

DIVISION 20. - LIGHTING STANDARDS

Sec. 34-1831. - Purpose and applicability of division.

(a) *Purpose.* The purposes of this division are:

- (1) To curtail and reverse the degradation of the night-time visual environment by minimizing light pollution, glare, and light trespass through regulation of the form and use of outdoor lighting; and
- (2) To conserve energy and resources while maintaining night-time safety, utility, security and productivity.

(b) *Applicability.* All new luminaires, regardless of whether a development order is required, must comply with the provisions and standards of this division.

(c) *Exemptions.* The following are generally exempt from the provisions of this division:

- (1) Emergency lighting required for public safety and hazard warning luminaires required by federal or state regulatory agencies;
- (2) Outdoor light fixtures producing light directly by the combustion of fossil fuels such as kerosene and natural or bottled gas;
- (3) Low wattage holiday decorative lighting fixtures (comprised by incandescent bulbs of less than eight watts each or other lamps of output less than 100 lumens each) used for holiday decoration; and
- (4) Lighting for public roads except as provided in § 14-77 of this LDC.

Sec. 34-1832. - Definitions.

The following words, terms and phrases, when used in this division, shall have the following meanings, unless the context clearly indicates a different meaning:

Back-lighted means a surface that is at least partially transparent and is artificially illuminated from behind.

Direct light means light emitted directly from the lamp, off the reflector or reflector diffuser, or through the refractor or diffuser lens, of a luminaire.

Footcandle means the quantify of light striking a surface, measured in lumens per square foot.

Full cutoff means that a light fixture in its installed position does not emit any light, either directly or by reflection or diffusion, above a horizontal plane running through the lowest light-emitting part of the fixture. Additionally, the fixture in its installed position does not emit more than ten percent of its total light output in the zone between:

- (1) The horizontal plane through the lowest light-emitting part of the fixture, and
- (2) Ten degrees below the horizontal plane (80 degrees above the vertical plane).

Lumen means a unit of light emission. For example, incandescent light bulbs with outputs of 60, 75, and 100 watts emit approximately 840, 1170, and 1690 lumens respectively.

Luminaire means a complete unit for producing artificial light, commonly referred to as a lighting fixture.

Mercury vapor means a high-intensity discharge light source that is filled with mercury gas under pressure and which emits a blue/white light.

Non-essential lighting means lighting that is not necessary for an intended purpose after the purpose has been served. For example, lighting for a business sign, architectural accent lighting, and parking lot lighting may be considered essential during business or activity hours, but is considered non-essential once the activity or business day has concluded.

Shielded means that an outdoor light fixture that is fully and permanently blocked by a physical device or by its integral design from discharging light in specific directions.

Sec. 34-1833. - Technical standards for lighting.

(a) *Generally.* This section contains minimum and maximum standards that apply whenever outdoor lighting is provided.

(1) In addition to the standards and criteria in this section, there are standards for artificial lighting near sea turtle nesting habitat in ch. 14, article II of this code.

(2) When specific standards are not addressed in these sources, the standards of the Illuminating Engineering Society of North America (IESNA) will apply.

(b) *Specific standards.*

(1) *Illuminance.* The following table indicates minimum and maximum illumination levels. These levels are specified for general use categories and are measured in footcandles on the task surface (for example, the lighted parking lot or walkway) with a light meter held parallel to the ground, facing up, unless otherwise specifically stated.

Use/Task	Minimum (1)	Maximum (average) (1), (2), (3), (4)
PARKING LOTS - MULTIFAMILY:		
Medium vehicular/pedestrian activity	0.8	3.2
Low vehicular/pedestrian activity	0.3	1.2
PARKING LOTS - COMMERCIAL/INSTITUTIONAL/MUNICIPAL:		
Medium activity, e.g., major shopping districts, cultural/civic/ recreational facilities	0.8	3.2
Low activity, e.g., neighborhood retail, offices, employee parking, school/church parking	0.3	1.2
NONRESIDENTIAL WALKWAYS & BIKEWAYS	0.3	1.5

CANOPY OVER FUEL PUMPS	6.0	30.0
<i>NOTES:</i>		
<p>(1) The specified illumination levels are the initial levels to be measured at the time of final inspection for a certificate of compliance. Outdoor lighting must be maintained so the average illumination levels do not increase above the specified maximum values. The minimum illumination levels may decrease over time consistent with the Light Loss Factor (LLF) associated with the installed fixtures.</p>		
<p>(2) In no case may the illumination exceed 0.5 footcandles measured at the property line. The amount of illumination projected onto a residentially zoned property or use from another property may not exceed 0.2 footcandles measured at 10 feet from the property line onto the adjacent residential property.</p>		
<p>(3) Maximum values listed in this column are the average of actual measurements taken throughout the lighted area at the time of final inspection.</p>		
<p>(4) Where all-night safety or security lighting is to be provided, the lighting intensity levels should provide the lowest possible illumination to discourage crime and undesirable activity and to effectively allow surveillance, but may not exceed 50 percent of the levels normally permitted for the use as specified in this code.</p>		

- (2) *Lamp standards.* Lamp types and colors must be in harmony with the adjacent community, any special circumstances existing on the site, and with surrounding installations. Lamp types must be consistent with the task and setting and should not create a mix of colors unless otherwise specifically approved by the director for a cause shown. Specifically, mercury vapor lamps are prohibited. Lighting of outdoor recreational facilities (public or private) such as athletic fields and tennis courts is exempt from the lamp type standards provided that all other applicable provisions are met.
- (3) *Luminaire (fixture) standards.* Fully shielded, full cutoff luminaires with recessed bulbs and flat lenses are the only permitted fixtures for outdoor lighting, with the following exceptions:
 - a. Luminaires that have a maximum output of 260 lumens per fixture (the approximate output of one 20-watt incandescent bulb), regardless of number of bulbs, may be left unshielded provided the fixture has an opaque top to keep light from shining directly up.
 - b. Luminaires that have a maximum output of 1,000 lumens per fixture (the approximate output of one 60-watt incandescent bulb), regardless of number of bulbs, may be partially shielded, provided the bulb is not visible, and the fixture has an opaque top to keep light from shining directly up.
 - c. Sensor-activated lighting may be unshielded provided that:
 1. The light is located in such a manner as to prevent direct glare and lighting into properties of

- others or into a public right-of-way; and
 - 2. The light is set to only go on when activated and to go off within five minutes after activation has ceased; and
 - 3. The light must not be triggered by activity off the property.
- d. Flood or spot luminaires with a lamp or lamps rated at 900 lumens or less may be used except that no spot or flood luminaire may be aimed, directed, or focused such as to cause direct light from the luminaire to be directed toward residential buildings on adjacent or nearby land, or to create glare perceptible to persons operating motor vehicles on public ways, or directed skyward, or directed towards the shoreline areas.
- 1. The luminaire must be redirected or aimed so that illumination is directed to the designated areas and its light output controlled as necessary to eliminate such conditions.
 - 2. Illumination resulting from such lighting must be considered as contributing to the illumination levels specified herein.
- e. All externally illuminated signs must be lighted by shielded fixtures mounted at the top of the sign and aimed downward. Illumination resulting from sign lighting must be considered as contributing to the illumination levels specified herein.
- f. Fixtures used to accent architectural features, materials, colors, style of buildings, landscaping, or art must be located, aimed, and shielded so that light is directed only on those features. Such fixtures must be aimed or shielded to minimize light spill onto adjacent properties or into the night sky in conformance with illumination and luminaire standards.
- g. All non-essential exterior commercial lighting must be turned off after business hours.
- (4) *Luminaire mount standards.* The following standards apply to luminaire mountings:
- a. *Freestanding luminaires.* Light poles must be placed on the interior of the site. When light poles are proposed to be placed on the perimeter of the site, specific consideration should be addressed to compliance with the illumination standards at the property line and off the property onto adjacent residential property. The maximum height of light poles for parking lots and vehicular use areas may not exceed 15 feet measured from the ground level directly below the luminaire to the bottom of the lamp itself (see additional restrictions in ch. 14 of this LDC for luminaires near sea turtle nesting habitat). Light poles located within 50 feet of a residentially zoned property or use may not exceed 12 feet. Poles used to illuminate pedestrian walkways may not exceed 12 feet. Lighting of outdoor recreational facilities (public or private) such as athletic fields and tennis courts is exempt from the mounting height standards provided that all other applicable provisions are met.
 - b. *Building-mounted luminaires.* These luminaires may only be attached to the building walls and the top of the fixture may not exceed the height of the parapet for flat-roofed buildings or the lowest point on the nearest sloped roof.
 - c. *Canopy lighting.* Luminaires mounted on the underside of a canopy must be fully shielded full cutoff fixtures. As an alternative (or supplement) to canopy ceiling lights, indirect lighting may be used where the light is beamed upward and then reflected down from the underside of the canopy. When this method is used, light fixtures must be shielded so that direct illumination is focused exclusively

on the underside of the canopy. No part of the canopy may be back-lighted. Lights may not be mounted on the top or sides (fascias) of the canopy. The sides (fascias) of the canopy may not be illuminated in any manner.

- d. *Trees and landscaping.* To avoid conflicts, locations of all light poles and fixtures must be coordinated with the locations of all trees and landscaping whether existing or shown on the landscaping plan. Vegetation screens may not be employed to serve as the means for controlling glare. Glare control must be achieved through the use of such means as cutoff fixtures, shields, and baffles, and appropriate application of fixture mounting height, wattage, aiming angle, and fixture placement.

Sec. 34-1834. - Permits for lighting.

- (a) *Development order and building permit criteria.* The applicant for any development order or building permit involving outdoor lighting fixtures, must submit as part of the application evidence that the proposed work will comply with the outdoor lighting standards of this code. Specifically the submission must include the following:
 - (1) Plans indicating the location on the premises and the type of illuminating devices, fixtures, lamps, supports, reflectors, and other devices.
 - (2) A detailed description of the illuminating devices, fixtures, lamps, supports, reflectors, and other devices. The description must include manufacturer's catalogue cuts and drawings, including pictures, sections, and proposed wattages for each fixture.
 - (3) All applications for development orders or building permits, except for single-family and two-family building permits, must provide photometric data, such as that furnished by the manufacturer of the proposed illuminating devices, showing the angle of cutoff and other characteristics of the light emissions including references to the standards contained herein.
 - (4) All applications for development orders or building permits, except for single-family and two-family building permits, must provide photometrics in initial footcandles output for all proposed and existing fixtures on-site shown on a 20-foot by 20-foot grid on an appropriately scaled plan. On-site lighting to be included in the calculations must include, but is not limited to, lighting for parking lot, canopies, and building-mounted and recessed lighting along the building facades and overhangs. The photometric plan must include a table showing the average, minimum, and maximum footcandles of illumination on the site and within 50 feet of the site and the calculations deriving the averages. Evidence must be provided demonstrating that the proposed lighting plan will comply with the requirements of this code. The use of a light loss factor (LLF) is not permitted in these photometrics. This photometric plan must be coordinated with the landscape plan to identify the location of trees and other landscaping features with respect to the lighting devices. Rejection or acceptance of the photometric plan will be based on this code.
- (b) *Compliance.*
 - (1) Prior to the final inspection for a certificate of compliance pursuant to § 10-183 of this LDC, site-verified footcandle readings must be provided demonstrating that the outdoor lighting, as installed, conforms with the proposed photometrics and the letter of substantial compliance provided by a registered professional engineer must include a certification that the outdoor lighting is in compliance with this code.

- (2) If any outdoor light fixture or the type of light source therein is changed after the permit or development order has been issued, a change request or development order amendment must be submitted for approval together with adequate information to assure compliance with this code. This request or amendment must be approved prior to installation of the proposed change.
- (3) Outdoor lighting must be maintained in compliance with this code.
- (c) *Existing outdoor lighting.* Light pole height requirements do not apply to existing light poles. Existing light fixtures must be brought into compliance with this code by January 1, 2010. Any fixtures replaced after the date of the adoption of this code must be replaced with fixtures that comply with the standards established herein. Illuminance levels specified in this code apply to all outdoor lighting.

Secs. 34-1835—34-1860. - Reserved.