

## Energy Conservation Myths

***Myth #1: Leaving a light on uses less energy than turning it off and on several times.***

Truth: Leaving an incandescent or fluorescent lamp on uses more energy than turning it on and off as needed.

Tips:

- Get into the habit of turning off lights when you leave a room.
- Use natural day lighting when possible and reduce or eliminate artificial lighting. Day lighting has been proven to have many benefits.
- Use compact fluorescent lights instead of incandescent bulbs whenever you can. Compact fluorescents are 3-4 times more efficient than incandescent and last 10 times as long.

Myth #1 Additional Information:

When fluorescent lights first came into use in the 1950s, people developed the habit of leaving the lights on. Like many myths, this one has lived well past its useful life.

As a general rule, you should turn off the lights whenever you leave a room. It's just a good habit to develop. Turning off the lights reduces operating costs in two ways: it saves energy and reduces the number of lamp replacements.

But doesn't it take more energy to start up the light than it does to run the lamp for several minutes? No. It is true that fluorescent lamps draw an inrush current that is five times greater than the operating current. However, the initial surge of a rapid start lamp lasts for only 1/120th of a second. So, you have to turn the lamp off for only one second to save the same amount of energy used to start it up again.

But, doesn't the starting cathode erode each time the lamp is started? Yes. Cathode erosion is one factor that limits lamp life. While turning off the lights reduces the number of hours the lamp will burn, it extends the time between lamp replacements.

For example, a standard rapid-start fluorescent lamp operating continuously will burn for 38,000 hours or 4.3 years. If the same lamp burns only 12 hours per day, the number of operating hours drops to 30,000. However, the lamp will remain in service for 6.8 years. So, you cut operating energy in half and reduce lamp replacement costs by 30 percent.

It's not necessary to go through elaborate calculations each time you leave a room. As general rule of thumb, it's always better to turn off the light, even if you'll be gone only a minute or two. Make a habit of turning off the lights every time you leave.

Forty years ago, leaving the lights burning continuously may have been the best thing to

do. However, a few things have changed since then. Fluorescent lamps are more durable, energy is several times more expensive, and fluorescents are used in more locations than ever before. If you want to save money on energy and lamp replacement, turn it off!

***Myth #2: Keeping your thermostat at the same temperature day and night uses less energy than turning it down at night and heating your room up again in the morning.***

Truth: It takes less energy to warm up a cold room in the morning than it does to maintain a constant temperature throughout the night.

Tips:

- Setting the temperature lower just a few degrees can significantly reduce heating costs.
- Dress appropriately for the seasons and the comfort level of your work area.
- Close your blinds and drapes at night in the winter to keep the cold out.
- Keep warm air registers clean and free of obstructions, such as furniture, carpets, and drapes.

Myth #2 Additional Information:

Night setback is a simple means for saving heating energy by allowing the temperature in a conditioned space to drop to a specified set-point when the space is not occupied.

Using seasonally appropriate temperature set points minimizes the temperature difference while maintaining comfort. During the heating season, a temperature set point of 68°F will optimize comfort and energy costs. As a rule of thumb, each degree over 68°F yields a 1% increase in heating energy cost because you increase the temperature difference.

Temperature setbacks further reduce energy usage by decreasing the temperature difference between inside and outside during times when the building is unoccupied. Night setbacks allow the temperature to be set to normally uncomfortably cool or warm levels during heating and cooling seasons, respectively, without compromising occupant comfort. A 10°F setback is generally recommended (55°F in heating seasons, 82°F in cooling seasons). With the given rules of thumb, a 10°F setback will reduce annual heating and cooling energy costs by 10-15%, and the only equipment needed is a programmable thermostat.

Some critics argue that setback does not reduce energy usage because the heating or cooling system must run higher to return the building to set point conditions before occupants arrive. It is important to realize that most HVAC systems cycle between fully on or fully off. Therefore, during morning warm-up, the system simply cycles on for a longer period of time. When setback periods last more than six hours, this longer warm-up cycle requires less energy than would be consumed by the system cycling to maintain temperature during unoccupied times. Hence, night and weekend setbacks, lasting 12 or

more hours per night for commercial buildings, greatly reduce energy consumption. Occasionally, strip heating is necessary to supplement the system during warm-up and will lower available savings. Therefore, setbacks should be carefully planned to allow plenty of time for an unassisted warm-up.

***Myth #3: The higher you set your heater's thermostat, the faster your room will warm up.***

Truth: Setting the thermostat all the way up only wastes energy and increases your heating costs.

Tips:

- Dress appropriately for the seasons and the comfort level of your work area.
- Close your blinds and drapes at night in the winter to keep the cold out.
- Keep warm air registers clean and free of obstructions, such as furniture, carpets, and drapes.
- If you have reversible ceiling fans, set them in the winter to circulate the heated air collecting at the ceiling down towards the floor.

Myth #3 Additional Information:

It is easy to think of a thermostat as a throttle, and the higher you set it, the faster it will get warm. However, this isn't how thermostats work. A thermostat is a regulator for automatically regulating temperature by starting or stopping the supply of heat. It will take the same amount of time for the temperature to reach 70 degrees whether the thermostat is set at 70 or 90 degrees. By setting it to a high temperature, it's more likely to stay there when you forget to reset it later.

A common problem in multiple-user rooms is one occupant setting the thermostat too high, maybe thinking of it as a throttle, and forgetting to reset it. The following occupant then opens a window to cool the area while leaving the heat on and wasting energy.

***Myth #4: Compact fluorescent lights are those glaring, humming, flickering tubes seen in some offices.***

Truth: There's a whole new generation of compact fluorescent light bulbs that are suited for home use. They screw into the same light bulb socket and produce the same quality of light as an incandescent bulb.

Myth #4 Additional Information:

Compact fluorescent lamps (CFL) are four times more efficient and last up to 10 times longer than incandescent. A 22-watt CFL has about the same light output as a 100-watt incandescent. CFLs use 50 - 80% less energy than incandescent.

Although initially more expensive (CFLs cost from \$10 to \$20 per bulb), you save money in the long run because CFLs use 1/3 the electricity and last up to 10 times as long as the incandescent. A single 18-watt CFL used in place of a 75 watt incandescent will save about 570 kWh over its lifetime. At 8 cents per kWh, that equates to a \$45 savings.

Replacing a single incandescent bulb with a CFL will keep a half-ton of CO<sub>2</sub> out of the atmosphere over the life of the bulb. If everyone in the U.S. used energy-efficient lighting, we could retire around 90 average size power plants. Saving electricity reduces CO<sub>2</sub> emissions, sulfur oxide and high-level nuclear waste.

Newer CFLs give a warm, inviting light instead of the "cool white" light of older fluorescents. They use rare earth phosphors for excellent color and warmth. New electronically ballasted CFLs don't flicker or hum.

CFLs come in several sizes and configurations, and can be applied nearly anywhere that incandescent lights are used. Energy-efficient CFLs can be used in recessed fixtures, table lamps, ceiling fixtures and porch lights.

***Myth #5: It uses less energy to boil water if you start with hot water from the tap.***

Truth: It uses the same amount of energy to boil water regardless of where the energy is from. If it is preheated by the water heater, you pay for that energy as well as any losses in the pipes and heater itself.

Tips:

- Water boils faster in a covered pot and uses less energy.
- Use the least amount of water you can get away with. It will take less time and energy to bring it to a boil. Use the lowest possible heat setting to keep the water boiling, steaming, simmering, or whatever your recipe calls for.

Myth #5 Additional Information:

It may not seem like a big deal, but the way you heat water to make a nice hot cup of coffee or tea or a warming mug of instant soup can make a difference in your energy use.

For instance, you may think that you'll use less energy to boil water if you start with hot water from the tap. In fact, it takes more energy for your water heater to heat the tap water than it does for your stove to bring cool water to a boil.

But there are better ways to boil water than by firing up the range. A microwave can boil water quickly and very efficiently. An English-style electric kettle will also use less energy than your stove to heat water for coffee or tea.

***Myth #6: It is more energy efficient to leave your computer running when not in use.***

Truth: Any time you can turn off your computer it will save energy. Many computers now have energy saving "sleep" features that save energy when the computer is not being used.

Tips:

- Turn off computers and monitors at night and on weekends. Remember that these machines generate a lot of heat - they can cause an air conditioner to run more.
- Configure the system so the monitor will go into power saving or "sleep" mode instead of flashing a fancy screen saver.

Myth #6 Additional Information:

You've probably heard that desktop computers should be left on because starting them back up causes additional wear on the hard disk and other components. Like other myths, this was once true...in the days of huge, soap-lubricated hard disks attached to room-size mainframes. However, today's computers can tolerate several on-off cycles each day. At a minimum, desktop computers should be turned off at the close of business, over lunch breaks and during long meetings. Even more efficient Energy Star computers should be turned off at night and on weekends.

IBM, a leading maker of computers of all sizes, tells employees that turning off their computers for one hour each day can save the company \$1 million per year in energy costs. They recommend printers be turned on only when needed and then turned off. They suggest monitors be turned off when going to lunch or a meeting. An engineering firm found that monitor life was significantly extended when they stopped leaving their computers and monitors on overnight.

Many organizations have learned that employees need constant reminders. Posters, power switch stickers, staff meetings, announcements and friendly notes have been shown to reduce energy use by as much as 14 percent annually. But savings gradually decline without a new type of reminder. Some companies reduce the uncertainty of human behavior with smart power strips that automatically shut down equipment when not in use.

Modern computers have come a long way since the early behemoths. Today, computer chip and hard disk manufacturers say that equipment should experience no reduction in life expectancy due to power cycling as long as recommended shutdown procedures are followed. Any degradation from cycling computers and monitors several times a day is far outweighed by energy savings and longer service life. The useful life of laser printers may also be extended by power management, because of the decrease in thermal cycling.

Like many myths, this one was once based in fact, but the myth has outlived the facts. Now that the myth has been put to rest, you can encourage co-workers to turn off those idle computers.

***Myth #7: Setting your air-conditioner thermostat to its lowest setting when you start it will cool your room faster.***

Truth: This won't cool your room any faster, it'll just use more energy.

Tips:

- Use a personal fan or ceiling fan to cool you directly. A fan can make it feel several degrees cooler while using much less energy. These fans create air movement across the skin, lowering skin temperature through evaporation.
- Dress appropriately for the seasons and the comfort level of your work area.
- Don't set your thermostat at a colder setting than normal when you turn on your air conditioner. It will not cool faster. It will cool to a lower temperature than you need and use more energy.
- Do not position heat-producing appliances, such as televisions or lamps, near the thermostat that controls your air conditioner. The heat they produce "fools" the thermostat and causes the air conditioner to run longer than necessary.
- Take advantage of natural ventilation during the times of the year when this is feasible to reduce air conditioning usage. Opening and closing windows can ventilate different parts of a building.
- In the cooling season, draw draperies, blinds, and shades indoors to keep out direct sunlight.

Myth #7 Additional Information:

It will take the same amount of time for the temperature to reach 72 degrees whether the thermostat is set at 72 or 65 degrees. A thermostat on an air conditioner is a regulator for automatically regulating temperature by starting or stopping the supply of cooling. It is easy to forget about the thermostat after it has been set too low until the room is too cold and a window gets opened to warm things up a bit. Or even worse, someone turns on a heater because they are too cold and wastes even more energy.

Air conditioners are now the largest single contributors to peak electricity demand. Air conditioners account for one-sixth of the nation's electricity consumption each year. On a typical hot summer afternoon, they gobble up 40% of the power during peak periods. Raising your thermostat setting by just one degree can save more energy than you might think. If each household in the United States raised the air conditioning temperature 6 degrees, we'd save the equivalent of 190,000 barrels of oil every day. Better yet, try some lower energy consuming techniques like dressing properly or using a fan.

***Myth #8: When my appliance is turned off, it's off.***

Truth: Most appliances still use energy when the switch is turned off.

Myth #8 Additional Information:

It's been found that most devices continue to consume power when they're switched off, sometimes as much power as when they're on! A surprisingly large number of electrical products, from air conditioners to VCRs, cannot be switched completely off without unplugging the device. These products draw power 24 hours a day, often without the knowledge of the consumer. This power consumption is sometimes called "phantom energy," or "standby power."

When not in use, TVs and VCRs, for example, operate on standby power to allow such things as clocks, memory settings and remote control systems to operate. Much, if not most, of this standby power is consumed by the appliances' power supplies, which convert alternating current into direct current. In other words, it's wasted power.

These phantom losses can quickly add up. While a typical 25-inch television uses 4.5 watts when on standby – compared with 90 when in operation – the standby consumption exceeds the operating usage if the TV is watched one hour per day. VCRs are worse, using on average only five per cent of their total energy for their intended functions of recording and playing videos. Overall, the average household's TVs and VCRs use only 60 per cent of their electrical consumption for their intended purposes.

An even greater culprit is the set-top box – typically a cable box, video game box or satellite decoder or digital converter. These use almost as much energy off as on. In one year, the average satellite decoder uses 130 kilowatt-hours of power, about one third of what an energy-efficient refrigerator consumes.