



Issue: #TB157
Date: December 11, 2003
Topic: IECC 2003 Lighting Control Provisions

IECC 2003 Lighting Control Provisions

The provisions of the International Energy Conservation Code (IECC) outline minimum energy efficiency requirements for commercial building design. Numerous state, regional, and local jurisdictions are adopting its provisions. Like the ASHRAE 90.1 provisions, the IECC imposes broad mandatory requirements for lighting controls for interior spaces, light reduction controls, automated shut-off, and exterior spaces.

Space Controls [Section 805.2.1]

- Required for:** Areas enclosed by walls or floor-ceiling partitions
- Controls:**
- at least one manual control for controlling lighting serving that area
 - control device(s) located within the space, or if remote switch is used, it must identify lights served and indicate light's status
- Exceptions:**
- designated security or emergency areas
 - stairway or corridor lighting within the paths of egress

Light Reduction Controls [Section 805.2.2.1]

- Required for:** Each area required to have a manual control must also furnish controls to uniformly reduce lighting by at least 50%
- Controls:** Use one of the following methods:
- dimming all lamps or luminaires
 - dual switching of alternate luminaires or lamps
 - switching each luminaire or each lamp
- Exceptions:**
- areas with only one luminaire
 - areas controlled by an occupancy sensor
 - corridors, store rooms, restrooms, public lobbies, guest rooms

Automatic Lighting Shut off [Section 805.2.2.2]

- Required for:** Buildings larger than 5,000 sq. ft.
- Controls:**
- automatic control device to turn off lighting in all spaces. This can function by either:
 - scheduled basis using a time switch device with independent control schedule

- for lighting areas not to exceed 25,000 sq. ft. and are not more than one floor, or
- unscheduled basis by occupant intervention using an occupancy sensor, time delay wall switch, or connection to an alarm system
- if using an automatic time switch control device for scheduled shut-off, must also include:
 - provide an occupant override capability that is readily accessible, manually operated, and controls an area not exceeding 5,000 sq.ft
 - occupant override is located so controlled lighting is visible from override switch or switch has annunciated status (i.e., pilot light)
 - occupant override offers a maximum override of two hours
 - automatic time switch control device has holiday scheduling capability unless it is a retail store

Exceptions:

- areas having only one luminaire
- corridors, storerooms, restrooms, and public lobbies
- for scheduled shut-off using an automatic time switch, the following exceptions apply:
 - in malls, arcades, auditoriums, single-tenant retail spaces, industrial facilities, and arenas, occupant override may exceed two hours if a captive key override is used
 - in malls, arcades, auditoriums, single-tenant retail spaces, industrial facilities, and arenas, override area controlled may not exceed 25,000 sq. ft.
 - automatic time switches used in retail stores and malls, restaurants, grocery stores, churches and theatres are not required to have holiday scheduling capability

Guest rooms [Section 805.2.2.3]

Required for: Guest rooms in hotels, motels, boarding houses or similar buildings

Controls: • at least one master switch at main entry that controls all permanently wired fixtures and switched receptacles

Exception: • guest room bathrooms

Exterior Lighting Control [Section 805.3]

Required for: For all exterior lighting not intended for 24 hour operation

Controls: • automatic switching or photocell control

- if using automatic switch, it must have seven-day operation, astronomic control capability for seasonal adjustment, and at least four-hour backup

Examples:

A commercial office building has 2,000 sq. ft. of space built out into eight private offices, a conference room, and two restrooms in the front of the building, and open office space of 4,000 sq. ft. at the back of the building. There is exterior lighting around the building perimeter, including the sidewalks and parking areas. In addition, there is exterior lighting around the shipping/receiving canopied area.

Automated shut-off:

To comply with the IECC 2003 provisions, the building uses a time-scheduling control panel to provide automatic OFF facility-wide at 7 pm. In addition, there are occupancy sensors and manually operated switches in each private office, and one manually operated dataline switch in the open office area. These switches work in conjunction with the lighting control panel, so that occupants can use the switches to override the shut-off control during scheduled unoccupied times for up to two hours.

Lighting reduction controls:

In the open office area, occupants may reduce the lighting load via the dataline switch by switching the middle row of lamps in the luminaires. Lighting in the private offices is exempt from this IECC provision because each office contains only one luminaire and is controlled by an occupancy sensor.

Exterior space:

In compliance with IECC 2003, the building perimeter lighting is automatically turned off during the day by a photocell. The shipping/receiving lighting, which is intended for 24 hour operation, is exempt from the control provisions, and remains on continuously.

Conclusion:

Devices such as lighting control panels, time switches, and occupancy sensors offer simple and convenient ways of complying with the lighting controls provisions of the IECC 2003. The Watt Stopper provides reliable lighting control products to comply with today's energy code standards. Through its Technical Support team, The Watt Stopper also provides technical expertise on code compliance issues, such as product selection and design and application guidance. Call Technical Support at 800.879-8585 for assistance with code compliance.

Sources:

Building Codes Assistance Project (BCAP) web site: <http://www.bcap-energy.org/index.html>.

Department of Energy website: www.energycodes.gov/news/broadcasts/cast_01.stm.

2003 International Energy Conservation Code. This Code contains standards for all major building systems for residential and commercial buildings. For more complete information on IECC provisions, or to purchase a copy, visit <http://iccsafe.org/index.html>.