ENERGY LITERACY

THE IMPORTANCE OF ENERGY

Energy is the ability to do work or produce change. Virtually everything we do or use at work and home uses energy:

- Heating, air conditioning, and ventilation
- Computers
- Electronic equipment such as entertainment systems and TVs
- Appliances
- Manufacturing
- Transportation
- Food storage and preparation
- Security systems

Between 1990 and 2005, energy consumption worldwide rose 33%. People living in the U.S. consume 21.8% of the energy, yet they represent less than 5% of the worldwide population.

WHERE DOES ENERGY COME FROM?

Today, most of our energy comes from **nonrenewable energy sources**, including fossil fuels and uranium.

Fossil fuels – coal, oil, and natural gas – were formed from plants and animals that lived 300 to 400 million years ago in swamps and oceans. When these living things died, they decomposed and were buried. During the millions of years that passed, different types of fossil fuels were formed depending on the combination of animals and plants present, how long the material was buried, and the temperature and pressure. All fossil fuels release carbon when they are burned. The heat content of a fuel is measured in British thermal units, abbreviated as Btu.

A Btu is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

- **Coal** is the most abundant nonrenewable energy source in the world. There is an estimated 930 billion short tons, which is more than a 132 year supply. Coal releases approximately 205 pounds of CO_2 per million Btu when it is burned.
- **Oil** use for transportation in America is increasing rapidly, which creates increased dependence on foreign countries for the needed supply. When oil is burned, it releases approximately 155 pounds of CO_2 per million Btu.
- **Natural gas** is a major source for electrical generation, which places heavy demands upon supply and impacts cost. Natural gas releases approximately 116 pounds of CO_2 per million Btu when it is burned.

Uranium is the fuel most widely used by nuclear plants. **Nuclear energy** is the energy inside the nucleus (core) of an atom of uranium. The energy is released through nuclear fusion or nuclear fission. In nuclear fusion, energy is released when atoms are combined together to form a larger atom.

This is how the sun produces energy. In nuclear fission, atoms are split apart to form smaller atoms, releasing energy. The energy generated by the release is used to heat water into steam, which in turn spins a turbine that generates electricity. Increased use of nuclear energy is proposed by some as a way to reduce emissions of greenhouse gases.

Fact:
New York produces more hydroelectric power than any other state east of the Rocky Mountains.

– U.S.Energy Information Administration

ENERGY LITERACY

Fact:
Nuclear energy provides 19 percent of the United States' electricity and is the country's number one source of emission-free electricity.

– U.S.Energy Information Administration

Renewable Energy Resources can be quickly replenished through natural processes. When "green" energy alternatives such as solar, wind, biomass, or hydropower are used to generate electricity, there are fewer harmful greenhouse gases produced. Renewable energy is safe, plentiful, and shows tremendous potential to replace existing fossil fuels. In 2004, New York State adopted the goal of increasing the proportion of renewable energy used to generate electricity from the current 20% to at least 25% by 2013. To learn more about renewable energy and NYSERDA's incentives, visit **www.nyserda.org**.

Fact:
New York ranks 20th in the country in energy production and 51st in total energy consumption per capita (including Washington DC as a ranked entity). This result may be attributed to New York City's masive mass transit systems.

– U.S.Energy Information Administration

TOTAL ENERGY PRODUCTION 2007 (Trillion Btu)

Rank	State	Total Energy
1	Texas	11,341
2	Wyoming	10,290
3	Louisiana	6,893
20	New York	873
51	District of Columbia	1.09

Source: U.S.Energy Information Administration

TOTAL ENERGY CONSUMPTION PER CAPITA, 2008 (MILLION Btu)

Rank	State	Energy Consumption
1	Wyoming	1,016
2	Alaska	946
3	Louisiana	783
51	New York	205

Source: U.S. Energy Information Administration

Secondary Energy Sources, such as electricity and hydrogen, are created from the conversion of other sources of energy.

- **Electricity** is the flow of electrical power or charge. It occurs in nature as lightning and as static electricity. A generator converts mechanical energy into electrical energy.
- **Hydrogen** is the most abundant element in the universe. It does not occur naturally as a gas on the earth; it is combined with other elements. Hydrogen separates from hydrocarbons through a heating process. It is colorless, odorless, tasteless, and non-toxic. Currently, most hydrogen comes from natural gas and has great potential because it is high in energy and, when burned, produces almost no pollution.

ENERGY LITERACY

ELECTRICAL GENERATION

Energy source	New York	U.S.
Petroleum	2%	2%
Natural Gas	26%	21%
Nuclear	26%	19%
Coal	12%	49%
Hydropower	17%	6%
Other*	17%	3%

**includes other renewables and net imported electricity*

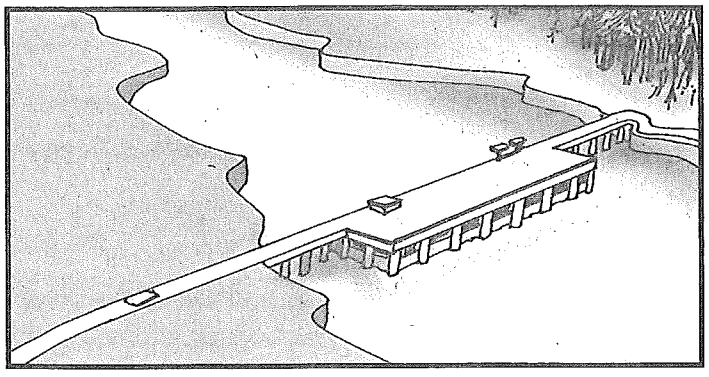
Source: NYSERDA, Patterns and Trends, 2010

There are 28 large projects and 340 small (less than 10 megawatt) electrical generation projects in New York. The largest is Niagara Falls. The other 17% in the chart above includes electricity imported from our neighboring states and Canada (14%). The balance (2%) comes from biofuels (mainly wood, waste, and agricultural products) and 1% comes from wind.

Fact:

Currently, U.S. hydropower generation annually avoids 225 million metric tons of carbon emissions, equivalent to the output of approximately 42 million passenger cars.

–National Hydropower Association



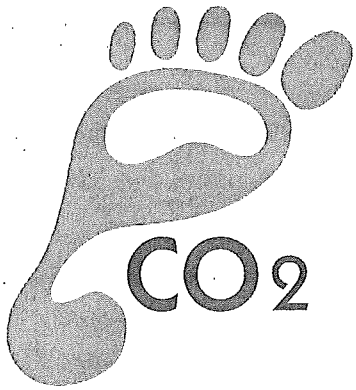
ENERGY AND THE ENVIRONMENT

Every energy source has both positive and negative impacts on the environment. Many of the environmental problems we face today are a result of our fossil fuel dependence. America's primary source of energy, accounting for 84%, is fossil fuels. While the fossil fuel industry continues to improve in sustainable practices, many challenges remain. Some of those challenges include:

- Air pollution
- Climate change (global warming)
- Oil spills
- Water pollution
- Toxic waste
- Acid rain

WHAT IS OUR CARBON FOOTPRINT?

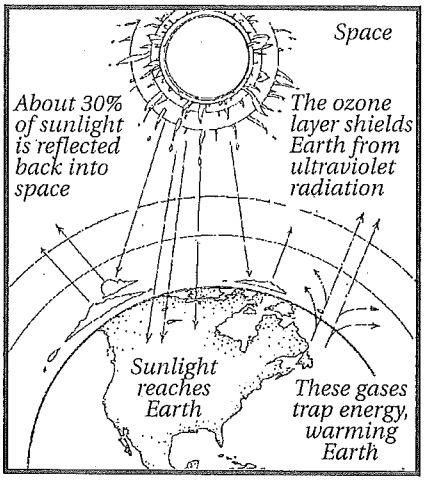
The amount of CO_2 we put into the atmosphere through our energy use is our carbon footprint. If we are going to make our carbon footprint smaller, we need to look at all areas that contribute to carbon dioxide emissions – cars we drive, buildings we live and work in, and how much energy we use. Energy efficiency can provide many immediate environmental benefits. Many of these impacts and risks can be avoided. The reduced use of fossil fuels can help conserve our resources for future generations.



CARBON FOOTPRINT

What Is the Greenhouse Effect?

The greenhouse effect is a heat-trapping process that keeps the Earth warm enough to sustain life. Earth's atmosphere acts like the glass of a greenhouse – after sunlight passes through the atmosphere and warms the Earth, the heat is then radiated back towards space. A portion becomes trapped against the Earth by "greenhouse" gases in the atmosphere. Although there are several greenhouse gases, some scientists believe CO_2 accounts for half of the climate change trend.



China emits the largest amount of CO_2 in the world, closely followed by the United States. However, the average American generates 19.8 metric tons of CO_2 per year, while the average for China is 4.6 tons per capita. What can you do to reduce your carbon footprint?

What is Air Pollution?

Air pollution is caused by gases and particles released into the air. It comes from natural sources such as volcanoes and wild fires. It also is generated by man-made sources such as factories, automobiles, homes, and electricity generation.

Why Is Air Pollution a Serious Concern?

Air pollution is a major human health and environmental issue. Particulate matter affects human health, but we are also concerned about the harmful effects of other chemical or biological materials on our environment, such as acid rain, smog, ozone depletion, and the greenhouse effect.

"You can never have an impact on society if you have not changed yourself."

- Nelson Mandela

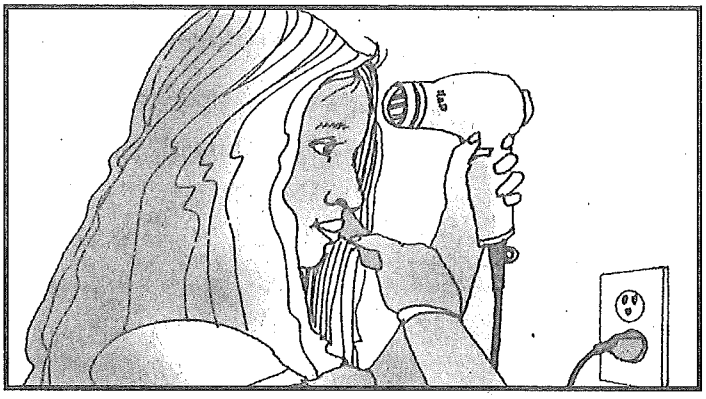
Country	CO_2 Emissions from consumption and burning of fossil fuel (2006) (million metric tons of CO_2)[1]	CO_2 Emissions per capita (metric tons)[1]
China	6,018	4.58
United States	5,903	19.78
Russia	1,704	12.00
India	1,293	1.16
Japan	1,247	9.78
Germany	858	10.4
Mexico	436	4.05
South Africa	444	10.04

1 Trends: A Compendium of Data on Global Change, CO2 Information Analysis Center, Oak Ridge National Lab, U.S. DOE, 2004, www.cdiac.esd.ornl.gov/trends/emis/tre_coun.htm and
Energy Information Administration (EIA) International Emissions Data 2008 Report, www.eia.doe/environment.html

7. COST OF LOOKING YOUR BEST

Family Activity

It takes energy to look your best. Energy is needed to shower, blow-dry your hair, brush your teeth, and wash and dry your clothes. Use the chart below to estimate the energy costs for looking your best.



Here's how:

With your parents, estimate the daily and weekly activities below. Enter the number in the column labeled "Units." Then multiply the "Units" by the "Cost per Use" column; write your answer in the "Cost for Activity" column. Enter the "Cost of Activity" in the next column before the multiplication sign. Enter the number of times per month each activity is performed, and write that number in the "Times per Month" column, to the right of the multiplication sign. Multiply and enter your answer in "Monthly Cost." Multiply by 12 to calculate your annual cost.

Costs estimated at 18.3 cents per kWh and $1.46 per therm (New York State average, 2009).

DAILY ACTIVITIES – STUDENT FILLS IN						
ACTIVITY	UNITS	COST PER USE	ACTIVITY UNIT COST	ACTIVITY UNIT COST X NUMBER OF TIMES PER MONTH	MONTHLY COST	YEARLY COST
Shower	min.	x $.12		x	=	x 12 =
Tub Bath	inches	x $.12		x	=	x 12 =
Hand/Face Wash	min.	x $.04		x	=	x 12 =
Blow Dryer	min.	x $.04		x	=	x 12 =
Brushing Teeth	min.	x $.12		x	=	x 12 =
Daily Student Subtotal						
WEEKLY ACTIVITIES – PARENT FILLS IN						
Washing Clothes Hot water	loads	x $1.48		x	=	x 12 =
Warm Wash/ Cold Rinse	loads	x $.93		x	=	x 12 =
Cold Wash/ Cold Rinse	loads	x $.07		x	=	x 12 =
Drying Clothes: (Natural gas)	loads	x $.26		x	=	x 12 =
Drying Clothes: (Electric)	loads	x $.85		x	=	x 12 =
Weekly Family Total					$	$
Weekly Student Subtotal (Divide the "Weekly Family Subtotal" above by the number of persons in the family)					$	$
GRAND TOTAL – Add 2 Student Subtotals together					$	$

ENERGY TIPS

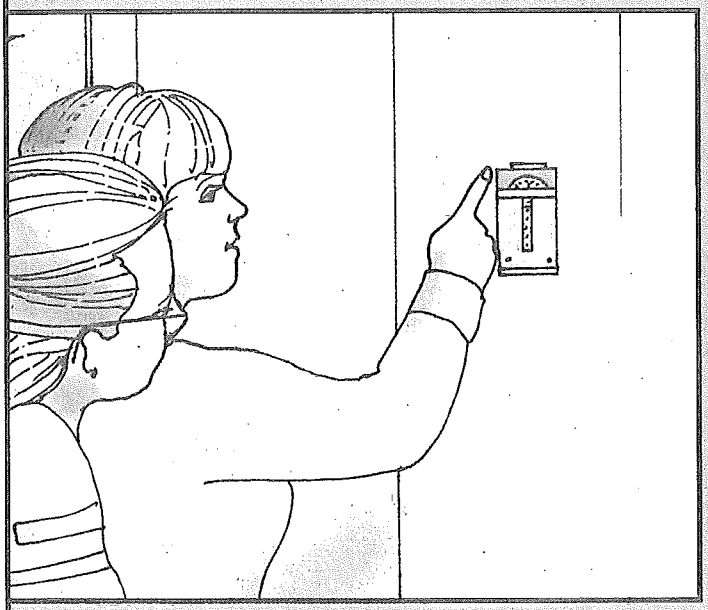
DO YOU KNOW...

these four common myths about energy that cost families hundreds of dollars each year?

Myth 1

"Thermostats should not be turned down at night because it takes more energy than it saves to reheat the home."

Not true - It takes less energy to reheat or re-cool your home than it does to leave the heat or air conditioner set to a constant temperature.



Myth 2

"You should leave your car running at a drive-thru window because it takes more energy than you save to restart the car."

Not true – If you expect to be idle for more than 30 seconds, turn your car off. Every two minutes that a car idles is the same as driving it one mile.

Myth 3

"Taking a bath uses less water than taking a shower."

Not true – Do you know that taking a bath uses even more water than taking a shower? A typical bath uses 30 to 40 gallons of water as compared to an average shower of five to 10 minutes, using a high efficiency showerhead, which will use 2 ½ gallons per minute.

Myth 4

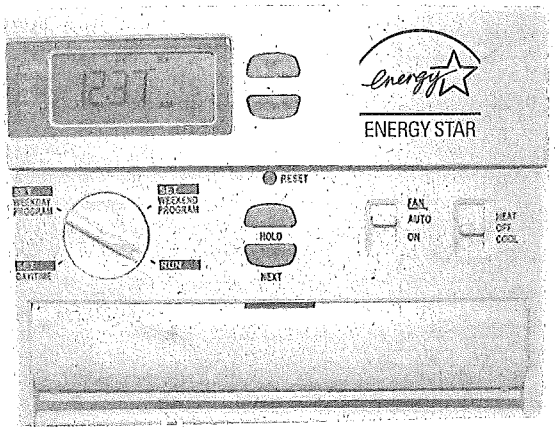
"Turning your computer on and off throughout the day may harm the computer."

Not true: New home electronics are made to turn off and on many times. Any time you can turn it off will save energy.

Using a programmable thermostat is an easy way to save energy and money. An ENERGY STAR® programmable thermostat offers pre-programmed settings to regulate your home's temperature in both summer and winter. Program your thermostat to automatically reduce heating and cooling in your home when possible.

The recommended setting for the summer air conditioning is 78°F or higher. Each degree above 75°F saves you 3% of the energy to cool your home.

The recommended setting in the winter is 70°F or lower. Adjusting the temperature 5 to 8 degrees (down in winter, up in summer) can help save energy if you are away from home for several hours.

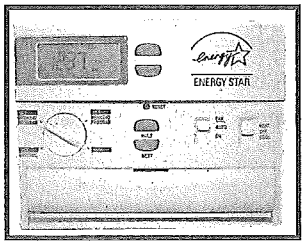


ENERGY TIPS

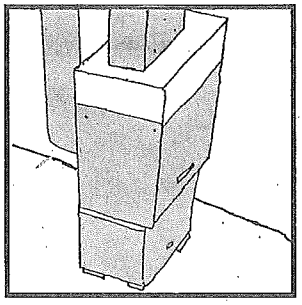
TAKE ACTION TO LOWER YOUR ENERGY USE, SAVE MONEY, AND REDUCE YOUR CARBON FOOTPRINT.

Saving energy happens in two ways. First, you can use less energy through conservation, such as turning off the television when you are not in the room, or second, through energy efficiency. Energy efficiency is using less energy to accomplish the same amount of work. Let's begin in the areas of your house that have the largest carbon footprint.

Home Heating and Cooling



- Install a programmable thermostat.
- Make sure your house is properly insulated. If you have less than six inches of insulation in your attic, you would benefit from adding more.
- You can save 10% or more on your energy bill by reducing the air leaks in your home with caulking and weather stripping.

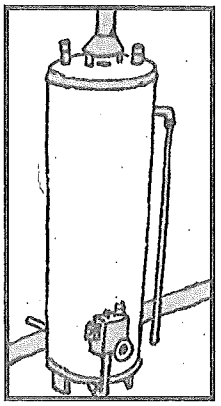


- To help your furnace run more efficiently and cost-effectively, keep your air filters clean.
- For windows with direct sunlight, close your blinds in the summer to keep the heat out. Open them on winter days to let the warmth in.
- Small room fans are an energy-efficient alternative to air conditioning.
- For an energy audit of your entire house, consider the Home Performance with ENERGY STAR® program.

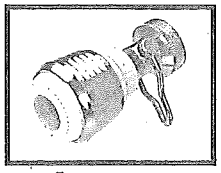
"What is the use of a house if you haven't got a tolerable planet to put it on?"

– Henry David Thoreau

Water Heating

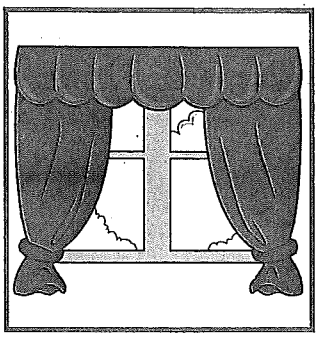


- Check your faucets for leaks that can cost you hundreds of dollars each year.
- Install a high-efficiency showerhead and save up to $50 a year.
- Install faucet aerators to decrease water use.

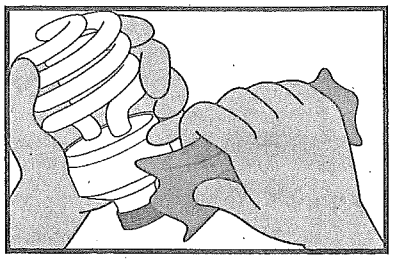


Aerator

Lighting



- Let the sun shine in. Use daylight and turn off lights near windows when possible.
- Replace your most used incandescent bulbs with CFLs (compact fluorescent bulbs) and save from $12 to $20 per year.
- Use lighting controls such as outside motion detectors and timers.
- Turn off lights when you leave the room.
- Always use the lowest wattage bulb that still gives you the light you need.
- Keep your light bulbs clean. It increases the amount of light from the bulb and reduces the need to turn on more lights.



***Safety note**: Burned out CFLs, which contain a small amount of mercury, should be disposed of properly. To locate a collection site in your area, or to learn what to do if a CFL breaks, visit www.getenergysmart.org.*

ENERGY TIPS

Refrigerators and Freezers

- Replace your old refrigerator with an ENERGY STAR® model, which requires 40% less energy than conventional models and provides energy savings without sacrificing the features you want.
- The coils in the back or bottom of your refrigerator and freezer should be kept as clean as possible.
- The freezer should be kept as full as possible. When it is full, it runs more efficiently, stays cooler, and uses less energy.

Electronics

- Turn off your computer and game consoles when you are finished.
- New home electronics are made to turn on and off many times. Always turn them off to save energy.
- Electronics with the ENERGY STAR® label use up to 60% less energy while providing the same performance at the same price as less efficient models.
- Beware of phantom loads or energy vampires. Electronic games, and DVD players, computers, printers, coffee pots, television sets, and telephone chargers continue to draw electricity when they are plugged in but not in use. Use power strips for household electronics. One button will turn off multiple appliances, which conserves energy and saves you money.

Dishwashers

- Only run dishwashers when full and use the "air dry" or "no heat dry" settings.
- ENERGY STAR® dishwashers use at least 41% less energy than the federal minimum standard for energy consumption.

Laundry

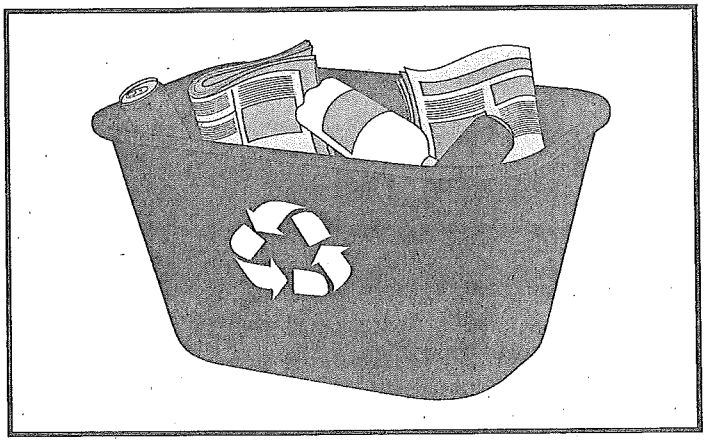
- Purchase an ENERGY STAR®, front-loading washer. The clothes come out nearly dry, decreasing the dryer time needed.
- Buy a moisture-sensitive dryer that automatically shuts off when clothes are dry.
- Use a clothes line whenever possible.

Cooking

- Use the right-sized pan for the burner.
- Cook multiple items at the same time in the oven.

Reducing

- Buy less. When shopping ask yourself, is this something I really need or is it just something I want?
- Recycle everything you can. Participate in the recycling program offered in your town or city.
- Reduce your carbon footprint by lessening the amount of solid waste that goes into the landfill. Every pound of solid waste generates 1.5 pounds of greenhouse gases.



PARENTS, WATCH THE ENERGY SAVINGS ADD UP

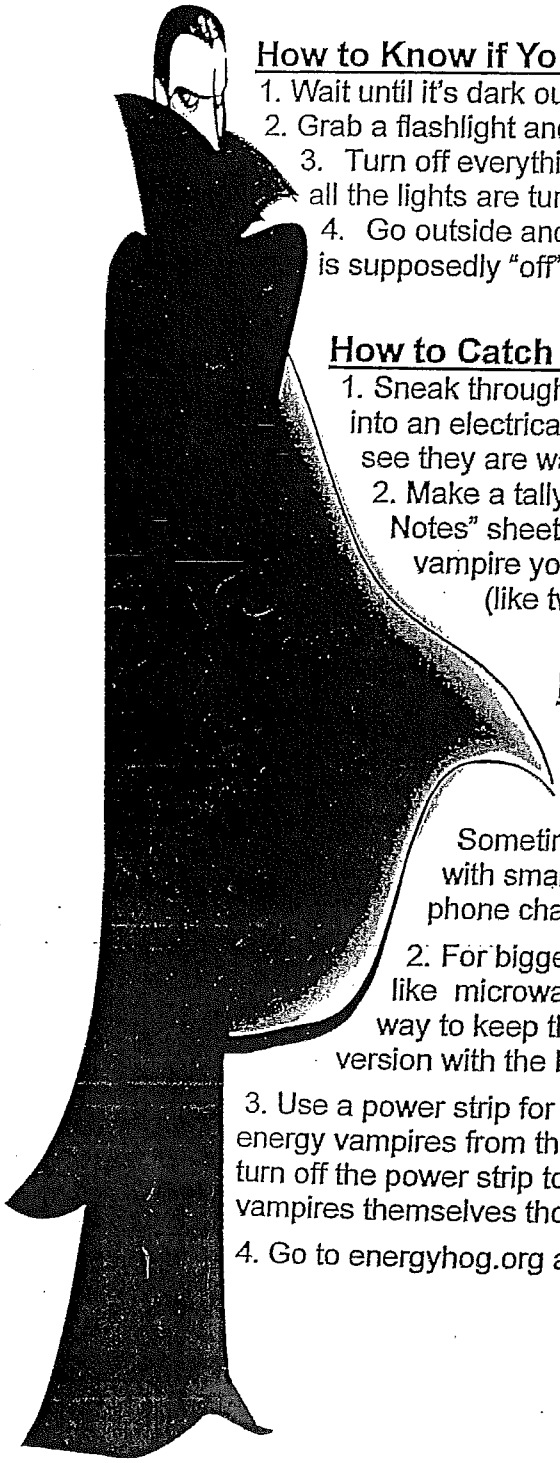
An individual with a combined electric and heating fuel bill of $2,500 per year could save 20% or $42/month by using energy more efficiently. That is like getting a pay raise without having to work longer or harder.

Think about this:

- $42 is the monthly payment on a 15-year, 6% interest home equity loan for $5,000 in improvements to your home.
- If you invest $42 every month into an IRA that earns 8% interest, you'll have $7,000 after ten years – nearly $63,000 after 30 years.

ENERGY VAMPIRE HUNT

Energy Vampires are electronic appliances that are constantly using energy- even when you think they are off! Instead of being all the way off, they go into "stand-by mode" and suck energy when you're not using them! Sometimes, these vampires have a tell-tale sign that can help you catch them — some give off a little light (like DVD players or microwave oven clocks) and some make noise like a laptop computer. Others (like a cell phone charger), might be warm to the touch.



How to Know if You've Got Energy Vampires in Your Home

1. Wait until it's dark outside and you have an adult with you.
2. Grab a flashlight and turn off all the lights.
3. Turn off everything in your home the way you would normally at night. Make sure all the lights are turned off.
4. Go outside and look at your electric meter. Is it running, even though everything is supposedly "off"? If yes, you've got vampires.

How to Catch an Energy Vampire

1. Sneak through each room in your home, and investigate each item plugged into an electrical outlet. Look for lights, listen, and touch possible vampires to see they are warm.
2. Make a tally in the "Vampires Found" column on your "Vampire Hunter's Notes" sheet for every vampire you find. Remember to make a mark for each vampire you see- so if you find more than one of the same kind of vampire (like two lighted alarm clocks) make a tally for each of them.

How to Slay Energy Vampires

Energy Vampires can be hard to find, but they are easy to beat:

1. Turn vampires all the way off when you're done with them. Sometimes this means unplugging them. This works especially well with smaller appliances like toasters, CD players, and toothbrush or cell phone chargers.
2. For bigger vampires—things that can't be turned off all the way like microwave oven clocks or a DVD player it gets harder. One way to keep these vampires away is to replace them with a new version with the ENERGY STAR® label on it.
3. Use a power strip for all your computer equipment, to completely disconnect the energy vampires from the power source. When you're done using the computer, just turn off the power strip to turn everything all the way off. Beware of power strips that are vampires themselves though, as some have constant lights.
4. Go to energyhog.org and learn more ways to save energy!

ALLIANCE TO SAVE ENERGY
Creating an Energy Efficient World

Answering Machine (24 kWh)		x $2.57 =	
Coffee Pot (9.9 kWh)		x $1.37=	
Microwave Oven (23.2 kWh)		x $2.48 =	
Satellite System (100.8 kWh)		x $10.80 =	
Cable Box (86.4 kWh)		x $9.25 =	
Compact stereo system (77.6 kWh)		x $8.31 =	
Television 42" Plasma		x $28.32	
Television LCD		x $6.65	
Video Game console (10.4 kWh)		x $1.12 =	
VCR (64 kWh)		x $6.85 =	
DVD Player (33.6 kWh)		x $3.60 =	
Cordless Phone (20.8 kWh)		x $2.23 =	
Portable Stereo (17.6 kWh)		x $1.88 =	
Radio, Clock (13.6 kWh)		x $1.46 =	
Computer (13.6 kWh)		x $1.46 =	
Washer (stand by)		x $1.58	
Dryer (stand by)		x $1.58	
Printer, Ink Jet (40 kWh)		x $4.28 =	
Battery Charger (7.2 kWh)		x $0.77 =	
Internet Terminal (84.8 kWh)		x $9.08 =	
Garage Door Opener (24 kWh)		x $2.57 =	
Doorbell		x 3.15 =	
Dishwasher (standby)		x $1.18=	
Furnace (standby)		x $7.49=	
Smoke detectors		x $0.79=	
CO_2 detector		x $0.79=	
Total Vampires Found:		**Total Money:**	

Calculate your Energy Vampire Drain: To figure out how much energy and money the Vampires are draining out of your house, multiply the number of vampires found by the amount of money each one costs you each year. Then add all the numbers in the "Money" section.

Calculate the U.S. Energy Vampire Drain: Now take the total money sucked from your home, and multiply it by the number of homes in the whole United States – 113,200,000. If everyone had as many Energy Vampires as you, together, we would loose $_____! (Actual Department of Energy estimate is about $9 billion dollars per year).

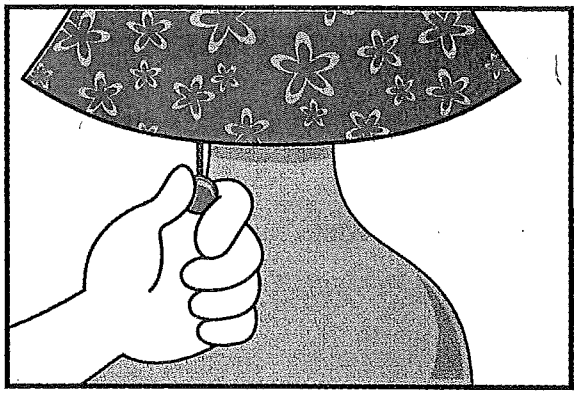
Now you have the power to stop Energy Vampires!

Successfully Changing in Five Steps

The wise use of natural resources, and the wise use of energy that are generated from natural resources, are individual, community, and national responsibilities. Turning off one light bulb, or lowering the temperature two degrees in one home may not seem like significant acts, but when added with the same acts of 300 other peers or 300 other homes, the results are very significant.

Changing a habit or behavior is challenging. To be successful you must have a desire or need to change, followed by a plan of action that can be reasonably implemented. Finally, a means of gauging the result of the endeavor is necessary. The result should illustrate to you that the effort was worthwhile enough that you will continue the changed behavior, making it an integral part of your life.

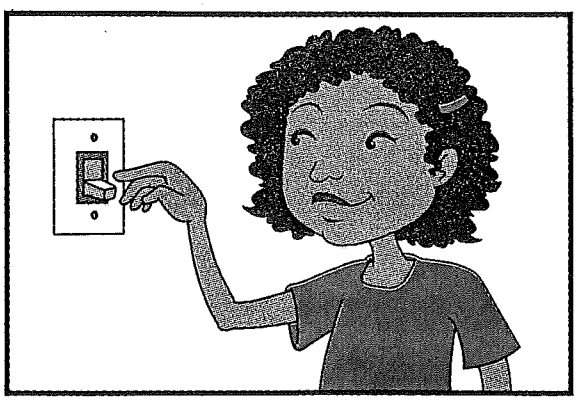
This *Energy Action Challenge* provides five steps to successfully changing behavior. Take the *Challenge* yourself. Then offer the *Challenge* to your family, friends, and community. By creating a "snowball" effect, the results will be profound.



If every person student in a school of 300 turned off one 100-watt light bulb for eight hours every day for a year they would save about 240 kilowatt-hours per day or 87.6 megawatt-hours per year. If the cost of a kilowatt-hour is $.08 a savings of $19.20 would be realized per day or $7,008 per year. (1000 kilowatt-hours equals 1 megawatt-hour)

In a school district of 30 schools the savings would be 2,628 megawatt-hours per year, or $210,240 per year.

Every megawatt-hour of electricity that is NOT used minimizes the environmental effects of generating electricity. If every school in a state or province participated, can you imagine how many megawatt-hours of electricity would NOT be used in a year, how many tons of sulfur dioxide emissions would NOT be put into the air, how many tons of carbon dioxide would NOT be released into the air?



Take the Challenge

Check out your school and answer the following questions. Discuss the questions about your home with your family and let them help with the answers.

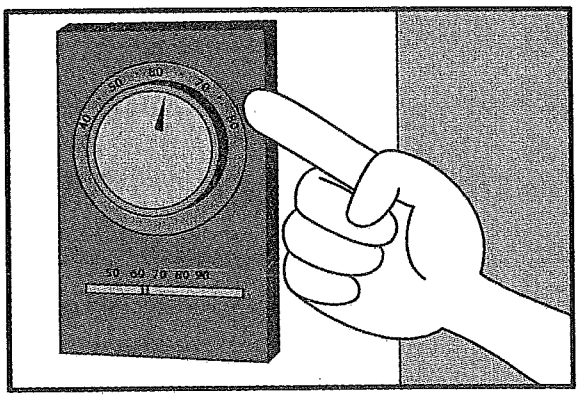
Saving energy is important. Further discuss with your family the questions with a "No" answer. What changes would be needed to answer "Yes" to those questions? (Leave unanswered any questions that do not pertain to your home.)

Yes No At School

- ❑ ❑ 1. Are outside doors weather-stripped?
- ❑ ❑ 2. Are windows free of cracks?
- ❑ ❑ 3. Are windows caulked to prevent air leaks?
- ❑ ❑ 4. Are drapes or blinds closed during non-school hours to keep heat in or out?
- ❑ ❑ 5. Are lights turned off when no one needs them?
- ❑ ❑ 6. Are light fixtures, skylights, and windows clean?
- ❑ ❑ 7. Are radios and computers turned off when not in use and during non-school hours?
- ❑ ❑ 8. Are faucets in lavatories and kitchen areas free of leaks?
- ❑ ❑ 9. Does your school have a recycling program for aluminum, paper, tin, glass and plastic?
- ❑ ❑ 10. Is the backside of papers used for scratch paper?

Yes No At Home

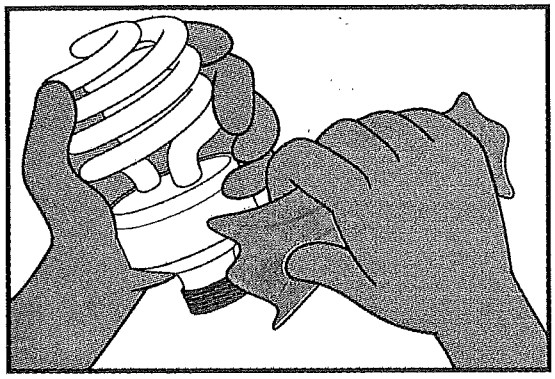
- ❑ ❑ 11. Are cracks and joints around the windows, doors, stairways, pipes, and electrical wires caulked?
- ❑ ❑ 12. Are windows free of cracks?
- ❑ ❑ 13. Are outside doors weather-stripped?
- ❑ ❑ 14. Are furnace and air conditioner filters clean?
- ❑ ❑ 15. Is the thermostat for heating set at 68°F (20°C) or lower?



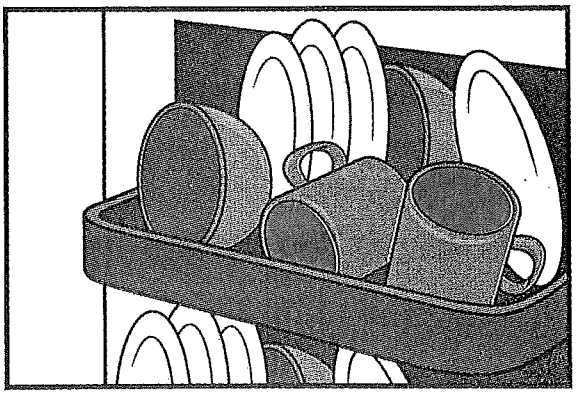
- ❑ ❑ 16. Is the thermostat for air conditioning set at 78°F (25.6°C) or higher?
- ❑ ❑ 17. Is the heat turned down at night?
- ❑ ❑ 18. Are vents, radiators and cold air returns clear of blockage from furniture, draperies, or other items?
- ❑ ❑ 19. Is the water heater temperature set at 120°F (48.8°C) or less, or 140°F (60°C) if you have a dishwasher?
- ❑ ❑ 20. Are the lights turned off when no one needs them?

Yes No At Home (cont.)

- ❑ ❑ 21. Are energy efficient compact fluorescent lights being used where appropriate?
- ❑ ❑ 22. Are light bulbs kept clean?



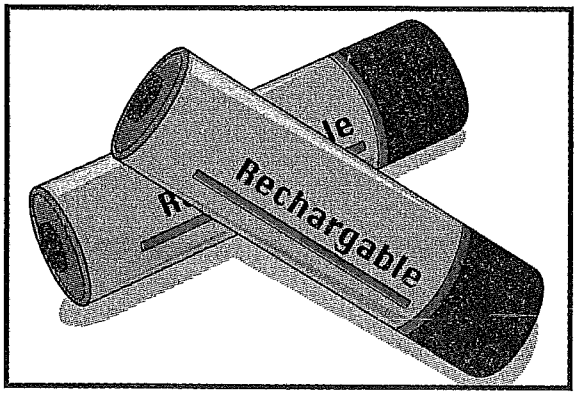
- ❑ ❑ 23. Are washer and dryer used only with full loads?
- ❑ ❑ 24. Are clothes washed with cold water whenever possible?
- ❑ ❑ 25. Is the dryer lint screen cleaned after every use?
- ❑ ❑ 26. Are drapes or shutters closed to keep heat in or out?
- ❑ ❑ 27. Are televisions, radios, stereos or other electronic equipment turned off when not in use?
- ❑ ❑ 28. Is the refrigerator opened and closed quickly?
- ❑ ❑ 29. Are all the faucets and toilet tanks free of leaks?
- ❑ ❑ 30. Are quick showers taken instead of baths?
- ❑ ❑ 31. Is there a flow restrictor device or aerator on the shower and sink faucets?
- ❑ ❑ 32. Are toilets low-flow or have water displacement devices been installed?
- ❑ ❑ 33. Are vehicle tires properly inflated?
- ❑ ❑ 34. Are carpools used for work and family activities?
- ❑ ❑ 35. Do family members walk or ride a bike when possible?
- ❑ ❑ 36. Do family members schedule errands so one trip accommodates everyone?
- ❑ ❑ 37. Are aluminum, paper, tin, glass, and plastic recycled?
- ❑ ❑ 38. Are rechargable batteries purchased for household use?
- ❑ ❑ 39. Is the dishwasher run with full loads?
- ❑ ❑ 40. Are dishes washed in the dishwasher allowed to air dry?



Yes No Myself

- ❑ ❑ 41. Are the tires on my car properly inflated so they will last longer?
- ❑ ❑ 42. Do I use alternative or public transportation when possible?
- ❑ ❑ 43. Do I take short showers instead of baths?

- ❑ ❑ 44. Do I turn off the water while I'm brushing my teeth?
- ❑ ❑ 45. Do I hang up my clothes after wearing them to minimize laundering?
- ❑ ❑ 46. Do I dress appropriately for existing weather conditions?
- ❑ ❑ 47. Do I use an adapter instead of batteries when possible?
- ❑ ❑ 48. Do I use rechargable batteries?



- ❑ ❑ 49. Do I turn off the light, radio, TV or other electronic equipment when I leave my room?
- ❑ ❑ 50. Do I write on both sides of my notebook paper?
- ❑ ❑ 51. Do I use the reverse side of work papers for scratch paper?
- ❑ ❑ 52. Am I careful with pens, pencils, and supplies so I don't lose them and so they will last longer?
- ❑ ❑ 53. Do I recycle paper, plastics, tin cans, aluminum and glass when possible?
- ❑ ❑ 54. Do I avoid using plastic disposable items when possible?
- ❑ ❑ 55. Do I keep my closet doors closed so the space is not unnecessarily heated?
- ❑ ❑ 56. Do I use natural light when possible, saving electricity?

If you answered only 28 or fewer questions "Yes", you are not practicing energy efficiency. It's time to change.

If you answered 29 or more questions "Yes", you are energy conscious; it will be easy to improve even more.

If you answered 52 or more questions "Yes", pat yourself on the back. You are on your way to accomplishing the ***Challenge!***

Energy Questions

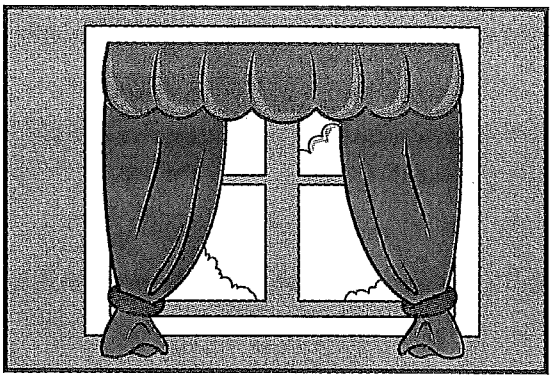
1. Are deciduous (leaf-shedding) trees planted on the south and west sides of our home for summer shade and winter sun? _____
2. Are the exterior walls and roof a light color to help keep the house warm in the winter and cool in the summer? _____
3. Is the insulation in the attic sufficient for our climate? _____
4. Construct a draft meter like the one used at school and check for leaks in the home. How many leaks were found? _____
5. Is a storm door on each exterior door? _____
6. Is the fireplace flue/damper kept closed when not in use? _____
7. Do we have a glass fireplace screen? _____

   Is it kept closed when the fireplace is not in use? _____
8. At what temperature do we set the thermostat for winter? _____

   At what temperature do we set the thermostat for summer? _____

   Do we adjust the night-time heating and cooling temperature? _____
9. What is the temperature of the hot water? _____
10. Are hot water pipes insulated in unheated portions of the house? _____
11. Does everyone make a conscious effort to turn the lights or electronic equipment off when they leave a room? _____
12. How many incandescent light bulbs do we have in our home? _____

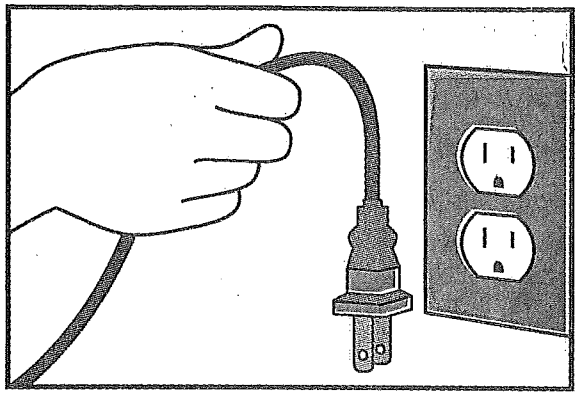
    How many energy-efficient compact fluorescent bulbs do we have in our home? _____
13. Do we adjust the drapes to let heat in or out during the day or night, or seasonally? _____



14. Does everyone open and close the refrigerator quickly? _____
15. Do we air dry dishes washed in the dishwasher? _____
16. Does everyone take quick showers instead of baths? _____
17. Do we ride bikes, car pool, or use public transportation when possible? _____

Daily Procedures

List 10 or more energy saving procedures you could do daily at home and 5 or more you could do at school to modify your behavior. For instance, turn off lights if last one to leave the room, use backside of paper for scratch paper, or turn off electronic equipment when finished with it.



AT HOME

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

AT SCHOOL

1. _____
2. _____
3. _____
4. _____
5. _____