



# Chapter III. Home Furnishings for Energy Conservation<sup>1</sup>

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## INTRODUCTION

Furnishing your home to conserve energy is a low-cost approach to coping with rising utility bills. In the past, interior decorating decisions were usually made on criteria that involved beauty and function. Today, energy-saving interior decorating will not only provide beauty and function, but will also help save dollars without reducing comfort.

By creating a feeling of warmth or coolness through the use of color and textures, your home will actually appear to be warmer or cooler. The placement of furniture as well as a change in wall or floor coverings can add to dollar savings on energy costs.

The home furnishings ideas suggested in this section are some of the easiest, lowest-cost ways by which you can reduce energy consumption. They require an initial outlay of money, but the payback period in energy savings should not be excessive.

Any time you decide to redecorate a room or change something in the room, you should consider "energy-saving comfort." The decorating decision based on energy savings will not only save money, but will provide a more comfortable living environment. This

comfort will result in fewer trips to the thermostat to make the house warmer or cooler.

A major area to consider when redecorating is windows. Windows are especially vulnerable to heat transfer. In parts of Florida, heat gain in the summer is even more important than heat loss in the winter. The principles that apply to windows and heat loss also apply to heat gain through windows in the summer.

In North Florida, to reduce heat loss in the winter, install a double glazing by means of a storm window or plastic on the outside. The major drawback of plastic is reduced visibility. On the inside, window treatments can be used to reduce the amount of heat gain or loss. Plastic film can be wrapped and taped to the window screen and reinserted in the frame.

Regardless of the window treatment used, it should provide flexibility to allow control of the inside temperature capitalizing on outside conditions when appropriate.

When outside temperatures are cooler, window treatments should be opened during the day to allow sunshine inside, and closed at night to keep warm air inside. When outside temperatures are warmer, window treatments should be closed during the day to keep

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sunshine out and opened at night to take advantage of cooler temperatures.

## **SAVING ENERGY WITH WINDOW TREATMENTS**

### **Overview**

Approximately 25 to 30 percent of a home's heating costs may occur because of poor window insulation. Energy transfer (loss or gain) at the windows may be reduced by blinds, shades, draperies, or shutters. Exterior shutters and solar screen can also control solar radiation. The insulative value of the window treatment is greatly increased if it is tight-fitting and forms a dead air layer between itself and the window. The window treatment should be particularly tight-fitting at the top. This prevents the room air from moving freely by convection into and out of the space between the window and the window treatment.

### **Roller Shades**

Shades help to reduce window heat loss in winter and the effects of incoming solar heat in the summer. Approximately 15 to 50 percent of a home's heat loss and gain through windows is reduced if materials are selected carefully.

Fabrics can determine whether energy is saved or not. Light colored heavy vinyl fabrics save energy because these fabrics reflect heat.

Consider the thickness of the vinyl before making any purchasing decisions. The thicker the vinyl, the darker the room will become.

The actual mounting of a shade can make a big difference in saving room heat. Shades should be mounted on the inside window casing. Make sure the shade is far enough away from the window -- about one inch -- and use the inside mounting brackets. To help reduce air flow, shades need to fit closely to the sides, top and bottom of windows.

During the winter months, shades or draperies can be opened in the day to allow the sun's rays to heat a room. At night, they can be lowered to keep warm air inside the home.

During the summer months, shades or curtains can be lowered in the daytime to keep solar heat out. This will reduce air conditioning bills and increase the life of home furnishings. Home furnishings will fade if exposed to direct sunlight. At night, the shades can be

raised to take advantage of the cooler natural air currents.

### **Window Coverings**

In general, window coverings should not block the glass area. Draperies need to be extended past the window's frame but should not block or cover heat/air conditioning registers.

Ceiling to floor draperies reduce air flow better than short draperies. In addition, draperies tend to trap more air if there is a tight fit at both the ceiling and floor. Hooks, nylon fasteners and snaps are handy for attaching free-hanging curtains at the side and bottom areas.

Draperies that are lined reduce the heat transfer around the window because both the drapery and lining trap air, producing insulation. Lining fabrics are labeled "insulative lining." Separate insulated lining can be bought to increase the insulative value of home draperies. Hook the lining over drapery pins. The lining will hang just inside the drapery.

Some drapery fabrics have a foam backing that increases insulation. Even though these fabrics have insulation, they do not fold as well as ordinary draperies.

A closed-top drapery end (cornice) helps to keep any cold air from leaving the window's top area. A lambrequin is similar to a cornice, but follows the side of the window as well. Both these window treatments, if upholstered with a lining, padding and fabric, help to improve insulation.

Layered window coverings are very flexible and provide good insulation. For the winter, a combination of draperies, shades and sheers can be closed in the evening to help keep warm air in the room.

Pile and heavy fabrics provide more insulation. Also, they trap more air than smooth or lightweight fabrics. Lightweight and smooth fabrics are suitable for use in the summer months when weather conditions are warm.

Awnings placed just above windows can be helpful in controlling the sun's direct radiation. If properly designed, awnings can also provide protection against wind damage from hurricanes.

Installing solar screens or tinted windows having a low shading coefficient ( $S_c$ ) may be an attractive energy saving option. The lower the shading coefficient, the

more efficient the screen or tint is at reducing solar radiation. Clear glass has an  $S_c$  of 1, while some of the better solar screens or films have an  $S_c$  as low as 0.2. An  $S_c$  of 0.2 reduces the direct solar radiation by 80 percent.

Disadvantages of solar screen or tinted glass are reduction of natural lighting and solar gain in the winter. Use of solar screen or tinted glass on north- and south-facing windows, while providing some benefit in southern Florida, is not considered cost effective.

## SAVE ENERGY WITH HOME FURNISHINGS

### Colors and Textures

The "psychological" temperature of a room can be changed just by altering its color. "Warm" colors (reds, yellows and oranges) will make a room seem warmer, and "cool" colors (greens and blues) will make a room seem cooler.

When decorating a room, make it bright. Light colors will help a room that has limited artificial or natural light seem brighter.

Dark colors like black, dark brown and burgundy tend to absorb light. These colors should be used sparingly, primarily for upholstery or accenting home furnishings. Don't use dark colors as major portions of a room's background color.

Ceilings need a light or white color. More light will be reflected, saving on light energy. Walls, rugs and draperies will reflect additional light, if lighter colors are used.

Textures can promote either a warm or cool feeling. For warmth, pile or rough textured fabrics are best. Fabrics that have a smooth texture like chintz feel cooler.

### Furniture Placement

Furniture influences a room's physical temperature. For a warmer room, place furniture pieces closer to each other. Intermediate to dark wood furniture and rough textured accessories make a room cozier and warmer.

For a cooler room, furnish it with a sparse amount of furniture. Place pieces further apart and don't crowd conversation areas.

Heating and cooling ducts must not be blocked by furniture. Air deflectors should point into the room without being blocked by curtains or furniture.

For additional insulative value in a room, large multipurpose wall units (book shelves, storage units, cabinets, and closets) can increase the insulative value of a wall if put on the exterior wall.

## Wall and Floor Coverings

Rooms have a "warm" feeling if vinyl and fabric wall-coverings are used. These coverings act as sealers. They help fill, seal, or cover cracks that allow air infiltration in a room.

A light colored wallcovering reflects light better, providing a "cool" feeling. Dark colors tend to absorb room light. More artificial room lights may be needed.

For a cozy room, add paneling that has a light color. Thicker paneling helps increase the home's insulative value.

Carpets reflect more light if they are a light to medium color and help to make a room appear cooler.

Carpet pads help to insulate the floor and increase the carpet's life. The pile and pad of carpeting forms a dead air space much like that in fiberglass insulation. A prime urethane foam is very effective for insulation, and it wears well.

Vinyl, brick, slate and terrazzo tiles are smooth and provide year-round coolness. Carpeting or wood floors are warmer. Scatter rugs give a room a "warm" feeling. They also are decorative on wood floors.

## Lighting and Energy

Be sure to turn off lights that are not being used. Timers can be used at night to turn on lights when you are away from home.

Lower wattage light bulbs use less energy. Use them when only a minimum of light is required.

Dimmer switches and three-way bulbs help to control light in a room. For general light or watching the television, use a low setting. Reading and sewing require a higher setting.

Make sure to keep light bulbs and lamp shades dust-free. Dust particles absorb valuable light energy.

Shades and draperies should be open during daylight hours unless you are preventing the infiltration of solar radiation during the summer months or preventing furniture and carpets from fading as a result of too much sun. Natural light is an energy-saver.

Try not to use ornamental lights. They waste electricity. Lamp shades should be translucent, with white linings so more light is reflected for use.

Fluorescent lights are more energy efficient for home use than incandescent bulbs. These lights are good for the kitchen, bath and work areas because they give more illumination per watt.

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The Reduce, Reuse, Recycle strategy represents a three-prong approach for conserving what's left of Earth's supply of fossil fuels. Increasing the reliance on renewable energy sources, such as solar, wind and geothermal generators, can also help conserve the dwindling supplies of fossil fuels that remain in the ground. Non-Renewables Are a Mixed Blessing. Fossil fuels are the remnants of millennia of organic decomposition. Cost Effectiveness: Energy: \*Energy Conservation: \*Evaluation Methods: \*Heating: Money Management: Photography: \*School Buildings: Secondary Education: Technical Assistance: Thermal Environment \*Energy Management: \*Thermographs. ABSTRACT. Presented is a study of energy conservation opportunities in a Rhode Island high school. With the aid of. an. Energy Conservation in Buildings and Community Systems. The IEA sponsors research and development in a number of areas related to energy. Malcolm Orme of the AIVC, for providing energy data and figures for Chapter 3. 12 AIVC Guide to Ventilation. The Energy Impact of Ventilation and Air Infiltration, for checking and editing the equations in Chapter 12 Calculation Methods and for assistance in desk top publishing. Mark Limb of the AIVC for finalising the diagrams and for the cover design. Rhona Vickers of the AIVC for checking and editing the text.

Home. Create. Search. Only RUB 220.84/month. Chapter 5 Energy Sect 3 - Energy Transformations and Conservation. STUDY. Flashcards. Prentice Hall Science Explorer - Motion, Forces, and Energy. Terms in this set (12). energy transformation. A change from one form of energy to another. true. Energy conservation is the decision and practice of using less energy. Turning off the light when you leave the room, unplugging appliances when they're not in use and walking instead of driving are all examples of energy conservation. The two main reasons people conserve energy are to gain more control over their energy bill and reduce the demand on the earth's natural resources. Ready to get a handle on your home energy use? Find fixed-rate plans in your area: States 10 Energy Conservation Ideas. So why is it important to conserve energy? While energy efficiency might cost you money up front before potentially saving you money down the road, energy conservation is something you can put into practice immediately, either at very little or no cost to you. The three R's - Reduce, Reuse and Recycle - represent the best strategy for conserving non-renewable oil, coal and natural gas. The United States Environmental Protection Agency champions this approach, which was popularized by environmental conservationists in the late 20th century. Increasing the reliance on renewable energy sources, such as solar, wind and geothermal generators, can also help conserve the dwindling supplies of fossil fuels that remain in the ground. Non-Renewables Are a Mixed Blessing. On an individual level, homeowners can take advantage of renewable energy as it becomes increasingly more available. They can install solar generators on their houses and choose energy providers that use renewable methods of generation.