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1. Green Tips

Green living is easy once you know what to do. Just about every corner of your life and home offers ample opportunities to be green, without requiring you to sacrifice comfort or convenience. This guide is an opening volley on how to be green by making simple choices that will improve the quality of your life and have a gentler impact the environment. So, get your bearings and step up to ride the green wave that's happening everywhere.

It seems that one of the great modern conundrums is that we have been convinced, largely by the media, that the environmental, political, and social issues we are facing are so great that they are out of our control. But the truth is that we as individuals and consumers have potent power to influence the laws of supply and demand, of ecology and economy, and of give-and-take that shape our world. The power to do what's good and right is in our hands every day.

Green living is as fundamentally essential as life gets and, frankly, it's our duty. Being green isn't a privilege or a luxury, it's a responsibility we all need to accept, because a healthy, safe environment is the backbone of everything we rely on to live, thrive, and survive. Choosing to be green is not just about the far-flung corners of the planet or generations that have yet to be born, it's about immediately improving our lives and the quality of living every day. The brilliant beauty of being green is that it not only serves the planet, it also serves us. Choosing to clean kindly with

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nontoxic and biodegradable products not only protects our precious freshwater supplies and aquatic ecosystems from contamination, it also prevents the buildup of chemical residues in our homes and improves indoor air quality. Curbing the use of plastic for food containers, shower curtains, and water bottles not only prevents mass pollution from the petroleum extraction, manufacturing, and disposal of those products, it also reduces our exposure to health-endangering plastic additives as well. Conserving energy with smart, efficient practices and products not only decreases the emissions of overburdened power plants, it also saves us money on our utility bills. Opting for natural personal care products and cosmetics instead of those made with synthetic, petroleum-based ingredients not only curbs the manufacturing of chemicals, which ultimately end up in the water, air, and soil, it will also make your skin and hair healthier and more beautiful. It's a win—win relationship.

Being responsible stewards of our beautiful, complex world and governing our actions with accountable etiquette is both selfless and selfish—it helps the planet and helps us. It's said that "many hands make light work," and if each of us does our own small part in making this world a better, cleaner, safer place, everything is possible. As Abe Lincoln said, "Let us have faith that right makes might, and . . . let us, to the end, dare to do our duty as we understand it." And, that duty can be done every day by making easy, green choices that add up to eminent, great change.

Green, Green Home

Clean kindly.

- Use plant-based, biodegradable soaps and detergents.
- Use all-purpose and surface cleaners that contain plant-based solvents, and use ammonia-free glass cleaners.
- Lose cleaners that contain chlorine.
- If the ingredients are not fully disclosed on a product label (or you can't pronounce them), choose a product you can trust!



Choose natural personal care products and cosmetics.

Choose pure products made with pronounceable, plant-based ingredients. Opt for natural beauty and grooming products that don't have petroleum-based chemicals and synthetic ingredients—especially paraben preservatives (such as methylparaben, propylparaben, sodium lauryl sulfate, and sodium laureth sulfate), and synthetic or vaguely identified

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fragrances or colorants. It will do your body and the planet a gorgeous world of good.

- Choose soaps and body washes that are plant based and free of synthetic fragrances and colors. They are naturally biodegradable, which is better for you and the planet.
- Use face and body moisturizers made with pure, plant-based, and botanical ingredients to keep your skin hydrated and healthy without chemicals and synthetic preservatives.
- For lustrous locks, choose natural hair care products that are sans petrochemical foaming agents and paraben preservatives.
- Go for naturally effective deodorants and duck away from those that contain aluminum and other chemicals.
- Attention, ladies! Choose organic, nonchlorine-bleached feminine products. It's a wise, health-savvy, eco-smart move for your precious body and the planet.

Go for recycled, naturally bleached toilet paper, paper towels, and tissues.

Majestic trees are too precious to put in the toilet. Buy postconsumer recycled paper goods. I am not suggesting that you use sandpaper-grade toilet paper on your hindquarters; there are fluffy recycled papers that are

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made snowy white with safe oxygen bleach instead of dastardly chlorine Ditto for paper towels and tissues.

Use unbleached coffee filters for a dioxin-free cup o'joe.

Some great things come in small packages. Choosing unbleached coffee filters is a grand act that requires little effort. Bleaching paper with chlorine—coffee filters included—is a notorious source of truly malevolent dioxins, which are some of the most toxic substances on the planet.

And dioxins migrate! Studies clearly show that brewing coffee with chlorine-bleached filters leaches detectable amounts of dioxins into the coffee—up to 24 percent of the dioxins migrate into your cup of Java. This means that if you drink coffee brewed with conventionally bleached filters, you will definitely ingest dioxins. According to the Environmental Protection Agency (EPA), the use of chlorine-bleached coffee filters gives you enough dioxins to exceed a lifetime of "acceptable levels."

Next Green Step: Procure a reusable coffee filter or French press to opt out of using disposable filters.

Note: Buy "fair trade" coffee to stay on socially and environmentally sound ground. Fair-trade products ensure fair terms for farmers, adhering to internationally agreed-upon standards for wages, labor rights, and conditions and minimum prices to protect farmers and promote

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sustainable production methods. It's feel-good Java for drinkers and farmers alike.

Install a water filter.

Clean, safe water without all the waste: Brilliant. You'll use fewer plastic water bottles, which means using less energy and fewer resources to make the bottles and less fuel to ship them around for delivery, and creating less waste. Fresh, clean water is a necessity, not a luxury.

More than half of Americans drink bottled water, and more than a third of us do it on a regular basis—that adds up to billions of gallons of bottled water and more than \$15 billion in sales annually. A majority of bottled-water drinkers do so out of concern about the healthfulness and safety of tap water, and for good reason—more than 60 percent of municipal facilities across the country violate their Clean Water Act permits, meaning that the water supplied by these facilities may contain contaminants and chemicals. In fact, the EPA estimates that more than 2,100 known contaminants and toxic chemicals are in our drinking water, several of which are known poisons and carcinogens.

Bottled water might be cleaner, but boy, does it produce a mountain of waste, and golly, is it expensive. Though the demand for recycling is pretty high, the actual rate of recycling water bottles is dismally low (about 12 percent in 2003). The result is that 40 million bottles every day are thrown in with the rubbish. That's a lot of plastic. Installing a water filter simply makes a lot of sense.

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Get a low-flow toilet, or make your existing toilet low flow.

Old-school toilets guzzle water like it's going out of style. About a third of the water used at home is flushed down the toilet.

Older standard toilets swallow 3-5 to 7 gallons per flush. New, low-flow toilets send away as little as 1.6 gallons per flush, for a savings of 54 to 77 percent of water used for the John (which can mean a savings of 16 to 23 percent of total water use at home).

You can easily retrofit any toilet for lower-flow efficiency without compromising performance by displacing water in the toilet's reservoir. Install a toilet dam (a water displacement device), or simply submerge a full plastic water bottle or two in the tank. Save water and the planet one flush at a time.

Don't be a drip—fix leaky faucets and toilets.

A leaky faucet or shower that loses water at the rate of one drip per second can waste 3,000 gallons of water a year. Don't be a drip; save money and water resources by fixing it!

A leaky toilet can waste 200 gallons of water a day. Talk about flushing away money and resources! The traditional test to find out if a toilet is leaking is to add food dye to the tank. If the toilet is leaking, color will appear in the bowl within 15 minutes. Most replacement parts are cheap,

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readily available, and easily installed. Note: Flush as soon as the test is done to avoid staining the tank and bowl.

Kick off your shoes.

Removing your shoes at the door is not just a pleasant custom, it also prevents you from tracking a host of unwanted things like pesticides and herbicides into your home. Other shoe hitchhikers include synthetic lawn fertilizers, lead, toxic cleaners used on outdoor surfaces like decks and patios, and wood preservatives. Yikes!

It's just common sense, like washing your hands before eating or covering your mouth when sneezing. Taking off your shoes is an especially good idea if your floors are clad in carpeting, which can rub all that nasty stuff off your soles and accumulate it.

Scientists suspect that exposure to dangerous pesticides from the "tracked in" route might trump the most well known source—conventionally grown fruits, vegetables, and animal products. That's pretty serious, especially for families with young kids, where everything on the floor eventually ends up in the little 'uns mouths.

Get a welcome mat. A doormat outside and an entryway rug inside also help to collect toxins that are tracked in and prevent these substances from migrating throughout the house. Doormats are simple and smart, and they look nice, too.

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Bring in houseplants!

Houseplants literally grow fresh air by producing clean, fresh oxygen and absorbing carbon dioxide and chemicals such as formaldehyde and benzene.

The EPA estimates that indoor air is 2 to 10 times more polluted than outdoor air. The culprits? Synthetic materials found in furniture, carpeting, plywood, adhesives, mattresses, and shower curtains; chemical cleaning products; plastics; and chlorinated water are just a few.

Two small plants or one medium-size plant per 100 square feet will provide fresh air and healthy, mold-free humidity in any room so everyone can breathe deeply with ease.

Plant a tree every year.

Trees are the lungs of the planet. They heroically remove carbon dioxide from the atmosphere, storing it as cellulose in their woody parts, and generously release oxygen in its place. That is a sophisticated service that makes our very lives possible and has the potential to offset and reverse the currently rising levels of greenhouse gases. About half of the



greenhouse gases that are causing global warming are carbon dioxide emissions.

Opt out of getting junk mail.

Do you know anyone who likes junk mail? Me neither. More than 62 billion pieces of junk mail are delivered to American mailboxes every year— that's about 41 pounds a person. About 100 million trees and 28 billion gallons of water are used annually to produce the 5-8 million tons of catalogs and unsolicited wads of preapproved credit card offers and other junk that arrive at our homes—44 percent of which are thrown away unopened. But there are ways to reduce the onslaught, and therefore the wasting of the trees and the energy that is needed to truck around these mountains of mail.

- Stop credit card offers. Go to www.optoutprescreen.com, where the consumer credit report industry lets you opt out of receiving preapproved and prescreened credit card offers.
- Stop your name from being sold. When you order something online or over the phone, you can specifically request that your name not be lent, sold, or traded. Create a form letter asking that your name be removed from mailing lists when you're renewing subscriptions and don't fill out warranty cards, which are commonly used to gather names for mailing lists—most products are covered by the manufacturer's warranty even if you don't fill out the warranty card. When you make purchases online, note in

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the comment box that you don't want your name shared for any purpose without your authorization. A little persistent effort pays off, and the forests and ice caps will thank you.

- Green Dimes will do it for you. This nonprofit organization will reduce the amount of marketing materials delivered to your home, help maintain your privacy, and plant trees on your behalf. For less than a dime a day (\$36 a year), it will stop what you want it to stop—meaning that you can still get the catalogs you like—and contact the Direct Marketing Association to nip the output of national and direct marketers in the bud. It will plant five trees for you when you sign up, and also plant a tree for each of the first five catalogs you stop. Its representatives are on call seven days a week to answer your questions and provide help. Go to www.greendimes.com for details.

Learn about trees.

- A single mature tree can absorb almost 50 pounds of carbon dioxide a year and produce enough oxygen to sustain two adults.
- If every American family planted just one tree a year, it would remove more than a billion pounds of carbon dioxide from the atmosphere annually—which in 1992 was about 5 percent of the worldwide output.

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- Trees absorb all kinds of pollutants, such as gaseous pollutants like sulfur dioxide from coal-burning power plants, nitrous oxides from vehicle exhaust, and particulate pollutants from burning fuel, especially diesel fuel. A mature tree can absorb 120 to 240 pounds per year.
- Urban areas that are well planted with trees have up to 60 percent less street-level particulate pollution.
- Trees are natural air conditioners that keep cities cooler. Just one large, healthy tree has a cooling effect that is equivalent to 10 room-size air conditioners running for 20 hours a day.
- Tree cover can reduce asphalt temperature by as much as 36°F and the interior temperature of parked cars by more than 47°F.
- Trees reduce noise pollution by absorbing sound.
- Trees reduce storm water runoff and erosion by up to 7 percent. In urban areas, this can save some of the tax dollars spent every year on installation, materials, cleanup, and maintenance of water drainage systems. Rainwater runoff collects pollutants as it flows, and much of it eventually ends up in streams and other freshwater bodies, which are common sources of drinking water, so managing and reducing runoff are important. Just 100 mature trees can catch about 100,000 gallons of rainfall per year, reducing runoff to keep surface water cleaner.

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- Trees increase property values. Studies show that homes that are well landscaped, especially with trees, have a value that's 5 to 9 percent higher than that of equivalent homes that don't have good landscaping.
- Commercial real estate in wooded areas is more valuable.
- Apartments and offices surrounded by trees have higher occupancy rates.

Go veggie 1 day a week

Beyond being a solid source of a full spectrum of good stuff—vitamins, nutrients, minerals, antioxidants, and phytonutrients—a plant-based diet requires a lot less energy and water to produce than a meat-based diet. Meat is the least-energy-efficient food on the planet, requires a serious amount of water, and is a major polluter. Beef requires 35 calories of energy for every 1 calorie it provides. That doesn't sound like a very good investment—imagine someone asking you to invest \$35 for a \$1 return. Cows are thirsty: producing just 1 pound of beef requires 2,500 gallons of water—that's 40 times more water than it takes to produce a pound of potatoes.

Get this: Eating just 2 to 4 pounds less meat a year will save as much water as not showering every day for a year. Note: These figures are based on these two calculations:

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- A 5-minute shower with a water-conserving showerhead (2-5 gallons per minute) x 365 days = 4,562.5 gallons per year (2 pounds of meat = 5,000 gallons water)
- A 5-minute shower with an ordinary showerhead (5 gallons per minute) x 365 days = 9,125 gallons per year (4 pounds meat = 10,000 gallons water)

Plus, livestock produce a massive amount of waste—130 times the waste generated by humans! Eleven billion pounds of manure, sludge, and slurry waste are produced by livestock every year. All that waste in turn emits VOGs (volatile organic compounds), hydrogen sulfide, ammonia, and endotoxins. One VOC is methane (the number-two greenhouse gas causing global warming, with 20 times the heat-trapping ability of carbon dioxide). The livestock industry alone is responsible for almost 20 percent of the methane in the atmosphere. Adopting a more-plant-based diet, or even going veggie just 1 day a week, is a powerfully green choice. Your body, the freshwater supplies, and ice caps everywhere will rejoice.

Green Energy

Energy-efficient lightbulbs save energy, money, and emissions.

Lighting sucks up about 20 percent of the energy used at home, which adds up on utility bills and causes literally tons of carbon dioxide to be spewed into the air by our overburdened power plants. Standard

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incandescent bulbs waste 90 percent of the energy they draw in creating heat, not light.

Energy-efficient lightbulbs like compact fluorescent lightbulbs and light-emitting diodes have come a long way, baby! Producing just as much light as incandescent bulbs but using a fraction of the energy, there are a bevy of bulbs available in all shapes, sizes, brightnesses, and light qualities to fit every socket and then some. That's something to get lit up about!

Turn the thermostat down 2°F.

During the cold months, set the thermostat at 68°F (20°C) during the day and 60°F (15°C) at night.

Turning the thermostat down 5°F to 10°F at night will save you 5 to 10 percent on your heating bill. It is also helpful to all of the houseplants that are busy cleaning and filtering your indoor air—most of them like this kind of temperature drop at night! When you're going to be away for a full day or weekend, turn the thermostat down to 55°F (13°C); you will save money and energy, and don't worry, your pipes will not be at risk for freezing. During the warm months, set the air conditioning at 78°F (25°C).

Next Green Step: Install an automated setback thermostat. Available for most gas- and oil-fueled central heating systems, setback thermostats automatically turn down the heat at night and turn it back up before you

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wake up. Some even allow you to set two schedules, which can be timed to turn down the heat when you leave for work or school and back up before you get home!

Next Green Upgrade: On-demand water heaters more efficiently save both money and energy.

Set your water heater at 120°F (49°C).

You'll find that 120°F (49°C) is piping hot! Most water heaters are set at 140°F (60°C), which is simply a waste—it's really too hot for household needs. Turning the temperature down just 10°F will prevent each and every household from producing about 600 pounds of carbon dioxide a year for an electric water heater or 44° pounds for a gas water heater.

If every American household turned the water heater down by just 10°F, it would prevent 45 million tons of carbon dioxide from entering the environment each year. That equals the entire amount of carbon dioxide emitted by Kuwait or Libya.

Next Green Step: Insulate your water heater. Insulating your water heater will reduce the heat lost by 25 to 45 percent, saving you 4 to 9 percent of the cost for the energy to heat your water. Precut insulating jackets for water heaters run only about \$10 to \$20.

Smarten your fridge and freezer. Turn their thermostats up and make sure the seals are snug.

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- Set the fridge at 37°F (3°C). Set the freezer at 3°F (-16°C).
- Maintain a tight seal on the doors of your fridge and freezer. Here's a quick way to test your seals: a dollar bill should be held snugly when the door is shut.
- Vacuum the fridge and freezer coils regularly. Every 4 to 6 months, depending on how dusty they get, simply vacuum the coils at the back of your fridge and freezer for optimal performance and to extend the life of the appliance.
- If you don't have a self-defrosting or no-frost freezer, defrost your freezer regularly. An iced-up freezer doesn't work well and requires a lot more energy to keep it cold. Most newer refrigerators have self-defrosting or no-frost freezers with a built-in mechanism that prevents ice from building up. However, if you have an older model or a non-self-defrosting freezer, defrost it by turning the thermostat to the warmest setting (take everything out first!). Depending on how quickly ice builds up, defrost it every other month.

Use power strips and unplug appliances.

Power strips are our friends. Save energy and money by plugging your electronics into power strips that can be turned off when the components are not in use. TVs, stereos, game consoles, computers, and accessories

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all have a hefty "phantom" draw of energy (called idle current) even when they're turned off—about the same amount of energy as a 60-watt lightbulb burning continuously. That really adds up on individual electric bills and, collectively, on power plant output.

Green Bonus Step: Look for "smart" power strips, which have advanced circuitry that senses the flow of electricity and automatically shuts off components that are consuming idle current.

Choose green residential energy service options.

Utility companies across the country offer renewable energy options that generate electricity with wind, solar, bio-mass, and geothermal sources. Choosing clean energy is cheap and easy; for a small premium, based on how much energy your home draws, you can opt for green energy and feel like an eco-hero.

If we want it, they will make it. In the United States about 97 percent of electricity is generated from nonrenewable resources, including petroleum (40 percent), coal (23 percent), natural gas (22 percent), and nuclear energy (8 percent). These sources pollute our air, spoil our water, and devastate the atmosphere. Coal mining involves open-pit or strip mining or in-situ leach mining, and nuclear energy produces radioactive effluent that will stick around for at least 10,000 years. Renewable energy provides only about 7 percent of our needs, from sources such as biomass (3 percent), hydroelectric (3 percent), and geothermal, solar, and wind, but every household that pays an electric bill can change that. Just think

of what would happen if just 10 or 20 percent of us put a few bucks in the pot for this future. We could change the world.

Other Green Tips

Buy local.

Buying locally grown food means fewer fossil fuels are used to truck it to you. That's a good thing, because these days food isn't just shipped around the country, it's shipped all over the world! The average morsel of food travels about 1,300 to 1,500 miles from farm to plate in the United States. That's some well-traveled food! Some experts estimate that it takes almost as much energy to ship food as it does to grow it. That's a lot of energy. In addition, the jury is out on the exact figure, but it's said to take more energy (in calories) to produce and ship food today than we actually get from eating it. Buying locally grown food is a simple way to change that equation for the better and get the most for your money. The bottom line is that local food is fresher, tastes better, and saves energy. Everybody wins.

Go organic

Buying and eating organically grown food is one of the single most powerful green choices, period.

Take a cloth bag or basket to the store.

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In New York City, just one less grocery bag per person would prevent 5 million pounds of waste and save \$250,000 in disposal costs.

If every American used just one less grocery bag, it would prevent 187.5 million pounds of waste and save millions of dollars in disposal costs.

Inflate your car's tires to their proper pressure to save gas and money.

Properly inflated car tires can improve gas mileage by more than 3 percent and extend the life of the tires. Underinflated tires experience more rolling resistance, which directly affects fuel economy and can cut the tread life in half! If every American simply kept his or her car's tires properly inflated, it would save 2-8 billion gallons of gas a year, saving billions of dollars and helping to curb global warming.

Tires lose pressure naturally over time, like a balloon, so check their pressure regularly.

The proper pressure varies from car to car. Check the owner's manual to find out where to find the recommended tire pressure—it is often printed on the pillar of the driver's door, in the glove compartment, or on the fuel door.

Check the pressure when the tires are cool and have not been driven for more than a few miles.

More Auto Tips

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- Lighten up on the pedals. Avoid flooring the gas pedal and mashing the brake pedal for massive fuel economy gains. The standard advice is to drive like there's an egg under the gas pedal. Moderating your driving techniques can save gas and improve mileage by as much as a whopping 37 percent!
- Clean the air filter. Replacing a car's air filter regularly can boost your gas mileage by 10 percent.
- Get tuned up. Regular tune-ups can hike your miles per gallon by an impressive 4 to 40 percent, depending on the type of car and how badly it needed to be tuned up.
- Recycle motor oil. Motor oil can be recycled, rerefined, and used again. If you change your own oil, many service stations are used motor oil collection centers, as are local and county recycling centers. If you have someone else change it, ask around and take your car to a service center that recycles its used oil.

Get a travel mug!

In 2005, we Americans used and disposed of 14.4 billion paper coffee cups. Yes, that's enough to circle the Earth 55 times if placed end to end. Most paper coffee cups are not only bleached with devastating chlorine, they are also lined with a thin film of plastic to prevent leakage. That has

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a significant impact on the waste stream and uses enough petroleum to heat 8,300 homes.

Recycle your cell phone.

According to the Washington Post, the 128 million Americans who have cell phones upgrade to a new one an average of every 18 months. Many recycling programs will take your old cell phones.

What happens to phones that are recycled?

- If they work, the devices are simply given a second life by worthy charities. If they need work, they are refurbished and returned to service.
- If the phone can't be reused or refurbished, some of its components, like plastics and precious metals, are still valuable and can be recovered and recycled into new products ranging from kitchen counters and cabinets to circuitry boards. Cell phones and other electronics also contain toxic heavy metals that should not be sent to landfills, which is another good reason to recycle them.

Before recycling your phone:

- Terminate your service.

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- Clear the phone's memory of its contacts, address book, and other stored information.
- Remove the SIM card, if it has one. If you don't know how to remove it, contact your service provider.
- Choose a domestic recycling program. There are growing concerns about old American electronics being sent to countries where standards may not protect workers from being exposed to all kinds of toxic stuff.

Organizations that recycle cell phones:

- CTIA—The Wireless Association, www.recyclewirelessphones.com. This nationwide, voluntary program implemented by the wireless industry facilitates environmentally sound production and recycling of wireless devices. The central Web site links to all participating CTIA members' recycling information.
- Eco-Cell, www.eco-cell.org. This company purchases cell phones from fund-raisers, paying up to \$15 per phone for refurbishing or recycling.
- GRC Wireless Recycling, www.grcrecycling.com, offers socially responsible cell phone recycling opportunities that benefit charities.

- Recycle for Breast Cancer Program, www.recycleforbreastcancer.org. This program's goal is to keep toxic electronic wastes out of the environment to reduce the incidence of breast cancers caused by environmental pollution.

Home Maintenance

There are many green measures to maximize the efficacy of maintaining a home. Here are some smart green ideas that will save energy and money and improve the value of your home.

Weather-strip it.

Save energy on heating and cooling by weather-stripping around windows and doors. Weather-stripping will save you a bundle—when done right, it can save 10 percent of home energy costs. Other places to weather-strip and seal are around plumbing and electrical lines and ducts (sealing and insulating them can improve efficiency by as much as 20 percent); the attic door; and air conditioners. It's easy to do yourself. However, sealing your home for energy efficiency is a good reason to choose safe, green interior paints and home furnishings like carpets, couches, mattresses, and shower curtains over synthetic materials that may emit VOCs (volatile organic compounds). Houseplants will also help keep the indoor air clean by producing fresh oxygen and filtering out chemicals emitted by

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synthetic materials. Lastly, consider replacing screens with storm windows for winter months.

Shade your air-conditioning unit and clean the filters regularly.

- An air-conditioning unit in the shade uses up to 10 percent less energy than one in the sun. Planting bushes or trees on the south side of the unit will do the trick. Just be sure they don't block airflow.
- Clean the filters regularly. Check them once a month, especially during heavy-use months in the height of summer. At a minimum, change the filters every 3 months for maximal performance. Dirty filters slow down airflow, making units work harder and waste energy. A clean air-conditioning filter can cut the unit's energy use by 5 to 15 percent and prevent dust buildup, which will also save cash on maintenance and premature system failure in the long-term.

Use green paints.

Once upon a time—not that long ago—many house paints contained lead, which is highly toxic, especially to young children, who find a way to put everything in their mouths, including paint flakes. Today's house paints don't contain lead, but they do contain a lot of other nasty stuff. Most paint is made with a slew of petrochemicals that emit toxic fumes. On the manufacturing side, paint can create up to 10 times its weight in toxic

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waste. On the wall, it releases noxious VOCs, like formaldehyde, that are no good to breathe. VOCs are solvents that allow the paint to dry, and some evaporate quickly, with acutely toxic fumes, while others degrade more slowly, with long-term, low-level toxic emissions. VOCs also cause chemical reactions in the atmosphere that produce ground-level pollution and smog that can cause breathing problems and nervous system and kidney damage. Who wants that at home or on the planet? Fortunately, there are other alternatives.

Green paint to the rescue! Natural paints, zero-VOC paints, and low-VOC paints—finishes too!—are the smart green options. Thanks to consumer demand and environmental regulations, most paint manufacturers now offer one or more types of low-VOC or zero-VOC paint. Made with plant oils and resins instead of petroleum, they're durable, cost-effective, and less harmful to humans and the planet.

Install rheostatic light dimmers to create ambience and save energy and money.

Dimmers save energy on lighting by allowing you to control the brightness of lightbulbs with a dial or slide. They're inexpensive and easy to install. Create ambience with a soft glow or radiant brightness with eco-savvy style, saving energy and money at the same time.

Install reflective window films and tints.

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South-facing windows can turn living spaces into veritable saunas in the summer months, fading furniture, rugs, and artwork. Protective window film can cut cooling costs and improve the general quality of life. Tinted film was once the only option for controlling the amount of sun shining through windows, but the new generation of reflective films are much more effective and hardly influence the color of the light passing through the panes. Reflective film can reduce 50 percent of the total solar heat for cooler indoor temperatures and lower cooling costs and cut out 98 percent of the UV light that fades home interiors. Most are scratch resistant and have a lifespan of 20 years. It's recommended that you have reflective film installed by a professional who can gauge your needs and give you optimally smooth results.

Next Green Step: Install double-pane windows.

Go for a natural gas on-demand water heater for tankless water heating.

Heating water on demand with natural gas is one of the most efficient means around. These systems use loads less energy, offering instantly hot water at a fraction of the cost of water heaters that store hot water in a tank. Consider that the water heater is one of the biggest energy hogs at home. While hot water storage tanks fueled by natural gas are much more efficient and much less polluting than electric water-storing heaters, on-demand water heating trumps storage heating by 30 percent. You can save a bundle, and because it's available on demand, your tank of hot water will never run out because there isn't one! Some on-demand water heaters cost more initially than conventional storage models, but their

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lower operating costs can more than offset the higher purchase price. To sum it up, go for a high-efficiency water heater: on-demand is better than storage, and solar is the best of all if you live in an area where operating one is feasible.

Next Green Step (in very hot regions): Consider a solar water heater. Some states and utilities even offer rebates on installation.

Insulate your roof with reflective insulation.

Insulating the inside surface of a home's roof is a simple, effective way to keep a home cooler in the summer and warmer in the winter.

Reflective insulation, or a radiant barrier, is a new, eco-smart way to reduce cooling costs during the summer by up to 10 percent and heat loss in the winter. It literally shields energy, keeping hot air out or warm air in depending on the season. Usually made of a sheet of thin metal or foil applied to one or both sides of a substrate material, a radiant barrier is designed to block heat transfer across open spaces, like attics. It can be installed directly on rafter framing or simply over insulation. During construction of a roof, it can also be laid over the tops of the rafters before the roof deck is put on.

Next Green Step: Consider reflective paint and roofing materials. Reflective paint and roofing will keep the house cool and comfy in hot months, reducing cooling demands by 10 to 15 percent.

Precious Water

Choose sustainable materials.

If and when the time comes for home renovation, go for eco-friendly materials for beautiful sustainable flooring, counters, tiles, carpets, insulation, wallpaper, and more. Choose from green-savvy materials like bamboo, cork, reclaimed wood, and recycled glass tiles for Architectural Digest—worthy digs with planet-friendly endorsement.

Plant shade trees.

Big, beautiful trees not only improve property value by 5 to 9 percent, they also offer energy savings on heating and cooling costs year-round. According to the US Forest Service, houses with trees use 20 to 25 percent less energy than houses in wide-open areas. As few as three wisely positioned trees can save the average home owner between \$100 and \$250 every year in heating and cooling costs. Plant summer shade trees (two on the west side of a house and one on the east side) to save up to 30 percent of your home's air-conditioning costs. For winter protection, plant trees on the north side of the house (or on whatever side the prevailing winds come from in the winter) to save up to 25 percent on winter heating costs. For a winter windbreak, put a row of trees between your house and the prevailing winds; a windbreak slows the force of wind behind it for a distance of 10 times its height, and two to three times its height in front of it.

Purchase energy-efficient appliances.

Precious Water

A substantial chunk of monthly utility bills goes to feeding the major appliances in your home—fridge, washing machine, dryer, dishwasher. Older models are energy hogs; refrigerators and washing machines more than 12 years old can use twice the operating energy of today's energy-efficient models. Over the years, federal energy-efficiency standards have been tightened to ensure better performance while using less energy, so today's appliances are better for your pocketbook and better for the planet. When the time comes to replace appliances, look for the most efficient models to save energy and money. Here are some guidelines for getting the most bang for your buck.

- Energy Star—rated models are the most energy efficient in any category—they exceed federal energy-efficiency minimums. In some regions, utilities and state governments up the ante by offering rebates on Energy Star models. Visit www.energystar.gov for more information.
- Look at ENERGYguide labels. New appliances must have an ENERGYguide label, either on the appliance itself or on the packaging. This yellow and black label will allow you to compare the skinny on operating costs and annual energy consumption. It will let you judge how much energy can be saved by choosing the most efficient models.

2. Saving Water

Quite simply, we are consuming too much water. Our demand for water increases yearly, to the extent that no matter what the water companies do, eventually they will not be able to keep up. Water also requires huge amounts of energy, both to treat it and pump it to our houses, so our thirst for water is damaging our planet in more ways than one.

The good news is that there are many simple things we can do at home and at work to reduce our consumption of water. As well as helping to secure our water supply both for ourselves and for future generations, by doing these things we also benefit in many other ways.

By cutting down our water use, we can:

- Save money, especially if on a water meter
- Reduce the possibility of water shortages and summer water rationing
- Reduce emissions of greenhouse gases responsible for climate change



Precious Water

- Reduce the amount of energy and chemicals used in the treatment and pumping of water
- Reduce damage to wildlife habitats in wetlands and rivers
- Reduce the fall in groundwater levels, thereby reducing stress on woodlands

Are you letting money flow down the drain? Find out how much water you use: how much is it costing you?

| | <i>gallons</i> |
|---------------------------------|----------------|
| Bath | 40 |
| 5-minute shower | 10 |
| 5-minute power shower | 20 |
| Brushing teeth with tap running | 2/min |
| Brushing teeth with tap off | .25 |
| One toilet flush | 3 |
| Other water use (drinking, etc) | 7 |
| Washing machine | 40 |

Precious Water

| | |
|-------------------------|----------|
| Dishwasher | 10 |
| Washing car with bucket | 3 |
| Hose/sprinkler | 140/hour |

Kitchen Tips

- Never leave a tap running.
- Use a bowl to wash vegetables or to wash and rinse plates.
- Use the leftover water to water your garden or house plants, provided it is not too soapy.
- Store drinking water in a jug in the refrigerator, rather than waiting for the tap to run cold.
- Fix that leaky tap.
- Leaky faucets that drip at the rate of one drop per second can waste up to 2,700 gallons of water each year.
- If you are making a hot drink, fill the kettle with only as much water as you need. You will save energy as well as water.

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- Most of us couldn't survive for a week without water. Health experts figure that we need at least 6-8 glasses of water every day to keep us fit and healthy and aid our concentration.
- Tap water is around 500 times cheaper than bottled water-chill it in the fridge and see if you can taste the difference!
- A gallon of bottled drinking water can be more expensive than a gallon of gas.
- Only use a dishwasher if you have a full load. If you just have a few things to wash, use a bowl.
- While waiting for your water to run hot, collect the cold water and use it on your plants.
- If you have to replace your dishwasher with a new one, choose a water-efficient model.
- Garbage disposals use a considerable amount of water. Start composting - put the vegetable peelings in your compost bin.
- Avoid pouring used grease, fat, or cooking oil down your kitchen sink or drain, as these quickly cool and solidify and the fatty deposits build up and cause blockages. This is generally noticed only during periods of heavy rain, when blocked sewers can

Precious Water

overflow onto gardens and into properties. Put all your used fat and grease to good use-mix it up into a 'bird cake' with some nuts, seeds, and raisins and hang it out for the garden birds to feed on.

- Hand-wash small amounts of clothes in a bowl.
- Only use your washing machine with a full load; half-load programs are generally neither water- nor energy-efficient.
- When you next replace your washing machine, check out the amount of water it uses and buy a more efficient one. Look for appliances labeled with the Energy Star® label, which indicates that the product has met strict energy efficiency guidelines.

Bathroom Tips

- Check all the taps on sinks, baths, and toilets for leaks or drips.
- Don't keep the tap running while cleaning your teeth; use a mug of water.
- A running tap can use as much as 4 gallons of water in the time it takes to clean your teeth.



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- Have a shower instead of a bath. But if you use a power shower, beware; they can use as much water as a bath if you shower for more than five minutes.
- Put the plug in the drain and only run as much water as you need when washing.
- Attach a flow regulator to your shower.
- Attach a water-saving tap.
- Bathe with a friend.

Toilet Tips

- Remember the rhyme: "If it's yellow let it mellow, if it's brown flush it down." You will save a lot of water!
- Avoid flushing anything down the toilet that has not previously passed through your digestive system, apart from toilet paper - it's a waste of water and might be the sewer. Bag it and bin it.
- Many people in the world exist on 3 gallons of water day or less. We can use that amount in one flush of the toilet.

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- Why not pee into a container and use this nitrogen-rich liquid to speed up the decomposition of the contents of your compost bin? Just pour it on.
- If you have enough space, or are building a new house, how about making a composting toilet?

Garden Tips

- The average roof collects about 22,500 gallons of rain a year - enough to fill 450 50-gallon rain barrels with free water.
- Use two rain barrels or more and link them so that when one is full the surplus water is diverted into the others.
- Keep your rain barrels covered to avoid evaporation.
- Put a gutter and rain barrel on your greenhouse or garden shed.
- The oceans and seas of the world contain 97% of all our water, but it's salty. With the polar ice caps containing another 2%, there is very little fresh water left for us to use.



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- Keep your gutters clear so you don't waste all the water that falls on your roof. Collect it all in your rain barrel(s).
- Use a watering can to water your garden; hoses and sprinklers waste a tremendous amount of water, and their use may be limited during a water shortage (check with your water company).
- If you do use a hose, fit a trigger nozzle at the end so you can turn the water on and off easily - don't leave it running unnecessarily.
- Avoid using sprinklers. Trickle-irrigation and drip-irrigation systems help reduce water use and supply adequate water to plants.
- A garden hose or sprinkler can use almost as much water in an hour as an average family of four uses in one day.
- Check the weather forecast before you start watering - it may be going to rain soon.
- Water your plants early in the morning or during the evening when it is cool, so that less water is lost through evaporation.
- Avoid watering when it is windy, as this increases the evaporation rate.

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- Make your plants more drought-resistant by watering them occasionally but thoroughly - rather than little and often, which encourages shallow rooting.
- Direct the water to the base of the plants and give the roots a good soak. A couple of times a week should be sufficient, even when the weather is hot.
- Make it easy to water near the base of the plant by cutting the bottom off a plastic bottle and burying the neck in the ground near the roots.
- Create a natural, untended garden for wildflowers and wildlife. It won't need watering.
- Use 'gray water' (waste water from baths, sinks, etc.) to water your garden flowers, but don't water salad crops or other vegetables with it - 'gray water' can contain fecal coliforms, which might cause illness if ingested.
- Avoid using 'gray water' that has a lot of strong detergents in it, as this might damage your plants.
- 'Gray water' is best used soon after collection; don't store it for much longer than 24 hours, as it might get smelly.

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- Don't use 'gray water' on pot plants, as they will start to smell unpleasant, and detergent levels can build up in the pot.
- If your bath is on a higher level than the garden, you could siphon the bath water directly onto the garden or into a rain barrel.
- You can use the water from your washing machine by attaching a hose to the washing machine outlet pipe. Collect the used water when the machine is discharging and use it to water the garden.
- By using less water we can help to reduce the fall in groundwater levels, thereby reducing stress on
- Choose drought-resistant bedding plants - try African or French marigolds, petunias, geraniums, and alyssum.
- Choose perennial plants that need little watering, such as campanula, heuchera (coral flower), and aquilegia.
- Choose flowers and shrubs that positively enjoy dry, hot conditions, such as evening primrose, buddleia, rock rose, thyme, and lavender.
- Create shade with ground-cover plants, trellises, or hedges to help prevent evaporation of moisture from the soil.

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- Move your potted plants to a shaded part of the garden during hot, dry periods.
- Group your vegetables together according to their water needs when you plan your vegetable garden.
- Crops with plenty of leaves - such as lettuce, peas, runner beans, tomatoes, potatoes, salad onions, cauliflower, and broccoli - require the most water.
- Squash, zucchini, and cucumbers need regular watering once their fruit begins to swell.
- Vegetables such as corn, broad beans, and French beans will survive with less watering, although their yields will be lower.
- Root crops such as beets, turnips, and carrots, together with asparagus, are the most drought-resistant. However, root crops will become hard and woody if they get too dry.
- Check your soil by digging spadeful of earth near the plant - only water if the earth is dry at the bottom of the hole.
- Get composting: Instead of throwing away all your garden waste, vegetable peelings, paper, and cardboard, compost them.

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- Build up the organic content of your soil by using plenty of manure and compost. This will increase its ability to retain moisture.
- Plant vegetables close together. This will shade the soil and reduce moisture loss.
- Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.
- Help to reduce moisture loss and keep the soil cool by using your compost to form a layer of mulch on top of the soil. A mulch also suppresses weeds and feeds your plants.
- You can also make a mulch using other organic materials such as manure, hay or straw, a thin layer of grass cuttings, or locally produced bark or wood chippings.
- Mulching with your compost will also build up the organic content of the soil, increasing its ability to hold moisture.
- Keep the spaces between crops well-mulched, using compost, grass cuttings, straw, or hay.
- Place organic mulch into the planting holes of thirsty plants, such as sweet peas, peas, beans, squash, and melons, before planting

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out. This will improve the ability of the soil to hold moisture around the roots.

- Control weeds during hot weather by mulching rather than hoeing. Don't disturb the soil.
- Plant vegetables such as potatoes under a mulch, rather than ridging them.
- Don't bring moist soil to the surface by hoeing or digging - mulch instead.
- Use old tea leaves or tea bags as a mulch - particularly for roses, which love cold tea.
- Use old blankets, carpets, or weighted-down layers of cardboard or newspaper on top of the soil to conserve moisture and reduce the amount of watering you need to do in the hot dry summer months.
- If you have a heavy clay soil, work in some sharp sand or grit in addition to some organic matter to improve water retention. This will reduce the possibility of the soil cracking in dry weather.
- By using less water we can help reduce damage to wildlife habitats in wetlands and rivers.
- Let the grass grow longer on your lawns. Cutting it short encourages growth, which needs lots of water.

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- Adjust your lawnmower before you use it so that it cuts higher. Longer lawns last longer!
- Aerate and spike lawns early in the season to promote deep roots.
- Don't overfeed your lawn; this encourages excessive growth and requires lots of water.
- When you cut your lawn, leave the cuttings on it. This will reduce moisture loss and return nutrients to the soil. (If your lawn is really overgrown, compost the first cut.)
- Plant a tree or a large shrub beside your pond to give shade and reduce evaporation.
- Garden ponds can lose a lot of water through evaporation on hot days.
- Floating plants such as water lilies also help reduce evaporation and provide shade for fish and other pond life. Cover at least half the pond with these floating plants to provide a large shaded area.
- If you are filling a new pond, your plants and fish will be much happier if you use rainwater instead of tap water.

Precious Water

- Insulate all outside taps and pipes to prevent the water from freezing inside them when it is cold and causing burst or leaking pipes.
- If outside taps are not being used during the winter months, isolate them completely if you can by turning them off at the valve and draining off any water left in them.
- Check the overflow pipes from your toilet tanks and water storage tanks on your roof to see if any are dripping.
- Insulate your water pipes and tanks in the attic. Pipes are best insulated by placing them underneath the attic insulation, which allows some heat from the house to reach them and protects them from frost.
- Place an insulated cover over your pool when it is not being used to help prevent water loss through evaporation.
- Check swimming pools frequently for leaks.

Car Tips

- Wash your car at home rather than at a car wash.
- It takes about 120,000 gallons of water to produce a small car.

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- Wash your car using a sponge and a bucket and some soap. It works just as well and uses much less water than a hose or a pressure washer.
- It takes about 35 gallons of water to produce a bicycle.
- Wash your car less often.

Miscellaneous Tips

- If you have a water meter, check for leaks. Make sure no water is being used in your house and garden, then see if the meter is going round; if it is, you have a leak.
- Have a water meter installed - you will certainly use less water, and installation is free.
- The average household uses about 15% less water when a water meter is installed.
- Make sure everybody in your home knows where your main water valve is and how to work it. Use it to turn the water off if you have a leak.

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- Check the main water valve occasionally to make sure it works - turn the water supply off, try a tap in the house; no water should come out. If there is a problem with your valve, contact your water company.
- Keep the telephone number of a plumber handy for emergencies.
- Think before you buy. Most products have to be manufactured, which consumes huge amounts of water.
- Far more water is used in manufacturing than in our homes.
- If you see a water leak or a burst pipe when you are out and about, tell the water company.
- Install a rainwater-harvesting system.
<http://rainwaterharvesting.tamu.edu>
- Simply installing dual-flush toilets, buying water-efficient appliances, and using low-flow taps and showers can reduce your water consumption by about 25%.

Collection

All the water you get from your taps starts off by falling from the sky as rain, hail or snow. It is then collected, stored, cleaned, and made safe to drink before being pumped to your house.

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Water is taken from rivers, streams, reservoirs, and from deep wells (boreholes) that collect water that has soaked deep into the ground.

Cleaning

This water is then cleaned and treated. First the water is passed through a huge sieve that catches and removes large bits of debris. Then combinations of chemical and physical processes are used to remove the remaining impurities.

To make this water safe to drink, it must be cleansed of any remaining harmful germs or bacteria. This is done by either disinfecting the water with chlorine or ozone, or by treating the water with ultraviolet light.

Storage and delivery

Clean drinking water is now pumped from the water-treatment works and put in covered storage tanks. These are higher than the area they serve, so that the water flows with enough pressure through the pipes to your taps.

The water mains carry the water to just outside your house. From here a service pipe connects the water mains to your house, usually with a valve. This valve is generally found underneath a cover in the pavement and allows you, or your water company, to turn off the water for repairs or maintenance.

You may also have another valve inside your house, probably underneath the kitchen sink, which you can use if you need to repair your household plumbing.

Final Words

Much of the world already faces acute water shortages - from the poor areas of Central Asia, where rivers and lakes have shrunk or dried up, to the wealthy southwestern states of the United States, where the once mighty Colorado River now no longer even reaches the sea.

China is just one example: due to a rapidly expanding population and economy, currently over 200 cities, including the capital, Beijing, face crucial water shortages. Here the groundwater level has been dropping by about 6 feet every year, and now over a third of the city's wells have dried up.

An estimated 25 million refugees are displaced annually by contamination of rivers and river basins, more than are forced to flee from war zones. By 2025 there will be another 2 billion more people requiring food and water.

We are very lucky in the United States. Currently we have enough water for everybody, provided we look after this precious resource - although a growing population and climate change will undoubtedly place an increasing strain on our water supplies. Just a few of the measures suggested in this guide can make a lot of difference, and also save you money.

Precious Water

Conserve water - it's all we have...

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