **ENERGY STAR® labeled products** can cut your energy bills by up to 30 percent. Find retailers near you at <http://www.energystar.gov/> when you are ready to replace your appliances, lighting, windows, office equipment, and home electronics.
- ☐ Are **ceiling and walls insulated**? In our region, DOE recommends: R-38 to R-49 in ceilings, R-18 in walls, R-11 on concrete foundation walls, and R-19 in crawl space.
- ☐ **Seal air leaks**. Caulk leaky windows & doors and around openings in the wall and floors, such as pipe penetrations. Check for cracks in walls and foundation.
- ☐ **Vacuum dust off your refrigerator coils**. Heavy dust accumulations on these coils can increase energy usage by 30%. Check once per month for dust accumulations and clean as needed.
- ☐ **Insulate your hot water pipes** to prevent heat loss.
- ☐ **Insulate heating ducts in unheated areas**, such as attics and crawlspaces. Keeping ducts in good repair can prevent heat loss of up to 60 percent at the registers.
- ☐ **Close registers & doors of infrequently used rooms**. Leaving infrequently used rooms unheated will reduce heating bills.
- ☐ **Reduce your air conditioning costs by planting shade trees and shrubs** around your house—especially on the west side.
- ☐ **Collect your utility bills**. Separate electricity and fuel bills. Target the largest energy consumer or the largest bill for energy conservation measures.

These tips were taken from the *Consumer Guide to Home Energy Savings with additions by EJ Shen*. For additional information on home energy conservation/efficiency measures, visit the [Consumer Energy Center](#) and the [Home Energy Saver Answer Desk](#). 12/5/07