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# Home Energy Audit

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CONSERVATION  
GUIDE

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Energy is used in every area of your home from attic to basement. How much energy you use - or waste - depends on the condition of your home, your family, and your lifestyle. This home energy audit will help you evaluate the energy efficiency of your home and the ways you use energy. It is designed to highlight some important areas where energy conservation measures can be implemented.

Step I of each section deals with energy management - no cost energy measures that require making changes in energy use habits. Some, like lowering thermostats five degrees will cut your fuel bill by approximately 15 percent. Others, like reducing lighting, result in smaller energy savings. All add up, however, to important energy and money savings.

Step II of each section is concerned with making improvements in your home and requires some investment. The improvements you make - like adding insulation, storm windows, weatherstripping, or caulking - will reduce the amount of heat that escapes from your home and thus lower your fuel needs. Therefore, even though they may cost you some money, these improvements will pay for themselves in lower fuel bills.

## **Heat Loss**

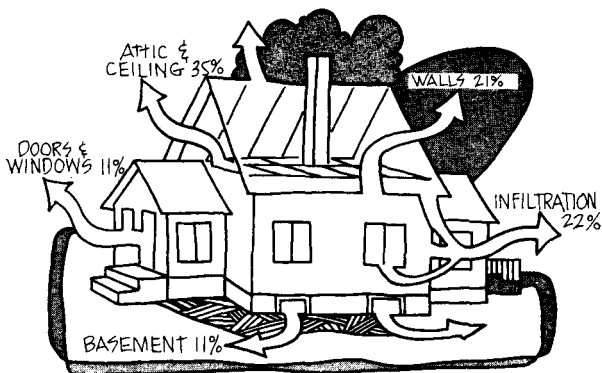
Basically, heat is lost from homes in two main ways - by conduction and infiltration. Conduction is heat lost by transmission directly through the outside surfaces - walls, windows, ceilings, floors and roofs. Infiltration is heat lost by cold air coming in and warm air going out. This occurs through leaks around windows, cracks in the wall, up the fireplace chimney, etc.

The table below shows how heat is lost from three different styles of homes.

### **Heat Loss in Homes**

	<b>1900-1940 Two-Story No Insulation</b>	<b>1945-1960 One-Story No Insulation</b>	<b>1960-1975 One-Story 4" Insulation</b>
Attic & Ceiling	23%	35%	15%
Basement	5%	11%	11%
Doors & Windows	8%	11%	26%
Infiltration	37%	22%	35%
Walls	27%	21%	13%

The following diagram illustrates the percentages of heat lost from the various areas of a 1,200 square-foot uninsulated one-story home.



Minimizing heat loss saves energy and money. Each improvement is a giant step toward “tightening up” your home.

As a general rule, begin your energy conservation program in this order:

- Implement the no cost energy measures in Step I and change your energy use habits.
- Reduce air infiltration by caulking and weatherstripping doors, windows, and other openings.
- Add attic insulation.
- Install storm windows and doors.
- Tune up your heating and cooling systems.

What you do first depends on the present condition of your home. For example, you should add storm windows and doors when you have none rather than add attic insulation where there already is some.

Now, begin the inspection of your home. Start at the top in the attic, and work your way down to the basement. The time you spend will be well worth it.

The problem areas are indicated by “no” answers. Check all the “no” answers and make yourself a “to do” list on the last page of this book. Now you are ready to begin your home energy saving program. If you carry out this program, it can reduce heat loss, home energy use, and your utility bills by as much as fifty per cent.

# Attic



Adding attic insulation is one of the most important energy saving home improvements you can make. Fortunately, the attic is also the easiest place to add insulation. You could save between \$198 and \$400 in fuel bills the first year just by insulating an uninsulated 1,000 square foot unfinished attic floor. The amount you save on your fuel bill varies depending on whether you heat with natural gas, fuel oil, electricity, or propane.

## Step I

Yes No

Is your attic ventilation free of obstructions like insulation, tree limbs, bird's nest, etc.?

*Care should be taken not to block new or existing vents. They provide a necessary air flow and let moisture vapor escape.*

## Step II

Does insulation cover the joists in your attic?

*If not, you should add insulation so that the total is at least R value 38. Check with your fuel supplier, lumber yard, or insulation contractor for R values of various insulation materials and proper insulation techniques.*

Does your attic have enough ventilation to minimize high heat gains in the summer and moisture damage in the winter?

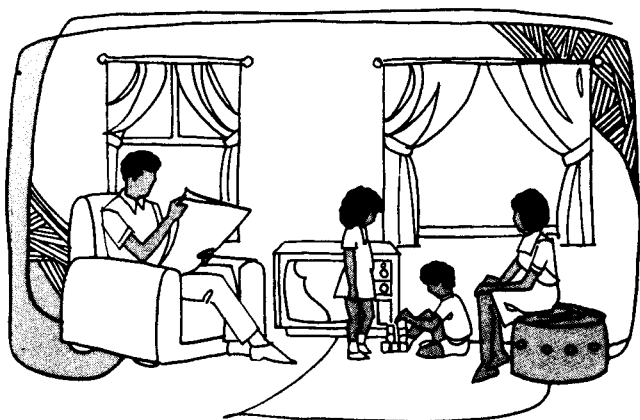
*When adding insulation, you may have to add ventilation as well. As a general rule, you need 1 square foot of free ventilating area for each 150 square feet of attic floor area. This will keep the attic temperature close to the outside temperature.*

Is your attic access door insulated and weatherstripped? **Yes** **No**

*Don't neglect the attic door when you insulate your attic.*

If you decide to reinsulate your attic, send for details in **Ceiling Reinsulation - Conservation Guide 2.**

## General Living Areas



There are many ways to save energy that cost little or nothing in either dollars or comfort. Turning off lights, turning down thermostats, and closing off rooms are common sense approaches. Going further by tightening up your home with weatherstripping and caulking will reduce drafts and allow you to be more comfortable at lower temperatures.

### *Step 1*

#### *General*

Do you turn off lights, stereo, television, etc., when rooms are not occupied? **Yes** **No**

Do you concentrate light on tasks like reading, sewing, or cooking, rather than use overall lighting?

Do you use fluorescent bulbs rather than incandescent wherever possible?

*They are three to four times more efficient.*

Have you turned off your decorative gas lamp?

*It's the law as of September 30, 1977.*

Do you use less water with a shower than a bath? **Yes** **No**

*The average shower requires only one half as much hot water as an average tub bath.*

### **Heating**

Is your thermostat set at 65°F during the day and 60°F at night?

*Lowering your thermostat from 70°F to 65°F can reduce your heating costs by as much as fifteen percent.*

Are your heating supply and return registers and radiators clean and unobstructed by furniture and draperies?

Are all heat registers in unused rooms closed off?

*WARNING: To protect pipes in these rooms, make sure the temperature stays above freezing.*

Is the fireplace damper closed when not in use?

Do you open draperies on south facing windows during the day to take advantage of free heat from the sun?

*Keep them closed at night or on cloudy days to keep the warm air in. Draperies, especially lined ones, are good window insulators.*

### **Cooling**

Is your thermostat set at 78°F or higher during the cooling season?

*You can save three percent of your cooling costs for each degree you raise the thermostat above 75°F.*

Do you use natural ventilation and wear light clothing to minimize the need for air conditioning?

Do you keep your draperies closed during the day to reduce solar heat gains?

Do you air condition only the part of your home that really needs it?

*Consider this when deciding between central and room air conditioning.*

Is your outside air conditioning condenser shaded from the sun or located on the north or shady side of the house?

## Step II

Yes No

Have you repaired all leaky faucets, especially hot water faucets?

*A leaky faucet can waste over 1,000 gallons of water per year.*

Do you have a water flow restrictor on your shower head?

*It reduces gallons of water used per minute by half and costs only \$3.50.*

Have you considered energy efficiency in interior design by painting walls and ceilings light colors?

*When you redecorate, remember light colors reflect light thereby reducing the need for artificial lighting.*

Are your windows and doors free of drafts?

*To check for drafts, hold a candle about one inch from where windows and doors meet their frames. If the flame moves, you have a draft problem that should be corrected. As a general rule, caulk when a permanent seal is desired, and weatherstrip when doors and windows must be opened.*

Do you have storm windows on every window in your home?

*Storm windows will cut window heat loss in half. If you cannot buy storm windows, plastic sheeting applied either indoors or outside is an inexpensive, easy-to-install, yet effective storm window.*

Are your doors and windows in good repair?

*Replacing, patching, or taping cracked or broken panes of glass will reduce air leakage and drafts.*

Are your outside doors insulated or do they have a storm door?

*If not, add a storm door, or even better, add an enclosed porch or entryway.*

As you go through your home, list below all windows and doors that need storm treatment, repair, or weatherstripping.

Location

Action

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and energy efficient appliance use can result in energy and money savings. Insulation is one of the most important energy saving features in both refrigerators and ranges. Use appliances only when you have to, and select the right equipment for the job. Small appliances like a toaster often use less energy than a range and cook just as well.

## STEP I

	Yes	No
Is your refrigerator located in a cool spot with good circulation of air and away from heat sources like direct sunlight, kitchen stove, and heat vents?	<input type="checkbox"/>	<input type="checkbox"/>

Do you open and close the refrigerator door as quickly and infrequently as possible?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you plan total oven meals?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you resist peeking in the oven?	<input type="checkbox"/>	<input type="checkbox"/>
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*Every time you open the door, you lose 20 percent of the heat inside.*

Do you match the size of pots and pans to the size of your burners?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you cover pans whenever possible?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you minimize the amount of water in pans and use the lowest setting that will do the job?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you wash only full loads in your dishwasher?	<input type="checkbox"/>	<input type="checkbox"/>
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Do you turn off the dishwasher after the final rinse and let the dishes air dry?	<input type="checkbox"/>	<input type="checkbox"/>
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## Step II

Do the gaskets on your refrigerator and freezer doors fit tightly?	<input type="checkbox"/>	<input type="checkbox"/>
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*If you aren't sure, check by closing the door on a piece of newspaper or a dollar bill. If the paper pulls out easily, you need a new gasket.*

Does the flame on your gas stove burn with a clear blue flame?	<input type="checkbox"/>	<input type="checkbox"/>
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*If not, and the flame is yellow, this is an indication of improper combustion. Something may be clogging the outlets. Turn off the gas, remove the burner and clean the parts with a wire pipe-cleaner. If this doesn't improve the flame, call a service person.*

# Laundry

The key areas for saving energy in the laundry room are to use less hot water when washing clothes and to minimize electric or gas dryer use.

## Step 1

Do you wash clothes with cold or warm water and rinse with cold whenever possible?

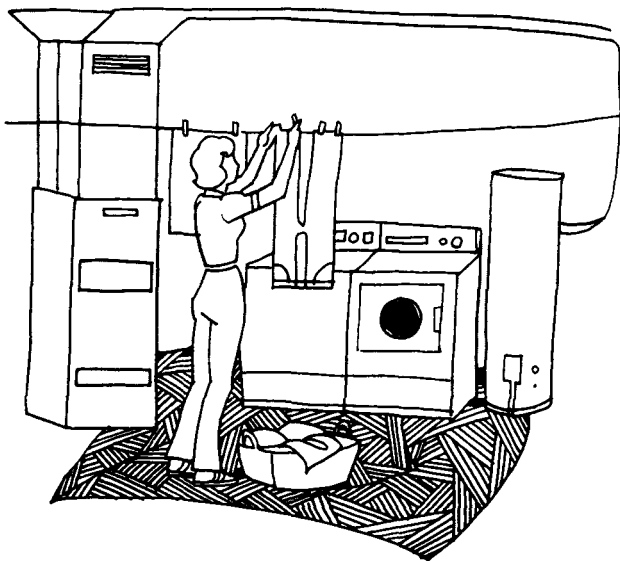
Do you hang your laundry on outdoor clotheslines?

*This solar clothes dryer completely eliminates the energy and money used by your gas or electric dryer.*

Do you operate washers and dryers with full loads only?

Do you clean the lint screen on your dryer after every use?

# Basement



## Heating & Cooling Systems

The biggest expense in your family's energy budget is for heating and cooling your home to make it more comfortable. Make the most of heating and cooling energy by keeping your

systems clean and tuned up. A well tuned furnace can reduce heating costs by as much as ten percent, and a well tuned air conditioner can cut your cooling costs by as much as twenty percent. No matter what kind of fuel you use, you can cut your heating and cooling bills by following the energy-saving ideas listed below.

**Do you replace or clean furnace and air conditioner filters monthly?** Yes  No

**Have your heating and cooling systems had a service check-up and/or inspection yearly?**

*Inefficiencies in heating and cooling systems - whether they're oil, coal, gas hot water, or gas forced air (bottled, LP, natural) - can increase fuel consumption by as much as ten percent.*

**Are the burner flame and pilot light of your oil or gas furnace burning with a clear blue flame?**

*If not, and black smoke is coming from the tip, your burner needs adjustment. While the service person is there, ask if there is an adequate combustion air supply for your furnace. If not, fuel is not burning completely and your unit is less efficient.*

**Is all duct work sound, with no leakage?**

*If not, energy and heat are being wasted. Leaks can usually be repaired easily and inexpensively with duct tape available at most hardware stores. NOTE: Insulate ducts running through unheated areas.*

**If you plan to buy an air conditioner, have you compared energy efficiency ratios (EER'S)?**

*Many air conditioners are now labeled by manufacturers which allows easy comparison by consumers. An EER of 8.0 or higher is desirable. The higher the rating, the more efficient the unit and the less it costs to run.*

## **Hot Water Heater**

Hot water heating is the second most expensive item in your energy budget, and like space heating, is subject to great waste.

Again, insulation is a good way to prevent heat loss. Start at the water heater and wrap all exposed hot water pipes with insulation strips available at your hardware store. You will save money and energy for years!

Setting the temperature on low (110°F) and using warm, not hot water, for washing clothes along with other water conserving practices will result in annual savings of \$5.50 for natural gas and \$25.00 for electric water heaters.

**Step I** Yes No  
Is your water heater set on low (110°F)?    
Have you periodically drained the tap near the bottom of your water heater to clear out sediment and mineral deposits?

**Step II** Yes No  
Is your water heater well insulated?    
*If not, you can wrap the sides with an "insulation blanket" to cut heat loss. CAUTION: Wrap sides only and be sure to use fire resistant insulation. Keep it well clear of the burner on an oil or gas-fired tank. Because of the added insulation, the pilot light may now need adjustment.*

Has your oil or gas water heater had an annual check-up along with your furnace?    
*If not, the flame, pilot light, barometric damper, and stack temperature should be checked to insure maximum efficiency.*

### **Basement Walls**

Are all cracks in the masonry caulked or sealed?

Are your basement walls insulated?

*If not, a good deal of heat is escaping, especially from the part above ground. Before you insulate, apply a moisture proof coating. Rigid insulation boards can be applied either inside or outside but must be coated outside for protection from the elements and covered inside with ½" gypsum board or an equivalent fire resistant material (not ¼" paneling). Inside walls can also be insulated with fiberglass after they have been framed or stripped with furring strips.*

Is the rim joist where the basement ceiling joists sit on the foundation insulated?

*If not, this is an important area and should be plugged with insulation.*

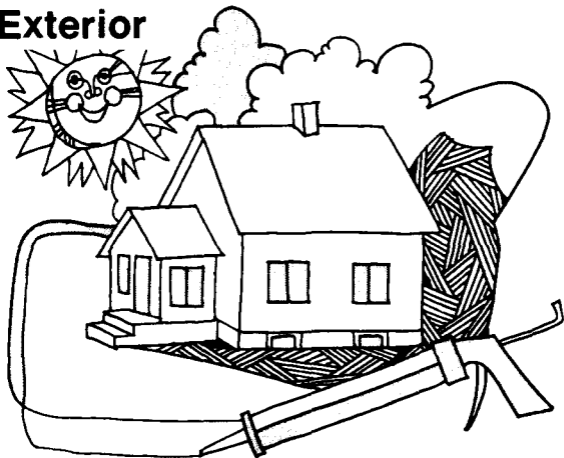
**Do you have insulation to the full depth of the floor joists in floors over unheated areas?** Yes  No

*If not, you should install batts or blankets between the floor joists with the vapor barrier up.*

**Is your foundation crawl space insulated?**

*If not, lay a plastic barrier down on the crawl space earth and install batt or blanket insulation around the walls and perimeter of the crawl space. Proper ventilation of this area will prevent moisture problems and rotting of the wood.*

## Exterior



Maintaining your home's exterior is extremely important. Small cracks cause big heat losses. Substantial reductions in heating and cooling loads can be realized through careful use of grass, paving, shrubs, trees, and fences. Trees that lose their leaves in the fall let the sun shine in during the cold months and provide shade during the summer. Evergreens, on the other hand provide a constant windbreak on the north and west sides of your home.

**Is the exterior siding, block, brick, or stucco free from cracks?**

*If not, caulk or otherwise seal holes while you are caulking around your windows and doors. Give special attention to the area where the siding and masonry meet.*

**Are other openings like mail chutes, faucets, holes for electrical wiring and air vents caulked?**

*If not, caulk around these.*



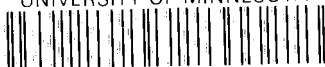
# To Do List

## Energy Saving Measures

Completed

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