

January 2015 EnergyWiseSM Tip: Motion Sensors

The lights are on, but no one is home. It's probably just me but my teen-agers are continually leaving lights on and fans operating long after they leave a room. If it's not just me, read on!

To remedy this problem an inattentive teenager creates, consider installing an occupancy or vacancy sensor on the electrical light circuit that is left "ON" the most often. Here are some considerations related to both.

First, consider what occupancy and vacancy sensors are and how they differ from each other. While both are considered "motion" sensors, occupancy sensors turn lights ON automatically upon detection of someone in the room and turn lights OFF automatically soon after an area is vacated. In comparison, vacancy sensors require manual activation of the lighting by the occupant; then, they turn lights OFF automatically after no one is detected in an area.

Now consider how they work. Typically, these sensors employ one of two technologies (or both) in the same controller. One such technology is passive infrared (PIR). PIR sensors are designed to detect motion from a heat-emitting source (such as a person entering a room) within its field-of-view. These sensors have segmented lenses. For units to see motion, the person must cross between two segments or bands. The distance between the segments or bands increases the farther a person is from the sensor, so motion has to be larger the farther it is from the unit. PIR sensors are considered line-of-sight sensors, meaning that the sensor must be able to have a direct line-of-sight to the person making the motion.

The second is ultrasonic technology. Ultrasonic sensors use the Doppler principle. These sensors produce low intensity, inaudible sound and detect changes in the sound waves it produces that are caused by motion, such as walking into the room, reaching for a telephone, or turning in a chair. They are volumetric in nature and are not line-of-sight dependent. Since they fill the space with these sound waves, they are excellent in bathrooms with stalls, enclosed hallways, or other oddly shaped rooms. In addition, they are much more sensitive to smaller motions.

What if PIR and Ultrasonic technology are combined into one sensor? They provide the best sensing solution available today. This pairing helps eliminate false activations (both ON and OFF) thus avoiding additional, unnecessary energy use.

Yes, both types of sensors cost more than standard wall switches. But depending on how often lights are being left on when no one is in a room, energy savings could make up that extra cost in less than a couple of months. Though a wall switch to replace a standard toggle switch using either technology was initially somewhat expensive, many models are now available for less than \$20.

Your local utility and Nebraska Public Power District want to help you make the most from the energy they provide. That includes helping to control unnecessary energy use when you are not home to monitor who is leaving the lights on. For more ideas on how you can make your home or business EnergyWiseSM, along with possible energy efficiency incentives, contact your local utility or visit www.nppd.com.