

## MPUA PUBLIC OUTREACH RESOURCES - JANUARY 2014

*Feature article: HOME HEATING: Temperature Setbacks and Programmable Thermostats*

*[Please review the entire article to determine if you would prefer to use individual sections/excerpts, or reorder for your utility's custom needs]*

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### THERMOSTAT SETBACKS AND PROGRAMMABLE THERMOSTATS – FACT AND FICTION

It's that time of year, when the cost of keeping a home comfortable through the winter is on the minds of many households.

The most common advice for saving home heating costs is often to set back your home's thermostat, or to install a programmable thermostat to automatically make those setbacks. But does adjusting a thermostat setting really help most households save, over the course of the winter? And if it does, what's the best way to achieve those savings, and how much can an energy-conscious consumer expect to save?

As is often true when dealing with energy questions, energy experts say the most accurate simple answer to those questions is "it depends." Home comfort, energy consumption, costs and savings depend on many factors related to the home, its heating system, the weather, and the household.

***[ALTERNATE STARTING POINT (for article minus the introduction)]***

#### **Thermostat Setbacks Usually Pay Off**

Generally, experts agree that in a 'typical home' you can save money on heating bills by simply resetting your thermostat to turn down the heat before you go to bed or during the day when you plan to be gone for several hours.

You can avoid forgetting to make those setbacks by installing a programmable thermostat and setting it to a pre-set schedule to turn the heat up or down. Many programmable thermostats can store and repeat multiple daily settings that you can override manually without affecting the rest of the daily or weekly program.

- ***[SEPARATE SHORT MYTH/TIPSHEET article could also start/end with this section and the following 'myths' portion.]***
- ***[IF YOU ONLY HAVE ROOM/TIME for a SHORT TIP/SUMMARY, the following paragraph is the 'nugget' of the story]***

In most homes, you can easily save energy in the winter by setting the thermostat to a comfortable setting (many people suggest 68°F) while you're awake and setting it lower for long periods of time while you're asleep or when you will be away from home. According to the U.S. Department of Energy Web site, by turning your thermostat back 10 to 15 degrees for

eight hours, you may save 5 to 15 percent a year on your heating bill -- a savings of as much as one percent for each degree if the setback period is eight hours long. If your home's 'normal' heating costs run about \$700 for the winter heating months (Oct. - March), that could mean savings of \$35 to \$105 every winter. (*Important note:* while setting heat as low as comfortable in the winter saves money for many households, seniors and people with special medical needs should check with their doctors before changing their normal home temperatures or considering turning off heating units.)

### **Temperature-setting Myths**

Some people may not use thermostat setbacks as a cost-saving method because of mistaken ideas about how they work. Here are examples of some common misconceptions:

- Many people think setbacks aren't cost-effective because the heating system has to work harder to heat the house back up to a comfortable temperature. In fact, as your house drops below its normal temperature, it loses energy to the surrounding environment more slowly. The lower the interior temperature, the slower the heat loss. So the longer your house remains at the lower temperature, the more energy you save, because your house has lost less energy than it would have at the higher temperature. For this reason using a setback of eight hours or more achieves the best energy savings.
- Cranking your unit up to 90 degrees will not heat your house any faster. A typical home's heating system isn't like the throttle on a car, where the harder you push on the gas, the harder the motor works. Most heating systems are simply on or off, and when the temperature falls below a set level, the system turns on to bring the temperature back above the set level. Once the temperature reaches the set level, it turns off. An exception to this is that **heat pumps** work differently from furnace systems. If you have one, don't miss notes about them later in this article.
- Likewise, many people also believe that a furnace runs so long to heat the house back up that this offsets any savings. But the fuel used to reheat the house is roughly equal to the fuel savings while the home's temperature was dropping to the setback level. The savings occur while the heating system is at the lower temperature. The longer the thermostat is at the lower temperature, the greater the cost savings.

### **[NEW SECTION or SEPARATE ARTICLE]**

### **Differences: for Heat Pumps, Electric Resistance Heating, Steam Heat, and Radiant Floor Heating**

A 'typical home' heated with a forced-air central heating system usually can save money on heating bills by resetting or programming a thermostat to turn down the heat before you go to bed or leave the house for the day. But that advice DOESN'T necessarily hold true for homes with heat pumps, electric resistance baseboard heating, steam heat, or radiant floor heating.

- Energy experts usually do NOT recommend thermostat setbacks for houses that are running heat pumps. Maintaining a moderate setting is usually the most cost-effective practice for these systems. Setting back the thermostat on some heat pumps when they are in heating mode can cause the system to run inefficiently, canceling out any benefits. Recently, however, some companies have started to sell specially-designed programmable thermostats for heat pumps, which make setting back the thermostat more cost-effective. These thermostats typically use special algorithms to minimize the use of backup electric resistance heat systems. You may wish to consult a local heating/cooling technician if you need more information on how your own heat pump will run most efficiently.
- Setbacks also are more difficult for houses with in-floor or steam heating. The difficulty with these systems is their slow response time. Reaching the desired temperature levels with these systems may take a number of hours. However, some manufacturers now offer thermostats that track the performance of your heating system to determine when to turn it on in order to achieve comfortable temperatures at your programmed time.

### **[NEW SECTION or SEPARATE ARTICLE]**

#### **Choosing and Using a Programmable Thermostat**

Most programmable thermostats are digital, though a few may still be electromechanical, or some mixture of digital and mechanical. Digital thermostats have become common, offering many features including multiple setback settings, overrides, and adjustments for daylight savings time. Most are fairly easy to program, so you don't need to have a computer science degree to set it up.

When programming your thermostat, consider when you normally go to sleep and wake up. If you prefer to sleep at a cooler temperature during the winter, you might want to start the temperature setback a bit ahead of the time you actually go to bed. Also consider the schedules of everyone in the household. If there is a time during the day when the house is unoccupied for four hours or more, it makes sense to adjust the temperature during those periods.

#### **Other Considerations**

- If your programmable thermostat runs on batteries, don't forget to change the batteries each year. Some units will indicate when batteries must be changed.
- If you have a choice of where to install your thermostat, locating it correctly is important. The location of your thermostat can affect the performance and efficiency of your heating system. To operate properly, a thermostat should be on an interior wall away from direct sunlight, drafts, doorways, skylights, and windows. It should be located where natural room air currents—warm air rising, cool air sinking—occur. Also make sure your thermostat is conveniently located for programming. Read the manufacturer's installation instructions to prevent "ghost readings" or unnecessary furnace or air conditioner cycling.
- Furniture may block natural air movement, so do not place pieces in front of or below your thermostat.

- Many homes use just one thermostat to control the whole house. If your home has multiple heating or cooling zones regulated by separate systems, you'll need a programmed setback thermostat for each zone to maximize comfort, convenience and energy savings throughout the house.

***[EXPENDABLE CONCLUSION SECTION: OMIT if you want just a WINTER-FOCUSED ARTICLE]***

### **Summer cooling**

Almost all the advice about setting back and programming thermostats holds just as true for homes with central air conditioning systems during the summer cooling system -- except it's in reverse. You can save energy in the summer by setting the thermostat to its warmest comfortable setting while you're home and setting it warmer when you'll leave it unoccupied for long periods of time. Again, there may some exceptions for home with heat pumps, which may operate most efficiently at a constant moderate setting.