

# The Wall Street Journal

November 12, 2007

## A CONSUMER'S GUIDE TO GOING GREEN

**How much energy do you save by switching light bulbs? Should you replace your refrigerator? We answer these and other commonly asked questions about what you can do to make an environmental difference.**

By REBECCA SMITH

*November 12, 2007; Page R1*

We hear the message day in and day out: It's time to go green. But figuring out where to start can be daunting.

When you look for advice, you often find wildly impractical schemes about remaking your entire life to reduce your "carbon footprint." Or you end up having to sort through heaps of perplexing statistics about power usage and efficiency.

Meanwhile, it can be tough to track down what most people actually need: a clear statement of the carbon consequences of, say, switching your light bulbs. And you'll rarely find out if you'll save enough on your energy bills to recover the cost of buying new appliances or changing your habits.

With that in mind, here are some answers to some commonly posed questions about what to do -- and what not to do -- to get greener.

### • WHAT ARE THE SIMPLEST -- AND CHEAPEST -- THINGS I CAN DO TO CUT EMISSIONS?

The most important thing to remember as you're getting started is that you don't have to change your whole life to make a difference.

"You can go crazy and get lost in the details and completely miss the point that every little bit helps," says Carl Zichella, regional director in Sacramento, Calif., for the Sierra Club.

So where do you start? Here are just a handful of things that may be obvious -- and yet so many people don't do them. Heat or cool your home less. Drive or fly fewer miles. Run electrical equipment less and use less water since pumping water takes a lot of electricity. Buy more locally grown foods and goods that are manufactured nearby; they're typically

made with cleaner U.S. manufacturing processes, and companies use less fuel to transport them.

Plus, buy the most energy-efficient devices you can afford. For instance, look for appliances with the Environmental Protection Agency's Energy Star label. Since the program started in 1992, the EPA says, it has helped Americans save \$14 billion on energy bills and cut emissions equivalent to those of 25 million vehicles. The EPA now includes more than four dozen types of products in the program, everything from DVD players to air conditioners.

The EPA has a useful calculator ([www.epa.gov/climatechange/wycd/calculator/ind\\_calculator.html](http://www.epa.gov/climatechange/wycd/calculator/ind_calculator.html)<sup>11</sup>) that allows you to create a customized plan for reducing your environmental impact.

**• I'D LIKE TO START SMALL. HOW MUCH ENERGY CAN YOU REALLY SAVE WITH LIGHT BULBS?**

A lot. A 25-watt compact fluorescent produces about as much light as a 100-watt conventional bulb but uses only one-quarter of the electricity. Because of that, the Environmental Protection Agency estimates that the average 25-watt compact fluorescent will save the equivalent of 100 pounds of carbon dioxide per year. That's about as much as a car generates driving 93 miles, assuming it gets a typical 23.9 miles per gallon.

And compact fluorescents won't cost you an arm and a leg. In California, for instance, utility rebates and volume discounts have driven down the cost of a four-pack of 25-watt compact fluorescents to about \$2 -- versus \$40 or more for the 100-watt equivalents in 1999. Prices have gotten so low that some compact fluorescents pay for themselves in energy savings the first month.

**• IT SEEMS LIKE MY REFRIGERATOR IS A BIG ENERGY HOG, BUT IT'S SUCH A COSTLY ITEM TO REPLACE. WHEN DOES IT MAKE SENSE TO BUY A NEW ONE, AND SHOULD I PAY EXTRA FOR AN ENERGY STAR MODEL?**

First, let's clear up a misperception. Compared with other household systems, refrigerators don't use that much electricity. In fact, they account for only 8% of an average household's annual electricity use, behind items such as water heating (13%). And they're dwarfed by real hogs like climate-control systems (45%).

With that in mind, here's a rough guide to replacing your fridge: If your unit was manufactured before 1993, it's probably time to make the move. Today's Energy Star models are twice as efficient as the average older unit, according to the EPA, and will make up for their higher initial cost within five years. In places where energy costs are high, they may completely pay for themselves in energy savings within 10 years. On average, you'll likely save \$40 to \$90 annually in electricity bills.

Plus, a new unit that uses half the power of an older unit is responsible for about half the greenhouse-gas emissions. Of course, the actual environmental impact depends on where

you live. States with a lot of coal-fired power plants have higher carbon-dioxide emissions per kilowatt-hour of power consumed than states that rely more heavily on nuclear power, hydroelectricity or natural-gas-fired plants.

• HOW MUCH ENERGY CAN I SAVE BY TURNING DOWN MY THERMOSTAT ON WINTER NIGHTS?

A rule of thumb is that a two-degree reduction in the temperature setting on your furnace cuts energy use by 1%, the EPA says. Moreover, houses that are well sealed and insulated, including heat ducts, use less energy because the furnace doesn't have to run as hard.

You might also consider replacing an old furnace. Replacing a 1980s furnace with an Energy Star model costing \$4,000 could produce \$3,269 in net savings for a New England family, according to an EPA calculator at [energystar.gov/index.cfm?c=furnaces.pr\\_furnaces](http://energystar.gov/index.cfm?c=furnaces.pr_furnaces)<sup>12</sup>. The move would also cut lifetime carbon dioxide emissions by 96,450 pounds -- equivalent to the output of a car for 10 years.

• I DRIVE A GAS HOG BUT I CAN'T AFFORD A HYBRID. ANY OTHER OPTIONS I SHOULD CONSIDER?

If you want to cut emissions from your car, the simplest answer is just to drive less and walk or use public transportation, when you can. If you must drive, you could carpool as much as possible.

But if you think a new car is warranted, look for one with better fuel economy -- even small steps are meaningful. Every increase in fuel economy of one mile per gallon cuts carbon-dioxide emissions by an estimated 272 pounds per year, according to the government. (Remember, a car with 23.9 gas mileage puts out 0.93 pound of carbon dioxide per mile.)

With gas hovering at about \$3 a gallon, there's also the obvious financial benefit. After all, going from 15 miles per gallon to 20 miles per gallon means a 15-gallon tank of gas goes 300 miles instead of 225 miles -- a 33% improvement.

There are several handy online calculators to help you make your choice. For instance, there's [www.fueleconomy.gov](http://www.fueleconomy.gov)<sup>16</sup>, a Web site run by the EPA. The site allows you to plug in information on the vehicle you drive now and compare it with vehicles you are considering. It also invites drivers to enter fuel-economy calculations based on their own experiences and compare them with what other drivers report.

Another very good tool -- both for households and corporate fleets -- is available at the Advanced Fuels and Advanced Vehicles Data Center ([www.eere.energy.gov/afdc/hev\\_calculator/single.php](http://www.eere.energy.gov/afdc/hev_calculator/single.php)<sup>17</sup>). Let's say you're weighing whether to buy a Saturn Vue as a standard or hybrid model, and you plan to own it for 10

years. The calculator lets you figure out which is the better deal -- for your wallet and for the environment.

In this case, the tool shows that the higher cost of the hybrid (an estimated \$5,000) would be covered over 10 years by the increased fuel economy: 27 city and 32 highway for the hybrid versus 22 and 27, respectively, for the regular car. (That assumes 55% city driving, 15,000 miles driven annually and \$3-per-gallon gasoline.)

On the environmental front, the hybrid would cut carbon-dioxide emissions by 20,616 pounds over that 10-year period. That's roughly equivalent to what two average passenger cars put out in a year, assuming they drive 12,000 miles apiece and get 23.9 miles to the gallon.

- DOES RECYCLING HOUSEHOLD WASTE CUT EMISSIONS?

Yes. Recycling reduces landfill gas generated by decaying matter such as newsprint and cuts down the industrial energy needed to manufacture new products. Recycling aluminum cans, for example, cuts the energy needed to make new cans by 95%.

So, a four-person household that recycles all its newsprint, aluminum, steel, plastic and glass could cut its greenhouse-gas emissions from solid waste by 41% to 2,384 pounds from 4,072 pounds, according to the EPA calculator. For comparison, that saving is nearly 10% of an average household's carbon-dioxide emissions in a year, excluding transportation.

- I KEEP HEARING THE TERM "DAYLIGHT HARVESTING." HOW MUCH ENERGY CAN THAT SAVE?

Commercial daylight-harvesting systems adjust the intensity of artificial light to complement the amount of natural light entering a space. For instance, manufacturer Axis Technologies Group Inc. says it expects its systems to cut energy use by 35% to 60%, depending on the amount of ambient light available. The next wave of daylight-harvesting equipment will allow utilities or companies to override the automatic settings and dim lights even further in emergency situations when the grid is stressed.

- IS IT BETTER TO DRIVE 500 MILES OR FLY 500 MILES?

Often, it's better to fly than drive. The average domestic commercial flight in 2005 emitted 0.59 pound of carbon dioxide per passenger flying one mile, according to federal statistics, whereas the average U.S. passenger vehicle emitted 0.93 pound per mile. In other words, a person flying 500 miles is responsible for 295 pounds of carbon versus 465 pounds driving, assuming the standard benchmark of 23.9 miles per gallon.

But there are a couple of factors to consider. The airline emission statistic is an industrywide calculation based on all flights and miles traveled, while the car statistic

doesn't take into account the number of people in a vehicle. So a full car could produce less carbon per capita. For instance, with four people in the car, emissions per person drop to about a quarter of a pound per mile, according to the EPA.

Moreover, flights don't get people to their final destinations. So you have to figure airline passengers will likely do some driving to reach or leave the airport -- taking away a bit more of air travel's emissions advantage.

We've become such a throw-away society. How do you fight it?

The EPA says solid waste, per person, has nearly doubled to 4.4 pounds a day from 2.7 pounds in the past 35 years -- filling up landfill sites and wasting materials that could be reused to save natural resources and energy.

Although recycling is important, it isn't as effective as reducing the use of materials from the get-go. One way to do this is to buy goods in concentrated, dry or bulk form to reduce transportation and packaging costs. Favor refillable or reusable items. Pick flexible packaging materials instead of rigid packaging, since flexible packaging typically takes less energy to make and transport. Pick goods with the highest ratio of product weight to packaging weight, when possible. Example: tuna in a foil pouch rather than in metal cans.

These options are getting easier to find. Matt Hale, director of the EPA's office of solid waste, says retailers are pushing for improvements in packaging to cut transportation and materials costs, as well as to use materials that can be readily recycled -- and thus cut costs again.

In broader terms, Jeffrey Harris, of the Alliance to Save Energy, a coalition of business, environmental and government interests, thinks more people should ask, "How much do we need to live a quality lifestyle?" He thinks that question inevitably leads to others, such as, "Do we really need oversized cars and oversized houses?"

He believes people's focus needs to move beyond energy efficiency, even if conservation is necessary. "The focus has to be on consumption," he says, "because the atmosphere doesn't care about efficiency, it responds to the volume of greenhouse gases put into it."

**• HOW MANY YEARS DOES IT TAKE SOLAR-POWER SYSTEMS TO PAY FOR THEMSELVES, AND HOW MUCH CARBON DIOXIDE DO THEY OFFSET?**

First, let's lay out the numbers involved. A 4,000-watt solar-power system, a typical size for many homes, costs roughly \$20,000 after a 30% federal tax credit and can meet about three-quarters of many families' electricity needs. By one estimate, it cuts carbon dioxide output by an equivalent of three-quarters, or about 7 tons per year. (That assumes a household needs 11,340 kilowatt-hours of electricity per year and gets 7,680 from its 40-panel system.)

As for payback time, it depends on where you live. Some areas, such as the Southwest, offer stronger, more consistent sunlight and make solar systems more effective. Meanwhile, some states offer tax credits and incentives for solar systems while others don't. Plus, many people get long-term financing from lenders for solar electric systems so they are cash-flow positive from the start. For example, they pay \$100 a month for a lender-financed solar system that saves them \$110 a month in energy.

Here's a general guideline: In states with hefty rebates, like California and New Jersey, the payback period is seven to 10 years. It may be twice as long in states without local incentives or in places where there's less sunlight on photovoltaic panels.

• HOW CAN I PROMOTE REDUCTIONS IN CARBON INTENSITY IN MY COMMUNITY?

Support policies that result in reductions in energy use, even if they're a side benefit.

For example, the federal government is encouraging "transit-oriented design," in which cities encourage mixed-use developments around transit hubs, such as commuter-rail stations. Residents say they like the convenience of transit options and having shops and restaurants that are within walking distance. Of course, society benefits from the increased density if more people walk, bike or take mass transit. It also may leave more land as open space.