



Brooks Solar, Inc.

Solar power for People

solar, wind, micro-hydro renewable energy systems
design, installation, and service

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Conservation first - less energy, more comfort

For every \$1 spent on conservation, \$3 to \$5 is saved in energy costs.

Space heating and cooling (50% of energy use):

- **turn down your thermostat in winter and turn it up in summer** - every degree lower in winter can save 2% on your electric bill. Use a programmable thermostat to automatically lower to 55° at night or during vacations. In summer, don't cool below 78°. Close off and don't heat or cool unoccupied rooms.
- Replace furnace and heat pump **filters** monthly. Consider an electrostatic filter that can be washed and reused, saving resources and expense.
- **Close your fireplace damper** when there's no fire. **Insulate** crawl space vents during cold weather. Be sure heating ducts are sealed and insulated.
- Ask your electric utility company about an **energy audit**, including a **blower door test** to identify holes and cracks that allow air to enter or exit your home. Seal air leaks with gaskets, caulking, etc. Maintain healthy indoor air quality in a controlled way (with an air-to-air heat exchanger or whole house fan). Use ventilation fans (kitchen, bath, etc.) only when needed to adequately remove moisture and odors from your house.
- Check the R value of **insulation** in your homes ceiling, walls, and floor. Minimum standards are R-38 in ceiling, R-19 in walls, and R-38 under floors. Exceed these and **super insulate**. Even when professionally installed, insulation is inexpensive compared to energy costs over the life time of the structure.
- After taking conservation measures, consider using **passive solar design** to maximize solar gain through south facing windows in winter, and insulate these windows at night to reduce heat loss. Reduce heat gain, and cooling costs, in summer by using overhangs, awnings, or solar screening to limit solar gain. Sun rooms and attached greenhouses can also help, if managed properly.

Hot water (20%):

- **reduce the temperature setting** on your water tank to 120°. Be sure your dishwasher has a heating element that will heat wash water to 140° to properly clean your dishes. Use your dishwasher efficiently by washing only full loads, and turning off the drying cycle - let the dishes air dry.
- Take showers using a **low flow shower head** (1.5 gallons per minute or less), and save 50% of the hot water

needed for a bath.

- **Insulate** all water pipes carefully to prevent energy loss from hot water lines, keep cold water cool in summer, and prevent freezing in winter.
- Consider an **insulating blanket** for older hot water tanks (made before 1991). Check the owners manual of newer tanks to see what they say about adding an insulation blanket.
- After taking conservation steps, consider a **solar hot water heater**. They are very effective even on partly cloudy days. In winter climates a freeze proof system is needed. Properly oriented solar hot water heaters can provide most of your hot water, year round.

Refrigerator/freezer (8%):

- Use an **energy efficient model**. Shop carefully. Super efficient models can be very expensive, while very efficient models from major brand manufacturers require only slightly more energy and cost a lot less. Ask for the most energy efficient model available from your local appliance store.

Cooking (7%):

- Use a **microwave** oven when possible. They use up to 75% less energy than an electric range or oven. Use a **toaster oven** for small cooking tasks.
- Consider using a **solar oven** on sunny days. They cook very well with free solar energy, and in summer keep from adding cooking heat to the house! They are available commercially or easily made. Check the library for a book with plans.

Washing and clothes drying (5%):

- Compare energy use carefully when buying any appliance. Models that use less water and electricity are available if you ask for them.
- Wash clothes in warm water, instead of hot water, and rinse in cold water.
- Use an electric clothes dryer that senses the humidity of clothes and turns off as soon as possible. Keep filter screens and vent tubes clean of lint. Use a vent cap that prevents cold outside air from entering the vent when the dryer is not in use.
- Consider a “**solar clothes dryer**” - a good old fashioned clothes line! These can also be installed indoors in a utility room or garage, and can retract to be out of the way when not in use.

Lighting (4%):

- Use timers, photocells, and motion sensors to provide lighting only when needed.

- Consider **compact fluorescent lamps**, which can save up to 75% of the energy needed by incandescent lamps. Check carefully that they are intended for your application. They can be sensitive to cold (outdoors) or heat (in recessed fixtures.)
- **Turn off lights** when not needed!
- Replace high wattage halogen torchieres with **compact fluorescent torchieres**, and save up to 70% energy and reduce the fire hazard.
- Take the best possible advantage of natural lighting. Reflectors on skylights in winter and **solar light tubes** can improve natural lighting.

Other (7%):

- Take a stroll through your house and consider all the other energy using devices you have. Eliminate or reduce the time of use of as many devices as possible.
- **Turn off your computer** and accessories when they are not being used. A switched surge suppressor outlet strip works well. It is a myth that such equipment can be damaged by turning it off and on frequently.
- **Turn off appliances** when you're not using them.
- Eliminate "**phantom loads**" - such as clocks, cordless phones, "instant on" TVs and stereos - that if left plugged in, consume power constantly, even when turned "off"! Unplug them or use a switched outlet strip or power cord switch.
- Use an **appliance power meter** to test your appliances and phantom loads. Know how much energy you are using so you can make informed decisions when comparing efficiencies and reducing your energy use.

Conservation not only reduces your existing energy costs, it also reduces the size and cost of any solar, wind, or micro-hydro renewable energy system you might be considering.