# CHAPTER 2 - CONSERVATION AND EFFICIENCY: BUILDING SYSTEMS



## 502.06 LIGHTING CONTROLS

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### INTENT

**To save energy by using effective lighting controls.**

### REQUIREMENT

For all new buildings other than villas and industrial buildings:

A. Occupant lighting controls must be provided so that it allows the lighting to be switched off when daylight levels are adequate or when spaces are unoccupied. It also allows the occupant to control the lighting levels.

B. Common areas such as corridors and lobbies which are not regularly occupied, the lighting levels should be reduced to a maximum level of 25% of normal condition, when unoccupied.

C. In offices and education facilities, all lighting zones must be fitted with occupant sensor controls capable of switching the electrical lights on and off based on occupancy level. Lighting required for safety purposes is excluded.

D. In offices, if the average design lighting power density value is less than 6 $W/m^2$ of gross floor area (GFA), then the control requirements of Part C of this regulation need not apply.

E. It is recommended (optional) that in offices, the artificial lighting in spaces within 6m in depth from the exterior windows must be fitted with lighting controls. The lighting controls to incorporate photocell sensors capable of adjusting electric lighting levels and shall supplement the natural daylight, when required. The use of both artificial light and daylight must provide an illumination level at the working plane between 400 and 500 lux. When 100% of daylight is available, the lux levels may exceed 500 lux.

### SIGNIFICANCE

The source of lighting in a building is daylight and artificial light. Artificial lighting load is a significant component in total electrical energy consumption. Uncontrolled lighting results in substantial energy waste.

Incorporating effective lighting controls lead to increased occupant comfort, productivity and wellbeing, as each individual or group of occupants can alter the lighting levels to their personal needs and switch off the light when not needed. Switching off light when not needed not only reduces lighting energy consumption, but also results in less heat build-up from lighting system, resulting in lower air conditioning load and higher energy savings.

Considering the high sunlight factor in the Emirate of Dubai, use of daylight contributes significantly in energy conservation.