

FLORIDA SOLAR



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Florida Homeowner's Manual for Energy Efficiency

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Florida homeowner's manual for energy efficiency

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Saving energy and money

Most homeowners would like to save on their monthly expenses. One of these expenses, the utility bill, costs the average Florida homeowner five percent of his/her total annual after-tax income. Currently, Floridians are paying about eight cents per kilowatt hour (kWh) for electricity. Without close monitoring, electrical uses, such as air conditioning, can easily push utility costs over \$150 per month.

Effective conservation measures involve using household appliances less frequently and servicing them properly. These measures will improve their performance as well as their useful life — a real savings over the long run. Also, when you use energy more efficiently at home, you support energy independence for our nation and help to reduce pollution and to conserve resources for future generations.

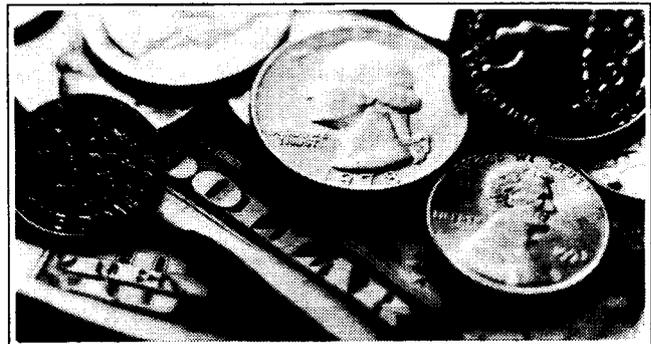
Where do you use electricity?

The chart below demonstrates the annual utility costs of a typical Florida home that uses resistance electricity for heating and has a swimming pool.

Cooling	33%
Refrigeration	15%
Hot water	14%
Space heating	10%
Pool pump	10%
Lighting	5%
Cooking	4%
Clothes drying	3%
Other	6%



Because the major expense is for space cooling, careful monitoring of thermostat settings and air conditioning maintenance will likely reward you with lower utility bills. Avoiding misuse of hot water, refrigeration and appliances will help, also.



How to save

Make sure all members of the household understand that saving on the utility bill is important. Improving the energy efficiency of your home will require some initial attention to the routine operation of the household. This manual indicates the different areas of residential energy use and provides tips for cutting consumption in each category. Recommendations with a star (★) are vital to reducing energy use. Those with a triangle (▲) are important measures; items with a bullet (•) are good ideas to keep in mind.

- ▲ Discuss household energy use. Use the owner's manual to find solutions for "problem areas."
- ▲ Place written reminders in a prominent place (such as on the refrigerator) concerning energy saving practices.
- ▲ To see how you are doing, compare this month's electricity use with the same from last year.

Summer:

Natural cooling

During the late spring, early summer and fall, you should be able to keep your house cool without the use of air conditioning (AC).

- ★ Ventilate your house during as much of the year as possible to avoid AC use. It will generally work best to keep the house closed tight during the day and to ventilate at night.
- ★ Open windows as wide as possible to admit cooling breezes and fresh air.
- ★ Consider installing a whole-house fan to improve ventilation and decrease your need for air conditioning. Use the fan during the cooler nighttime hours.
- ▲ Use ceiling fans to augment breezes and to increase comfort.
- ▲ To reduce interior heat buildup, minimize cooking and the use of lights and appliances.
- ▲ Shade windows exposed to sun, or draw drapes across them to prevent additional heat gain.
- ▲ Have dinner outside instead of in the hot kitchen.



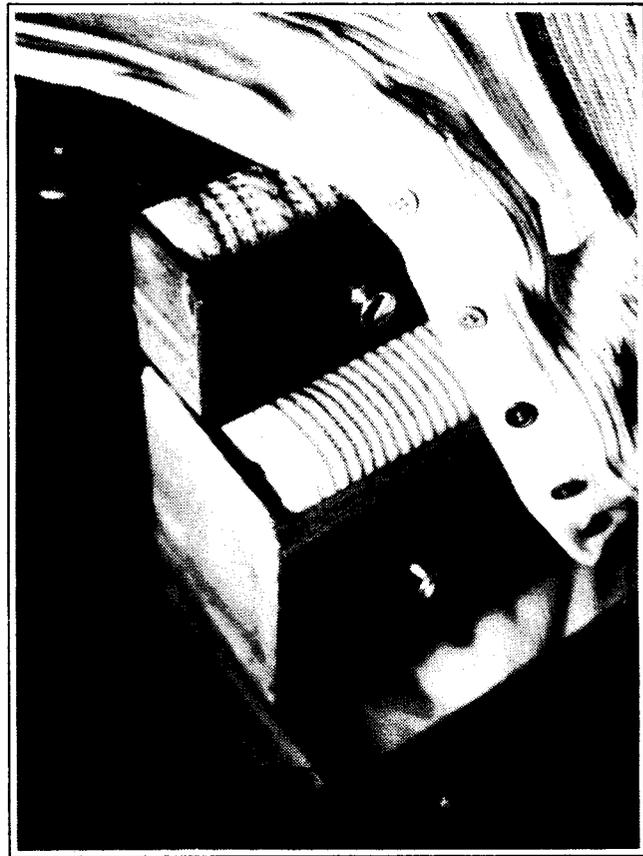
- To protect the interior from the hot summer sun, plant shade trees near windows and on east, southeast, west and southwest faces of the house.
- Try to keep humidity low. Reduce the amount of cooking that is done. Use bathroom exhaust fans when showering.
- Wear loose cotton clothing in preference to warmer synthetics. Shorts are more comfortable in summer than long pants.
- Vent the clothes dryer to the outside to reduce heat and moisture in the house.

Efficient air conditioning

Over a third of your average monthly utility bill is due to air conditioning. The recommendations below are particularly important in summer when AC can account for over half of your energy costs.

- ★ When buying a new air conditioner, select a model with a Seasonal Energy Efficiency Ratio (SEER) greater than 11.0 for central units and greater than 9.0 for room units. The higher the SEER, the more efficient the unit. Don't buy an air conditioner that is too large for your house. It will use more energy and remove less moisture from your home.
- ★ With the duct system fan operating, check your duct air distribution system for air leaks. Repair with mastic sealant.
- ★ Set the thermostat no lower than 78°F. Try 80° or 81°F while using ceiling fans in occupied rooms. Each degree increase will reduce A/C consumption by about eight percent.
- ★ Turn off the air conditioner when you will be away from home for an hour or more.
- ★ Make sure you have insulation above your ceiling. Four to ten inches of insulation can reduce your air conditioning use by 30% over no insulation. It will also greatly improve interior comfort during the late spring and early fall.
- ▲ Plant native shade trees (such as oaks) on the east and west sides of your house. These will shade the building and eventually reduce air conditioning by up to 30%.

- ▲ Use room air conditioners for one or two occupied rooms in place of the central air conditioner system.
- ▲ Do not use ceiling fans with the air conditioner unless you set the thermostat higher than you would otherwise. Because ceiling fans use electricity, run them only in rooms that are occupied.
- ▲ Consider painting your roof with a white elastomeric paint to reduce heat gain to the attic. If reroofing, consider white tile, which has similar properties.
- ▲ If you can see daylight around doors, they need weather stripping.
- ▲ Keep windows and doors in proper repair; they should fit snugly. Make sure all windows are properly caulked. Insulate and weather strip the attic access door.
- ▲ Fireplaces should have tight-fitting dampers that can be closed when heating or air conditioning is in use.
- Do not close off air flow from registers (air vents) unless they are in an unoccupied room. Closing off too many registers will increase duct air leakage and reduce AC efficiency.
- Set your thermostat to AUTO. The FAN ON setting will increase energy use as well as interior humidity.
- Clean air conditioner filters during each month of use and have the air conditioner serviced regularly.
- Install awnings to shade windows that are in direct summer sun, or draw light-colored drapes across sunlit windows.
- Keep doors to unconditioned rooms closed.
- Try to provide shade for the outside air conditioning condenser unit without obstructing air flow around the unit.
- Reduce air leaks that allow hot outside air to seep into your cool home in summer, or, warm air to escape to the outside during winter.



Winter: Heating

Heating accounts for about 10-20% of your annual energy costs — more in North Florida and less in the southern part of the state.

- ★ Make sure you have insulation above your ceiling. Attics in Florida should have six inches or more.
- ★ Consider installing an efficient heat pump or natural gas heating if you currently have electric strip heating.
- ★ Set the thermostat lower at bedtime and add more covers. This alone can save 10% of your heating costs.
- ▲ Don't heat unoccupied rooms. Do turn down the thermostat when you are away.
- ▲ Replace furnace filters and have your system serviced each year.
- ▲ On cold, sunny winter days, open drapes on south-facing windows to help heat the interior.
- Wear more clothing in winter. Every degree that you lower the thermostat will save approximately 7% of necessary heat energy to achieve that comfort level.

Water heating

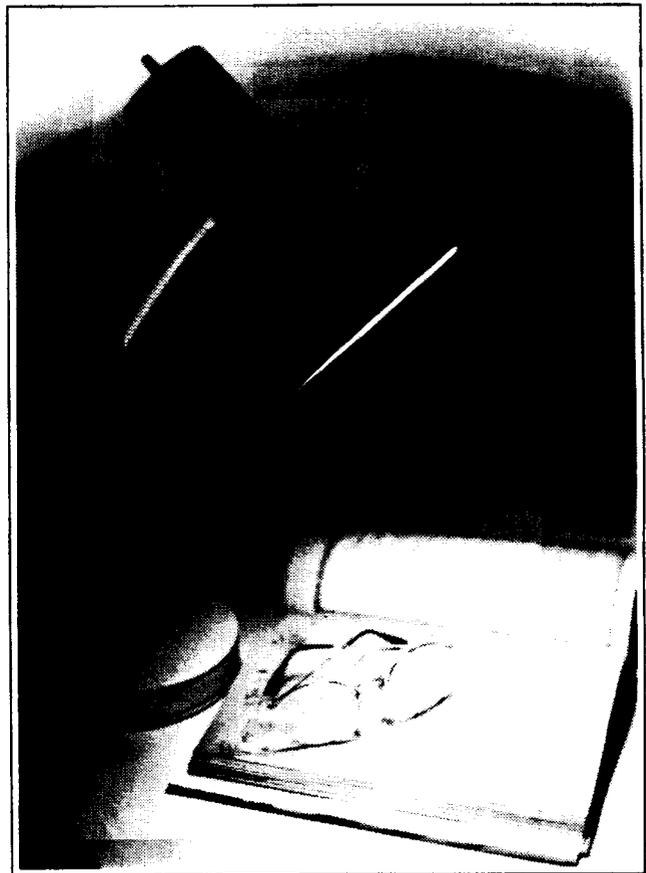
Water heating accounts for 12-20% of your annual utility bill and costs you about \$100-400 per year. The more people in your household, the more important are the following measures:

- ★ Consider installing a solar hot water heater to save up to 90% of your water heating costs (\$200 a year).
- ★ Reduce the thermostat on your water heater to 120°F. Automatic dishwashers without a temperature booster should be set no higher than 140°F.
- ★ Consider installing a low-flow showerhead. These cost about \$10, install in minutes and can save you \$25 a year in hot water costs.
- ▲ If buying or replacing a water heater, use the "Energy Guide" label to purchase the most efficient unit available.
- ▲ Switch to a lower temperature for clothes washing. Using cold water for washing and rinsing in Florida does not affect the quality of the wash.
- ▲ If your water heater is not already insulated, buy an external insulation kit to reduce heat loss. Kits are also available to insulate hot water pipes.
- Take showers instead of baths. If you like a hotter shower, decrease the amount of cold water in your mixture instead of adding hot.
- Turn off the water heater when you will not be at home for two or more days.
- Fix leaking faucets. One drop per second can consume 650 gallons of hot water a year.
- Wait until there is a full load to run the dishwasher or clothes washer. This saves energy, water and detergent, and increases the life of your appliance.

Lighting

About 5% of the energy we use in our homes goes to lighting. Good management can easily cut lighting energy use by half. The reduction in waste heat also decreases the need for air conditioning.

- ★ Use fluorescent lamps in preference to incandescent bulbs. They are three times more efficient in producing light for a given amount of energy. Also, they last up to ten times longer.
- ★ Consider buying compact fluorescent light fixtures that screw into conventional bulb sockets. They produce less waste heat and last up to 10 times longer than incandescent lamps.
- ▲ All lights not being used should be turned off, even fluorescent lights.
- ▲ Light-zone your home. Concentrate lighting in reading and working areas and where needed for safety. Reduce lighting in other areas by using 25 or 40 watt bulbs.
- Purchase "Watt Miser" incandescent bulbs where you must use them. Halogen incandescent lights are even more efficient and last up to 3 times longer. Fluorescents are best, however.
- Avoid long-life bulbs, they are 20% less efficient than standard bulbs.
- Dimmer switches can save energy when used with incandescent lighting fixtures.
- Use high-pressure sodium or metal halide lamps for outdoor lights left on all night.
- Use light-sensing controls to turn off outdoor lights during daytime hours.
- Motion sensors can be used with porch lights to improve convenience and security, and to reduce energy use.



Refrigerator/freezer

Refrigeration is often the second largest end-use of electricity in Florida homes — particularly those that have a separate freezer or second refrigerator. Refrigerators and freezers operate constantly and account for about 15% of your monthly bill. An average refrigerator costs \$100-200 to operate each year.

- ★ When buying a new refrigerator, buy the most efficient model available for the size you need. The yellow “Energy Guide Label” compares the energy efficiency of each unit. Newer models that feature improved insulation and power saver switches can save considerably over more elaborate models; and they cost less. Side-by-side refrigerators and those with through-the-wall ice and water dispensers are generally less efficient.
- ★ The thermostat setting of a refrigerator has a large effect on its energy consumption. Use a thermometer to set the refrigerator to 40°F and the freezer to 5°F. (Note: It takes 12 hours for the temperature to stabilize after re-setting.)
- ★ Turn off a second refrigerator or freezer that is only partly used, and save over \$100 per year.
- ▲ Allow warm food to return to a lower temperature before storing in the refrigerator/freezer.
- ▲ The air spaces behind and under the refrigerator must have sufficient room to allow hot air to escape from the compressor and coils. Make sure there is room for proper circulation.
- If your refrigerator has a power miser switch, keep it in the off position unless water condenses around door seals.
- The motor, coil and exhaust vents should be kept free of dust. Use a vacuum or brush to clean the coils.
- Reduce the frequency and time that the refrigerator is open.
- To maximize efficiency, defrost the interior freezer of manual defrost models.
- Place the refrigerator away from heat sources such as sunlight, or the kitchen range.

Cooking

Cooking constitutes an average of 4% of your monthly energy use.

Ranges:

- ▲ Use tight-fitting covers on pots and pans to increase efficiency and shorten cooking time.

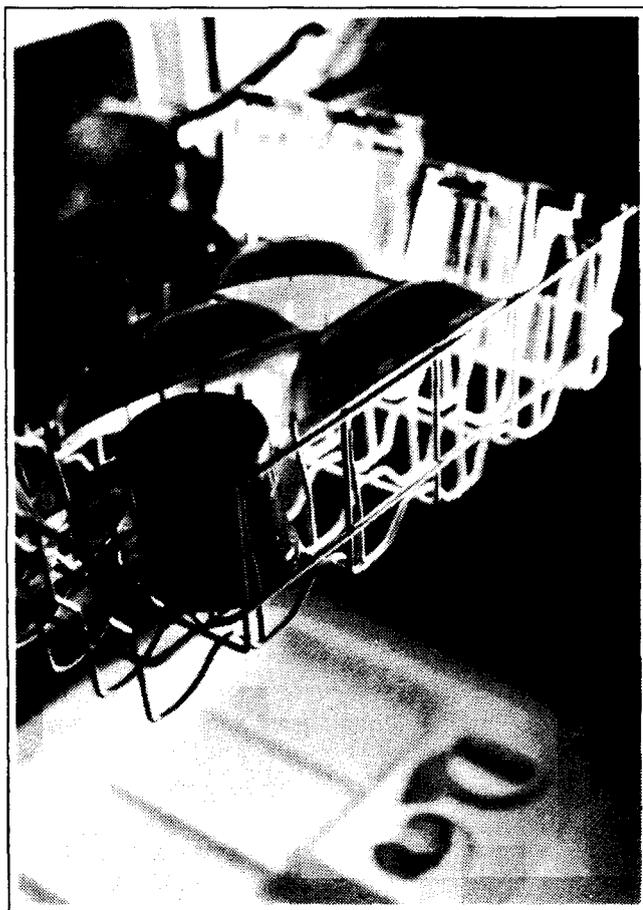
Cooking pasta with a lid on the pot will use one third as much energy as without.

- Use the timer to monitor cooking times and eliminate kitchen mistakes.
- Use a whistling tea kettle instead of an open pan for heating water.
- Thaw frozen foods before cooking.
- Turn off the range just before food is ready. The residual heat will finish the cooking.
- Keep reflector pans clean so they will reflect more heat upward.
- Copper-bottomed pots and pans use heat more efficiently.
- Use pressure cooking, stir frying or steaming to shorten cooking times. Once brought to a boil, turn down the burner under the pot to the lowest setting where it will simmer.
- Match the pan size to the burner element size. Use smaller pots and pans when possible.

Ovens:

- ★ Use microwave or toaster ovens for cooking food or warming leftovers. They can save up to 30% of the energy required to cook or reheat food in a conventional oven.
- ★ Use the oven as little as possible in the heat of summer. The waste heat makes the house more uncomfortable and increases air conditioning loads. Outdoor cooking may be a good idea.
- Don't peek! The temperature drops 25° to 30°F each time the door is opened.
- If you have a self-cleaning oven, use this feature sparingly. It uses 20% more energy per cooking cycle.





Dishwashing

A dishwasher accounts for about 2% of the home electric bill and costs about \$40 a year to run, including hot water. According to one study, however, dishwashers use about 37% less energy than washing by hand.

- ★ Use the no-heat, air-dry feature on your dishwasher. This will save over half of the energy used. With older dishwashers, open and air-dry after the final rinse.
- ★ If your dishwasher has a booster heater, turn down the hot water heater thermostat to 120°F.
- ★ Use the power miser and water miser cycle if they are available.
- ▲ Use the normal light cycle for normally soiled loads. It saves water and energy.
- Run the dishwasher only on a full load. Stack carefully so that rewashing is unnecessary.

- With a modern dishwasher, don't pre-rinse dishes prior to washing. If you must pre-rinse, use cold water.
- Use the dishwasher at night to reduce overheating of the occupied kitchen area.

Pools and spas

About 10% of energy use in Florida homes is for pools. Pool and spa heaters use a large amount of energy, and can easily cost \$100 a month to operate in the winter.

- ★ Only heat the spa or pool when you are going to use it. Timers that heat the water each day, even when no one is using the pool or spa, waste energy.
- ★ Don't run your pool pump more than four hours per day in summer or more than two hours per day in winter. This is sufficient to provide good pool filtration and saves \$10 a month over running it eight hours per day. Your pump will last longer, too.
- ★ Always use an insulating cover if you heat your pool or spa. Savings can be over \$50 per month!
- ▲ When replacing a circulation pump, replace with the properly sized unit (most pumps are oversized). For a given pipe size, the pump should be no larger than 1/3 horsepower (hp) for one-inch pipe, 1/2 hp for one and a half-inch pipe, and 2 hp for three-inch pipe.

Minor appliances

- ★ Waterbeds can use as much energy as a refrigerator! Consider the alternatives when purchasing bedding.
- ▲ Unplug unused waterbeds and regularly cover your waterbed with a comforter.
- ▲ When purchasing minor appliances, compare model energy efficiency and durability. What costs more initially, may cost less in the long run.
- Turn off the TV or stereo when no one is in the room or listening.

Laundry

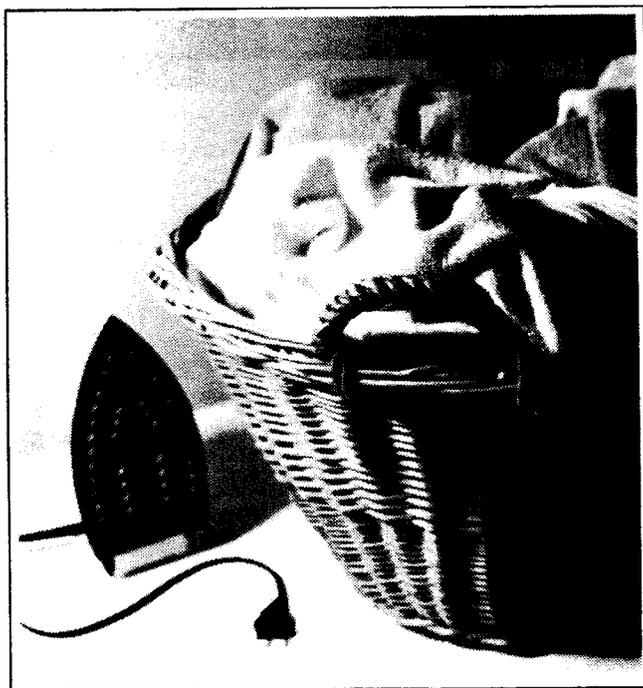
Laundry requires energy for water heating, washing and drying — which can add up to 4% of your utility bill.

Washing:

- ★ Use cold water (70° to 80°F) for most clothes and for rinsing.
- Use hot water (130°F) only for colorfast cottons, stains or diapers.
- Use the short wash cycle for lightly soiled garments.
- Wash full loads if possible; if you must wash a smaller load, remember to adjust the water level accordingly.

Clothes drying:

- ★ Use a clothes line. A “solar clothes dryer” saves 100% of this use of electricity.
- ▲ Avoid over-drying, which wastes energy and causes static and wrinkling.
- Wash and dry several loads in succession. A warm dryer uses less energy.
- Separate loads into light and heavy fabrics for the shortest drying times.
- Dry only full loads.
- Make sure your dryer is vented to the outside to reduce the work load on your air conditioner.



Water conservation

Using less water conserves a valuable Florida resource. The largest end uses of water in your home are for the lawn, the toilet, and bathing and washing.

- ★ Plant trees and shrubs that are drought-resistant. Replace portions of the lawn with drought-resistant ground covers.
- ★ Water plants selectively.
- ▲ Water the lawn in the early morning or late afternoon to reduce evaporation.
- ▲ Repair leaky faucets and toilets.
- ▲ Install an aerator in the showerhead and a low-flow faucet in the kitchen.
- Install a low-flush toilet that uses only two gallons per flush rather than the typical five.
- Take short showers in preference to baths.

Transportation

There are a number of ways to save on your transportation costs. When you reduce the amount you drive, you not only save gasoline and oil costs, but also increase the life of your car and reduce the frequency of tire replacement and other maintenance.

- ★ Compare EPA mileage figures carefully! The most important transportation-conservation strategy is to buy an energy-efficient car.
- ★ Bicycle or walk for short trips; you'll enjoy better health for it.
- ▲ Try carpooling with other workers or students who live in the neighborhood.
- ▲ Are all the trips really necessary? Would a telephone call suffice?
- ▲ Plan your trips carefully. Can some errands be combined?
- ▲ Have your car tuned and serviced often. Keep air filters clean and tires properly inflated.
- ▲ Minimize braking — anticipate speed changes. Take your foot off the accelerator as soon as you see a red light or slowed traffic ahead.
- Accelerate smoothly and moderately and drive at a steady pace. Minimize downshifting.
- Eliminate spillage — don't overfill your tank.
- Remove unnecessary weight from the car.
- Vacation near home and consider vacations that, once there, require little travel.

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