



# Indoor and Outdoor Lighting

## Know Your Project – Key Terms

The requirements in this fact sheet apply to residential, single-family buildings and multi-family buildings that are three stories or less. The residential lighting requirements also apply to residential spaces on nonresidential buildings, including dwellings in high-rise residential buildings, hotels and motels, and dwelling spaces of fire stations, dormitories and senior housing. Key terms pertaining to T24 lighting compliance include:

- ✦ **Additions:** includes any addition of new square footage, where new luminaires are installed
- ✦ **Alterations:** includes modifications where existing luminaires are re-used
- ✦ **Permanently Installed Lighting:** includes ceiling luminaires, chandeliers, vanity lamps, wall sconces, under-cabinet luminaires, and any other type of luminaire that is attached to the dwelling.

## Luminaire Requirements

- ✦ **Luminaire efficacy:** Installed luminaires shall be classified as high-efficacy or low-efficacy for compliance with §150.0(k)
- ✦ **Hybrid luminaires:** When a high-efficacy and low-efficacy lighting system are combined in a single luminaire, the systems shall separately comply with §150.0(k)
- ✦ **Luminaire wattage & classification:** The wattage and classification of permanently installed luminaires shall be determined in accordance with §130.0(c)
- ✦ **Electronic Ballasts:** Ballasts for fluorescent lamps 13 watts and greater shall be electronic with an output frequency  $\geq 20$  kHz.
- ✦ **Lighting integral to exhaust fans:** Lighting integral to exhaust fans must have the capability to be independently secured.
- ✦ **Vacancy sensor:** A manual-on/automatic-off lighting control, which includes a manual-off option

## High-Efficacy Luminaire Requirements

The following table can be used to determine luminaire efficacy if the determination cannot be made by using Table 150.0-A:

Table 150.0-B: Minimum Requirements for High-Efficacy Lights

Luminaire Power Rating	Minimum Luminaire Efficacy
5 watts or less	30 Lumens per watt
Over 5 watts to 15 watts	45 lumens per watt
Over 15 watts to 40 watts	60 lumens per watt
Over 40 watts	90 lumens per watt

Note: Determine minimum luminaire efficacy using the system initial rated lumens divided by the luminaire total rated system input power.

## Luminaire Efficacy Classification

Table 150.0-A of the Standards classifies lighting as either high-efficacy or low-efficacy luminaires. High-efficacy luminaires include the following:

- ✦ Pin-based linear fluorescent or compact fluorescent lights
- ✦ Pulse-start metal halide lamps
- ✦ Luminaires with LED light sources certified as high-efficacy
- ✦ GU-24 sockets rated for LED or CFL lamps.

High-efficacy lamps installed in low-efficacy luminaires (e.g., screw-base CFL and LED lamps) do NOT count as high-efficacy lighting.

Track lighting that allows for the addition or relocation of luminaires without rewiring and low-voltage lamp holders capable of operating incandescent are also NOT considered high-efficacy lighting.

This classification is very important, because most residential spaces have requirements for high-efficacy lighting.

## Project Requirements by Space

Most residential spaces require either a minimum percentage of high-efficacy lighting. In some cases, vacancy sensors may be used in place of high-efficacy lighting – see table notes for details. The table below summarizes mandatory requirements for different spaces.

Application	Power / Efficacy	% Requirement (of total install)
Internally illuminated signs	$\leq 5$ Watts	100%
Kitchen	HE	50%
Kitchen cabinet lighting	$\leq 20$ Watts per linear foot of cabinetry	
Bathroom	HE	$\geq 1$ luminaire <sup>A</sup>
Garage, laundry, utility closet (with vacancy sensor)	HE	100%
Other <sup>B</sup>	HE <sup>C</sup>	100% <sup>D</sup>
Single-family, outdoor	HE	100%
Attached lighting, or controlled by motion sensor	HE	100%
Multi-family, outdoor, low-rise <sup>E</sup>	HE	100%
Multi-family common area, low-rise	HE <sup>F</sup>	100%
Multi-family common area, low-rise <sup>G</sup>	Nonresidential	
Parking (>8 parking spaces)	Nonresidential <sup>H</sup>	
Recessed ceiling luminaires	HE	Airtight housing
Recessed ceiling luminaires <sup>I</sup>	HE	IC-rated

<sup>A</sup> At least one luminaire in each bathroom must be high efficacy. All other luminaires must be either high efficacy or controlled by vacancy sensors

<sup>B</sup> This classification applies only to rooms that are not kitchens, bathrooms, garages, laundry rooms, closets, or utility rooms.

<sup>C</sup> Permanently installed lighting in "other" spaces shall be: high-efficacy or controlled by a vacancy sensor or controlled by a dimmer.

<sup>D</sup> Closets that are less than 70 ft<sup>2</sup> and outbuildings such as sheds that are less than 1000 ft<sup>2</sup> are exempt from this requirement.

<sup>E</sup> Private patios, entrances, balconies, and porches may comply with either nonresidential or single-family requirements. All other low-rise multi-family outdoor lighting requirements are the same as for single-family buildings.

<sup>F</sup> If the total interior common area is  $\leq 20\%$  of the floor area, the lighting shall be high efficacy or controlled by an occupant sensor.

<sup>G</sup> If the total interior common area is  $\geq 20\%$  of the floor area, the common area lighting shall meet nonresidential lighting requirements.

<sup>H</sup> Nonresidential lighting standards for parking lots/garages apply for areas with more than 8 spaces (§130.2, §140.7). Areas with less than 8 spaces

<sup>I</sup> Recessed ceiling luminaires must be insulation-contact (IC) rated.

## Switching Control Requirements

- High-efficacy luminaires shall be switched separately from low-efficacy luminaires.
- Exhaust fans shall be switched separately, except when lighting integral to the fan is installed that meets requirements of Section 150(k)2.
- Lighting controls must meet applicable requirements of Section 110.9, shall be installed to allow for manual switching of on and off, and shall not bypass a dimmer or vacancy sensor function that complies with 150.0(k).

The switching requirements (Section 110.9) specify that time-switch controls and occupancy sensors meet Title 24 requirements, and contain additional requirements for astronomical based outdoor lighting controls.

## Application-Specific Requirements

- Kitchens, and lighting that is adjacent to the kitchen on the same switch, requires at least 50% of luminaires to be high efficacy and must be switched separately from low-efficacy luminaires.
- Cabinets are limited to 20 Watts per linear foot on the interior, where the interior is the horizontal length, vertical length.
- Bathrooms require a minimum of one high-efficacy luminaire, and require all other lighting to be either high-efficacy lighting or vacancy sensors for additional lighting.

## Residential vs. Nonresidential

### Residential vs. Nonresidential Parking Requirements

Space Type	# of Car Spots	Single Family	Low-Rise Multifamily		High-Rise Multi-family and Hotels
			Common area ≤20% of interior space	Common area >20% of interior space	
Parking garages	<8	Residential indoor	Nonresidential indoor		
	≥8	Nonresidential indoor			
Parking lots & carports	<8	Residential outdoor	Residential or Nonresidential outdoor		Non-residential outdoor
	≥8	Nonresidential indoor			

### Residential vs. Nonresidential Outdoor Lighting Requirements

Space Type	Single Family	Low-Rise Multifamily		High-Rise Multi-family and Hotels
		1-3 dwelling units	≥4 dwelling units	
Private patios, entrances, balconies, porches; parking lots with <8 vehicles	Residential	Residential or Nonresidential		Residential, if the lighting is separately controlled from inside the dwelling.  Otherwise, non-residential
Residential parking garages, lots and carports with > 8 vehicles	Nonresidential			
Other outdoor lighting attached to the building	Residential	Non-residential		
Outdoor lighting not attached to a building	Not regulated		Nonresidential	



## T24 Compliance & Compliance Documents

All of the residential lighting requirements, as defined in Section 6.1 of the Residential Compliance Manual the Standards are mandatory measures; therefore, there are no tradeoffs between lighting and other building features.

Because the compliance documentation for residential lighting consists primarily of a Certificate of Installation, it is not to be submitted until after the lighting project has been completed.

Consult the Residential Compliance Manual for the required Certificate of Installation and Certificate of acceptance forms.

The following guidelines apply to submitting any Certificates of Installation:

- By submitting the Certificate(s) of Installation, the person accepting responsibility for the project declares that the installed residential lighting complied with all of the applicable lighting requirements.
- A Certificate of Installation must be submitted to the building department for any residential lighting project that is regulated by Title 24, Part 6, whether that lighting project is for only one luminaire, or for the lighting of an entire building.
- When registration is required (all low-rise residential buildings which requires HERS field verification), the person(s) responsible for the compliance documents are required to submit the compliance form(s) electronically to an approved HERS provider data registry for registration and retention. The nonresidential process is forthcoming and will be available in the future.
- Even though the Certificate of Installation for lighting control systems is designed primarily for use as a nonresidential compliance document, it is also required whenever a lighting control system is used to comply with the residential lighting standards.