



Leading the Way to a Brighter Future

A program of the Maine Public Utilities Commission

# Automatic Lighting Controls

The simplest and often, most effective way to save energy on lighting is by turning lights off. In commercial environments it can be difficult for workers to remember to turn off unneeded lighting. Automatic lighting controls offer an inexpensive, effective way to minimize lighting costs, by turning unneeded lights off, or in some cases, dimming lights. There are three basic categories of automatic lighting controls: timers, daylight harvesting controls and occupancy/vacancy controls.

## Lighting Timer Controls

As the name implies, these controls allow the user to turn on lights for a specific time period. The controls range from simple twist knob controls to micro-processor based lighting scheduling systems. Timers can be very effective for applications where occupancy sensors do not have an adequate view of the area, and for spaces that are occupied for predictable time periods. Closets, bathrooms, and utility rooms are good candidates for simple timers. Commercial buildings and schools make use of timing systems to turn off general lighting after the end of the normal workday. Efficiency Maine offers Custom Incentives for lighting timing systems. [Click here for details.](#)

## Daylight Harvesting Controls

For spaces that receive significant daylight, these controls can be used to keep lights off, or to dim lights, when there is sufficient available daylight. The simplest systems simply turn off the lighting circuit when a pre-determined level of daylight is achieved. Because these systems require a high level of daylight throughout the space, systems that turn off only a portion of the lights are often more effective. For example, two lamps in a four-lamp fixture might be turned off, or the row of fixtures nearest the windows might be turned off in response to daylight. Daylight dimming systems are the most elegant, but they require special stepped or continuous dimming ballasts. Efficiency Maine offers Custom Incentives for daylight harvesting systems. [Click here for details.](#)

## Occupancy/Vacancy Controls

Also called motion sensors, occupancy controls are the most widely used form of automatic lighting control. These sensors can be used in a variety of spaces to keep lights off when they

are not needed. Most occupancy sensors detect motion based on passive infrared and/or ultrasonic methods of operation. Depending on the space type, the sensor can replace wall mounted light switches or can be mounted remotely, retaining the normal switching for use as override switches, which allows the lighting to be kept off even when the space is occupied.

### Sensor Types

- **Passive Infrared Sensors** monitor background heat energy and turn on lights when a significant change in the background heat energy occurs. When the background heat energy returns to a stable condition, the sensor turns the lights off. Passive infrared sensors must have a direct “line of sight” to occupants in order to detect human presence.
- **Ultrasonic Occupancy Sensors** utilize sound waves to detect human activity. When disturbances in sound wave patterns are detected, the sensor turns on the lights. When the sound wave patterns stabilize, the sensor turns the lights off. Unlike passive infrared sensors, ultrasonic sensors can “see” around objects and surfaces as long as there are hard surfaces that allow the bouncing of sound waves.
- **Dual-Technology Sensors** utilize both passive infrared and ultrasonic technologies. These sensors are designed for use in spaces that are difficult to cover, and for areas where maximum reliability is important for safety or productivity reasons.
- **Occupancy Sensors with Daylight Override** include an integral daylight sensor that can be adjusted to keep lights off when there is sufficient daylight, even when the space is fully occupied.
- **Vacancy Sensors** often provide additional savings by requiring occupants to manually turn lights on, but automatically turning them off upon vacancy. The lights will stay off until the next time they are turned on manually. For smaller offices and classrooms, vacancy sensors may be the best choice as they allow occupants to choose to keep the lights off when they are not needed, instead of having an occupancy sensor turn the lights on every time they enter the room.

For more information, please refer to our information sheet on [Occupancy Sensors](#).

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Efficiency Maine is a statewide effort to promote the more efficient use of electricity, help Maine residents and businesses reduce energy costs, and improve Maine's environment.


Efficiency Maine is funded by electricity consumers and administered by the Maine Public Utilities Commission.

## Incentives for Automatic Lighting Controls

Efficiency Maine offers prescriptive incentives for: occupancy and daylight controls for HIF systems, remote mounted occupancy sensors and vacancy sensors. Other automatic lighting control measures may be eligible using the Custom Lighting Form.


### Measure Code L60 – Controls for HIF Systems

Measure L60 is for the installation of occupancy or daylight controls for High Intensity Fluorescent Systems (Measures L40 & L41). The control system must turn off at least half of the lamps in the fixture, or must provide for continuous dimming. Sensors may be factory, or field installed.

Measure	Code	Eligible Installations	Unit Incentive	Eligibility Criteria
 <p>Controls for HIF Systems</p>	L60	Occupancy controlled High-Low (Hi/Lo-HIF) or Daylight Dimming Systems (DDS-HIF)	\$40 per Fixture	<ul style="list-style-type: none"> <li>Each unit must control a wattage total greater than 125W</li> <li>Ballast must be automatically controlled based on occupancy or daylight</li> <li>Must provide for continuous dimming or stepped dimming of at least 50%</li> </ul>


### Measure Code L70 – Remote Mounted Occupancy Sensors

Measure L70 is for the installation of occupancy sensors for the control of fluorescent systems. Remote sensors mounted on the ceiling, or high on a wall, offer greater coverage and better protection from vandalism than do wall switch-plate sensors. The sensor system should have a manual “off” override, but cannot have a manual “on” override in order to qualify for incentives.

Measure	Code	Eligible Installations	Unit Incentive	Eligibility Criteria
 <p>Remote Mounted Occupancy Sensors</p>	L70	Remote Mounted Occupancy Sensor	\$50 per Sensor	<ul style="list-style-type: none"> <li>Each unit must control a wattage total greater than 125W</li> <li>Wall switch plate mounted sensors are not eligible</li> </ul>

### Measure Code L71 – Vacancy Sensors

Vacancy sensors never automatically turn lights on, but they turn lights off when spaces become vacant. These sensors offer enhanced savings in areas where lights are not always needed, even when the space is occupied. Small offices with windows, and/or spaces that are used as passways, or are entered for short periods of time are good candidates for vacancy sensors. Wall switch plate and remote mounted sensors are eligible for this incentive.

Measure	Code	Eligible Installations	Unit Incentive	Eligibility Criteria
 <p>Vacancy Sensors</p>	L71	Manual On/Auto Off Vacancy Sensor	\$25 per Control	<ul style="list-style-type: none"> <li>Each unit must control a wattage total greater than 125W</li> <li>Wall and ceiling mounted units are eligible</li> <li>Sensors must operate on a manual on/automatic off basis</li> <li>Refer to our Occupancy Sensors Information Sheet for a list of eligible sensors</li> </ul>