SIGNIFICANCE

Excessive exterior lighting is wasteful and wasting energy has huge economic and environmental consequences. As the exterior lighting generally operates on dusk to dawn duration, reducing the electrical load of exterior lighting is very important to reduce energy consumption and carbon emissions.

By following the maximum average lighting power density values for various building types, electrical energy to provide adequate lighting is restricted thereby encouraging the use of energy efficient lamps and luminaries.

APPLICABILITY

This regulation is applicable to all building types. Refer to Table 101.07(2) in Section One - Administration for detailed applicability levels.

IMPLEMENTATION

For the exterior lighting, the Lighting Power Density (LPD) limits given in this regulation are the maximum limits. This is to promote variety of efficient light fixtures to be used in various areas.

As part of lighting design, the lighting schedule should include exterior lighting details including wattages and types of lighting fixtures. Project teams in design stage, should maintain consistency in the number of light fittings for each space and the light fixture wattage between the lighting layout and lighting schedule.

By counting the number of exterior lighting fixtures and their designed electricity consumption would give the lighting load. While calculating the lighting load the electrical energy used by the controls and ballasts must also be included. The total energy load is then applied to the gross floor area of the building to give the average lighting power density.

Emergency lighting that is switched off during normal building operation and the lighting that is required by a health or safety regulation are exceptions for this regulation.

The maximum lighting power density can be easily achieved by optimising the lux level requirement for each of the spaces based on their usage and by incorporating energy efficient lighting that produces high lumens per watt. Selection of lamps has a major impact on the energy usage and hence adequate care must be taken in their selection.

If the lighting design is changed during construction, the lighting power density calculation needs to be updated, while ensuring the overall values are still in compliance with this regulation. The changes i.e. wattage and number of light fittings in each space should also be consistent in the updated light power density calculations, light fixture data sheet and in the as-built layout.

If the LPD values for external lighting exceeds the values specified in Table 502.05(1), then the additional lighting load must be powered entirely, through renewable energy sources such as photovoltaic systems or similar. This offers a sustainable alternative to those building owners who wish to have more than the regulated level of outdoor lighting.

The requirement for this regulation should also consider the requirements stated in *Regulation 303.01*. As per *Regulation 303.01*, all exterior lighting must be fitted with automatic controls, to ensure that lights do not operate during daylight hours. This restricts the energy consumption for exterior lighting fixtures, thereby reducing energy requirements.