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Quick Guide for Title 24 Requirements

What is Title 24? The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible in-corporation of new energy efficiency technologies and methods. Local governments are charged with enforcement.

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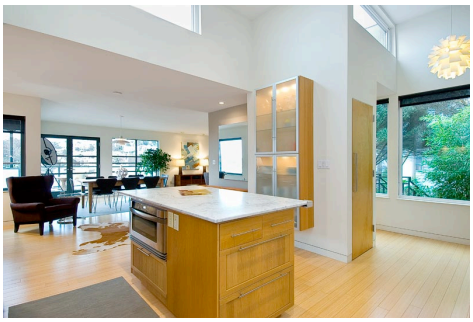
Kitchens

The Residential Lighting Standards define a residential kitchen as "a room or area used for food storage and preparation and washing dishes including associated counter tops and cabinets, refrigerator, stove, oven, and floor areas."

Kitchen lighting includes all permanently installed lighting in the kitchen, except for lighting that is internal to cabinets for the purpose of illuminating only the inside of the cabinets. Lighting in areas adjacent to the kitchen, including but not limited to dining and nook areas, are considered kitchen lighting if they are not separately switched from kitchen lighting.



The intent of the Kitchen Lighting Standards is to insure that the builder provides the occupant with energy efficient lighting. The permanently installed lighting should provide sufficient light levels for basic kitchen tasks without the need for portable (plug-in) lighting.

Determine High Efficiency and Low Efficiency Installed Wattage

The Residential Lighting Standards require that at least half the lighting watts installed in a kitchen must be consumed by high efficiency lighting. For example, if 150W of high efficiency lighting is installed, no more than 150W of low efficiency lighting can be installed.

Because high efficiency lighting typically consume less power than other lighting, about three-fourths of the lighting in the kitchen are likely to be high efficiency
There are no limits to the total number of watts that can be installed in a residential kitchen. Therefore, there are no limits to illumination levels. If higher illumination levels are needed, simply install additional wattage from high efficiency lighting until needed illumination levels are reached.

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Bathrooms, Garages, Laundry and Utility Rooms and Closets

Lighting in bathrooms, garages (attached and detached), laundry rooms, closets and utility rooms must be high efficiency, or must be controlled by a vacancy sensor.

Garages, laundry rooms, closets and utility rooms can be lit entirely by high efficiency lighting. Linear fluorescent light fixtures are typically between 1.5 and 4 times as efficient as CFLs, and should be used unless there is insufficient space. Fixtures should be mounted close to washer/dryer hookups and over work surfaces to ensure shadow-free illumination.

Special Considerations for Bathrooms

If a sink used for personal hygiene is in a room other than a bathroom, such as bedroom, where no doors, walls, or other partitions separate the sink area from the rest of the room, and the lighting for the sink area is switched separately from room area lighting, only the fixture(s) that are lighting the sink area must meet the bathroom lighting requirements; in this case, lighting of the sink area includes lighting of associated counters, cabinets, and mirrors.

Where automatic shutting off of lights by a vacancy creates a safety concern, the *Residential Lighting Standards* allow compliance though the use of high efficiency lighting fixtures, which when installed, does not require the use of a vacancy sensor. For safety in bathrooms, it is recommended that at least one high-efficiency luminaire should be installed so that it is not controlled by the vacancy sensor circuit. This will help to ensure that all of the lights don't switch off while someone is in the bath. Even dual technology sensors may not detect a motionless and silent occupant.

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Questions & Answers

Q: I am designing a residential kitchen lighting system where I plan to install six 26W compact fluorescent recessed down-lights, and four 24W linear fluorescent under cabinet luminaries. How many watts of incandescent lighting can I install?
A: First, determine the rated input watts of the fluorescent lighting system, including any additional wattage used by the ballasts. For this example, let's assume that the down-lights with electronic ballasts are rated by the ballast manufacturer as consuming 26W, and the under cabinet luminaries with electronic ballasts are rated by the ballast manufacturer as 25W.
26 x 6 = 156W
25 x 4 = 100W
Total = 256W
Therefore, the maximum watts of incandescent lighting that can be installed is 256W.

Q: In the above example, if I plan to use 40W incandescent lamps (bulbs) in luminaries that have a re-lamping rated wattage of 90W, how many incandescent luminaries can I install?
A: The installed incandescent wattage is based upon the re-lamping rated wattage of the luminaire, and not by the wattage of the lamp. Two 90W incandescent luminaries = 180W, and three-90W incandescent luminaries = 270W. Because no more than 256W of low efficiency lighting can be installed in the above kitchen, only two-90W incandescent luminaries may be installed. The additional 76W of low efficiency lighting may be installed somewhere else in the kitchen, provided that the total installed re-lamping rated wattage does not exceed the 76W still available. Alternatively, four-60W incandescent luminaries (240W) can be installed in the kitchen.

Q: In the above example, if I plan to use low-voltage incandescent halogen lamps with transformers rated at 40W each (in this example, let's assume that 40W includes the input wattage of the transformer + the lamp), how many of these low-voltage incandescent luminaries can I install?
A: The installed of low-voltage lighting is based upon the rating of the transformer. You are allowed up to 256W of low efficiency lighting
256 divided by 40 = 6.4 luminaries
You are allowed to install 6 low-voltage incandescent halogen luminaries with transformers rated at 40W each.

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Q: What types of vacancy sensors qualify for controlling low efficiency lights in bathrooms, garages, laundry, closets, and utility rooms?
A: Eligible vacancy sensors are those which have been certified to the Energy Commission. These vacancy sensors (manual-on / automatic-off occupancy sensors) do not allow the light to be turned on automatically and do not have an override that allows it to remain on.

Q: Is it good lighting practice to have all the lighting in a room controlled by a single vacancy sensor?
A: Vacancy sensors may fail to detect people who aren't making large movements, and their sensitivity is reduced in hot environments. Vacancy sensors may cause the lights to switch off while someone is using a hazardous device. Where safety is an issue, high efficiency lighting should be installed. High efficiency lighting do not require a vacancy sensor to meet the Residential Lighting Standards.

Q: Is the factory installed lighting system in a bathroom mounted medicine cabinet required to be either high- efficiency or controlled by a vacancy sensor?
A: If the factory installed lighting in a medicine cabinet is designed to only illuminate the inside of the medicine cabinet, and the lighting is controlled only by a door activated switch where the lights turn off automatically when the cabinet door is closed, then the factory installed lighting is not regulated by the Residential Lighting Standards. However, if the factory installed lighting is connected to a

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Summary of Title 24 Requirements for Home Renovations

When remodeling your home Title 24 requirements must be met and *The Residential Lighting Standards* apply only to permanently installed luminaries, i.e., lighting fixtures that are attached to the house. Permanently installed lighting fixtures include ceiling fixtures, chandeliers, vanity lamps, wall sconces, under-cabinet lighting and any other type of fixture that is attached to the house. Permanently installed fixtures may include hard wired or plug-in. For each room or area, the requirements may be summarized as follows:

Kitchens. At least half the installed wattage of lighting in kitchens shall be high efficiency. However, some lighting installed inside a cabinet may not be included in the wattage calculation that determines half of the installed wattage is high efficiency. The wattage requirements of permanently installed fixtures are only considered only in kitchens.

Bathrooms, Garages, Laundry Rooms, Closets and Utility Rooms. All lighting shall either be high efficiency or shall be controlled by a vacancy sensor. Closets that are less than 70 ft2 are exempt from this requirement.

Other Rooms. This applies only to rooms that are not kitchens, bathrooms, garages, laundry rooms, closets, or utility rooms. All installed luminaries shall either be high efficiency or shall be controlled by a vacancy sensor or dimmer.

Outdoor Lighting. All luminaries mounted to the building or to other buildings on the same lot shall be high efficiency luminaries or shall be controlled by a motion sensor in combination with a photo-control, astronomical time clock, or energy management control system (EMCS).

The Residential Lighting Standards Room Definitions.

Kitchen -a room or area used for food storage and preparation and washing dishes including associated counter tops and cabinets, refrigerator, stove, oven, and floor areas

Bathroom -is a room or area containing a sink used for personal hygiene, toilet, shower, or a tub.

Garage -nonhabitable building or portion of building, attached to or detached from a residential dwelling unit, in which motor vehicles are parked.

Laundry Room -nonhabitable room or which contains plumbing and electrical connections for a washing machine or clothes dryer.

Closet -nonhabitable room used for the storage of linens, supplies, clothing, non-perishable food, or similar uses, and which is not a hallway or passageway.

Utility Room -nonhabitable room or building which contains only HVAC, plumbing, or electrical controls or equipment; and which is not a bathroom,

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