

*Quick and Easy  
Green Books*

# 300 WAYS TO SAVE **MONEY** *and* **ENERGY** IN YOUR **HOME**



PLUS 100 WAYS TO HELP ENSURE A BETTER  
PLANET FOR YOUR KIDS AND GRANDKIDS

By DAVID A. TROESH  
LEED AP



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To Save  
**MONEY And ENERGY**  
In Your  
**HOME**

Plus  
100 Ways to Help Ensure a Better  
Planet for Your Kids and Grandkids

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**INFINITY**  
PUBLISHING

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The materials presented in this book are meant to examine typical operations and technologies. They are meant to clarify and illustrate typical situations and must be appropriately adapted to individual circumstances. Moreover the materials are not intended to provide legal advice or establish legal standards of reasonable behavior.

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**CTAC** – Southern California Edison's Consumer Technology Applications Center. Offers dozens of free in-depth classes and seminars on all aspects of energy efficiency and energy management. Much of what is presented here, I learned or refined at CTAC. The staff at CTAC is extraordinarily knowledgeable and extremely helpful. Everyone even remotely connected to the Southern California energy industry, even as just a customer, should avail themselves of this SCE resource.

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## **PREFACE**

You can reduce your energy bills by a third or more! Everyone would already be doing it if they could just find the time to research how and where to start. To make conservation easy for you, we've done all the digging, reading and research to create an energy-saving idea book. Energy efficiency is a simple investment in your future, not a hardship. You don't have to shiver in the cold and dark or do without. It's not difficult and it's not expensive. In fact, conservation pays. To help teach and financially inspire us to find better ways to conserve, cash and tax incentives are available from local utilities and all levels of government.

From the obvious to the absurd, there are thousands of different ways to save energy. This book concentrates on 300 easy-to-accomplish, common sense ways for you to save both money and energy. A quick read-through will jump-start your environmental efforts and help teach all your family the best ways to start "thinking green."

### **Where to start:**

First, get your entire household on board. Everyone needs to be involved. You can easily accomplish your energy-saving quest with just a tiny shift in your family's attention and attitude about "greenness." For kids who don't pay bills, the chance to be the household environmental watchdog may be the best motivation to get involved. For many of the rest of us, money is the major force behind our thinking. No matter what the driving force pushing your family, the end result will be the same. When the energy-saving changes we describe in this book become a part of the everyday fabric of your life, you definitely **WILL SAVE MONEY.**



This book is divided into three separate sections. The first addresses the questions: How much can I save? What's in it for me? And what should I do first to save the most money? The second section lists over 150 unique, creative, fun and nearly forgotten ways to save money and energy. Some seem silly, some are especially for kids and some are over 100 years old, but they can all save money and energy. The third section is all about sustainability. We explain over 100 easy and inexpensive things that we all should be doing immediately. These won't save you much money in the short term but if we all followed suit, we could guarantee energy, water and a livable world for future generations.

To save you time, we've searched for money-saving tips through thousands of articles, books, websites, blogs and TV shows that relate to energy conservation. This book boils all that text down to just over 300 separate things the average American can do to save money and energy at home. From that 300, we cherry-picked our ★Favorite 50★ most important energy-savers. They're our favorites because they are quick, easy, cheap and effective.

★ ★ ★ ★ ★

## OUR ★FAVORITE 50★ EASY ENERGY-SAVERS

★ ★ ★ ★ ★

To make the most efficient money-saving use of this book, follow these steps: First, from the ★FAVORITE 50★ list below, check off the tasks that you have already completed. Second, gather your "Green Team" to prioritize the remainder of the list, then include your personal easy-to-accomplish favorites from Chapters One through Fourteen. Third, working with your "Green Team, answer the just-for-fun test questions at the end of each chapter. Four, get started!

As you read through the chapters, look for the ★FAVORITE 50★ designations for expanded explanations of the fifty energy-saving tasks on the following list.

## **★FAVORITE 50★ Energy-Saver List**

- 1. Create a Green Team.**
- 2. Turn it off!**
- 3. Replace incandescent lamps with CFLs (compact fluorescent lamps).**
- 4. Install occupancy sensors or timers in all closed or seldom-used rooms.**
- 5. Turn off driveway, patio and back yard lights whenever possible.**
- 6. Adjust timers to accommodate the seasons and daylight savings.**
- 7. Clean light fixtures and lamps.**
- 8. Buy only Energy Star® lamps and fixtures.**
- 9. Reduce plug load.**
- 10. Pursue potential rebates and tax incentives.**
- 11. Get an Energy Audit.**
- 12. Set your cold thermostat at 78° and hot at 68° degrees.**
- 13. Install programmable thermostats.**
- 14. Caulk, foam, seal up all holes, and replace worn or cracked weather stripping.**
- 15. Seal and insulate A/C ducts in unconditioned areas.**
- 16. Run high energy-using appliances like your washer, dryer or dishwasher at night.**
- 17. Install multi-pane low-emissivity (Low-E) windows.**
- 18. Check the landscaping around your A/C unit.**
- 19. Use correct temperatures.**
- 20. Retire your old refrigerator.**
- 21. Activate power management software on your computer.**
- 22. Unplug charger units when not in use.**

- 23. Dedicate power strips to specific equipment.**
- 24. Buy only Energy Star® rated office equipment.**
- 25. Ship your stuff safely.**
- 26. Use your microwave first.**
- 27. Wash full loads only.**
- 28. Keep the hot water off.**
- 29. Take advantage of your supermarket's on-sale cycle.**
- 30. Install (EPA) WaterSource® approved products.**
- 31. Turn off the water when shaving or brushing your teeth.**
- 32. Try a front-loading washing machine.**
- 33. Wash clothes only in cold water.**
- 34. Install pipe insulation and a water heater blanket.**
- 35. Install instant-hot water heaters.**
- 36. Create an air curtain.**
- 37. Make it at home like your grandmother did.**
- 38. Shop at the farmer's market.**
- 39. Buy in bulk and save.**
- 40. Have you tried serious couponing yet?**
- 41. Bill Cosby called them penguins.**
- 42. Water in the morning.**
- 43. Cover your pool at night.**
- 44. Turn off your car.**
- 45. Tune up your vehicle.**
- 46. Park in the first spot.**
- 47. Limit your Christmas gift giving.**
- 48. Be a friend to your library.**
- 49. Get your teachers involved.**
- 50. Recycle.**

# PART ONE

## EASY ENERGY SAVERS



The quantity and quality of light around us determines how well we see, work, and play. Light affects our health, safety, morale, comfort, and productivity. See below for ways to reduce the cost of lighting your home by over 50%.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER ONE

### LIGHTING

- **★FAVORITE 50★ Replace incandescent lamps with CFLs (compact fluorescent lamps).** Start with replacing just five of your most used incandescent light bulbs with compact fluorescent lamps. Replace a couple more each month until your home is 100% complete. The CFLs can cost a little more but last at

least ten times longer. Since they burn cooler, your A/C cost will be lower. Different types are available to fit almost any indoor or outdoor application and many come with rebates. You can expect each CFL to save you about \$30.00 of electricity over its life. Since they produce 75% less heat, you can save on your cooling bill, too. Tip: CFL's are the most cost-effective when illuminated at least two hours per day. **Special note:** CFLs are a great short term (2 to 5 years) energy-saver but LED lamps are a better long-term replacement option. They contain no mercury, burn cooler and last even longer than CFLs. As the technology becomes more affordably available, we suggest you switch to all LED lighting.

### INCANDESCENT vs. CFL SAVINGS

INCANDESCENT		CFLs		
Watts	Average Anticipated Life	Watts	Average Anticipated Life	Potential Annual Savings
40	1500 hours	7	10,000	\$47.17
60	1000	13	10,000	\$63.45
75	750	18	10,000	\$79.08
100	750	26	10,000	\$102.67

*The savings shown above are based on the differences in lamp life at \$.15 / kWh.*

- **Start using LED lighting.** Install light sensitive LED (Light Emitting Diodes) night-lights in dark hallways for safety. LED lamps are being used in numerous industrial and commercial energy-saving applications. Energy Star® approved LED lamps are available for several cold weather, outdoor uses including pathway

lights, step lights and porch lights. Note: Unlike CFLs, LEDs contain no Mercury, can last up to 25 times longer than incandescent lamps, burn fewer watts than CFLs and they are recyclable.

- **Don't forget about lumens.** Lumens are a measure of the quantity of light (brightness) in a space. When buying CFLs, divide the wattage of the incandescent bulb that you are replacing by four then buy the closest wattage CFL. (i.e.  $100 \text{ watt incandescent} / 4 = 25 \text{ watt CFL}$ ) For LED lighting the formula is:  $\text{incandescent bulb wattage} / 16 = \text{LED wattage}$ . (i.e.  $100 \text{ watt incandescent} / 16 = 6 \text{ watt LED}$ )
- **You have a choice of colors.** Astronomers use the same color scale (measured in degrees Kelvin-K) as the lighting industry. Above 4000K, the colors are cooler (blue or white). Below 3000K, the colors are warmer (yellow). Tip: Buy lower Kelvin temperature lighting for your bedroom and high Kelvin temperature lighting for above your garage workbench. Note: Kelvin temperatures in the lighting industry are only a measure of color and don't relate to room temperatures.
- **★FAVORITE 50★ Install occupancy sensors or timers in all closed or seldom-used rooms.** Occupancy sensors can be adjusted to go dark as soon as activity stops or a few minutes later. They are perfect energy savers for use in garages, hallways, game rooms, closets, storage rooms, pantries and bathrooms. Tip: Don't put use occupancy sensors in your bedroom. Tip #2: Accidentally leaving the light in your kid's closet every day while they're at school or outside playing adds an extra \$43.00 to your annual electric bill. ( $100 \text{ watt lamp} @ \$0.15/\text{kwh}$ )
- **Install dimmer switches with dimmable lights in most rooms.** Just because you install a 250-watt bulb doesn't demand that you use all that light. Reducing

the brightness by half reduces the energy usage by about half, too. Dimming also extends your lamp life. If you don't install dimmers, then use the lowest wattage light bulb that will do the job. Dimmable lights are effective in almost every room. Tip: Not all CFL lamps are dimmable.

- **★FAVORITE 50★ Turn off driveway, patio and back yard lights whenever possible.** Installing timers or motion sensors will save you money. For safety and security, a combined motion sensor and photocell controller is an even better answer. Tip: LEDs are great for outdoor applications because of their long life, performance in cold weather and their recyclability.



Light switch covers like these will help your family remember to shut off the lights. From [awarenessideas.com](http://awarenessideas.com)

- **★FAVORITE 50★ Adjust timers to accommodate the seasons and daylight savings.** Burning just two 100 watt light bulbs on your back porch for only an extra hour every day wastes about \$11.00 (at .15/kwh) dollars per year. That doesn't sound terrible unless you start counting how many lamps you have throughout your home and around your property that are burning unnecessarily.

- **Repair or replace twist-timer light controls.** If you have twist timers anywhere in your home, make sure that they are operating properly. If not, replace them, hopefully with occupancy sensors or digital timers that are much more efficient.
- **Use Task lighting.** Instead of lighting an entire room, direct the light only where you need it. (i.e. If your desk lamp is adequate, don't turn on the overhead lamp in your home office, especially during the day.)
- **Do not over light.** Too much light is worse on your eyes than too little. Just because a light fixture can accommodate more lamps is no reason to install them. Also consider using three-way lamps. Use the lowest wattage setting whenever possible. Tip: Younger eyes require less light than older eyes.
- **★FAVORITE 50★ Clean light fixtures and lamps.** A dust-covered light bulb hidden by an even dustier opaque lampshade can lose up to 80% of its brightness. When it comes time to replace old electrical fixtures, look for the Energy Star® label. Tip: Most lamp brightness will degrade over time. When your lamps have faded so far that no amount of cleaning will help, it is time to retire them even if they are still burning.
- **Remove excess lighting in hallways and storage spaces.** Reducing excess lighting can be as simple as removing two lamps from a four lamp linear fluorescent fixture. For even more savings, replacing the remaining lamps with higher output, lower wattage lamps can cut your per fixture electrical usage by up to 70%.
- **Take advantage of existing natural daylight to lower interior lighting.** Natural outside lighting is better for dozens of health reasons. Take advantage of “real light” whenever possible by hanging light-colored, loose weave curtains. Tip: Use heavy



curtains to block radiant heat in the summer time and as a window insulator in the wintertime.

- **Install a skylight.** A properly installed skylight can not only provide free light, but it can also reduce heating and cooling costs. Tip: Depending on where you live, skylights can also add heat load.
- **★FAVORITE 50★ Buy only Energy Star® lamps and fixtures.** Energy Star® lamps and fixtures are meticulously tested by third party agencies for quality and to verify advertised service life. Energy Star® quality fixtures typically distribute light more efficiently and evenly than standard fixtures. Note: Lamp is the electrical industry's term for a light bulb or fluorescent tube. The device that supports and illuminates a lamp is called, by them, a fixture or luminaire.
- **Upgrade your fluorescent tubes.** If you still have old T-12 fluorescent tubes (1.5" diameter) in your garage or laundry areas, upgrade to T-8s with electronic ballasts and reflective backing. For a very long life, mercury-free alternative, switch to an LED tube.
- **Replace mercury vapor lights.** Mercury Vapor lamps are so energy inefficient that the government has banned their manufacture. A Pulse Start Metal Halide lamp produces more light for less wattage. The electrical savings will pay for the retrofit in about two years.
- **★FAVORITE 50★ Reduce plug load.** Review the electrical usage and necessity of every single item being energized by a wall plug or controlled by a light switch. Every watt counts. Tip: Buy a Kill-a-Watt™ wattage measuring/conversion device to calculate the daily, weekly and monthly cost of everything electrical in your home. Another good tool is Watts Up? Pro Power Meter® from Home Depot.®

- **Dissect your electric bill.** Figure out what each entry on your utility bill really means and how best to reduce it. Your utility company can be very resourceful finding ways to help you save money.
- **Take advantage of your utility company's "Time Related Demand Metering" rules.** In some areas, you can reduce your electric bill simply by turning off your A/C. Call your local utility to see if you are eligible for any of their savings plans and which might fit your situation best. Note: In areas where TOU (time of use) technology is available, your cost/kWh can change throughout the day based on overall grid demand. You will be able to save a lot of money simply by working your appliances during off-peak hours.
- **★FAVORITE 50★ Pursue potential rebates and tax incentives.** Both utility companies and local governments are providing rebates on many energy-saving purchases. The federal government and some states are offering tax incentives on a large number of home improvements. There is no other industry that pays you to not buy their product. You will be surprised at how much money is available and how easy it is to get.
- **Arrange furniture to better utilize natural lighting.** You don't have to be a *feng shui* master to understand the importance of optimum utilization of natural light. Better grades, better moods and generally better health have all been linked to natural light. Rather than wasting expensive electricity to create a less-healthy home environment, use this free light source as often as possible.
- **Paint your interior walls a light color.** All-white walls are boring but they are the most reflective. Compromise by painting your interior walls a light color to increase lighting efficiency. Tip: Given the

same hue, a high gloss finish (with a specular reflectivity of 70 to 89%) is the most reflective but it shows all the texture flaws. A totally flat surface (1 to 9% reflectivity) reflects the least light and is the hardest to clean. An egg-shell finish with a 26 to 40% reflectivity effectively combines the best elements of both. Light colored, reflective walls allow you to save money by using less electricity to illuminate a space effectively.

- **Install window film to block sun-generated heat and reduce glare.** There are dozens of different types of window film from blackout to totally reflective from which to choose. Use a high-quality film and a professional installer to make sure you get the most efficiency possible for your situation.
- **Turn off outdoor natural gas lamps.** Burning just eight of these beautiful decorative lamps every night wastes enough fuel to heat most homes for the whole winter.
- **★FAVORITE 50★ Get an Energy Audit.** An in-depth energy audit counts the energy usage of every electric appliance and lamp in your home. You can't fix what you don't measure. Call your local utility company for help getting an energy audit. They can direct you to a competent vendor or explain how you can do it yourself. Tip: Sometimes these audits are free.

### TEST QUESTION

Q. What is the quickest way to save money on your lighting today? A. Until LED lamps become more available, change out your ten longest burning incandescent bulbs to CFLs.



Your biggest savings opportunity is on your HVAC. There are lots of ways to save money without compromising your comfort. Start by resetting your thermostats, then move on down the list.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER TWO

### HVAC

- **★FAVORITE 50★ Set your cold thermostat at 78° and hot at 68° degrees.** For each cooling degree above 78°, you can save about 5% on your A/C bill. There are comparable savings with your heating below 68°. Tip: Consistently lowering your thermostat 10° every night can lower your heating bills by 10 to 20%.
- **★FAVORITE 50★ Install programmable thermostats.** Most homes can reduce their A/C costs by 20% simply by installing an inexpensive programmable thermostat. With it, you can program exactly how long your A/C will be running and at

what temperature. This is one of the most important energy-saving upgrades that you can make. Tip: Don't install the thermostat near a lamp, TV, air register or other heat source or on an outside wall. Tip #2: Make sure you properly program the unit, especially the differential settings.

- **Check all programmable thermostats for fresh batteries.** Some of the newer programmable thermostats are powered by a light-reactive photocell. If yours is an older one, replace the batteries annually just like you do for your smoke detector alarm.
- **Remember the target temperature myth.** Setting your thermostat colder in the hope of cooling the room faster doesn't work. Aim for the right temperature target, not a lower one. The room won't cool any faster. All you accomplish is using more energy if you forget to adjust the thermostat as your room cools.
- **Install an EMS (Energy Management System) system.** Install an EMS system capable of separately controlling lighting and HVAC. A highly sophisticated EMS can control lighting outside and in every room while simultaneously monitoring and controlling separate room and even pool temperatures. If this is far more technology than you need to keep you comfortable, consider programmable thermostats.
- **Purchase Energy Star® rated equipment.** If it is time to purchase a new A/C unit, make sure your research leads you to Energy Star® where qualified models can save you up to 15% per year. Tip: If your A/C unit is more than fifteen years old, and you use it a lot, the energy savings alone will pay for it in just a couple years.
- **Get an annual tune-up.** A proper annual inspection by a qualified HVAC contractor should include:

cleaning, lubricating, calibration, adjustment and new filters. A system tune-up should reduce your heating cost by about 5%.

- **Change A/C and heater filters as often as necessary.** Depending on the dust, smoke and air quality in your area, anywhere from 2 to 12 filter changes each year may be necessary. If your area is occasionally cursed with a fire, change your filters as soon as the smoke clears. A good general rule of thumb is to change your filters every three months. Tip: Don't buy the really cheap "bottle-cap" air filters. They only stop relatively large particulate matter, and health wise, they are virtually useless. Use the relatively inexpensive, correctly sized, pleated filters instead.
- **Turn heater pilot lights and timers off in summer.** Most newer model heaters don't have pilot lights. If you have an older home with older equipment and are uncomfortable with the technology, your local gas company can help you. Tip: Depending on your weather, new equipment can pay for itself in a relatively short period of time. It's worth investigating.
- **Use portable space heaters or fans in enclosed rooms.** Rather than adjusting the temperature for your whole house when you are really only using one room, bring in a portable fan or space heater to help raise your comfort level.
- **Keep air grills and registers clean and unblocked.** Remove the clutter and furniture around all grills, registers and diffusers. Increasing the potential airflow reduces the run time on your A/C motors and extends their life. Tip: Pay particular attention to floor-level grills when you move furniture so as not to block them.

- **Clean grease filters.** If you have grease filters, either on an exhaust hood or on the microwave above your stove, make sure you clean them periodically. Warning: In just one hour, an ignored kitchen exhaust fan can pull out an entire houseful of warmed or cooled air.
- **★FAVORITE 50★ Caulk, foam, seal up all holes, and replace worn or cracked weather stripping.** Huge amounts of conditioned air slips outside through loose windows, doors and the cracks around them. Dampen the back of your hand to check for escaping air, then do whatever repairs and upgrades are necessary to keep it inside. Other places to check include: gaps along baseboards, mail chutes, phone, gas, electrical or cable entry ports and any crack in the stucco, siding, foundation or brickwork. These easy-to-accomplish repairs can reduce HVAC cost by 10%. Tip: Install foam gaskets behind outside wall electric outlets and switch plates.
- **★FAVORITE 50★ Seal and insulate A/C ducts in unconditioned areas.** Even in the best-kept homes A/C ducts get disconnected and/or the insulation gets knocked off by accident. Look for discolored insulation or small piles of dust to help find the leaks.
- **Test for air leaks with a candle.** Test for air leaks around windows and doors with a lit candle. Watch the direction the smoke moves and whether the flame flickers. Tip: Most conditioned air leaks occur around windows, so start your search there. Tip #2: A less hazardous method is to dampen the back of your hand and use it to check for leaks.
- **Install door sweeps on exterior doors.** Hot or cold outside air blowing in under your door is reason enough to think about door sweeps. Thinking further about the insect and rodent population outside that would rather live indoors with you should inspire you

to action. Tip: If you have one, don't forget the door leading from your garage into your house.

- **★FAVORITE 50★ Run high-energy appliances like your washer, dryer or dishwasher at night.** Especially in the summer time, when it's super-hot and every business and home in town is running their A/C units full blast, don't add to the afternoon electrical load with your washer, dryer or dishwasher. Save that work for late night when most businesses have dropped off line. Tip: Some utilities have summer plans that will actually pay you to work your appliances only at night.
- **Consider a whole house humidifier.** With a whole house humidifier, in winter, you can lower the room temperature about 5° F and still stay comfortable. By maintaining the relative humidity in the 35 to 45% range, your furniture and the surroundings will radiate heat back into the room even after the heater turns off.
- **Install reversible ceiling fans.** Typically, in summer, a fan doesn't actually lower a room's temperature. It's the breeze evaporating the perspiration on your skin that gives the perception that you are 5° cooler. In winter, by reversing the fan's direction, you can drive the hot air that is uselessly accumulating at the ceiling back down around the wall to warm the room. Tip: When you leave the room, turn off the fan.
- **Consider a heat pump.** If you use electricity for home heating and live in a moderate climate, a heat pump can reduce your electrical usage by as much as 30 or 40%.
- **Install glass doors on fireplaces.** Glass fireplace doors stop cold air infiltration coming down the chimney and warmed air escaping up the chimney. The glass retains the heat from the fire and radiates it



into the room. Tip: Make sure to keep your flue closed when the fireplace is not in use.

- **★FAVORITE 50★ Install multi-pane, low-emissivity windows.** High performance, gas filled, double-paned “low emissivity” (Low-E) windows are quickly becoming the standard in the new housing industry. Unfortunately, except in more intemperate areas, retrofit, replacement windows have a slow payback. Tip: Besides saving energy dollars, double pane windows also block out noise. In some areas, noise is a bigger pollutant than bad air.
- **Install special window coverings and/or awnings.** If you don’t have trees, create shade on the outside of your home with awnings. Inside, use white shades, white-lined drapes or white blinds to help control solar gain adding to the temperature of your home. Tip: In winter, open your south-facing window drapes to allow as much warmth in as possible. (Note: Cleaner windows let in more heat.) Close these same drapes and/or blinds at night to help keep the warm air inside.
- **Install window film to block sun-generated heat and reduce glare.** There are dozens of different types of window film from blackout to totally reflective. Use a high-quality film and a professional installer to make sure you get the most efficiency possible for your situation.
- **★FAVORITE 50★ Check the landscaping around your A/C unit.** Don’t let your successful garden overrun your A/C unit. Make sure mounded mulch, trees, shrubs or intruding grass don’t block the coils on your exterior A/C unit. Tip: Shading your A/C unit helps reduce its energy usage by up to 10%.
- **Research landscaping options.** Depending on city and HOA (Home Owners Association) restrictions,

you may be able to shade your home with trees or other plants to minimize solar gain. Shading the south-facing wall will have the largest impact on the temperature of your home. Tip: Besides providing shade, trees also remove CO<sub>2</sub> from the air.

- **Install a light colored, preferably snow white, roof membrane.** If you live in warmer climates, a white, heat-reflective roof can have a significant impact on your energy usage. White roofs are becoming commonplace on commercial buildings but are rarely used in residential construction. Warning: Being the best energy-saving option won't always guarantee instant approval by your neighbors, especially a home owner's association.
- **Turn off patio space heaters as often as possible.** Patio heaters are a great patio innovation especially if you live in the desert with its significant end-of-day temperature drop. All energy is expensive, even propane, so when you leave your patio, don't forget to turn off the overhead space heaters.
- **Turn off patio misters.** If you are blessed with enough water to install patio misters, make sure they only operate when someone is close enough to really enjoy them.

### TEST QUESTION

Question: If you only have a half hour to spare, what is the one thing that you can do today to save HVAC energy dollars? Answer: Find the directions to your thermostat and figure out how to reset the temperature parameters and lock it so the kids can't change it.



Your refrigerator is the biggest energy-hog appliance in your home. Following the steps below will extend your refrigerator's life and lower your energy bill.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## **CHAPTER THREE**

### **REFRIGERATION**

- **★FAVORITE 50★ Use correct temperatures.** Colder isn't always better. The following are the temperature ranges typically used in food stores. You can cheaply verify your refrigerator's temperatures with an outdoor glass bulb thermometer. For more accuracy, try a regular store-bought refrigerator thermometer. Tip: Setting your refrigerator/freezer temperature 10° colder than recommended can increase your energy cost by 25%.

Dairy = 32 to 36°

Frozen Food = 0 to -5°

Meat = 28 to 30°

Ice Cream = -8 to -12°

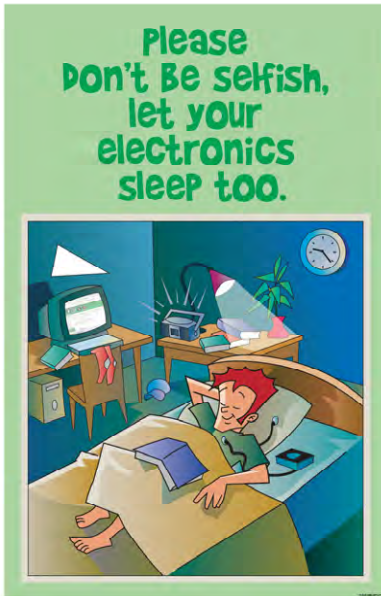
Meat/deli = 32 to 36°

Produce = 35 to 40°

- **Do a dollar bill test.** Keep your refrigerator door seals clean and in good repair. Insert a dollar bill halfway into the door. If it slips out easily, you may need new seals or a latch adjustment. Tip: Keep the door closed as much as possible.
- **Clean self-contained refrigerator coils regularly.** An occasional vacuuming will significantly extend the machine's life by decreasing the motor run time. Plus: Keeping coils clean can reduce energy consumption by 25%.
- **Let your refrigeration coils breathe.** Don't set your self-contained home refrigerators, wine coolers or freezers tight against the wall. Set them four inches from the wall to keep air flowing properly around the refrigeration coils. Tip: Don't place refrigerators in direct sunlight or next to a heat-producing appliance like your stove or dishwasher.
- **Avoid ice build-up.** Regularly defrost manual-defrost freezers. When your coils are covered in ice, your unit wastes energy by running longer.
- **★FAVORITE 50★ Retire your old refrigerator.** If your old refrigerator is more than ten years old, it is likely using three times as much energy as today's more efficient models. Use an on-line calculator to figure out how soon a new one will pay for itself. Tip: Many utilities will haul an old one away for free. Tip #2 – Don't retire your refrigerator to the garage. Donate it or recycle it.

### TEST QUESTION

Question: Your refrigerator is your biggest energy hogging appliance, what can you do to make it use less? Answer: Verify the temperatures in both compartments with an outdoor thermometer and then adjust them to match the chart shown above.



You already try to save money everywhere you can. Here are some tips that apply to both office and home management. Whether you work full or part time from your home or just have a family-use computer, these suggestions will save you money.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER FOUR

### HOME OPERATIONS and OFFICE EQUIPMENT

- **★FAVORITE 50★ Create a Green Team.** In schools, churches and the work place, creating a Green Team is fairly easy. There, the team's primary function is to manifest the habit of sustainability. At your home, whether your family is big or small, everyone needs to be part of the environmental solution. Being an important player on your Green Team shouldn't be optional. You will be surprised how tuned in your children are to the environmental movement. Take advantage of their enthusiasm. Remember, you don't have to do everything listed in this book at once. Sustainability is a slow process and mostly involves a simple attitude change. Start small,

but on several fronts. It's easier than you think. Tip: Post your home electric bill every month and celebrate your savings.

- **Spread the truth about power-down techniques and screen-saver myths.** In the ancient days of primitive mainframe computers, technicians believed that computers would last longer if never powered down. That idea has now proven to be incorrect. Other ill-informed techies still think that a screen-saver reduces monitor energy usage. They are incorrect, too. Tip: Turn off your monitor if you are leaving for more than twenty minutes. If you are leaving for more than two hours, and you are not an integral part of a network, shut down your computer and printer, too, especially at night.
- **Choose a laptop.** Laptop computers burn about 50% less power than a regular computer and they are easier to unplug so you don't have to worry about wasted vampire power. There are dozens of good reasons to choose a laptop over traditional types. When it's time to invest in new equipment, make an energy-conscious choice. Tip: Don't forget to plug your new laptop charger into a power strip with an on/off switch, not the wall. Some chargers burn about the same amount of electricity whether they are charging something or not. Use the power strip's on/off switch to save energy.
- **★FAVORITE 50★ Activate power management software on your computer.** If your computer doesn't have a power management system, you can download free software from Energy Star®. ([www.energystar.gov/benchmark](http://www.energystar.gov/benchmark) - ENERGY STAR'S® power management software). Properly used, a good power management system can reduce your computer system power usage by up to 90%.

Since your computer will run cooler, using a low-power mode can extend its life.

- **★FAVORITE 50★ Unplug charger units when not in use.** Charger units for phones, ipods, cameras etc. draw nearly as much electricity when charging as when on standby. These units are one of the two major power vampires that suck up to 10% of all the power used in a typical home. (The other power vampires are anything with a clock or glowing light. i.e. TVs, sound systems, computers, microwave ovens.) Keep the chargers unplugged unless actually in use. Note: Easily accessible power strips are perfect for this application as long as everyone remembers to click the 'on' switch when they plug back in their equipment.
- **★FAVORITE 50★ Dedicate power strips to specific equipment.** Many types of home office equipment, especially computers, printers and monitors suck vampire power even when not in use. The EPA estimates that 75% of the electricity used to power home electronics is consumed while the units are turned off. Centralize all electronics when possible to run off a power strip to simplify turning them off all at once. A combined computer and CRT burn close to 150 watts of power. Turning them off for only eight hours every night will save \$65.00 per year. If you have to leave the computer on as part of a system, at least power down the monitor and printer overnight.
- **Give your appliances a vacation, too.** Unplug everything possible before leaving on vacation. Many appliances still draw a small amount of electricity, even when off. Be sure to adjust the parameters on your heater-A/C unit to stay off while you are gone. Don't forget to turn your water heater off, too.
- **★FAVORITE 50★ Buy only Energy Star® rated office equipment.** When you look at saving energy through your home office equipment, you only have

two real choices: 1) Turn it off! 2) Buy Energy Star® rated equipment, much of which uses about 50% less electricity. The DOE (Department of Energy) through their Energy Star® program maintains a growing list of the best energy efficient equipment available for your home office. Many of the listed items carry rebates, so don't miss out when they are available. Energy Star® rated equipment can help reduce air-conditioning loads, fan and transformer noise and monitor electromagnetic field emissions.

- **Pay bills through an e-billing program.** Signing up for electronic billing saves you time, stamps and a trip to the mailbox or post office. Many companies are offering discounts to their customers in thanks for their reduced operating cost and the savings you generate for them.
- **Print on both sides of all your papers.** If your printer has an option to print two sides of a sheet, be sure to activate it. If not, draw a quick yellow highlighter stripe across unneeded (and unwrinkled) papers, then feed them back into your printer's paper tray. It is a very small thing that makes a very strong statement to your family about your commitment to the environment. Besides, every tree saved from the paper mill reduces carbon dioxide emissions, air pollution and is a cheap and easy eco-victory you can share with your family.
- **Use recycled paper.** Unless you are printing a document going out to someone very important (like a resume' or Christmas letter), use paper with a high-recycled content. Use the least expensive acceptable paper available for all your written communications.
- **Recycled bills.** Buy a home shredder to shred non-recyclable paper, sensitive mail and home generated paperwork. Use the shredded paper as packing material so that you are certain of its final



destination. See the section on recycling in chapter seventeen for a complete list of other recyclables.

- **Moving?** Wherever you are moving to, don't forget these simple moving tips from the EPA.
  - 1) Donate unneeded books to the library or community center.
  - 2) Hold a yard sale.
  - 3) Donate yard sale remnants to local charities.
  - 4) Donate food items to food banks or local shelters.
  - 5) Use used boxes and packing material.
  - 6) Some cities will pick up large items (like refrigerators or couches). Give them a call.
  - 7) Properly dispose of used car fluids, pesticides, paint, cleaning supplies and anything with a motor (i.e. lawn mowers, snow blowers, chain saws).
- **★FAVORITE 50★ Ship your stuff safely.** No matter what you are shipping, you want it to get there in the same condition that it left. There is a new, very lightweight, incredibly strong, packing carton material available from Hexapack. Not only does it exceed the manufacturer's claims but it is made from recycled material and is biodegradable. See this new recyclable packaging material at [www.hexapack.com](http://www.hexapack.com) We have included it here because it is forward-thinking technology using recycled material.

### TEST QUESTION

Question: What can you do to inspire your "Green Team?" Answer: Hold a family meeting and choose a mascot as the first order of business. A ninja-type cartoon turtle or Kermit the Frog are traditional favorites.



Saving money and energy in the kitchen is easy. There are dozens of cost-free ways that require only a tiny shift in technique or attitude. Listed below are some of our favorites.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER FIVE

### IN THE KITCHEN AND COOKING

- **Some energy-saving cooking tips from the EPA.**
  - **Cook when it's cool.** Try to plan your cooking so that the oven and the A/C never need to be on at the same time.
  - **Don't preheat.** If the meal you are cooking takes over an hour, don't preheat your oven. Even for shorter cooking times, never preheat your oven for over ten minutes.
  - **Conserve oven heat.** Cook several dishes at once to conserve oven heat. Average all the cooking temperatures when you have a variance.

- **Don't peek.** Opening an oven door can drop the cooking temperature by up to 75°F.
- **Use residual heat.** Turn off your oven a few minutes before it's done and let the residual heat finish cooking your meal.
- **Grab the right pan.** A 6" pan on an 8" burner wastes 40% of the energy you are using.
- **Buy a combination oven.** A combination convection and conventional oven cooks food faster at lower temperatures.
- **★FAVORITE 50★ Use your microwave first.** Microwave ovens can save up to 70% over other household appliances. Use them first. Your microwave oven is one of the highest efficiency, major appliances in your kitchen. Ranked by energy usage, next come toaster ovens, then regular ovens. The worst energy burners are griddles and broilers. Tip: Microwave ovens work best when clean. To clean yours easily, cook a wet cloth on high for about 30 seconds. The steam will loosen crusted splatters, which you can remove with the warm cloth. Be careful not to burn yourself.
- **Use a toaster oven instead of your big oven.** A toaster oven heats up quickly and uses far less electricity than your big oven. It is the perfect solution for small meals, side dishes and, of course, any size toast.
- **Use free heat.** Turn your oven off a few minutes before you are done cooking. The oven will use the retained heat for up to 30 minutes to finish your cooking for free. Tip: This works great for turkeys, meatloaf, chicken and baked potatoes, but not so great for cookies, cakes or brownies.
- **Use flat-bottom pans with lids.** Flat bottom pans provide a larger surface area for the most efficient

interface with your heat source. A lid contains the heat inside your pot where it belongs rather than escaping into your kitchen where it can raise temperatures and your A/C cost. Tip: Always match the size of the flame (or electric coil) to the size of the pan for greater efficiency.

- **Use a pressure cooker.** Pressure cookers cook food faster than regular pots or pans. Your grandmother probably used one every day. You can save money by following her example.
- **Make Sun tea.** Rather than wasting gas or electricity boiling water on your stovetop, use the sun's free energy to make your tea. It is easy to do, super-cheap to make and unlike soda pop is actually good for you.
- **Put timers on coffee makers.** If your coffee maker didn't come with a timer, plug it into one. An ignored coffee pot will boil its contents down to powder, smell horribly and crack the carafe. Even if it doesn't break, cleaning it is so labor intensive, you might be better off throwing it away or recycling it.
- **Cool your food for free.** Rather than attacking your refrigerator with a wave of hot air, let your leftover food cool a little before putting it away. The USDA recommends refrigerating leftover food within two hours after cooking.
- **Pre-wash only when necessary.** If the age and efficiency of your dishwasher demands that you scrape the dishes nearly clean before washing, rinse them in a gentle stream of cold water right after dinner, before the food hardens. Pre-rinsing can use up to 20 gallons of water at every meal. When you review the cost of both the wasted water and electricity and decide that it's time to retire the machine, don't forget about Energy Star® approved appliances. Tip: Cleaning the dishwasher drain helps your machine run more efficiently.

- **★FAVORITE 50★ Wash full loads only.** Use your dishwasher only for full loads. You will save water, soap, electricity and gas (depending on your water heater). If you only have a few dishes, skip the dishwasher and do them by hand. Tip: Don't use the rinse hold setting for small loads. It calls for three to seven gallons of hot water.
- **Keep your refrigerator full.** An empty refrigerator or freezer is expensive to run. A full one retains the cold. Stocking your extra refrigerator with bottled water, soda or beer can actually save you money. Tip: Most refrigerators only run about one third of the time. If yours is constantly running, call a repairman.
- **Clean your refrigerator door gaskets.** Finger marks and food often build up on refrigerator door gaskets. Use a mild soap and water solution or baking soda and water solution to keep them clean. If your door gaskets get torn or broken, replace them.
- **Clean all condenser coils.** Vacuum the dust from your condenser coils on the back of your refrigerator at least once each year. Unplug the refrigerator for the five-minute cleaning job. If you have a small patio refrigerator, garage freezer or extra refrigerator, don't forget to do it too. Tip: Review the electrical draw on your garage freezer and refrigerator. If they are over ten years old, replacing it with an Energy Star® unit will likely pay itself in just a couple years.
- **Polish heat reflectors.** Take advantage of the physics behind heat reflectivity by cleaning all the reflective surfaces on your stove and inside your ovens and broiler.
- **Clean burners regularly.** Clogged gas burner ports cause uneven heat distribution and waste gas by extending cooking times. Tip: If your gas flame is more yellow than blue, it is inefficient. Check the manual or call the manufacturer.

- **★FAVORITE 50★ Keep the hot water off.** Always leave your faucet in the cold position so that you don't accidentally draw water all the way from your hot water heater when you don't actually need it. In the center position, your faucet is mixing water from both the cold and hot water lines. Every time you remove water from the hot water line your water heater has to heat more water to replace it.
- **Install a quality water purification system.** It will guarantee the taste and purity of your water and avoid the expense of bottled water. Tip: Using purified water to refill your carefully cleaned store-bought bottles can save you hundreds of dollars each year.
- **Save while washing fruits and vegetables.** Wash fresh fruits and vegetables in a bowl of cold water (not a colander) placed in your sink. This method will save gallons more than simply running cold water over them as you scrub them.
- **Enjoy instantly cool and refreshing water.** Keep a bottle of cold water in the refrigerator rather than turning on the tap and waiting for cooler water. Besides, even at its best, refrigerated water is much more refreshing than tap-temp water. Also, since the water helps retain the cold, your refrigerator has to work less.
- **★FAVORITE 50★ Take advantage of your supermarket's on-sale cycle.** Most typical groceries (except some staples like bread, milk and eggs) go on sale at least every twelve weeks for 20% to 30% below regular price. Shopping the ads and buying a three-month's supply of food at a time can save a family of four nearly \$2,000 a year. Tip: Use coupons to save even more.
- **Buy in bulk.** Buy in bulk, then repackage as needed, preferably in reused glass containers, not plastic. Individual servings cost more and create the need for

wasteful excess packaging. Consider bringing home the largest size package that you can use before it spoils. Warning: Always check the cost per unit (i.e. cents per ounce). Sometimes the smaller size is cheaper, especially if it is on sale.

- **Think about leftovers.** Some people prefer starvation to eating leftovers. Unless you and your family are absolutely opposed to them, always buy and cook with leftovers in mind. Simply double your recipe and freeze half to reheat later. (Reheating takes less energy than cooking.) You reduce your cooking time and cost per meal while increasing potential quality family time.
- **Compost food scraps and unwanted leftovers.** If you have enough room in your yard, compost food scraps along with your biodegradable garden trimmings. Check the EPA website for a list of food items to avoid composting before you start.
- **Buy Energy Star® rated appliances.** Once again, you can't go wrong with Energy Star® rated kitchen appliances. Manufacturers all over the world are racing to create more efficient products in the hopes of gaining a competitive edge. Note: Many utilities are offering rebates on Energy Star® appliances to help defray the occasionally higher initial cost. Tip: When oven shopping, look for self-cleaning features, a window and electronic timers. All three features will save energy.

### TEST QUESTION

Question: Next time you go grocery shopping, what are you going to do differently to save money and energy? Answer: Shop the ads, make a detailed list and buy the non-perishables in bulk. Don't forget to share your surplus.

**Please don't  
waste water.**



Water heating can account for 14%–25% of the energy consumed in your home. The biggest cost is for the energy to heat and maintain hot water. Below are easy ways to save hot water so that no one in your family will ever shiver through a cold shower again.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER SIX

### WATER AND WATER HEATING

- **★FAVORITE 50★ Install WaterSource® approved products.** Install EPA approved WaterSource® flow restrictors, aerators and showerheads. Besides the obvious cost of just purchasing your water, there are two hidden charges: 1) The cost to heat it. 2) The cost to dump it into your sewer. Don't waste water! EPA approved WaterSource® aerators and flow retarders are quick, inexpensive, easy to install and can reduce your water consumption by up to 30%. There are dozens of showerheads on the market promising water reductions of up to 50%. Use both for maximum



savings. Tip: Aim for a flow rate of 2.5 gpm (gallons per minute) or less for maximum efficiency. A quality low-flow showerhead will pay for itself in energy savings in about four months. Tip #2: If you have an electric water heater, install a timer to heat your water only during the times that you are home.

- **Don't use hot water for defrosting.** Hot water defrosting worked great for your grandmother, now we have a better way. Most microwaves have a defrost cycle that uses less power than the cost of the water you are throwing away as you circulate it around whatever you are defrosting. Tip: Plan ahead and defrost your Thanksgiving turkey in the refrigerator, not in the sink.
- **Install water-efficient faucets and toilets.** The cost of water is only a small part of your total energy bill, but well worth careful scrutiny. Beyond the dollar figure on your utility statement, there is the hidden cost to heat it and the ignored cost of flushing it into the sewer system. Fixing the drips and leaks is the first and most obvious step. The more costly second step is to replace faulty or marginal faucets and to install low water usage toilets. Careful attention to detail can reduce your water consumption by half.
- **Try partial pressure water.** Teach your family (and yourself) not to turn on the water full blast when washing your hands or rinsing dishes. Adjust the water pressure downward; partial pressure will work just as well and save water.
- **★FAVORITE 50★ Turn off the water when shaving or brushing your teeth.** This is one of the oldest water-saving tricks, and the most obvious. Dentists recommend brushing for three minutes and shaving takes at least five. At a typical flow rate of two gallons per minute, that equates to dozens of gallons of water wasted by every person in your

household every day. Even if you don't already take advantage of these savings, these are good habits to build on. Tip: Running hot water for shaving wastes both water and energy.

- **Repair all leaks.** Compared to electricity, your water bill may seem so miniscule that it's hardly worth bothering about. But, at one drop per second, you waste 3000 gallons each year. Throwing away cold water is bad enough but a fast-flowing hot water leak will quickly cost you more than a visit from your plumber.



Water-saving reminder stickers from [awarenessideas.com](http://awarenessideas.com)

- **Install filler water bottles in toilet to displace water in tank.** For a quick, really cheap toilet fix, simply install a couple weighted bottles of water to displace the unneeded water in your tank. It seems silly, but this simple no-cost trick can save you the cost of new toilets plus thousands of gallons of water each year. Tip: Make sure that whatever you add to the tank doesn't interfere with the flushing mechanism.
- **Take a shower, but keep it short.** Baths require about 70 gallons of water. A five-minute shower utilizing a WaterSource® approved showerhead uses only 10 to 25 gallons. If you really need a bath, plug the drain and adjust the water temperature as the tub is filling rather than after. Note: Showers consume about 25% of the water used inside your home.

- **★FAVORITE 50★ Try a front-loading washing machine.** An Energy Star® front-loading washing machine uses up to 75% less water and 85% less energy than a typical top-loading machine. They use less soap (which is good for the environment), are gentler on your clothes and spin out more water so your dryer uses less energy to dry them. A per load cost as low as \$.07 is one of the reasons that 90% of the washing machines sold in Europe are front-loading units. Tip: No matter what type of washing machine you use, make sure to only wash full loads or adjust the water level to match your load size.
- **★FAVORITE 50★ Wash clothes only in cold water.** Up to 95% of the energy used washing clothes in hot water is simply for heating the water. There are dozens of highly effective cold-water detergents on the market today. Save the hot water cycle for oily and stained clothes. Take advantage of all the choices that all those dials and knobs on your washing machine give you. Experiment with water level, number of rinses, water temp, pre-wash, soaking etc. to minimize both your water and energy usage. Tip: If you absolutely must wash with warm water, remember to follow it with a cold-water rinse. It's just as effective as an expensive warm water rinse.
- **Mix your colored clothes.** Combine colorfast clothing to make a full load. The strict fifty-years-ago "don't mix colors" rule no longer applies. Very few colors run, especially with the correct detergent and in cold water. Give this a try.
- **Choose a clothes dryer with a moisture sensor.** Clothes dryers are such energy hogs that Energy Star® won't approve any of them. If you don't have room for a clothesline, your best energy-saving alternative is a dryer with a moisture sensor that shuts the unit down as soon as your clothes are dry. Tip #1:

A Gas dryer costs about half as much to run as an electric dryer. Tip #2: Make sure that the outside heat exhaust line is clear and that you remember to clean the filter after each load for added long-term savings.

- **★FAVORITE 50★ Install pipe insulation and a water heater blanket.** Most heat loss from your water heater occurs within the first three to six feet of the “out” pipe. Insulate as much as possible, but definitely the first six feet. Wrapping your water heater with an easy-to-install heat blanket will save money from the first day and act as a constant reminder to your family about saving energy. Tip: Insulating your pipes can raise your end-point water temperature by 2° to 4°F.
- **Lower water heater temperature to 120°.** The health department only requires food establishments to maintain 120°F hot water for food safety and cleanliness. It’s the right temperature for home use, too. Higher temperatures are both wasteful and create a dangerous scalding potential.
- **Install an Energy Star® rated water heater.** Just as with their lighting, home office and appliance specifications, Energy Star® has stringent requirements for the manufacture, reliability and energy-saving potential for home water heaters. Take the time to shop around before your water heater crashes to find a qualified Energy Star® model and a reputable installer. Tip: Heating water accounts for 13% of your energy cost.
- **Drain out a couple quarts.** Drain out a couple quarts of water (depending on the manufacturers recommendations) every three to six months to remove the sediment that lowers the efficiency and shortens your water heater’s life. Tip: Use the water

for irrigation but don't spray hot water directly on your plants.

- **★FAVORITE 50★ Install instant-hot water heaters.** Instant-hot water heaters are a perfect solution for sink locations that are remote from your master water heater (i.e. upstairs restrooms). There are a number of tankless models available that will help save both the cold water you throw away waiting for the hot water to travel to your sink and the electricity or gas you use to keep the water hot in a large tank. When you consider that you also waste the cost of heating all the hot water that is left in the pipe between the end-point sink and the hot water heater when you turn the hot water off, the cost of an instant-hot water heater becomes even more sensible. Researchers have found tankless water heaters creating savings of up to 30%. Tip: Having virtually unlimited hot water is not a valid reason to take a 30 minute shower. Note: There are rebates attached to many Energy Star® tankless water heaters.
- **Install a solar pool heating system.** If you are blessed with a swimming pool or hot tub, using solar power to heat the water is cost-competitive with conventional systems and will significantly reduce your operating costs. Tip: As an incentive to cover it after each use, calculate the increased energy usage for your hot tub when you leave the lid off. Tip #2: Many pool pumps are allowed to run for 16 to 24 hours/day. Typically, 1 to 4 hours/day is adequate.

### TEST QUESTION

Question: If you were going to spend only \$25 to save money and water in your bathroom, what would you do? Answer: Buy a low-flow showerhead so that we can use less water.



Knowing just a little about landscaping will beautify your yard and save you money. The usual ROI on major energy-efficient landscaping upgrades is about eight years. This chapter gives you some easy ideas on how to get started.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER SEVEN

### SAVING ENERGY OUTSIDE

- **Try a trigger nozzle.** Install a trigger nozzle on your garden hose to save water. This is so easy, cheap and convenient, no hose should be without one. Tip: Fix all leaks in your water hose. It is easy, inexpensive and pays for itself quickly.
- **Adjust your sprinkler heads.** Until you can install a drip system, adjust your sprinkler heads to water only gardens or lawns and never hardscape like sidewalks and driveways. Install an inexpensive timer, too.
- **Watch your watering time.** If you are multitasking while your moveable sprinkler waters the lawn, use a kitchen timer to remind you to move it when appropriate.

- **Install an efficient water-saving drip irrigation system.** Change to a drip irrigation system or soaker hoses, then control your water usage with an outdoor water timer. With drip irrigation, the entire water dispensing part of the system is underground. A standard sprinkler type system delivers water with only about 60% efficiency. A drip irrigation system puts up to 95% of the supplied water exactly where it is needed. This one upgrade alone can reduce your outdoor water usage by 50%.
- **Carefully planned landscaping reduces A/C costs.** Shrubs, vines and bushes planted about one foot from your walls creates an insulating dead air space that is effective in both summer and winter. Tip: Low-lying, dense trees and shrubs on the north side of your home can help reduce winter wind chill.
- **Shade your A/C unit.** Place your A/C unit in the shade on the north side of your home. Shading can reduce its electrical usage by as much as 10%. Tip: Make sure that your shade-providing plants don't block the air flow.
- **Plant Greenscaping or Xeriscaping.** Xeriscaping is the technical term for utilizing a dry landscape design with water conservation as its primary objective. Typically, you plant drought resistant native plants that are already acclimated to both local climate and insect predation. Greenscaping also includes the concept of planting on the south, east and west sides of building to create shade that cools your building envelope to reduce your A/C cost.

**Words of Wisdom: Look deep into nature, and then you will understand everything better.**  
***Albert Einstein***

- **Rethink your lawn.** Can you shrink it? Get rid of it altogether? Install a weather sensitive sprinkler system? Convert the area to fruit trees or a vegetable garden? Give up mowing forever by installing a nice patch of artificial turf? (Note: Most artificial turf is made from petroleum-based material, so weigh this alternative carefully.) As our water supplies dwindle, the idea of outlawing lawns is spreading from town to town across the west. Plan ahead.
- **Use your car washing water twice.** Instead of watering the driveway or street, wash your car on the lawn to double use the water. Tip: If you don't have the facilities to wash your vehicles at home, patronize a carwash that recycles water.
- **Use a broom.** Rather than spraying water from a hose, use a broom to clean off your driveway and sidewalks. Of course washing down the driveway, sidewalk and your other hardscape is easier, but in many towns, it's illegal. Get used to conserving water before you get ticketed for wasting it.
- **Compost.** Composting makes the best possible use of decaying leaves, grass clippings and most kitchen scraps. Work compost into your soil to help hold water and reduce evaporation. This is particularly important to avoid water runoff in soils with a heavy clay content.
- **Plan for winter.** Properly store outdoor tools, furniture and toys over winter to extend their life. You will be able to find them when you need them and you won't have to clean or replace them in the spring.
- **Building a new wood deck?** Don't use wood this time. Instead, build with high-density polyethylene made from recycled milk jugs, other plastic bottles and even old plastic grocery bags. It's recyclable and



has at least ten times the life expectancy (about 50 years) of wood without any maintenance. It has a higher first cost than wood, but you never touch it again.

- **Get off the grid.** There are new technological advances in the wind and solar fields being made nearly everyday. Effectively removing yourself from the power grid and generating an excess to sell back to the utilities is now easier than ever before. Warning: Be wary of the new arrivals to the energy industry. Not all of them are entirely trustworthy. Talk to your local utility for recommendations. Tip: Be sure to take advantage of all the tax incentives and utility rebates that are available for many of the new and upcoming alternative energy technologies.

### **TEST QUESTION**

Question: Without getting into serious landscaping changes, what can you do today to reduce your water consumption outside? Answer: Buy a new hose or fix your old one and put a new trigger nozzle on the end.

## PART TWO

### CHEAP FIXES

Chapters Eight through Fourteen explain about 150 wonderfully unique ways of spending less. Some may seem silly, some are just for kids and some are over a hundred years old. All of these suggestions will save you money and energy. Some people are afraid that they might look like a cheapskate. The wiser ones are on a personal quest to never waste a single kilowatt or drop of water.



Some of these suggestions are pretty obvious and you might have already heard about them or maybe even tried a few. Use the following savings techniques to help you tweak your daily routine enough to establish a personal habit of conservation.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER EIGHT

### AROUND THE HOUSE

- **★FAVORITE 50★ Turn it off!** Always turn off incandescent lamps when you leave a room. If you have fluorescent tube lighting or CFL's, leaving them burning for ten or fifteen minutes while you wander in and out of a room is fine.
- **How much does your noise cost?** Some people think better with background noise. They eat, sleep and work with a 400-watt stereo blaring away across the room. There are websites that will play music through your computer speakers for no extra energy and for free. Tip: Conservation isn't giving up things, it's about making better choices.
- **Remove your A/C window unit.** Remove and store your window A/C unit during the winter. Even the best ones provide a giant escape route for your expensive heated air. If you can't remove it safely, get a tight-fitting cover to block the airflow. Tip: The A/C manufacturer probably already makes a specific cover to fit each model.
- **Install your storm windows early.** Storm windows do more than just protect your windows from wind-blown debris. They act as a temperature barrier that can reduce your heat loss through the glass by 25 to 50%. Tip: Storm windows should have weather stripping on all the moveable joints, be well-weatherized and kept in good repair.
- **Help your radiator.** Install a reflector between the radiator and the wall. This can be as simple as an aluminum foil-covered piece of cardboard and still effectively bounce heat back into the room that would have been wasted heating the wall. Warning: Don't let your reflector touch the radiator.

- **Cool your kitchen with a box or rotating fan.** Using a directional fan is an inexpensive way to help cool your kitchen rather than waiting for the A/C from the rest of the house to catch up. Studies show that, even though the change isn't real, people perceive a 5° temperature drop as soon as the moving air hits them. Make sure the refreshing air blows toward the cook, not the food.
- **Turn the ceiling fan backwards.** In the winter, reverse your ceiling fan motor so that the blades push air up toward the ceiling. The fan will drive the warm air that is accumulating at the ceiling back down around the edges of the room, which can result in more even heating.
- **Close the damper.** Keeping your fireplace damper closed between uses restricts the escape of warm air from the room. If you never use the fireplace, seal the damper shut.
- **★FAVORITE 50★ Create an air curtain.** Tightly tape a sheet of heavy gauge clear plastic to your windows in the winter to help prevent infiltration by the cold. Try this in rooms with rarely-opened blinds or drapes and in the garage. Tip: True, this looks tacky but quite effectively helps keep warm air inside.
- **Be Super-Scrooge for a week.** Try these personal radical savings tricks adapted from the revered "Ultimate Cheapskate," Jeff Yeager.
  - 2) **Shop your pantry.** Don't buy any food all week. Eat only what is already on hand.
  - 3) **Wait-a-week, then buy.** Mull over it and wait a full week before paying more than \$10 for any discretionary purchase.
  - 4) **Pay only cash.** Leave your credit cards and checkbook at home.

- 5) **Never shop alone.** Bring along a frantically frugal “Designated Cheapskate” to help keep your buying in line.
  - 6) **Pick a card.** Carry a small index card listing your five all-time dumbest purchases. Read it out loud in the car before entering a store.
  - 7) **Haggle.** It’s an American tradition.
  - 8) **Count your blessings.** Volunteer at a homeless shelter. It helps put buying into the proper perspective.
- **Buy the cheap refill.** If you are a big soda drinker, buy the refillable container. Typically, refills are cheaper.
  - **Get super savings at your supermarket.** Try these super-frugal, quick-and-easy techniques for a month and count up your savings. (From Judy Walker. Food Editor of The Times-Picayune, New Orleans)
    - 1) **Stick to your list.** Take a list of both what you need and what you have on hand, especially perishables.
    - 2) **Eat first.** Never shop when you are hungry.
    - 3) **Skip the pre-made sections.** Skip past the precut meats, produce and the preprocessed foods. Your home-fixed meals will be fresher, potentially healthier, more predictable and far less expensive.
    - 4) **Shop in the right store.** Buy toiletries at discount or club stores for a significant savings.
    - 5) **Buy generics.** Most are as good as the name-brands.
    - 6) **Look low for bargains.** Check the bottom shelves for the lowest priced items.
    - 7) **Buy in bulk.** Buy non-perishables in bulk.

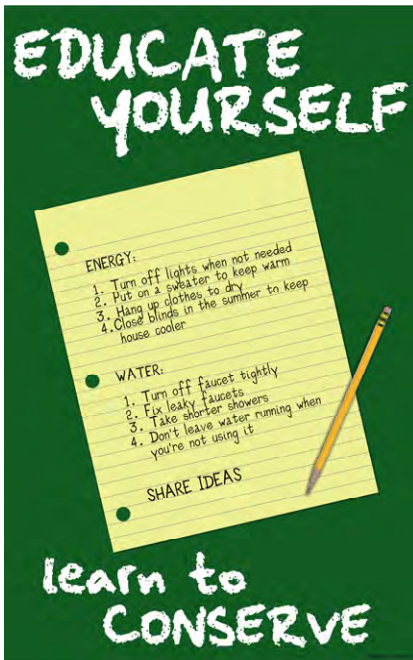
- 8) **Watch the register readouts.** Pay close attention to the scanner readout. Most major stores have several thousand price changes a week. It's a great opportunity to make an error, but not always in your favor.
  - 9) **Walk to the store.** The exercise is great for you and you'll only buy what you can comfortably carry.
  - 10) **Do you WANT it or NEED it?** When shopping, if you need it, the item should be on your list. If you just want it, wait until next time. Tip: Beware of bargains. They are designed to confuse your wants vs. needs.
- **Shop Craig's List.** Before starting remodel or repair projects, check on-line (i.e. Craig's List) for used or surplus bathroom or kitchen fixtures or appliances. If Craig's list doesn't have what you need, try Kijiji as an alternative shopping site.
  - **Have you tried a pawnshop lately?** Pawnshops have lost their seedy reputation. The bargains that you can find there are some of the best-kept secrets in town.
  - **Don't buy single-use cleaning products.** Use durable brushes and sponges instead of the cheap single-use disposable kind that will never degrade in a landfill.
  - **Create some color.** Store old paint, lids down, in tightly sealed cans. Mixed together to create wonderfully unique colors, the paint is terrific for kid's projects. It can also be donated or dropped off at a recycling center.
  - **Be creative about car washing rags.** Worn-out diapers have always been perfect for washing cars, but now, in the age of disposables, they are

impossible to find. The next best thing is old tattered towels and T-shirts.

- **Seek out pre-used moving boxes.** When you are moving, rather than buying boxes, try getting throwaway boxes from local merchants. Ask your friendly grocery store to save you a few banana or produce boxes. They are heavy duty and typically all about the same size for easy stacking. If you are forced into buying boxes, get the highest recycled content boxes available then recycle them when you are done.
- **Consider this moving (or storage) tip.** When moving, or packing away in storage, use old newspapers rather than fresh new tissue paper to wrap fragile items. Don't worry about smearing the ink. You were probably planning on washing all your treasures when you unpacked them anyway. See more EPA tips on moving in chapter four.
- **Tired of buying bad news?** Cancel your daily newspaper subscriptions and find a more dependable, hopefully less-biased news source on line. Compromise by reducing your paper delivery to only once or twice a week.

### **TEST QUESTION**

Question: What is the easiest, cheapest, most efficient upgrade you can do to your lights and appliances? Answer: Turn it off! Get your kids involved making brightly colored signs to tape onto your light switches and appliances.



Long before industry created the plethora of products we just can't seem to live without, our forbearers managed just fine. Most of the homemade products listed below were created through experimentation by our grandparents. Many of them are safer and still work better than a lot of the advertised concoctions available in stores today.

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## CHAPTER NINE

### HOMEMADE FIXES ---- BACK TO THE FUTURE

- **★FAVORITE 50★ Ten homemade household products from the EPA that your grandmother once used.** Try these “old time ways.” You already have most of the ingredients around your home.
  - 2) **Air freshener** – Boil cinnamon and cloves and let steam. Or, at Christmastime push a dozen or so whole cloves into oranges and place them around the room. The juice activates the clove aroma for a wonderful seasonal smell.



- 3) **Multi-purpose cleaner** – combine Borax, baking soda, vinegar or lemon juice and hot water. Add an essential oil for scent. Note: Borax is usually available on the soap aisle at your supermarket.
  - 4) **Bleach** – Add a half-cup of Borax to each laundry load.
  - 5) **Disinfectant** – Add a half-cup of Borax to a gallon of the hottest water you can safely tolerate.
  - 6) **Fabric softener** – Pour one cup white vinegar or about a half cup of baking soda or Borax into the final rinse.
  - 7) **Wood floor cleaner** - Use a damp mop with mild vegetable soap (i.e. castile soap or Murphy's oil soap).
  - 8) **Mirror cleaner** – Mix one cup of cool, strong, black tea with three tablespoons of vinegar. Spray on mirror, wipe clean with soft recycled rags.
  - 9) **Scouring powder** – Mix one cup baking soda with a half cup of Borax. Sprinkle on and scrub.
  - 10) **Ant repellent** – Sprinkle a mixture of cinnamon and ground pepper around their entry hole to your house.
  - 11) **Stains** – Spray on a mixture of baking soda and soda water. Hydrogen peroxide will also work.
- **Homemade slow-drain fix.** Fix slow drains by pouring about one half cup of baking soda followed by the same amount of vinegar. Let stand for fifteen to thirty minutes then carefully pour in several gallons of very hot water. Repeat as needed. Tip: Follow this procedure once-a-month to keep your drain clog free.

- **Homemade toilet bowl cleaner.** To clean toilet bowls, instead of a single-use plastic pad that will never decompose in a landfill, use an old-fashioned toilet brush and baking soda or vinegar.
- **Homemade furniture polish.** For a made-at-home furniture polish, add a teaspoon of lemon juice to a pint of mineral or vegetable oil. Apply sparingly to your furniture with a recycled rag.
- **Homemade silver cleaner.** A good silver cleaner alternative is simple non-abrasive toothpaste. Brush on with an old soft-bristle toothbrush and wipe clean with a recycled T-shirt.
- **Homemade window cleaner.** To clean windows, use a mixture of one tablespoon of vinegar or lemon juice in a quart of warm water. Spray on as usual but wipe with soft recycled t-shirts instead of paper towels or newspapers.
- **Homemade rug deodorizer.** Many rug deodorizers' primary active ingredient is baking soda. Rather than paying for an expensive, perfumed, store-bought compound, liberally sprinkle baking soda on your carpet, let stand for a few minutes then vacuum. Repeat as needed.
- **Homemade shredded soap.** Chop up those last slivers of colored soap with a nut chopper or cheese grater and dump them into an old sock or nylon. Stick the sock in a corner of each clothing drawer to keep them smelling fresh and clean.
- **Homegrown mothballs.** In place of mothballs, use a few or all of the following: cedar chips, lavender flowers, rosemary, mint or white peppercorns. Tie them up in an old sock and stick them in a back corner of your drawers.
- **Homemade Insect repellent.** Add eucalyptus or catnip essential oils to a carrier lotion or oil. Both are

considered up to ten times more effective than DEET, which is toxic to many humans.

- **Homemade 100% effective flea trap.** If your pets bring fleas into your house, fill a pie tin with about a half-inch of water then add a few drops of dish detergent (to break the surface tension). Place the dish near where your pet sleeps at night and shine a lamp on it. The fleas jump in and drown.
- **Homemade baby food.** Making your own highly nutritious baby food will actually save you time and money. You can make up a couple weeks' worth, freeze it and not worry about running out. There are dozens of excellent baby food cook books available or visit [www.wholesomebabyfood.com](http://www.wholesomebabyfood.com) for some great recipes and tips.

### TEST QUESTION

Question: Which of the old-time fixes will be most appreciated in the summer? Answer: The homemade insect repellent and the 100% effective flea trap.



The battle to save money on food and other consumables is won or lost in the kitchen. The tips below might require a slight attitude shift, but you will be surprised how much money you will save.

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## CHAPTER TEN

### IN YOUR KITCHEN AND LAUNDRY

- **★FAVORITE 50★ Shop at the farmer's market.** Buy produce and other homegrown or homemade food products at your local farmer's market. Not only can you personally save money but you also avoid the cumulative damage done to the environment from transporting the produce over long distances, sometimes even from out of the country. Note: Every dollar spent supporting a local independent merchant creates over three times the benefit to your community than buying at a national chain. (Source: [www.amiba.net](http://www.amiba.net))
- **★FAVORITE 50★ Buy in bulk and save.** Buy in bulk, then repackage as needed, preferably in reused

glass containers, not plastic. Individual servings cost more, and create the need for wasteful excess packaging. When buying in bulk, consider sharing the expense with either friends or family. Better yet, give your excess to someone more in need than you. Depending on your shopping skills, you might still be ahead. Tip: Don't buy perishables in bulk unless you are sure you'll use them before they spoil.

- **Too spoiled for leftovers?** Cooking in bulk, repackaging and freezing only makes sense when you are sure that the excess will be eaten before it spoils.
- **Ditch cheap storage containers.** Reuse glass jars and plastic containers (i.e. cottage cheese or yogurt cartons) to store leftovers. If you need to purchase plastic storage containers, always buy those marked as #1 or #2 plastics in the EPA chasing arrow symbol because they are the most easily recycled. Tip: The square or rectangular containers are easier to stack in your refrigerator.
- **Are you buying just six chips in a bag?** Prepackaged snacks like chips, cookies, nuts or trail mixes are wonderfully convenient. Unfortunately, they are mostly over-packaging. Buy the large cookie or chip bag and pack lunch-time snacks in reusable containers.
- **Save some ketchup for later.** When your fast food restaurant gives you a half a handful more tiny packages of ketchup or hot sauce than you need, don't throw them away. Use them at home. Same with the wad of extra napkins.
- **★FAVORITE 50★ Have you tried serious couponing yet?** Get over the embarrassment, buy a good how-to book and get ready to save some serious money. Go to [www.couponmom.com](http://www.couponmom.com) to get started.
- **Wash out those plastic water bottles?** Are the same people who say not to wash out your plastic water

bottles the same ones who manufacture more plastic water bottles? Refilling the bottles you already purchased with quality, filtered water from home can save you hundreds of dollars each year. Tip: Buy a light weight stainless steel water bottle or a camelbak® BPA-free plastic water bottle to sidestep the entire issue.

- **Save with half-sized paper towels.** Buy smaller towels rather than full or over-sized paper towels. Since there are more towels, the rolls last longer and you save money. Resources are saved because you bought fewer rolls and killed fewer trees.
- **Air-dry your dishes.** Use the no-heat setting on your dishwasher. Just wash the dishes after dinner like usual and crack open the door at bedtime. Your dishes will be ready to put away in the morning. Tip: Some dishwashers generate enough heat to dry your dishes overnight without the door cracked open.
- **Monitor your garbage disposal.** If you can't add food scraps to your compost pile, you can at least save a little energy by using cold water in your garbage disposal. Tip: To keep your disposal running freely, periodically fill your sink with about three inches of water, dump in a cup of baking soda and drain it with the disposal running. (Source: Linda Cobb, Queen of Clean)
- **Try a plunger to clean clogged drains.** When you don't have the ingredients described in Chapter Nine to clean clogged drains, use a plunger or plumber's snake. Both are inexpensive and easy to use. Tip: You can get better suction on a plunger by applying a little petroleum jelly around the lip.
- **Try used grocery bags in your trashcans.** Instead of buying new small and medium-sized trashcan liners, reuse paper grocery bags on the medium-sized trash containers and plastic grocery bags on the small

ones. Tip: Store a few used plastic bags in the bottom of the small trash cans so that you never have to go searching for them.

- **Buy concentrated laundry and cleaning products.** There is no use paying for the water the manufacturer adds to your cleaning products when you can add it virtually for free. Powdered concentrates that are environmentally safe are an even better idea.
- **Do you have a one-wearing wardrobe?** Can you wear an item one or two more times before washing it? It's not necessary to drop all the way back to college dormitory standards. Just think a little before tossing an item into the dirty clothes. You will save water, electricity and your clothes will last longer.
- **Some EPA clothes dryer tips:**
  - 2) Dry full loads.
  - 3) Don't over-dry your clothes. Over-drying wastes energy and puts more wear on your clothes.
  - 4) Clean the lint trap after each load to improve air circulation.
  - 5) Separate heavy from light clothes for faster, more even drying.
  - 6) Use a moisture sensor instead of timed drying.
  - 7) To best utilize residual heat, finish your load by using the cool-down cycle.
  - 8) Take advantage of retained heat by drying two or more loads in a row.
  - 9) Use a gas dryer, instead of electric, to reduce your per-load cost by up to 50%.
- **Don't use your clothes dryer.** Line-dry your sheets in the summertime. They hang up and take down quickly and are a refreshing delight to sleep in. Let your delicates drip dry over your tub. Air-dry as much of your laundry as is reasonable because your

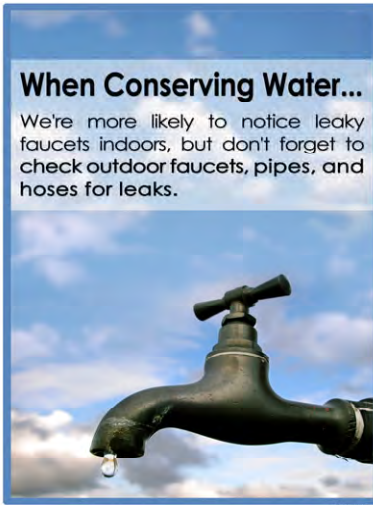
dryer can put more wear and tear on fragile clothes than you do. Air-drying helps your clothes last longer and smell fresher while using no expensive energy.

- **Avoid traditional dry cleaning.** Perchloroethylene (Perc) has been the dry cleaning agent of choice for decades. OSHA describes it as a potential occupational carcinogen. Get your clothes cleaned where they use safer and more environmentally friendly cleaning procedures. Tip: If you do use a traditional drycleaners, make sure you hang your newly cleaned clothes in the garage to air out. Try to avoid breathing the potentially dangerous fumes that could accumulate in your closet.
- **Reuse cloth napkins.** Instead of purchasing single-use paper napkins, buy bright, colorful, cloth napkins (boring white napkins show dirt too easily) and then have your family reuse them for several informal meals before washing. You can find a collection of outrageously different napkin rings at most thrift stores to help differentiate one person's place setting from another. Comment: Yes, this is strange to some but it saves a lot of washing and paper napkins.
- **★FAVORITE 50★ Bill Cosby called them penguins.** Penguins are people who stare longingly into an open refrigerator trying to decide what to eat. Open your refrigerator door as infrequently and briefly as possible. Children and mid-night snackers are typically the most notorious penguins.

### TEST QUESTION

Question: Name three great reasons for shopping at a farmer's market? Answer: Farmer's markets, support the local economy, offer low prices and sell the freshest fruit and produce in town.





*12"x 18" color poster available  
from [awarenessideas.com](http://awarenessideas.com)*

When most people think of saving energy, they rarely think about the outdoors. There is a lot you can do outside. Take a look at the list below to see which of these you can start today.

## CHAPTER ELEVEN

### OUTSIDE

- **★FAVORITE 50★ Water in the morning.** Watering your garden and lawn in the very early morning avoids mid-afternoon evaporation. Early evening watering is next best but in some areas it can lead to mold production and plant diseases.
- **Don't water when it's windy.** Don't water your lawn or garden on a windy day, especially with low humidity. You could blow away as much as 50% of the water before it hits the ground.
- **Let your lawn hibernate.** If your area is suffering through a summer drought, let your lawn go dormant with only a monthly watering. It will bounce back in the fall. Cutting your lawn "tall" before you stop watering will help it survive the heat.
- **Exercise with a hand mower.** Get rid of your gas-guzzling, pollutant-emitting lawn mower and replace it

with a hand mower. Mowing the lawn can burn as many calories as a trip to the gym. A hand mower is also a good incentive to reduce the size of your lawn.

- **★FAVORITE 50★ Cover your pool at night.** Cover your pool at night to retain the heat that it absorbed during the day. Handling this every-night chore can cut your pool energy cost by 50%. Tip: Your pool will stay a few degrees warmer, too.
- **Cool your house with trees.** Plant deciduous trees on the south and west-facing sides of your home. The shade cools your house in the hotter summer months and help your A/C unit to run less. In the autumn, the lack of foliage allows more winter sun through to warm the house. Tip: Dense, low-lying trees and shrubs on the north and northeast sides of your home can help protect against wind chill.
- **House colors are important.** Base the exterior color of your home on the weather. Paint with light reflective colors in warm climates and darker heat and light absorbing colors in colder climates. Choosing the right color is a cheap, easy, passive and long-lasting help to lower your A/C bill.
- **Compost.** Composting upcycles manures and kitchen and yard waste into a very fertile humus-like soil end product. Bacteria, worms, ants, and other insects are instrumental in the breakdown process. It takes very little space to create this nutritious soil additive.
- **Compost your ashes.** Save the cold ashes from your wood-burning stove in a large metal barrel. Add them to your compost pile to enrich the entire mixture.

### TEST QUESTION

Question: Why should you water in the morning?

Answer: Early morning watering is best because there will less evaporation and most likely less wind.



Our cars are such huge contributors to pollution that we now measure our environmental successes by comparing them to the number of theoretical cars we removed from the road. The tips in this chapter can help you reduce your vehicle's carbon footprint and the number of visits you make to your favorite gas station.

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## CHAPTER TWELVE

### IN YOUR CAR

- **★FAVORITE 50★ Turn off your car.** If you think you are going to be delayed more than thirty seconds, turn off your car at signals and train crossings or when stopped dead in construction zone traffic. You will typically burn more gas idling for thirty seconds than you will by starting your car.
- **Some “Save while you drive” hints from the EPA:**
  - 2) **Avoid “jackrabbit” starts.** Accelerate gradually when possible.

- 3) **Plan ahead.** Anticipate stops to avoid sudden braking.
  - 4) **Leave extra stuff at home.** Avoid carrying unneeded items in the trunk. The extra weight can reduce your mileage by 1 to 2% per hundred pounds.
  - 5) **Keep everything inside.** Avoid using the roof rack if there's room inside. Roof racks increase air resistance and decrease mileage.
  - 6) **Use the A/C sparingly.** Use the air conditioning only when necessary.
  - 7) **Use the right oil.** Using a manufacturer unapproved motor oil can lower your MPG by 1 to 2%.
- **Choose efficiency.** Whether you chose your bike, feet or the highest MPG vehicle in your garage, always use the most fuel-efficient mode of transportation available.
  - **Try carpooling.** Letting someone else drive (or subsidize your fuel and maintenance costs) makes your commute a lot more enjoyable. Figure out how much you'll save using public transportation once a month, or even once a week. If you can arrange it, telecommuting is an even better alternative.
  - **Combine your trips.** Consolidate your trips when the destinations are near each other. Walk between them if you can.
  - **★FAVORITE 50★ Tune-up your vehicle.** Tune-up your vehicle, especially before leaving for vacation. You will save both money and help the environment. Tip: Simply replacing your dirty air filter can improve MPG by 10%.
  - **Be prepared for winter.** Winterize your vehicles by checking tires, windshield wipers and fluids. The savings come from better mileage and not being

injured or stranded when something fails. Note: Warming your car up for more than thirty seconds on winter mornings doesn't extend the motor life, it just burns extra fuel.

- **Buy the cheap gas.** Use low octane gas unless the manufacturer specifically prohibits it. Odd as it seems, besides being cheaper, lower-octane fuels release fewer toxic emissions than higher-octane fuels.
- **Drive slower.** Significantly increasing your speed above fifty-five MPH can burn up to 15 to 20% more gas.
- **Use cruise control.** Using cruise control on the highway can save you up to 14%. Tip: Don't use it in hilly country.
- **Don't forget this tire tip.** You can improve your gas mileage by over 3% by keeping your wheels aligned and your tires properly filled per the manufacturers specifications.
- **Disengage your four-wheel drive.** Unless you need it for weather or tough terrain, you'll burn less gas by not engaging your four-wheel drive.
- **Save your A/C.** Your A/C is most fuel-efficient over 60 MPH. Unless you have a summer-desert type super-heated car, wait until you are on the highway before switching it on.
- **Avoid traffic.** [www.traffic.com](http://www.traffic.com) provides free traffic updates. When you don't have internet access, call (866) 698-7232.
- **Use your GPS.** Some GPS units have a traffic avoidance feature. Making good use of it will save you both time and gas.
- **★FAVORITE 50★ Park in the first spot.** Park in the first spot you see. Don't drive around the parking

lot looking for the perfect spot next to the front door. Walking the few extra steps is great exercise. Tip: The spaces farthest from the door are often called the “no-ding-zone.”

- **Hide a really cheap air purifier under your seat.** Place a few charcoal briquettes under the seats to absorb odors. This works great in seldom-washed vehicles that are typically filled with messy children.
- **“Pay me not to drive” tax incentives.** Some states and municipalities are offering tax incentives both for you and your employer for limiting your driving. Check out the appropriate websites.

### **TEST QUESTION**

Question: Name three bad driving habits that should never be ignored when you are trying to save money.

Answer: Driving a poorly tuned vehicle, driving too fast, leaving the engine running at long signals or train crossings.



Gifts, gift-wrap, greeting cards, toys, and even batteries are mostly year-end purchases that too often become instant trash. Before getting buried in Christmas holiday hype, think of the reasons for the season. What can you do to celebrate while minimally impacting the environment? Take a look at the gift-giving and Christmas-related tips below that you can utilize this Christmas?

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## **CHAPTER THIRTEEN**

### **SEASONAL SAVINGS AND GIFTGIVING**

- **Think “Green” by creating the following shopping habits:**
  - 1.) Look for gifts with minimal packaging and maximum recycled content.
  - 2.) Look for innovative gifts that feature creative uses for recycled material.
  - 3.) Look for locally manufactured products especially by craftsmen or artisans.

4.) Combine bags. If whatever small item you are buying will fit in the big bag you are carrying, keep them all together in your one large bag. There is no need to waste more bags or worry if you might lose a purchase.

5.) Tell store clerks that you don't need a bag.

- **★FAVORITE 50★ Limit your Christmas gift giving.** Don't allow yourself to get caught up in a seasonal buying frenzy. Instead of giving an "obligatory" and likely unmemorable gift, use the money you save to support a worthy environmental cause. See [adventconspiracy.com](http://adventconspiracy.com) or [kiva.org](http://kiva.org) for ideas.
- **Create some free gift tags.** Use the front face of last year's Christmas cards as gift tags. Tip: It's fun to go back through your Christmas cards after the season when you have more time to reflect on the friends and family who sent them. Tip: An interesting statistic (from 42 Ways to Trim Your Holiday Waistline by Lilienfield and Rathje). The 2.65 million Christmas cards that are sold each year would fill a ten-story tall football stadium.
- **Save it for next year.** Save reusable gift bags, collapsible boxes and as much slightly used gift-wrap as possible from season to season. At season's end, at close-out prices, buy the biggest gift-wrap rolls that you can find. If all the presents under your tree match, you will have created a themed holiday. Tip: Don't forget where you stored all your wrapping bargains so that you don't buy them again.
- **Celebrate a retro Christmas.** Celebrate a depression era retro Christmas with your family by creating your own garland from strung popcorn, cranberries or colored paper. Create some unique tree decorations out of old Christmas cards or cookie dough. Christmas is all about making memories; you can



make some great ones without spending much money.

- **Buy gifts with minimal packaging.** Buy gifts with minimal packaging like gift cards. You can have a lot of fun creatively wrapping them. (i.e. hide them in a DVD or CD case or a book that is the complete opposite of the recipients taste.) Better yet, buy gifts that don't require any packaging at all like a favorite home-cooked meal or a trip to the park.
- **Check for recycled or recyclability.** When gift buying, check labels both for recycled materials and for recyclability. The more environmentally friendly purchases that we make this year, the bigger selection we will have next year.
- **Create unique gift-wrap.** Create your own signature gift-wrap from newspaper comics, old calendars, magazine pictures or fabric. For a travel-related gift, try wrapping the present in a slightly used road map.
- **Just wrap it in a bow.** If he doesn't notice, don't splurge on wrap. For every one-year-old and many men, gifts only require a bow. If the recipient neither notices nor appreciates your efforts, fancy wrapping can be a complete waste of both time and money.
- **Do you have more time than money?** Rather than a quickly forgotten gift, bake some cookies or make candy and present them in a reusable or recycled container. You are showing how much you care by giving the gift of your time.
- **Give a Christmas cookie party.** Don't invite friends and family together and then stress over what type of presents you should buy them all. Have a cookie exchange party instead. Everyone brings a nice recycled container packed with a couple dozen of their favorite cookies (homemade or not). Recipes are optional.

- **Buy a fifty-year Christmas tree.** Rather than cutting down a Christmas tree, buy a potted one and replant it in the spring.
- **Try LED Christmas lights.** Buy LED Christmas lights and control their burn time to save energy. Some Energy Star® LED light strings advertise up to a 98% reduction in electrical usage.
- **Use Christmas light timers.** Put both your interior and exterior Christmas lights on timers. It's wonderful to show all your neighbors your extraordinary Christmas spirit, but never leave your lights on all night.
- **Buy rechargeable batteries.** About 40% of battery sales happen at Christmas. Buy rechargeable batteries for your kid's new toys. Make sure that you have a recharger to support them.
- **Cull your kid's toys and clothes.** Help your children learn about helping others by donating old toys and useable clothing to charities. Let them pick out which of their unneeded and under-loved toys or too-small wardrobe needs a new home. Do this twice each year with a 50% reduction as a goal.
- **Regifting tips from the EPA:**
  - 1.) **Don't take frugality too far.** Regift the gift, but never the wrapping, too.
  - 2.) **Send your unwanted treasures far from home.** Regift to someone who doesn't know the original recipient.
  - 3.) **Don't tell.**
  - 4.) **Stop feeling guilty.** You saved money and reduced waste.
- **★FAVORITE 50★ Be a friend to your library.** Buy used books from your local library, especially for kids. Some have never even been opened. It saves

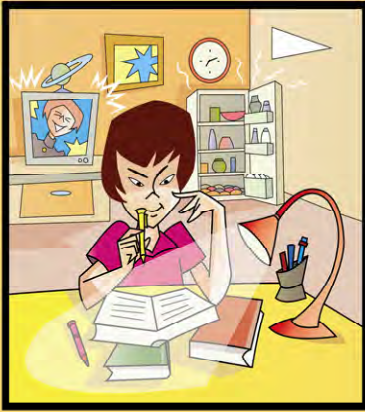
trees, money, energy and the kids learn a great lesson about “REUSE” while honing their reading skills.

- **Create your own Halloween costume.** At Halloween time, create a costume featuring old clothes and some fun imagination rather than buying a one-use costume. If you create something extraordinary, consider donating it to a local theatre arts group or simply giving it to a costume rental shop.
- **Trick-or-treat with a cloth bag.** Hopefully, you have a bunch of reusable cloth bags from all your favorite grocery stores in the trunk of your car. Rather than buying a special “Halloween” bag like everyone else on your block, send your kids out with a recyclable cloth bag.
- **Roast pumpkin seeds.** It only takes a few minutes to clean and roast the pumpkin seed from your jack-o-lantern. Don’t pass up this annual treat. Look on line for directions.

### TEST QUESTION

Question: What would Christmas be like if everyone stopped rushing around trying to find the perfect gift for someone who already has everything? What if they spent the money on some needy folks here or even far away in a land they’ll never get to visit?  
Answer: Better for the environment and everyone else involved.

**Please  
be aware of  
energy waste  
and help stop it.**



Don't ever underestimate the energy, enthusiasm or potential for excellence that the kids in your life can muster. The sooner they understand the tremendous impact they can have on the environment, the sooner they will start correcting it. Use the tips below to help develop environment - saving habits that will last a lifetime.

*12"x 18" colored poster available  
from [awarenessideas.com](http://awarenessideas.com)*

## **CHAPTER FOURTEEN**

### **WHAT CAN KIDS DO TO HELP?**

#### **AT SCHOOL**

- **Pass it on.** Pass on the Fourth R message (reduce, reuse, recycle and RESPOND) by starting a recycling project or environmental club at your school.
- **★FAVORITE 50★ Get your teachers involved.** Tell your teacher that you would like to learn more about what you and your school can do to help the environment. Your school administration might be surprised to learn that "Going Green" doesn't cost more, it can actually save your school thousands of dollars each year.

- **Be a door monitor.** You and your friends at school can help keep the classroom and hallway doors closed by adopting a door. You can't heat or cool the great outdoors, so please don't try.
- **★FAVORITE 50★ Recycle.** Recycle your cans, bottles, printer cartridges, white paper and dozens of other things. For a more complete list, see the recycling section in Chapter Seventeen.
- **Reuse from last year.** Before starting the new school year, sort through last year's remnants. Most can be reused or recycled. Notebooks, binders and folders typically can last through another year. Be careful to recycle, not just throw away old papers.
- **Buy eco-friendly school supplies.** Buy non-toxic products like vegetable-based inks and water-based paints. Make sure that your notebook paper and tablets have the highest recycled content available. If your store doesn't offer recycled paper, complain to the manager and then shop somewhere else.
- **Buy in bulk.** Buy school supplies in bulk to reduce redundant excess package waste. Shop at an office supply store where the item counts per package are larger and sold in packages that are often smaller. Watch for their back-to-school sales just after summer starts to avoid the rush. Split large quantities with other students or siblings.
- **Work with a list.** When you are buying school supplies, work from a list of exactly what you need. It will save both money and time. Look for products that have a high-recycled content or that are recyclable.
- **Don't lose it.** Discipline yourself not to lose pens, pencils and other small supplies by putting them away properly in the right place.
- **Use book covers.** If your school reuses textbooks to save money, or you believe all books should be treated with respect, creatively cover yours (perhaps

with a brightly colored paper bag) so it will look clean and fresh for the next student who uses it.

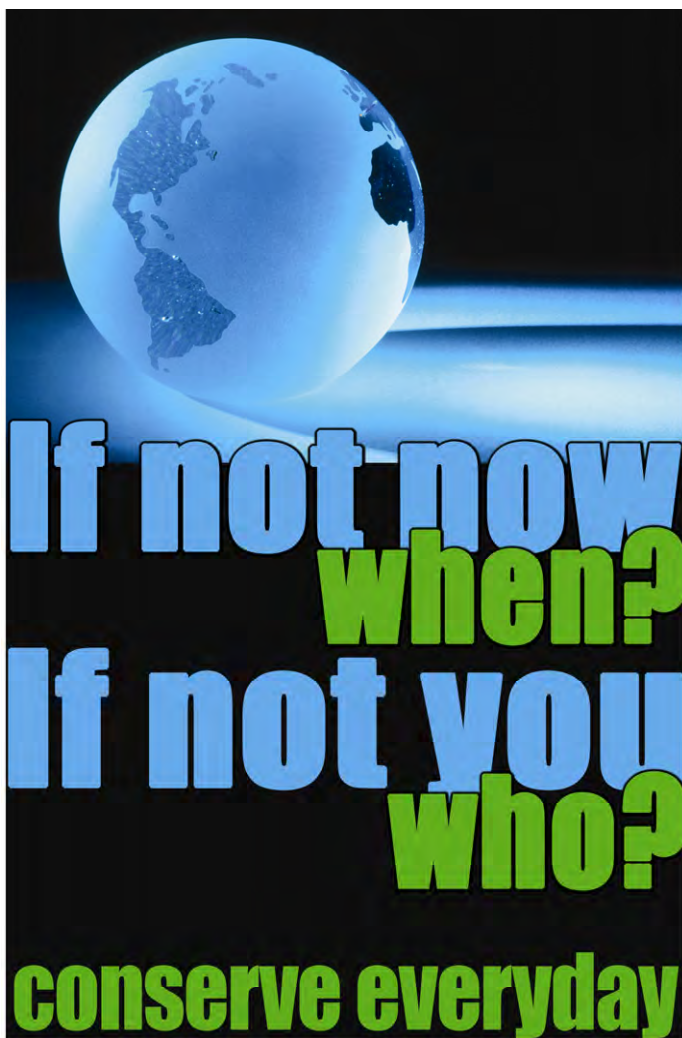
- **Don't waste food.** If you buy lunch, or your school provides it, eat everything you take and don't waste napkins, plastic flatware or condiments.
- **Reuse your lunch containers.** If you bring your lunch, pack it in reusable containers. If you transport your food in a paper sack, make sure that it and everything inside it are recyclable.
- **Walk or ride, but don't drive.** If you are close enough, walk to school. You can save wear and tear on the family car while reducing your carbon footprint. If you drive, carpool.

**Words of Wisdom: The world is mud-luscious and puddle-wonderful. *E.E. Cummings***

- **Get a library card.** Computers make research so easy that you never have to leave your desk. That's nice in the middle of the night, but there is so much more at the library. Besides thousands of books, magazines, CDs, and movies, there are actual real, live people there who are happy to help you. Plus, most of the services are free.

### **TEST QUESTION**

Question: What would happen if we turned kids loose on the environment and somehow managed to keep their enthusiasm and energy alive? Answer: Children, given the opportunity, the financing and the technical support are the world's best hope for a sustainable future. Instilling in them an appreciation of nature's beauty and fragility will pay benefits for generations to come.



*This and many other energy-saving messages are available on posters ,magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

You only need to remember these three easy things to start saving the environment today!

Turn it **OFF**.

Turn it **DOWN**.

Make it more **EFFICIENT**.

## PART THREE

### SUSTAINABILITY

The tips and suggestions in Chapters Fifteen through Twenty aren't designed just to save energy and money. In fact, some of them won't save you any money at all. Still, they must become an integral part of the everyday fabric of all our lives. Listed below are some of the first steps everyone must take to help create a sustainable world. Unfortunately, there are no quick and easy solutions. Creating a sustainable future requires that we start now before any more of the environment and the world ecology is irreparably damaged. The fix is only achievable if we learn the environmentally correct things to do and then change our attitudes to get them done.

**Words of Wisdom: We do not inherit the earth from our ancestors, we borrow it from our children. *Native American Proverb***

#### TOP 20 SUSTAINABLE TIPS

The first two sections of this book are devoted to preservation of your financial assets. This section lists about a hundred small ways that you can contribute toward preserving a sustainable world for our children and grandchildren. Below are listed our ★TOP 20★ favorite ways to start doing your part today.

As you read through the remaining chapters, look for the ★TOP 20★ designations for expanded explanations of all the items on the following list. None of these is newsworthy or particularly difficult, but each of them is



necessary. Cumulatively, you'll be making a huge difference.

### **★TOP 20★ Sustainability Tips**

- 1. Go organic.**
- 2. Wear more clothes.**
- 3. Are your personal products personal poisons?**
- 4. Where do you dump your old meds?**
- 5. Use 'Green' cleaners and insecticides.**
- 6. Turn everything off before leaving.**
- 7. Help save someone else's money.**
- 8. An old Boy Scout rule still works.**
- 9. Shop where you have a choice.**
- 10. Borrow and share tools.**
- 11. Pass it along, don't throw it away.**
- 12. Clean out seasonal clothes to share.**
- 13. Look for recycled packaging.**
- 14. e-cycle.**
- 15. Get involved.**
- 16. Think about water.**
- 17. Save some of your state's water and electricity.**
- 18. Help an Eagle Scout.**
- 18. Share the ride.**
- 20. Donate your clunker.**



Before we can take on the world, we first need to get our corner of it environmentally correct and moving toward sustainability. We can begin by implementing some of the following easy-to-accomplish tasks at home.

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## CHAPTER FIFTEEN

### AT HOME

- **★TOP 20★ Go organic.** As more and more people get the organic message, retail prices continue to fall and the assortment in the stores continues to grow. When you consider all the chemicals and poisons that are added to our food supply, it's hard not to spend the extra money.
- **Do your homework.** Before the internet, knowing where to find organic products and sustainable practices was virtually impossible. Now, Local Harvest ([www.localharvest.org](http://www.localharvest.org)) maintains a directory of restaurants, farmer's markets, co-ops and farms that support sustainability.

- **Support local “Green” restaurants.** Green goes far beyond serving organic or natural foods. A truly sustainable restaurant will be using many of the money and energy-saving techniques described in Chapters One through Seven. A good restaurateur knows that being “green” isn’t just a marketing ploy. It’s a best business practice and a simple way to save money by reducing costs.
- **Have you tried almond milk yet?** Considering all the negatives surrounding milk production (i.e. antibiotics, growth hormones, grazing practices, manure and methane production), many people are turning to almond, soy, coconut or rice milk. As demand grows, prices are more comparable to regular milk and cheaper than organic milk.



Refrigerator magnets to help keep your family “Green Team” on track. From awarenessideas.com

- **★TOP 20★ Wear more clothes.** Rather than adding to the drain on the national energy grid, learn to adapt to colder temperatures by wearing an extra layer of clothing. In the summer, do just the opposite.
- **Wear sustainable clothing.** Most synthetic fabrics are petroleum-based, a non-renewable resource. A better option is to choose clothing from renewable

natural plant fibers like organic cotton, hemp or bamboo. From the animal world, organic clothing made from the hair fibers from sheep, alpaca, angora rabbits and goats and even some types of dogs is being produced world-wide.

- **What about silk?** The good news is that silk is both renewable and biodegradable. However, since most silk in the US comes from China, Korea, Japan or India, there are questions about harvesting and processing methods. Several worldwide companies claim to employ only good working conditions. To avoid green-washing companies, be sure to know the history of the silk clothing that you buy.
- **Advertise your environmental message.** There are dozens of websites selling T-shirts, hats and other clothing with a printed environmental message. Many of them are on organically grown materials from non-sweatshop manufacturers. When you find (or create) the perfect item, wear it proudly and give it to friends and family as gifts.
- **★TOP 20★ Are your personal products personal poisons?** Even if they read the list carefully, hardly anyone actually understands what all the ingredients in soaps, lotions, shampoos and make-up are for or what negative effect they might have on humans. The Environmental Working Group (EWG) deciphers all the terms and explains the potential harm done by each ingredient. See their website [www.ewg.org](http://www.ewg.org). .  
**★TOP 20★ Where do you dump your old meds?** The rules are changing about dumping medications. Dispose of outdated medicines properly. Don't dump them in the toilet. A number of drugs are showing up in trace amounts in our water supplies. Check the EPA website for its updated disposal procedures.
- **★TOP 20★ Use 'Green' cleaners and insecticides.** The EPA Environmentally Preferable Product

Information list is your most up-to-date source of information about government approved cleaners and insecticides. Some ingredients or chemicals to avoid include: petrochemicals, chlorine bleach, acidity, phosphates, volatile organic compounds (VOCs) and toxicity to people, plants or animals. Both you and your ecology-minded family will appreciate knowing that you are using cleaners and insecticides that are environmentally safe.

- **Is it time for new wood floors?** For new hardwood floors, look for the Forest Stewardship Council stamp of approval. The Council is an international organization that promotes sustainable forest harvesting by bringing together the appropriate government entities, wood end-users, local foresters, environmental and human rights organizations.
- **Walk on soda bottles.** When your old carpeting starts to wear out, install new carpeting made from recycled drink bottles. Its manufacturing process requires no additional chemicals.
- **Use a natural air purifier.** Consider bringing some green plants into your home to help remove some of the impurities in your air. Some of the better choices include: Areca Palm, Boston Fern, English Ivy, Peace Lilly, Philodendron and Spider Plants. Warning: Some plants can be harmful to your pets.
- **Take advantage of existing natural daylight to lower interior lighting.** Natural outside lighting is better for dozens of health reasons. Take advantage of “real light” whenever possible by hanging light-colored, loose weave curtains.
- **Try partial pressure water.** Teach your family (and yourself) to never turn on the water full blast when washing your hands or rinsing dishes. Adjust the

water pressure downward; partial pressure will work just as well and save water.

- **Buy some ugly, mismatched dishes.** Buy mismatched dishes and flatware at a thrift store for picnics and kids' meals rather than paper plates. Buying and using a forest-based, single-use product like paper plates should always be your last choice.
- **Bring your own mug.** Stop using Styrofoam or cardboard cups for hot coffee. Bring your own reusable, insulated coffee mug from home. Or buy two reusable mugs at your favorite drive-by coffee shop. (One for your car and one to rotate through your dishwasher.)
- **Be prepared for winter.** Prepare for winter storms by stockpiling both regular and rechargeable batteries (and don't forget candles and matches). Note: Make sure you dispose of all batteries properly.
- **Maintain your septic system.** If you are lucky enough to live in a rural area with a septic tank, clean it every three to five years. Cleaning prolongs the life of your system and helps prevent groundwater contamination.
- **Clean up after your pet.** Obviously, pick up your dog's poop when you are in public. Back in your own yard, don't leave pet waste on the ground either. Harmful bacteria and nutrients can leach into the storm drain system and eventually pollute the ocean.

### TEST QUESTION

Question: What is the single most important thing that you can do to help the environment? Answer: Get involved. Involvement changes attitudes, starting with your own. Sustainability is just an attitude of respect for the earth.



Aim toward sustainability even when out traveling. When people see others minimizing their impact, whether at their destination or their mode of transportation, they tend to follow suit. Preach your commitment to sustainability by your actions.

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## CHAPTER SIXTEEN

### ON VACATION

- **★TOP 20★ Turn everything off before leaving.** When going on vacation, adjust your lighting, A/C and water heater then unplug everything possible to avoid vampire energy waste. Many appliances still draw a small amount of power even when not operating, so unplugging will save you more than simply turning it off. Be sure to adjust the parameters on your heater-A/C unit to stay off while you are gone. Don't forget to turn your water heater off, too.
- **★TOP 20★ Help save someone else's money.** Most hotels are now posting signs or placards near the

phone and in their rest rooms asking you to help them conserve water and energy. An easy rule of thumb is: Don't use any more towels or sheets or take longer, hotter showers than you would at home.

- **Save someone else's electricity, too.** When leaving your hotel room, switch off the lights, TV and A/C. You aren't paying extra, but the environment will be the better for your consideration.
- **★TOP 20★ An old Boy Scout rule still works.** At city, county, State and National Parks, take nothing but pictures and leave nothing but tracks. Pack out your own trash. Don't leave it for the rangers. Go one step beyond other trekkers by picking up other people's trash, too.
- **Be a memorable example on an environmental vacation.** With little else to distract them, it seems like kids remember vacations forever. They don't miss anything. Plan a "green" vacation. Go to a national park, a dairy or fish farm or even a wind or solar farm. For a view of the dark side, visit a landfill then drive by a smoke-spewing factory. Take advantage of every tour possible and be prepared with answers to their questions.
- **Try a "green" day trip.** Whether at the seashore, lakeshore, creek side or just a walkabout in the woods, get your children outside to see the wonders of nature. Even if you can go someplace where a ranger or docent can guide you, bring along some reference material. Help your kids to learn how to identify rocks, trees, birds, bugs and whatever else you see.
- **Have some offbeat, kid fun.** Take along a couple old picture frames (without glass) and a bottle of glue to create a collage of "found items" to help keep your kids busy. Hang a nylon mesh bag (available at auto



part stores) on the back of your seat for crayons, coloring books and other car-craft items. Don't forget to throw in an old pair of binoculars, too.

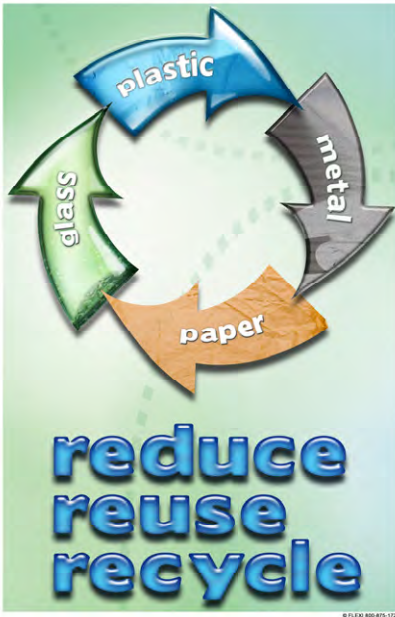
- **Play in the sand.** At the beach use old buckets, thrift store spoons and scoops instead of buying new plastic stuff for every trip. Recycle empty cottage cheese or yogurt containers to help build your sandcastle turrets. If you decorate your creation with beach flotsam and jetsam, throw away the unnatural material when you leave.
- **Think about eco-travel.** Eco-tourism is defined as "Responsible travel to natural areas that conserves the environment and improves the well-being of local people." Common sense demands that you learn everything possible about the exotic place you are going before leaving home. Also you should do everything possible to be respectful of the people and their resources and to leave the place as pristine as you found it.
- **Don't use the sample size packages.** Pack your own toiletries in reusable containers rather than using the generally lower-quality ones provided by your hotel. This saves the environmental cost of producing and distributing more of those tiny bottles. Many hotels no longer provide these sample size bottles except on request. They lower their operating cost without compromising their service.
- **Remember this car rental trick.** If your car rental agent is working really hard to convince you to upgrade your rental, he may be out of the lower price car that you ordered. Just say no. You'll probably get the upgrade anyway.
- **Fish environmentally.** Don't dump tangled line or damaged fishing gear in the water. It is a hazard to

every other animal (bird, mammal, reptile or amphibian) that uses the water.

- **How to save with your boat.** While on the water, you can save both money and help the environment by remembering the following:
  - 1) **Don't burn fuel needlessly.** Limit both full throttle and idling times.
  - 2) **Don't spill any.** Avoid spilling fuel by pouring slowly and smoothly from a smaller easily managed container into a funnel.
  - 3) **Control the vapor too.** Close the vent on your tank when appropriate.
  - 4) **Keep your fuel cool.** Transport and store gasoline in a cool, dry place out of direct sunlight.
  - 5) **In the off-season.** Follow the manufacturers recommendations regarding ongoing maintenance and winter storage.

### TEST QUESTION

Question: Name three environmentally helpful things that you can do at a hotel. Answer: Use a minimum number of towels, bring your own soap and shampoo and turn the lights and TV off when you leave the room. Don't forget to turn everything off at home, too.



The markets for recycled and reused materials grow larger every day, but too slowly. To build a sustainable world, we all have to buy into the FOUR R program described below and most importantly, spread the message.

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## **CHAPTER SEVENTEEN**

### **FOUR R'S = REDUCE, REUSE, RECYCLE AND RESPOND**

Each person in the United States creates, on average, 4.5 pounds of waste daily, almost double the 1960 quantity. Millions of tons of MSW (Municipal Solid Waste) are processed every day. We are quickly becoming a country buried in our own trash.

The EPA has created a four-point program (4Rs - Reduce, Reuse, Recycle and Respond) to meet the challenge created by our waste, but too few people take it seriously. For everything that we touch, we need to ask ourselves some basic questions:

1. Can I use less? (both less product and less packaging)
2. Can I recycle it when I'm done? Is it already recycled?
3. How much damage was done to the world by making this?
4. Do I really even need this?

In the foreseeable future, there will always be trash. Before our garbage buries us, or more likely our grandchildren, we need to act now.

**Words of Wisdom: In our deliberation, we must consider the impact of our decisions on the next seven generations. *From the Great Law of the Iroquois Confederacy***



**Reduce.**  
It is the first and most important physical step on the road to sustainability. The attitude behind that first step is respect for the earth. See the following tips for ways you can help reduce the flow.

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## REDUCE

Source reduction or waste prevention starts with the design and manufacture of a product. Whether producing a component or a final consumer item, the goal should always be to reduce the toxicity and the trash generated by its production. Consumers are just beginning to recognize and utilize their ability to direct the market place.

- **★TOP 20 ★ Shop where you have a choice.** Shop at merchants where single unpackaged items can be purchased. If you only need three apples, why buy four just because they are plastic wrapped to sell more? Tip: Learn to shop with your feet. Walk out of environmentally unfriendly stores.
- **Always choose minimal packaging.** When choosing between similar products, choose the one with the least packaging. Tip: About 10% of the cost of our food is just for packaging.
- **Support eco-friendly retailers.** Frequent and support retailers who stock product with minimal packaging.
- **Some Source-Reduction good news from the EPA:**
  - 1) **Land-filling is down by fifty-five million tons.** More than fifty-five million tons of MSW (Municipal Solid Waste) are source-reduced and not sent to landfills each year.
  - 2) **We've built 6000 reuse centers.** There are more than 6000 reuse centers around the country and the number grows everyday as new uses and markets for recycled materials are created.
  - 3) **The message is being heard.** Manufacturers are listening. (i.e. the weight of a plastic two liter bottle has decreased from 68 to 51 grams.)



Assuming that all things are someday destined for the trash, what can we do to slow the process? The simple answer is to use everything until it is totally used up. No matter whether the item is a piece of machinery, or an old dinner plate keep using it until it has absolutely no life left in it. Then recycle it.

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**Words of Wisdom: It is every man's obligation to put back into the world at least the equivalent of what he takes out of it.**  
**Albert Einstein**

## REUSE

- **★TOP 20★ Borrow and share tools.** Borrow special-use-only or once-a-year tools like ladders, ground tillers, chain saws, etc. Make sure that you return them in better condition than when you borrowed them. Tip: Some cities and utilities have “tool lending libraries” that can save you both money and storage space.
- **★TOP 20★ Pass it along; don't throw it away.** Whether it's tools, clothing, appliances, house wares

or even food, don't throw anything away. First ask yourself if there is anyone including family, friends, neighbors, Goodwill Industries or the Salvation Army that might be able to use your cast-offs one more time.

- **★TOP 20★ Clean out seasonal clothes to share.** Spring and winter school vacations are the perfect times to marshal your kids into a “donate unworn seasonal clothes” mood. Set a goal to reduce the number of hangers in the closet by 50%. If they grew out of it suddenly or “hate how it looks on me,” donate it to a local charity or someone less fortunate.
- **Share your old computer.** Donate your old (working) computer to a school, boys & girls club, scout troop, senior center, retirement home, convalescent hospital, church youth group or local charity. It is easier to e-cycle it, but so much better to take the time to find your equipment a real home.
- **Buy a step down computer.** Consider buying a used computer from a major manufacturer or a trusted local refurbisher. Most come with a warranty.
- **Pac-Man anyone?** There is a growing nostalgia market for old video games. If you don't want to try and sell your old game equipment, donate it to a local charity.
- **Donate used sporting equipment.** Rather than storing it for another season, donate used sports equipment to a charity or sell it through a used sporting goods store. Old soccer balls, footballs and tennis balls are much-appreciated chew toys at the local animal shelter.
- **Share your magazines.** Pass all your used magazines onto libraries, schools or even your barber. Very few magazines are so time-sensitive that they become useless or obsolete after only a few days. Ask your recipient to recycle the magazines when finished.

- **Start a special jar collection.** If you are continually recycling the same size jar (i.e. peanut butter, jam or baby food) start saving them. Having the same size matching jars to sort small stuff, tools, nails, screws or toy parts can add a whole new level of neatness to your home or garage.
- **Rent or borrow for parties, don't buy new.** Rent or borrow party decorations, dishes, linens and flatware rather than buying and storing them.
- **Try biodegradable plates and cups.** If your casual party doesn't call for rentable tableware, you can still think green. Biodegradable paper goods made from corn, sugarcane or other vegetable starches start decomposing within a few hours of entering your trash.



Recycling has four basic steps:

- 1) Collect it from the last consumer.
- 2) Sort it to simplify production for the next consumer.
- 3) Manufacture a recycled product.
- 4) Sell it to a discerning consumer who will start the process again.

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## RECYCLE

An easy-to-visualize example is an aluminum soda can which can be melted down and reused thousands of times at about 1/20<sup>th</sup> the cost of processing raw aluminum ore. There is a high probability that a tiny part of the soda can that you drank from yesterday came from another soda can that you recycled five years ago.

- **Five great reasons to recycle from the EPA:**
  - 1) Recycling protects and expands US manufacturing jobs and competitiveness.
  - 2) Recycling reduces the need for land-filling and incineration.
  - 3) Recycling saves energy and conserves natural resources like trees, water and minerals.
  - 4) Recycling prevents unnecessary use of virgin materials for manufacturing.
  - 5) Recycling is one of the best ways to sustain the environment for future generations.
- **★TOP 20★ Look for recycled packaging.** Only buy items that are packaged in recyclable materials. Besides the familiar bottles and cans, check out all cardboard, paper bags and plastics.
- **★TOP 20★ e-cycle.** Don't send your old, non-working electronics, especially TVs, computers and cell phones to the landfill. Donate them to a local charity that's working with an e-cycler. They extract the precious and hazardous metals for reuse and recycle the plastic. Besides computer components, phones and TVs, they will happily take virtually anything electrical. Go to [epa.gov](http://epa.gov) or [earth911.com](http://earth911.com) for a listing of local e-cyclers.
- **Refill your printer ink cartridges.** Return your used printer ink cartridge to your office supply store.

Many stores will give you an in-store credit. Also look into the cost of using a refilling service or doing it yourself for more savings. Tip: If your printer has a draft mode, using it can reduce your ink usage by half.

- **Look at the recycled content.** Buy products that have a high recycled content including stationery, clothing, furniture and office supplies.
- **Recycle your car fluids.** Take your dead car batteries, used antifreeze and dirty oil to a proper recycling center.
- **Make your own firewood.** Recycle old newspapers by rolling them into logs. Tie the rolls with string or hemp (not plastic rope), soak them in water to make them solid and save them to supplement your winter wood supply.
- **Compost your Christmas tree.** If you buy one of the thirty-three million Christmas trees that are harvested every year, make sure that it gets mulched or composted when the season is over.
- **Sad recycling facts from the EPA:**
  - 1) There are only about 3500 operating community-composting programs in the entire United States.
  - 2) There are fewer curbside-recycling programs now than in 2002.
- **Good recycling news from the EPA:**
  - 1) In 2008, recycling and composting saved the equivalent energy generated by 10.2 billion gallons of gasoline.
  - 2) Every ton of mixed paper saves the equivalent of 185 gallons of gasoline.
  - 3) Recycling one ton of aluminum cans conserves 1665 gallons of gasoline.

- 4) The 2008 total amount of MSW (Municipal Solid Waste) has dropped by seven million tons compared to 1990.

Here's one city's recycle list.

RECYCLABLES	TRASH
Aerosol cans (empty)	Animal and food waste
Aluminum and tin cans	Bathroom waste
Cardboard	Carpet and flooring
Cereal boxes (without lining)	Car parts
Computer and ledger paper	Cat litter
Egg cartons	Cigarette butts
Foam cups and plates	Clothes and shoes
Wrapping paper	Disposable diapers
Glass bottles and jars (lids off)	Mirrors
Juice cartons	Palm fronds
Junk mail and brochures	Pool covers
Laundry bottles	Rags and sponges
Magazines	Toys
Milk cartons	Non-recyclable debris
Newspapers / phone books	
Plastic bottles	
Plastic bags	

*From Recycle Anaheim, Summer 2009 update.*



“Respond” takes the traditional “Three R” message one critical step farther. Not only do we have to seriously get behind the program, we need to make it a personal priority to spread the entire “Four R” message. Below is a list of easy ways to start.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## RESPOND

- **★TOP 20★ Get involved.** You don’t have to carry a picket sign or lead a protest march. Here are a few small ways to start making a difference:
  - 1) **Send just one a week.** Write to one company each week asking them to reduce their unnecessary packaging or remove all the environmentally hazardous material from their products. Or call the companies’ 1-800 number and leave a message. Tip: Restrict your comments to only one issue in each letter. Don’t send a laundry list of issues that you would like to see addressed.
  - 2) **Surprise someone with a thank you.** Write a quick ‘thank you’ note to the CEO of an

environmentally-friendly company. Let them hear some friendly “trash talk” for a change.

- 3) **Talk to a legislator.** Make an appointment with your local legislator. Bring a short, one-page list of issues. In conversation, stick to your list. Leave a copy. Follow up with a thank you note.
- 4) **Spread the source-reduction message.** Explain source-reduction to all your friends. Ask them to help spread the message.
- 5) **Recycle at work.** Find out what your company is doing about recycling. Ask how you can help.
- 6) **Buy for longevity.** Consider buying long-lasting, high-quality clothing, appliances, equipment and vehicles for your personal use. Encourage the same sustainability philosophy among your friends.
- 7) **Be a greenness expert.** Become the “Green Expert” both at home and at work. Help your church and school understand your message, too.
- 8) **Support full-circle manufacturers.** Buy from manufacturers who offer to buy back or take back their products at the end of their useful lives. Note: Many electronics manufacturers and a few shoe manufacturers are now supporting this program.
- 9) **Join the energy police.** Become the “energy police” in the stores and offices you visit. If you see parking lot or other typical nighttime lights burning during daylight hours, dripping water in a drinking fountain or restroom sink or a sprinkler spraying the hardscape, notify the management.

- 10) **Opt off catalog mailing lists.** 100,000,000 trees are chopped down every year to make paper just to produce the 4.5 million tons of junk mail. How much do you throw away unopened? Go to: [obviously.com](http://obviously.com) to learn a dozen or so different ways to stop the waste and have your name removed from general circulation lists. Start with your own catalog and on-line purchases by insisting that your name not be shared or sold.
- 11) **Carry reusable cloth bags in your car.** Use cloth bags everywhere you shop, not just at the grocery store. You can even use them at the library.



Decals to help keep your family's recycling straight. From [awarenessideas.com](http://awarenessideas.com)

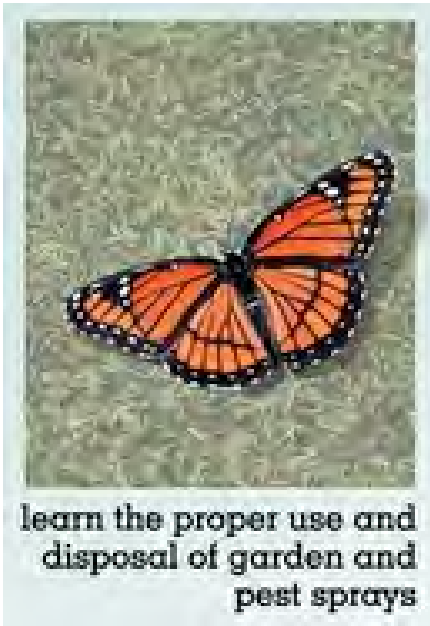
- **★TOP 20★ Think about water.** If you want to make a long-term impact, think about water conservation. We can't just stop needing it, but we can be a lot smarter about how we use it. Most of us can simply walk to the kitchen or reach for a plastic bottle to get a refreshing drink. Elsewhere over one billion people don't have regular access to clean drinking water. Even here, at home, the supply is dwindling. Start saving water. Insist that others do, too.

**Words of Wisdom: The Sea is the universal sewer. *Jacques Cousteau***

- **Sponsor a “Going Green” party or meeting.** Have a “going green” party at home or meeting at work. Brainstorm to see how many off-beat ways you can think of to help the environment. Remember that true sustainability is the result of hundreds of people ever-so-slightly improving the way they think about minimally impacting the environment, then doing something about it.

### **TEST QUESTION**

Which of the Four Rs (Reduce, Reuse, Recycle and Respond) is most important for you to do today?  
Answer: Respond. Spreading the message and getting involved begins with you.



When most people “think green,” in their minds they see their yards with trees, bushes and flowing water. Mostly complements of the EPA, listed below are tips, suggestions and questions about creating and maintaining a sustainable yard.

*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER EIGHTEEN

### IN YOUR YARD

- **★TOP 20★ Save some of your state’s water and electricity.** In some states nearly 20% of the state’s electrical usage is dedicated to pumping, transporting and treating water. You can help reduce this cost by installing aerators, low-flow faucets and low-flush toilets in your home.
- **Consider Solar energy.** Answer the following questions as you consider the advantages of solar power (photovoltaics - PV):
  - 1) Does your home have sufficient solar resources?



- 2) Are you connected to the grid?
  - 3) Will you be paid for generating excess electricity?
  - 4) How much are you willing to pay up front to save money later?
  - 5) What rebates and tax incentives are available?
- **Make your backyard a wildlife-friendly by:**
    - 1) Planting native plants, especially ones with berries, fruit or flowers.
    - 2) Use minimal, or preferably no, pesticides.
    - 3) Avoid invasive plant species.
    - 4) Provide a small birdbath, but keep the water fresh to avoid mosquitoes.
  - **Create a rain garden.** A rain garden is a passive way to avoid water runoff and soil erosion. You can increase your garden's water absorption potential to help return more water to the soil and the aquifer by:
    - 1) Directing downspouts onto lawns and cultivated garden areas.
    - 2) Adding compost and mulch to the soil to help the water soak in.
    - 3) Using pavers and gravel instead of pavement to create a larger water permeable area.
  - **Up to 95% of your garden's insect population are GOOD BUGS.** They can help you control your "bad" garden pests naturally. You can help them by:
    - 1) Maintaining healthy soil with compost and mulch.
    - 2) Planting pest-resistant plants and shrubs.
    - 3) Learning to recognize the helpful pest predators.
    - 4) Removing dead or infested plants that are creating a habitat for insect pests.
    - 5) Using pesticides responsibly.

**Words of Wisdom: A flower is an educated weed. *Luther Burbank***

- **Some waste-free lawn / garden tips from the EPA:**
  - 1) Don't over-fertilize.
  - 2) Donate healthy plants to community gardens or schools and volunteer to plant them.
  - 3) Use non-toxic alternatives like ladybugs to control aphids instead of poisons in your garden.
  - 4) Border your garden with recycled plastic fence and trim rather than wood.
  - 5) Protect young seedlings from the elements and animals with a milk carton with the bottom cut off. Recycle it when done.
  - 6) Reduce your need for pesticides by planting insect-resistant, native grasses and shrubs.
  - 7) Raise the cutting blade on your mower and leave the clippings to become mulch.
- **Here's some embarrassing bad gardening news from the EPA:**
  - 1) We spill more fuel each year filling our garden tools (lawn mowers, trimmers, etc.) than was lost in the Exxon Valdez oil spill in Alaska.
  - 2) Since small motors emit more greenhouse gasses than car motors, mowing a ¼ acre lawn produces more air pollution than driving round-trip from New York to Washington, DC.
  - 3) Homeowners use more chemical fertilizers per acre than farmers do. (About 70 million pounds.)

- **Don't dump your oil.** Dispose of used oil properly, not down a drain or poured on the ground. A single quart of oil can pollute 250,000 gallons of drinking water. Many oil-change shops will recycle it for you; some will even pay you for it.
- **Try partial pressure water.** Teach your family (and yourself) not to turn on the water full blast when washing your hands or rinsing dishes. Adjust the water pressure downward; partial pressure will work just as well and save water.
- **Use an electric snow blower.** Use an electric snow blower instead of a gas powered one to decrease greenhouse emissions. Better yet, burn up about 600 calories by using a shovel or broom to clear your driveway, porch and sidewalk.
- **Dress smart, not like a robot.** In cold weather, wear multiple layers of clothing rather than depending on battery powered personal heaters.
- **Plant Greenscaping or Xeriscaping.** Xeriscaping is the technical term for utilizing a dry landscape design with water conservation as its primary objective. Typically, you plant drought resistant, native plants that are already acclimated to both local climate and insect predation. Greenscaping also includes the concept of planting on the south, east and west sides of building to create shade that cools your building envelope to reduce your A/C cost.

### TEST QUESTION

Question: What is the single most important thing you can do in your yard to help the environment.  
Answer: Become a fanatic about conserving water.

## STOP ENERGY



**W A S T E**  
Got a Bright Idea?  
Share it!

Doing everything environmentally possible just for your family only goes so far. At some point you need to step out and help the rest of us. Below are a few easy first steps.



*This and many other energy-saving messages are available on posters, magnets, decals and more from [awarenessideas.com](http://awarenessideas.com)*

## CHAPTER NINETEEN

### COMMUNITY SERVICE

- **★TOP 20★ Help an Eagle Scout.** Scouting has been quietly protecting the environment for over 100 years. Eagle Scouts are the leaders of this movement. Support an Eagle Scout project aimed at helping the environment. Contact your local scouting office or Boy Scout troop for more details.

**Words of Wisdom: An activist is not the man who says the river is dirty. The activist is the man who cleans up the river. *Ross Perot***

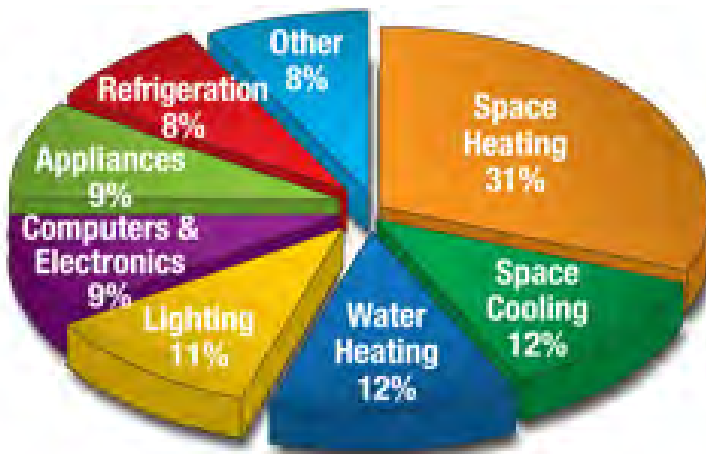
- **★TOP 20★ Share the ride.** Share the ride and the road. Walking, bike riding and public transportation all help reduce air pollution. Use every possible

opportunity to leave your car at home. Try alternative transportation just one day a week or even just one short trip a week. The exercise will do you good.

- **★TOP 20★ Donate your clunker.** If you have an old clunker car that is an annoying and damaging emissions source, donate it to be recycled for a tax deduction. When your car is an unfixable polluter that costs more to repair than to replace, forget sentimentality and give it away.
- **Be a street cleaner.** Next time you take a walk, bring along a used grocery bag to pick up bottles and cans. Once you overcome the first-time embarrassment, you'll happily pick up other trash, too. Tip: Wear rubber gloves.
- **Sponsor a fundraiser.** Sponsor or organize a bottle, can or electronics recycling drive for your church or school. E-cycling is less well-known and therefore often more lucrative. Contact your local waste management service or your city to learn how this can best be done.
- **Start your own carpool.** Whether you are going to school, work or just shopping, carpool with someone. If none is available, take the initiative and start your own. Tip: If you know a shut-in, take them with you. You may need the same service someday.
- **Buy Green power.** You can specify "green power only" from many utilities. It is a premium service, but the easiest way to access solar, wind, water or geothermal energy.

### TEST QUESTION

Question: How can you best serve your community? Answer: Show an attitude of environmental responsibility in everything that you do. Sustainability has little to do with ourselves and everything to do with the future.



### **How We Use Energy in Our Homes**

*Source: 2007 Buildings Energy Data Book,*

This pie chart details where we spend our home energy dollars. The numbers can change depending on where you live. There are easy ways to save money in all the categories, but concentrate on your largest ones first.

## **CHAPTER TWENTY**

### **HOME ENERGY AUDITS**

If you don't measure your energy losses, you can't correct them. A home energy audit will help you pinpoint where your energy is being used most inefficiently. In Southern California, where this book was written, we only turn on the heater a few days each year, so our percentages are far different from the national averages shown on the chart above. Use your audit data to see the areas that would reap the best return on your investment of time and money. If the pie chart is fairly representative of your home and you are serious about saving money, definitely start with space heating.

Many utilities will help you make a proper energy audit, some will lend you the tools, others will actually come

do it for free. Call your local utility to find out what services they offer to homeowners. You can also do a great home energy audit yourself or call in a professional for a more comprehensive examination. For more information about home energy audits, including free tools and calculators, visit [www.energysavers.gov](http://www.energysavers.gov) or [www.natresnet.org](http://www.natresnet.org) or [www.hes.lbl.gov](http://www.hes.lbl.gov)

Below is our Quick and Easy Five-Step Energy-Saving Implementation Plan:

- 1) Figure out your money and energy saving goals by asking yourself the following questions:
  - a) How much money do we spend every year on energy (including water, gas, heating oil and electricity)?
  - b) Based on the audit, where did we lose the most money and energy?
  - c) If we spend money on an energy upgrade, what is the payback? How much? How soon?
  - d) What are the non-financial benefits? (i.e. less noise from double pane windows or recognition from family and friends.)
  - e) Are we planning to move soon?
  - f) How much can I spend?
  - g) Do I have to hire someone or can I do it myself?
- 2) Look at our list of **★FAVORITE 50★** Energy Savers in the preface and check off those you've already done or that don't apply.
- 3) Working with your "Green Team", cherry pick ten of your favorites from first seven chapters (Easy Energy Savers section). Work on them.
- 4) Create a family conservation consciousness by picking ten more off-the-wall tasks from

the Cheap Fixes section (Chapters Eight through Fourteen).

- 5) Step up to sustainability by implementing some of our ★TOP 20★ Sustainable Tips. The payback isn't for today. It's to save and perhaps help recover a more pristine world for unborn generations far in our future.

For a Do-It-Yourself audit, list each light bulb and appliance in your home along with its wattage on a piece of (recycled) paper. For appliances, the wattage is typically listed on the nameplate. If you don't have or can't reach the nameplate, see the chart below for EPA wattage estimates. Use the following formula to figure out how many kilowatt-hours you are being charged for each day.

$$\frac{(\text{Wattage}) \times (\text{Hours Used per Day})}{(1000)} = \frac{\text{Daily Kilowatt-hour (kWh) consumption}}{}$$

Note: Your utility charges are based on kWh consumption.

For your annual cost, plug your answer into the following formula:

$$(\text{kWh}) \times \frac{(\text{number of hours usage per year})}{(1000)} \times (\text{cost per kWh}) = \text{cost per year}$$

We combined the two formulas for the following example: A child's 100 watt closet light is accidentally left on five days a week while she goes to school and left on all night to keep the monsters away. The utility charges \$0.15 per kWh.

$$\frac{(100 \text{ watts}) \times (16 \text{ hours})}{(1000)} \times (300 \text{ days per year}) \times (\$.15) = \$72.00$$

Analysis: Half the cost is to give a little girl a peaceful night's sleep; half is completely wasted. Spending \$36 on a happy little girl is money well spent. Spending the other \$36 on an occupancy sensor or timer switch for the closet is equally well spent.



No matter what appliance or lighting upgrade you are looking at, there are two costs to consider: the initial purchase price and the operating cost. Many of the upgrades we described in this book may have a higher initial cost than a comparable energy-wasting upgrade but the paybacks are generally fairly quick. In fact, some are less than a year. For instance if you replace a standard incandescent light bulb with an average life of 750 to 1000 hours with a comparable CFL with an anticipated life of 10,000 hours, for an extra couple dollars, you save ten round trips up and down a ladder to change the bulb.

**EPA Wattage Estimates for Various Appliances**

<u>Appliance</u>	<u>Watts</u>	<u>Appliance</u>	<u>Watts</u>
Aquarium	50 -1210	CPU/monitor-awake	270
Clock Radio	10	CPU/monitor-asleep	30
Coffee Maker	900-1200	Laptop	50
Clothes Dryer	1800-5000	Stereo Radio	70-400
Dishwasher	1200-2400	Refrigerator	750
Dehumidifier	785	TV, 19"	65-110
Electric Blanket	60-100	TV, 36"	133
Ceiling Fan	65-175	TV, Flat screen	120
Window Fan	55-250	Toaster	800-1400
Whole-house Fan	240-750	Toaster Oven	1225
Hair Dryer	1200-1875	VCR/DVD	17-25
Heater (Portable)	750-1500	Vacuum Cleaner	1000-1440
Clothes Iron	1000-1800	Water Heater	4500-5500
Microwave	750- 1100		

**TEST QUESTION**

Question: Why should you do an energy audit?  
Answer: There is no incentive to fix what you don't know is broken. An energy audit exposes and helps you prioritize all your energy problems.

## SUMMARY

If you are only going to “take away” one money-saving idea from everything we have discussed in this book, please make it TURN IT OFF! It’s a simple message that is easy for everyone on your Green Team to understand and pass on at school and work or to your extended family and friends. Start with wasted light energy. Lighting is the easiest place to make a noticeable impact. Whether you extinguish your lights with just simple wall switch or a sophisticated EMS system, everyone can relate to flipping off a light. Air conditioning (space heating and cooling) is harder to comprehend but since it accounts for nearly 40 per cent of your home energy cost, once your Green Team gets on your program, the savings are huge.

There is no question that the cost of energy is going to continue to increase. These increases will force people of all ages to become more deeply involved. By using the techniques that we have outlined in this book, you can create a firm ecological foundation for everyone in your household. The lessons they learn about saving energy (and money) at home will splash into their school and work lives and create the habit of energy conservation there, too. As your home’s overall carbon footprint shrinks, not only will you be doing the right thing ecologically, but you also will cut your expenses significantly.

We have shown you over 300 measurable ways to save both money and energy in your home plus another 100 ways to contribute to sustainability. By making a small change in your environmental philosophy and by buying into a few carefully chosen upgrades, you can reduce your energy consumption (and electric bill) by as much as 30 to 50%. Many of the upgrades we discussed have an ROI of less than two years and some pay back your investment in as little as

six months. Beyond the money, the impossible-to-measure attributes include living in a happier, healthier home where everyone understands and appreciates the true value of environmental sustainability.

In order to keep it quick, efficient and easy to read, this book only scratches the surface of conservation and sustainability. Our research was based on data collected from literally thousands of articles, websites and books about saving energy. Nearly all of them could be traced back to [www.epa.gov](http://www.epa.gov) where there is a mountain of extremely interesting and helpful information. Our other two favorite sources of current, unbiased information are the Energy Star® website [www.energystar.gov](http://www.energystar.gov). and the Southern California Edison website [www.sce.com](http://www.sce.com). If you are looking for more energy-saving information or tips to help lower your energy cost, we recommend that you spend some quality time on all three of these sites.

**One final thought:**

**In his desire to have and to enjoy rather than to be and grow, man consumes the resources of the earth and his own life in an excessive and disordered way. Modern society will find no solution to the ecological problem unless it takes a serious look at its lifestyles.**

***Pope John Paul II***

## **APPENDIX A**

### **ENERGY FACTS and TERMS**

- **Accent lighting** – draws attention to special features or enhances the aesthetics of both indoor and outdoor environments.
- **Air Conditioning** – describes the creation of both cool and warm air, not just cooled air.
- **Ambient lighting** – the general illumination in an area, both indoors and outdoors, excluding task and accent lighting.
- **Amperes (Amps)** – a measure of electrical current. An increase of either amps or volts increases wattage as follows:  $\text{Watts} = \text{Volts} \times \text{Amps}$ .
- **Ballast** – a piece of electrical equipment that properly controls the current flow to both fluorescent and HID lamps.
- **BTU** - One BTU equals the amount of energy required to raise the temperature of one pound of water by 1°F at sea level.
- **Bulb size** – the maximum diameter of a bulb expressed in eighths of an inch. (i.e. a T-8 fluorescent tube has an 8/8" diameter which equals one inch).
- **Compact Fluorescent Lamps (CFL)** – are lower wattage replacement lamps that now are available in sizes to retrofit nearly all standard usage incandescent lamps. They produce the same light levels while consuming up to 85% less energy and lasting at least ten times longer.
- **Cost per year** - One single 100-watt light bulb burning 18 hours a day for a year costs \$100. Simply put, 100 watts cost \$100/ year.

- **Cubic Feet per Minute (CFM)** – a measurement of the movement of air within a space.
- **Current** - is the flow of electrons and is measured in Amperes. (I)
- **Daylight harvesting** – building design that takes advantage of outdoor lighting to reduce electrical usage.
- **Demand** – (On your electric bill) is the total value of power over a specified interval of time.
- **Efficacy** – The efficiency of a light source measured in lumens/watt.
- **Energy efficiency** - Energy efficient equipment produces more work for the same amount of current.
- **Energy Efficiency Ratio (EER)** - is a measurement of A/C cooling capacity in systems with greater than 65,000 BTU/hr (5.4 tons). The current California minimum EER Rating is 11.5.
- **Evaporative Coolers** – AKA “swamp coolers” pull warm, dry exterior air through moist pads to condition the air, then blow the newly cooled air into a space with a simple fan.
- **Energy loss** - Most energy is lost in the form of heat.
- **Floodlight** – is a luminaire/lamp that disperses a bright light in a beam over 20° wide. (See also Spotlight.)
- **Fluorescent Lamp** – a high efficiency lamp that sparks an electric discharge through a mixture of inert gas and mercury vapor to produce ultraviolet (UV) energy. Phosphors on the interior lamp surface convert the energy to light.
- **Footcandle** - One footcandle of light is bright enough to see in a dim room. You need three footcandles of light to move around safely and twenty to thirty to read a newspaper.

- **Hazardous materials** - Most lamps must now be disposed of as hazardous waste.
- **HEPA (High Efficiency Particle Absorption)** is a measure of the effectiveness of air filters.
- **Horse Power** - One horsepower is the work required to lift 550 lb. one foot in one second.
- **Incandescent Lamp** – invented by Thomas Edison, is a generally inefficient light source that drives electricity through a very thin (usually tungsten) wire causing it to glow white-hot.
- **Indirect Lighting** – points luminaries toward the ceiling which produces a softer, more diffused light scattered over a wider area.
- **Kilowatt (kW)** = volts x amps / 1000.
- **Kilowatt Hour (kWh)** – the standard billing unit used by utilities for electrical usage. (i.e. Ten 100 watt lamps burning for one hour consumes one kilowatt hour of electricity.)
- **Lamp** – Consumers refer to an incandescent light as a light bulb and a fluorescent light as a tube. The lighting industry calls them both lamps.
- **LED** – Light emitting diode. LED lights are more environmentally friendly than many other types of lamps because they contain no Mercury and they last longer.
- **Light** – radiant energy that can be seen by the human eye.
- **Lumen** – a measure of quantity of light emitted by a source.
- **Luminaire** – a lighting industry term for the fixture that encompasses the entire lighting system.
- **Mercury Vapor Lamps** – are the oldest type of HID lamp. Because of the huge energy savings, they are being systematically replaced by newer metal halide lamps or high pressure sodium lamps.

- **Metal Halide Lamps** – the newer generation lamps are available in two main types. 1) Pulse-start metal halides which use about 20% less energy than the traditional metal halides and 2) Ceramic Metal Halides (CMH) which are used where high quality, directional light is needed.
- **MR-16** – a common 2” diameter mirrored reflector halogen or ceramic metal halide lamp.
- **Occupancy Sensors** – A device that activates lighting after sensing the presence of a person to switch lighting on only when a room is occupied. The four main types are: Ultrasonic, Microphonic Passive Infrared, and Hybrid. Occupancy sensors typically have a less than one-year payback.
- **OFF!** – The number one best way to save energy is to TURN IT OFF!
- **Operating or Burn Position** – Certain lamps are made to burn in specific orientations (i.e. facing up or down). The wrong orientation shortens the rated life of the lamp and may create safety issues.
- **Photovoltaics** – unlike solar power technologies, a photovoltaic system converts light directly into electricity using a chemical reaction in semiconductor materials.
- **Programmable Thermostat** – gives you the option of setting different room temperatures based on time of day and day of the week.
- **Radiation** – As it relates to temperature, radiation is the use of energy waves to change the temperature of solid objects (i.e. sunlight).
- **Rated Lamp Life** - the number of hours 50% of a test sample of lamps burned before burning out.
- **Relative Humidity** – the measure of how much moisture the air contains as a percentage of how much it could hold. 40 to 60% is preferred.
- **Seasonal Energy Efficiency Ratio (SEER)** - applies to both commercial and residential systems

with capacities less than 65,000 BTU/hr (5.4 tons). The minimum SEER rating in the United States is 13. The maximum is 21.

- **Service life** - Incandescent and fluorescent lamps lose 20 to 30% of their light output over their service life.
- **Spot Light** – a reflector lamp with a tight beam of light, typically around 10°. (See also Flood lamp.)
- **Sustainability** – is a philosophy that seeks to find ways to reduce or eliminate the negative impact of buildings on the environment and its occupants. Sustainability isn't an all or nothing proposition. The building owner/operator can choose how far to go and how much to spend.
- **T-5** – a 5/8" diameter fluorescent tube created in Europe on a metric scale. They are more efficient than both T-8's and T-12's but are not a viable retrofit option because of their shorter length and optimum compatibility with high frequency electronic ballasts.
- **T-8** – a 1" diameter (8/8") fluorescent tube. They burn about 23% less electricity than a T-12 while producing the same light levels.
- **T-12** – a 1.5" diameter (12/8") fluorescent tube. They are available in a variety of lengths and are the least efficient of the typically used fluorescent lamps.
- **Task lighting** – is the lighting used by workers to perform a particular task that requires more light than is provided by the ambient light source.
- **Ton of cooling** - one ton equals the amount of heat required to melt one ton of ice in 24 hours or 12,000 BTU per hour. Note: a one-ton cube of ice measures 5.6' on each side.
- **Transients** – High voltage surges that can be caused by electrical events ranging from lightning strikes to in-store short circuits.



- **Volt** – a measure of the electrical potential between two points.
- **Voltage** - is the electrical pressure that causes current to flow. The unit of measure is volts. (E)
- **Watts** – a unit of electrical power indicating the rate at which electricity is consumed.

## **APPENDIX B**

### **ON-LINE RESOURCES**

**quickandeasygreenbooks.com** – This book is one of the Quick and Easy Green Books series dealing with easy, inexpensive ways to save money and energy where you live and work. Other books planned for the series address energy-saving techniques for grocery stores, drug stores, convenience stores, dollar stores, schools and churches, hotels and motels. See [www.quickandeasygreenbooks.com](http://www.quickandeasygreenbooks.com) for more information

**Awarenessideas.com** – Has the widest selection of energy-saving programs that we were able to find anywhere in the country. They create everything from posters to decals to t-shirts to awards for excellence, all themed to environmental conservation. The designs shown throughout this book are only a tiny fraction of all that they have available on line. If they don't have exactly what you envision among their hundreds of thousands of items, they can help you design a custom program that exactly fits your needs. [www.awarenessideas.com](http://www.awarenessideas.com)

**Better Bricks** – A Portland, Oregon-based resource dedicated to helping your company or store reap the bottom line benefits of intelligent energy management. A good source of ideas from store design to operations on how to reduce your energy consumption. [www.betterbricks.com/subHomepage](http://www.betterbricks.com/subHomepage)

**BOMA** – Building Owners and Managers Association – One of the nations leading resources to help building owners and managers wade through the sea of “green wash” to identify the best solutions to save money and energy. [www.boma.org](http://www.boma.org)

**CTAC – Consumer Technology Application Center** – In Southern California, CTAC is the best source of in-depth

information about all aspects of saving energy. Operated by SCE, their programs include: seminars, workshops, displays, demonstrations, technical consultations and facility presentations. [www.sce/ctac.com](http://www.sce/ctac.com)

**EERE** – Office of Energy Efficiency and Renewable Energy – Working in both the private and public sectors, the EERE coordinates all the nation's efforts to create clean, reliable and affordable energy technologies. The EERE is an excellent resource to learn about the best of the new products coming to market. [www.eere.energy.gov](http://www.eere.energy.gov)

**Energy Information Administration** – Official U.S. Government Energy Statistics. One of the best sources of extremely in-depth information about energy related trends, supplies, forecasts and analysis. [www.eia.doe.gov](http://www.eia.doe.gov)

**Energy Star** – A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy dedicated to helping both businesses and homeowners save money and protect the environment through energy-efficient products and practices. [www.energystar.gov](http://www.energystar.gov)

**Energy Star Portfolio Manager** – The Energy Star Portfolio Manager is a free on-line tool that allows you to track, monitor and assess energy and water consumption and costs in your home. [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark)

**Environmental Protection Agency** - The EPA maintains the best and most comprehensive website relating to energy conservation and sustainability that we've found. From kid's games to technical white papers, they probably have the answer you need. [www.epa.gov](http://www.epa.gov)

**Food Marketing Institute** – A great resource for all things food-related including public affairs, safety, research, education, industry and government relations. [www.fmi.org](http://www.fmi.org)

**Food Services Technology Center** – the industry leader for testing appliance performance and commercial kitchen energy efficiency. Besides being a clearinghouse of information on equipment performance, the FSTC also has

expertise in commercial kitchen ventilation and building energy efficiency, including lighting, glazing and HVAC. They maintain one of the primary testing facilities for Energy Star® [www.fishnick.com](http://www.fishnick.com)

**Lamp recycling** – All fluorescent lamps (including CFLs) contain mercury, which is classified as a hazardous material. Lamprecycle.org is a one stop information source for how to recycle your old lamps in the US and Canada.  
[www.lamprecycle.org](http://www.lamprecycle.org)

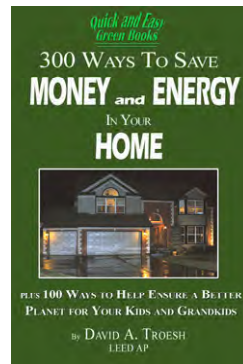
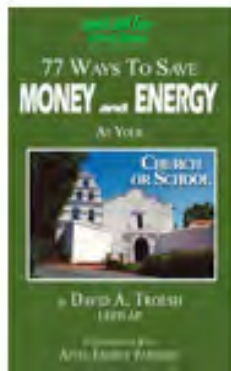
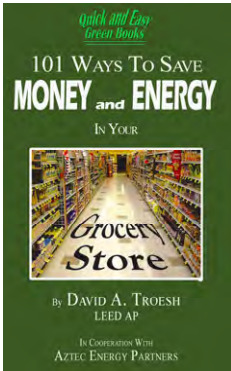
**The Ultimate Cheapskate** – Jeff Yeager earned this dubious title on the Today Show because of his success working with underfunded non-profit agencies. His website is a gold mine of money-saving ideas. [www.ultimatecheapskate.com](http://www.ultimatecheapskate.com)

**Judy Walker** – is the food editor from The Times-Picayune, New Orleans. She is famous throughout the South and Southwest for her down-to-earth money-saving ideas.  
[www.times-picayune.com](http://www.times-picayune.com)



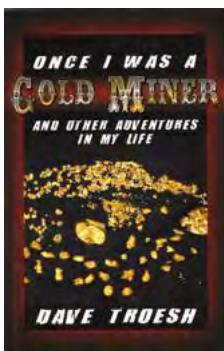
## ***Quick and Easy Green Books***

### Money and Energy-Saving Tips for Sustainability by DAVE TROESH LEED AP



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Dropping into leech infested ice water just after sunrise to move a dozen tons of rock to improve fish habitat and perhaps dredge up a few flakes of gold isn't everyone's idea of a great job. But it is by far, the best job that I ever had! This book tells the best stories of my life. The most outrageous came from the three gold mining years. The most important tales are from the decades before and after.

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DAVE TROESH, LEED AP, author of the popular Quick and Easy Green Book Energy-Saver Series, has saved energy and money in over 200 Big Box construction projects. Some of the simple money-saving tips he used to save a grocery store over \$100,000 in annual energy costs are easily transferable to homes. Through constant review of websites, trade papers, magazines and books, Dave finds and tests innovative ways to help you save money while saving the environment. Dave considers an enthusiastic family “Green Team” to be the most important element in any home energy-savings program.

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