

Tips for Energy Efficiency in Your Home

Using energy wisely at home is an important way for all of us to control our electrical costs, reduce our environmental impact, and support community conservation priorities. We all have opportunities to save energy through both simple actions such as turning off lights and unplugging unused appliances, as well as larger scale investments like home weatherization, purchasing efficient appliances, and the utilization of renewable energy.

Estimates suggest that residential buildings account for some 20% of the nation's energy consumption. Improving the energy efficiency of buildings helps to reduce this energy drain; lower utility costs for homeowners, tenants, and multifamily property owners; and reduce greenhouse gas emissions and our dependence on fossil fuels.

City initiatives

In the past two years, Peoria has improved the energy performance of City facilities; increased the use of renewable energy; increased the life expectancy of products and technology; completed a Comprehensive Energy Use Analysis for all City operations for 2010; and changed to high efficiency light bulbs in government buildings, street lighting and traffic lights. Since February of 2009, the city has reduced electrical consumption at the City Hall complex by 18%, which has resulted in a savings of \$160,000.

Energy savings tips for the Home

Lighting

- Consider LED (Light Emitting Diode) lighting. LEDs are becoming more common for use in tracking lights, under-cabinet lights and holiday lighting. The initial cost is somewhat high, but the lights use 10 times less energy and last 50 times longer than incandescent lights. LED lighting is becoming more popular today because it has so many benefits. LED bulbs operate on cool light, unlike incandescent bulbs, which can get very hot.

Facts on LED Lights

- The operational life of current white LED lamps is 50,000 hours. The long operational life of an LED lamp is a stark contrast to the average life of an incandescent bulb, which is approximately 1,200 hours.
- The cost of electricity (at \$.20 per kilowatt hour) is \$60 for an LED bulb and \$600 for an incandescent bulb.
- LEDs are more durable than incandescent lights, and less sensitive to temperature and humidity.
- **Brightness is equal to or greater than existing lighting technologies** (incandescent or fluorescent) and light is well distributed over the area lighted by the fixture.

Advantages of CFL (Compact Fluorescent Lights)

- An ENERGY STAR Qualified Compact Fluorescent Light bulb (CFL):
 - can save more than \$40 in electricity costs over its lifetime
 - uses about 75% less energy than standard incandescent bulbs and lasts up to 10 times longer
 - produces about 75% less heat, so it's safer to operate and can cut energy costs associated with home cooling

Buy Energy Efficient Appliances

When you add a large appliance such as a freezer, second refrigerator or hot water tank to your existing appliances, your electric bill will definitely go up. Always buy ENERGY STAR qualified appliances and equipment - they're up to 40% more efficient.

What is ENERGY STAR?

ENERGY STAR is the government-backed symbol for energy efficiency, helping us all save money and protect the environment through energy-efficient products and practices.

The ENERGY STAR label was established to:

- Reduce greenhouse gas emissions and other pollutants caused by the inefficient use of energy; and
- Make it easy for consumers to identify and purchase energy-efficient products that offer savings on energy bills without sacrificing performance, features, and comfort.

EnergyStar appliances include clothes washers, dishwashers, refrigerators, computers, televisions, air conditioners, heat pumps, furnaces and lighting.

Air Conditioner

- Purchase an energy-efficient model. Select an energy-efficient central air conditioner by looking at the SEER (seasonal energy efficiency ratio) rating. S.E.E.R. is the rating and performance standard that has been developed by the U.S. government and equipment manufacturers. It has a universal formula and conditioning that can be applied to all units, and it compensates for varying weather conditions.

As of January 2006, the federal government mandates that all new central air conditioning equipment be at least 13 SEER, but there is equipment available rated as high as 18, and even 23 SEER. Basically, the lower the S.E.E.R. rating, the more energy (electricity) is required to produce the desired effect.

Small Appliances

- Clean or replace air filters. Replace filters on exhaust hoods, humidifiers, vacuums, etc. Clogged filters impair performance and cause the units to run longer.
- Determine how much energy your small home appliances are using. You can utilize a Kill A Watt Energy Meter to track kilowatt hour consumption of any household item such as TVs and computers.

- Call SRP at (602) 236-9659 to borrow a Kill A Watt energy meter for the free loan period, or check one out at the Peoria Main Library or the Sunrise Mountain Library.

How to Use the Kill A Watt device:

- Plug the Kill A Watt into a standard 120-volt AC outlet.
- Connect an appliance or device to the Kill A Watt.
- Read the LCD display to see energy consumption in kilowatt-hours (kWh).
- Calculate the appliance's energy costs by hour, day, week, month or even an entire year using the guide enclosed with the device.
- To determine the average daily consumption of appliances in kilowatt hours (kWh), use this formula:
$$\text{Wattage} \times \text{Hours Used Per Day} \div 1000 = \text{Daily Kilowatt-hour (kWh) consumption.}$$

Ventilation and Insulation

Sources of Summer Heat*

Windows on a typical home in the Phoenix area account for nearly 50% of the workload placed on your air conditioning system. That's more than the roof, walls, and attic combined! Untreated windows in the desert environment will allow about 20 times more heat into your home than an equal amount of insulated wall space. By controlling the way the sun's energy enters your home, you can save on summer energy bills and take advantage of "free" heating in the winter.

* Source: APS

Purchase Energy Efficient/Low-E Windows- When you're shopping for new windows, look for the National Fenestration Rating Council or EnergyStar label- it means the window's performance is certified.

Low-emissivity (Low-E) coatings on glass help control heat transfer, by using insulated glazing. Windows manufactured with Low-E coatings typically cost about 10%–15% more than regular windows, but they reduce energy loss by as much as 30%–50%. The Low-E coating reduces the infrared radiation from a warm pane of glass to a cooler pane, thereby lowering the U Factor (The rate at which a window, door, or skylight conducts non-solar heat flow) of the window. Different types of Low-E coatings have been designed to allow for high solar gain, moderate solar gain, or low solar gain.

Advantages of high performance windows:

- o Improved comfort
- o Quieter home
- o Improved indoor air quality
- o Lower Utility Bills

- Apply sun-control or other reflective films on south-facing windows to reduce solar gain.

- Insulate ceilings to R-30 standards if your attic has less than R-19.

Insulation level is specified by R-Value. R-Value is a measure of insulation's ability to resist heat traveling through it. The higher the R-Value, the better the thermal performance of the insulation/resistance to heat flow. The recommended R-values of homes are dependent on climate. The recommended R value of home insulation for attics in the Phoenix/Peoria area is R-38 to R-60.

To determine whether you should add insulation, you first need to find out how much insulation you already have in your home and where. A qualified home energy auditor will include an insulation check as a routine part of a whole-house energy assessment.

What causes fading "As a rule of thumb"? The major factors affecting fading are: Ultraviolet Light (40%) Visible Light (25%) Heat & Humidity (25%) Window film installed on glass rejects 99.9 % of Solar UV Light, and up to 80% of the Sun's heat and visible light.

Home Energy Audit

Conducting a home energy audit (check up):

A home energy audit is often the first step in making your home more efficient. If you are interested in getting specific recommendations for improving the energy efficiency of your home, hire a Home Energy Auditor. A professional auditor can use a variety of techniques and equipment to help you assess how much energy your home uses and evaluate what measures you can take to improve efficiency. Recommended improvements must be implemented after the audit is done, in order to guarantee energy cost reductions.

To find a Home Energy Rater, visit the Residential Energy Services Network website: <http://www.resnet.us/directory/raters.aspx>