



Energy in Your Home: Myths and Facts



Myth: Buying an efficient air conditioner or furnace will automatically reduce my energy bill.

Fact: This is true to some extent, but you won't realize all the possible savings if the equipment is not sized or installed properly. Studies have shown that typical air conditioner and duct systems are improperly installed, wasting 1/3 or more of the energy used by the air conditioner. New and replacement equipment (and ducts) need to be properly designed and installed to realize all the possible savings. The same caveats about proper installation hold true for insulation, windows and many other energy-efficiency upgrades.

Myth: Energy efficiency and energy conservation are one and the same thing.

Fact: Well-intentioned information campaigns during oil crises of the 1970s created a lot of confusion about how to save energy and even about how to talk about saving energy. Energy efficiency means getting a job done with less energy. This could be lighting a room, cooling a house, or refrigerating some vegetables. The things made possible by using energy are sometimes called "energy services," e.g. illumination, comfort, or food preservation. Energy conservation, on the other hand, means reducing the level of services, e.g. reducing lighting or comfort or turning up the temperature of your fridge. Reducing service levels (conservation) does not necessarily mean sacrifice, however. For example, many spaces are over-lit by current-day standards, water heater temperature are set too high, etc. Consumers have the option of improving energy efficiency (e.g. by purchasing better appliances) and/or reducing service levels, but lowering the quality of life is not a prerequisite for reducing energy demand.

Myth: Duct tape is good for sealing ducts.

Fact: Unfortunately, laboratory research has concluded that duct tape has very low durability when used to seal ducts. On new installations, tape may fall off due to poor surface preparation, because ducts are installed in dirty and dusty locations and conditions. On older systems, the tape falls off as it ages and the adhesive dries out and tends to wrinkle.

Myth: When my appliance is turned off, it's off.

Fact: In fact, we've found that most devices continue to consume power when they're switched off, sometimes as much power as when they're on!

Myth: Cleaning refrigerator coils saves energy.

Fact: While this seems intuitively logical, and very small savings may indeed arise, the few efforts to actually measure this effect have typically come up empty-handed. This is a classic example of a widely held belief based on assumptions rather than measurements.

Myth: Dimming my incandescent lights by 50% will cut my lighting bill in half.

Fact: Actually, the relationship is not linear and savings will be less than expected. As the voltage drops, the filament cools, the wavelength spectrum of the light output shifts further into the infra-red, and efficacy thus suffers. Interestingly, fluorescent dimming is more linear and the savings for dimming are proportionately higher.



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Fact: Turning up (down) the thermostat will make your home get warm (cool) faster.

Myth: It's tempting to think of a thermostat like a water tap, i.e. the wider you open it the more water (heat/cool) will come out. In reality, it works more like a light switch in that if it's "on" the same amount of light (heat/cool) will come out.

Myth: Leaving lights, computers, and other appliances on uses less energy than turning them off and makes them last longer.

Fact: The small surge of power created when some devices are turned on is vastly smaller than the energy used by running the device when it's not needed. While it used to be the case that cycling appliances and lighting on and off drastically reduced their useful lifetimes, these problems have been largely overcome through better design.

Myth: Energy efficiency increases the first cost of houses.

Fact: While efficient products may initially cost more, in some cases there may be little or no first cost. Most efficient products are also premium products (in terms of features, warranty, etc.), so it's difficult to say what you are paying for the efficiency. Market data have shown, for example, that there is little or no correlation between refrigerator efficiency and purchase price. In some instances, efficiency can even reduce first cost as in the case where smaller ("downsized") heating and cooling systems can be installed if they're highly efficient. Smaller units with high efficiency generate as much heating or cooling benefit as large, inefficient ones.

Myth: Insulating the ceiling will just cause more heat to leak out of the windows.

Fact: Adding insulation to one part of a home won't increase the "pressure" on heat losses through other parts. However, it is certainly true that poorly insulated areas will be the major loser of heat and they often merit attention before improving already well-insulated parts of the home.

Myth: Switching to electric room heaters will reduce your energy bill.

Facts: This is true only under some circumstances. If you have central electric heating, the using room heaters will most likely save you money. But, if you have central gas heating (which is far cheaper per unit of useful heat) you can easily match or even exceed your heating bill by switching to electrical units.

Myth: Fluorescent lighting is unhealthy.

Fact: Fluorescent lighting has changed dramatically in the last few years. Today's fluorescents have greatly improved color quality. And the annoying flicker and hum have been eliminated from fluorescents that use electronic ballasts. Because they require less electricity, fluorescents generate less power plant pollution, emissions which have many known health effects. Fluorescent lights also contain small amounts of mercury and should be disposed of properly. However, additional mercury releases are avoided thanks to reduced use of mercury-containing fossil fuels used to generate electricity. If it's been a while since you tried fluorescent lights, you might give them another chance.



Energy in Your Home: Myths and Facts Continued...



Myth: Installing foam gaskets in electrical outlets will significantly reduce air leakage.

Fact: Measurements have shown that less than 1% of a home's air leakage is due to outlets.

Myth: Halogen lighting is super-efficient.

Fact: It's true that halogen lights use slightly less energy than standard incandescent bulbs, but halogens require transformers that can use extra energy, even when the light is off. They are also a fire hazard. By comparison, compact fluorescent lights are nearly three-times as efficient and don't pose a fire hazard. Many new models are dimmable, like halogens.

Myth: Electric heating is more efficient than fuel-based heating.

Fact: It's true that all, or almost all, of the electricity that goes into an electric heater is transformed to useful heat in your home. However, making electricity is an inefficient process, with as much as two-thirds of the input energy (coal, natural gas, etc.) being lost in the process. This is why electricity is so much more expensive for the consumer than direct fuels.

Myth: Saving money on your heating bills requires expensive upgrades.

Fact: An energy-efficient boiler or furnace can be a very effective improvement, but the simplest way to save money on the heat bill is to turn the thermostat down. A \$15 set of warm pajamas can go a long way toward making a \$1000 annual energy savings without sacrificing comfort. \$500 of caulking and added attic insulation will pay back 20 times over or more in energy savings. Likewise, turning the thermostat up in the summer and utilizing natural ventilation like open windows, screen doors, and a well-placed fan can help lower bills as well.

Myth: Windows are the source of the greatest amount of heat loss in a home, causing the most energy inefficiency.

Fact: Windows typically account for 1/5 of the heat loss in a typical one-story home. Ceiling/roof losses combined with wall losses total roughly 1/2 of that heat loss. Windows are, even at their best, a source of heat loss because of their nature. Proper caulking, upkeep, and storm windows can help significantly reduce the heat loss of a historic window.

These myths are brought to you courtesy of the Lawrence Berkeley National Laboratory <http://hes.lbl.gov/hes/myths.html> , Cool Capitol Challenge <http://www.coolcapitalchallenge.org/myths> , and the City of Columbia's Planning and Development Services Department.