

Energy Code for the State of North Carolina

The State of North Carolina uses a State specific Energy Code which is modeled on the ASHRAE 90.1-2004 Standard.

The following are highlights of the North Carolina State Energy Code which pertain to lighting controls.

INTERIOR LIGHTING.

AUTOMATIC LIGHTING SHUTOFF. Interior lighting in buildings greater than 5000 ft² shall be controlled with an automatic control device to shut off lighting in all spaces. The automatic control device can be:

1. Time-of-day operated device turning lights off at specific programmed times. Independent program schedules shall be provided for areas no more than 25,000 ft² but not more than one floor (or);
2. An occupant sensor that turns lights off within 30 minutes of an occupant leaving the space (or);
3. A signal from another control or alarm system indicating the area is unoccupied.

SPACE CONTROL. Each space enclosed by ceiling-height partitions shall have at least one control device to independently control the general lighting. The device can be activated manually or automatically by sensing an occupant. Each control device shall:

1. Control a maximum of 2,500 ft² for a space 10,000 ft² or less, or a maximum of 10,000 ft² for a space greater than 10,000 ft² (and);
2. Be capable of overriding any time-of-day scheduled shutoff control for no more than 4 hours.

Each manual device shall be readily accessible and located so the operator can see the controlled lighting. Remote location is permitted for reasons of safety or security when the remote device has an indicator pilot light and is clearly labelled to identify the controlled lighting.

A control device that automatically turns off lighting within 30 minutes of all occupants leaving shall be installed in all spaces except spaces with multi-scene control in classrooms, conference rooms or lunch rooms.

ADDITIONAL CONTROLS. Separate control devices are required in the following cases:

1. Display or accent lighting;
2. Case lighting;
3. Hotel and motel guest room lighting, located near entry;
4. Task lighting;
5. Nonvisual lighting;
6. Demonstration lighting.

TANDEM WIRING. Luminaires designed for use with 1 or 3 linear fluorescent lamps less than 30W each shall each use 2-lamp tandem-wired ballasts in place of single lamp ballasts when 2 or more luminaires are in the same space and on the same control device.

INTERIOR POWER ALLOWANCE. The interior lighting power allowance for a building shall be determined by either the building area (building area times allowed power density for building type) or the space-by-space method (sum of individual space allowances as determined by building type).

Power density factors for the building area method are in Table 9.5.1 and power density factors for the space-by-space method are in Table 9.6.1 of the ASHRAE 90.1-2004 Standard.

EXTERIOR LIGHTING.

GENERAL. Exterior lighting includes lighting for external building features including facades, illuminated roofs, architectural features, entrances, exits, loading docks and illuminated canopies.

Exterior lighting shall have automatic controls capable of turning off exterior lighting when sufficient daylight is available or when the lighting is not required during nighttime hours. Lighting not designated for dusk-to-dawn operation shall be controlled by an astronomic time switch. Lighting designated for dusk-to-dawn operation shall be controlled by an astronomic time switch or photosensor. Automatic time switches shall be capable of retaining programming during loss of power for a period of at least 10 hours.

All external building grounds luminaires that operate at greater than 100W shall contain lamps having a minimum efficacy of 60lm/W unless the luminaire is controlled by a motion sensor.

EXTERIOR POWER ALLOWANCES. The exterior power allowance is the sum of the individual power densities (found in Table 9.5.1 of the ASHRAE 90.1-2004 Standard) plus an additional 5% of that sum.

Lighting for the following exterior applications is exempt when equipped with an independent control device: transportation marker lighting, advertising signage, equipment lighting, theatrical lighting, athletic playing field lighting, temporary lighting, industrial production or storage area lighting, theme lighting in theme/amusement parks, and lighting that highlights monuments.

The above is a very brief guideline, as interpreted by Douglas Lighting Controls. Refer to the North Carolina State Energy Code for details applicable to your lighting control project.

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