

## **PART K**

### **Lighting**

#### **Section 2701. Purpose and Intent.**

To establish lighting standards for public safety and welfare while minimizing the adverse effects of outdoor lighting, such as glare.

To protect the privacy of residents and prevent the creation of nuisances caused by unnecessary intensity and glare of outdoor lighting onto neighboring properties, public streets, and into the night sky;

To promote lighting practices and systems that will enhance the safety and enjoyment of pedestrians, bicyclists, motorists, and neighboring properties, and which conserve energy without decreasing safety;

To encourage the selection of lighting fixtures to be complementary and sensitive to historic structures; and

To prohibit outdoor lighting installations which are of excessive intensity and/or are deficient of photometric control such that the resulting glare and light trespass create a nuisance to pedestrians, cyclists, or motorists on neighboring properties and roadways.

(Ordinance 1631, August 14, 2000, Section I.)

**Section 2702. Applicability.** The requirements of this chapter apply to the design, installation, and continued operation of outdoor luminaires and lighting systems as specified herein that are newly designed, constructed, erected, installed, or placed into operation after the effective date of this ordinance. (Ordinance 1631, August 14, 2000, Section II.)

**Section 2703. Nonconforming Luminaires and Lighting Systems.** Outdoor luminaires and lighting systems existing prior to the effective date of this ordinance are protected and may continue as nonconforming structures or uses. When nonconforming luminaires are replaced with new luminaires or when nonconforming lighting systems are expanded or extended, such replacement, expansion or extension shall be done in accordance with all applicable provisions of this Chapter. Nonconforming luminaires and lighting systems may be maintained and repaired. Maintenance and repair means:

- a. Replacement of burned out or inoperative lamps;

- b. Replacement or repair of damaged or inoperative luminaire components like ballasts, ignitors, lenses, reflectors, refractors, sockets, or photocell controls.

(Ordinance 1631, August 14, 2000, Section III.)

**Section 2704. Zoning Permits.** Zoning permits are required prior to the installation of new outdoor luminaires or lighting systems only when prescribed under Section 2706 of this Chapter Part. When a zoning permit is not required prior to the installation of an outdoor luminaire or lighting system, all other applicable provisions of this ordinance remain in force. (Ordinance 1631, August 14, 2000, Section IV.)

**Section 2705. General Requirements.**

- a. The regulations of this ordinance apply only to those lighting installations as specified in Section 2706.
- b. Federal- and state-required security lighting and air travel safety lighting are exempted from the provisions of this ordinance.
- c. Temporary holiday and special event lighting is exempted from the provisions of this ordinance. However, non-cutoff luminaires shall not exceed 2,300 lumens and shall be situated to prevent glare and light trespass. All flood or spotlights shall be directed away from adjacent properties and roadways.
- d. Luminaires in place prior to the adoption of this ordinance that pose a safety hazard to pedestrian or vehicular traffic shall be shielded or redirected to eliminate the hazard.

(Ordinance 1631, August 14, 2000, Section V.)

**Section 2706. Specific Situational Requirements.** These regulations apply to the following specific outdoor lighting installations:

**a. Outdoor Area Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part apply to outdoor lighting installations used for nighttime area illumination of car sale areas, convenience store parking areas, gasoline service station parking areas, and pump islands not under canopy and to parking areas, driveways, yards, and other similar areas illuminated on any property including parks except for those installations made at 1- and 2-family dwellings.

(2) Cutoff Luminaires Required. All luminaires used in outdoor area lighting installations shall be a cutoff luminaire type that complies with the following standards:

(a) The candlepower distribution classification of the luminaire as a cutoff type shall be in accordance with the ANSI/IES lighting definitions and the IES Lighting Handbook. The manufacturer of the luminaire shall provide certification of the cutoff classification based on photometric testing performed in accordance with the IES Lighting Handbook and the applicable testing procedures referenced therein. The requirement for the use of cutoff luminaire types shall include, but not be limited to, the following outdoor area lighting configurations: (1) Pole-mounted luminaires, (2) luminaires mounted on the exterior of buildings and structures, (3) luminaires mounted on or within exterior canopies of buildings or in free standing canopies, and (4) pedestal or bollard-mounted luminaires.

(b) Cutoff luminaires shall be mounted and maintained plumb and level in accordance with the intended application of their design. For the purposes of this requirement, the photometric nadir of the luminaire (zero degree vertical angle of the candlepower distribution) shall be oriented plumb, and the vertical angle of 90 degrees above nadir (horizontal) shall be oriented level. Cutoff luminaires shall not be installed or subsequently placed in a canted or titled position that permits candlepower distribution above the horizontal.

(c) Exception for Alternative Technology. Luminaires that do not meet the definition for cutoff luminaire, yet employ alternative technology that causes the photometric performance to approach that of cutoff luminaires, may be approved on a case-by-case basis. Such luminaires include, but are not limited to, period-style luminaires with refractive globes and internal cutoff reflectors.

(d) Exception for Period-Style Luminaires in all Outdoor Area Lighting Applications, Except for Parks. An area that reflects a particular historical period or architectural style may use non-cutoff luminaire installations provided that all of the following are met: (1) The exterior appearance of the fixtures and posts shall reflect the historic period or architectural style of the area; (2) the maximum initial illuminance level of any non-cutoff luminaire shall not exceed 2,300 lumens; and (3) no luminaire shall be mounted higher than 15 feet above grade.

(e) Exception for Period Style Luminaires in Parks. Non-cutoff luminaire installations are permitted in park applications provided all of the following are met: (1) Style of lighting fixtures and posts shall be vintage or architectural or historic; (2) the maximum initial illuminance level of any non-cutoff luminaire shall not exceed 9500 lumens; and (3) no luminaire shall be mounted higher than 15 feet above grade.

(3) Maximum Illuminance Levels at Property Lines. The maximum maintained illuminance levels permitted at the property line(s) during the nighttime produced by the sum of all outdoor lighting installations on said property shall be measured at grade in Horizontal Footcandles and in accordance with the requirements in Table 1 for the zoning district in which the property is located.

(4) Luminaire Height. The maximum height of luminaires in outdoor area installations shall be in accordance with the requirements in Table 1 for the zoning district in which the property is located. [Table 1 is at the end of this Chapter Part.]

(5) Lighting Plan and Zoning Permit Required. An approved lighting plan and zoning permit are required prior to the installation of any outdoor area lighting application as described in this Chapter Part. All lighting plans shall be prepared and submitted to the municipality in accordance with the provisions of Section 2709 of this Chapter. The zoning permit shall not be issued until the lighting plan is approved by the municipality.

(Ordinance 1631, August 14, 2000, Section VI.a.)

**b. Outdoor Canopy Lighting Requirements:**

(1) Applicability. The requirements specified in this Chapter Part applies to outdoor lighting installations that illuminate the area under outdoor canopies except for those installations made at 1- and 2-family dwellings. Lighting levels under canopies should be adequate to facilitate the activities taking place, but lighting itself should not be used to attract attention to a business. Signs as allowed under the Sign Ordinance shall be used for that purpose. (Note: Illuminated transparent and translucent surfaces of back-lit canopies constitute signs and the area thereon is regulated by the Sign Ordinance, Chapter XV, Section 111).

(2) Canopies. Outdoor canopies include, but are not limited to, the following applications: (1) all canopies associated with service stations and convenience stores, (2) canopies over store and office fronts, (3) all marquees and projecting overhangs, (4) exterior canopies over driveways and building entrances, and (5) pavilions and gazebos.

(3) Cutoff Luminaires Required. All luminaires used to illuminate canopies and the area below shall be cutoff luminaires that comply with Section 2706.a(2) of this Chapter.

(4) Maintained Average Illuminance. The maintained average illuminance on grade level surfaces below canopies shall not exceed 30 footcandles for applications in non-residential zoning districts and shall not exceed 10 footcandles in residential zoning districts.

(5) Maximum Illuminance Level at Property Lines. The maximum maintained illuminance levels permitted at the property line(s) during the nighttime produced by the sum of all outdoor lighting installations on said property shall be measured at grade in Horizontal Footcandles according to Table 1 for the zoning district in which the property is located. [Table 1 is at the end of this Chapter Part.] Exception: The maximum illuminance level measured at the property line is not applicable to canopies built over the property line pursuant to the Section 205 of Chapter XV. However, all other requirements pertaining to cutoff luminaires as specified in this Chapter Part apply.

(6) Lighting Plan and Zoning Permit Required. An approved lighting plan and zoning permit are required prior to the installation of any outdoor area lighting application as described in this Chapter Part. All lighting plans shall be prepared and submitted to the municipality in accordance with the provisions of Section 2709 of this Chapter. The zoning permit shall not be issued until the lighting plan is approved by the municipality.

(Ordinance 1631, August 14, 2000, Section VI.b.)

**c. Exterior Display and Sales Area Lighting Requirements.**

(1) Applicability. The requirements of this Chapter Part apply to commercial and industrial uses where exterior display or sales areas are located on portions of the property beyond parking areas, canopies, or pump islands.

(2) Maintained Average Illuminance. The maintained average illumination on grade level surfaces where exterior display and sales areas are located on portions of the property beyond parking areas, canopies, or pump islands shall not exceed 5.0 footcandles.

(3) Cutoff Luminaires Required. All luminaires used to illuminate exterior display and sales areas shall be cut-off luminaires that comply with Section 2706.a(2) of this Chapter. Luminaire height and the maximum permitted illuminance at the property line shall not exceed that permitted in the zoning district as specified in Table 1. [Table 1 is at the end of this Chapter Part.]

(4) Lighting Plan and Zoning Permit Required. An approved lighting plan and zoning permit are required prior to the installation of any outdoor area lighting application as described in this Chapter Part. All lighting plans shall be prepared and submitted to the municipality in accordance with the provisions of Section 2709 of this Chapter. The zoning permit shall not be issued until the lighting plan is approved by the municipality.

(Ordinance 1631, August 14, 2000, Section VI.c.)

**d. Outdoor Facility and Event Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part apply to all outdoor lighting installations, including those at 1- and 2-family dwellings, used for nighttime area illumination of sports, cultural, and recreational facilities or events. Outdoor facility lighting includes, but is not limited to the following installations: ball fields, ballparks, stadiums, tennis courts, soccer fields, golf courses, driving ranges, recreational fields, amphitheaters, etc.

(2) Cutoff Luminaires. Only cutoff luminaires shall be used to illuminate areas beyond the play field, stage, or other surface upon which the event actually occurs.

(3) Non-Cutoff Luminaires. Outdoor facilities for sports, cultural, and recreational events have unique lighting needs that vary depending on the nature of the activity and size of the facility. Because of their uniqueness, the actual playing or performance areas cannot be illuminated appropriately using cutoff luminaires. Accordingly, non-cutoff luminaires such as floodlights and other applications, are permitted to meet the lighting design objectives for outdoor facility and event lighting provided such luminaires are equipped with glare shields, visors, barn doors, or other shielding to meet the following criteria:

(a) The candlepower distribution from all lighting installations shall be cut off at and above the horizontal level.

(b) To the extent practicable, the candlepower distribution from all lighting installations shall be farther cut off at angles below the horizontal level to restrict illumination to within the functional area being illuminated for sports, cultural, or recreational purposes.

(4) Lights Out. The primary light source (e.g., spotlights or floodlights) for all activities shall be turned off within 60 minutes following the end of the event.

(5) Maximum Illuminance Levels at Property Lines. The maximum illumination levels permitted at the property line(s) during nighttime produced by the sum of all outdoor lighting installations on said property shall be measured at grade in Horizontal Footcandles and shall be in accordance with the requirements in Table I for the zoning district in which the property is located, except for Memorial Field, located in the RO-A zoning district, which shall be permitted at a maximum average maintained luminance of 2.5 footcandles measured at a distance of 50 feet beyond the property line. [Table 1 is at the end of this Chapter Part.]

(6) Luminaire Height. In non-residential zones, the maximum height of luminaires for outdoor facility lighting and event lighting shall not exceed 70 feet. In residential zones, the maximum height of luminaires shall not exceed the requirements in Table 1. Exception: The maximum height of luminaries for outdoor facility and event lighting at Memorial Field, located in the RO-A zoning district, shall not exceed 70 feet.

(7) Zoning Permit and Lighting Plan Required. An approved zoning permit and lighting plan are required prior to the installation of any outdoor facility or event lighting application as described in this Chapter Part including all 1- and 2-family applications. All lighting plans shall be prepared and submitted to the municipality in accordance with the provisions of Section 2709. The zoning permit shall not be issued until the lighting plan is approved by the municipality.

(Ordinance 1631, August 14, 2000, Section VI.d, as amended by Ordinance 1781, May 24, 2004, Sections 1 and 2., and by Ordinance 1823, November 9, 2005, Section 1.)

**e. Security Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part apply to all outdoor security lighting installations except for those installations at 1- and 2-family dwellings.

(2) Use of Non-cutoff Luminaires. Security lighting presents unique lighting situations that often require the use of non-cutoff luminaires. Non-cutoff luminaires shall be permitted provided that the luminaires used meet the following requirements:

(a) All luminaires shall be shielded and aimed so that the candlepower distribution is directed toward the functional area being secured or protected. Luminaires shall not be directed toward property lines if such direction causes light trespass.

(b) Security lighting shall not be used to illuminate vertical surfaces (e.g., building facades, walls, doors, and windows) that are higher than 8 feet above grade.

(c) Security lighting shall not be mounted on poles that are located farther than 10 feet from the perimeter of the designated secured area.

(d) Security lighting used to illuminate a perimeter such as a fence line shall have motion sensors that will keep lights off until activated by motion.

(Ordinance 1631, August 14, 2000, Section VI.e.)

**f. Building Facade and Landscape Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part applies to all outdoor lighting installations employed for nighttime illumination of building facades, structures, and exterior landscaping except for those installations at 1- and 2-family dwellings.

(2) Non-Residential Zones. In non-residential zoning districts the exterior surfaces of all buildings and structures may be illuminated as follows:

(a) The luminaire height shall not exceed the requirements in Table 1 for the zoning district in which the installation is located. [Table 1 is at the end of this Chapter Part.]

(b) Cutoff luminaires may be mounted on walls or under roof overhangs to illuminate facades. The maximum initial illuminance level produced by any cutoff luminaire shall not exceed 4,000 lumens.

(c) Spotlights or floodlights may be used to illuminate building facades provided they are shielded and aimed so that the candlepower distribution is directed toward the functional area being illuminated on the facade. They shall not be directed toward property lines when such direction causes light trespass. And, the maximum initial illuminance level produced by any spotlight or floodlight shall not exceed 4,000 lumens.

(d) Non-cutoff luminaires using globes or architectural-styled fixtures may be installed on walls or otherwise situated to illuminate first level facades provided that the maximum initial illuminance level produced by such non-cutoff luminaire shall not exceed 2,300 lumens and the mounting height does not exceed 10 feet above grade.

(e) Neon lighting used to decorate or highlight a building shall be permitted to the following extent: (1) the cumulative length of neon light tubing that shall be permitted on the exterior of the building shall be limited to the amount determined by multiplying the lineal length of all sides of the building facing a street or alley by 2 and in no case shall the cumulative length of such neon lighting exceed 200 lineal feet of light tubing per building. Irregular building sides with indentations, etc., shall be measured by lineal footage as the side faces the street or alley. Front shall mean any side facing a street or alley. All fronts shall be summed together. (2) neon lighting shall not be located higher than 25 feet above grade. (3) the maximum diameter of neon tubing shall not exceed 1 inch. (4) neon used in signs shall be regulated pursuant to Chapter XV of this Codification.

(3) Residential Zones. In all residential zoning districts, the exterior surfaces of all building and structures are prohibited from being illuminated except for buildings or structures with symbolic or historical significance like churches, schools, or public buildings. Illumination of these exempted structures shall be in accordance with the requirements in Section 2706.f(2) of this Chapter, as stated above.

(4) Landscape Lighting. In all zoning districts non-cutoff luminaires such as floodlights are permitted to be used to illuminate landscaping. All non-cutoff luminaires shall be shielded and aimed so that the candlepower distribution is directed toward the functional landscape area being illuminated. Luminaires shall not be directed toward property lines if such direction causes light trespass. The maximum initial illuminance level produced by any luminaire shall not exceed 4,000 lumens.

(Ordinance 1631, August 14, 2000, Section VI.f.)

**g. Outdoor Sign Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part apply to outdoor lighting installations employed for nighttime illumination of signs. Chapter XV of this Codification provides restrictions on the location and types of signs that are permitted to be illuminated.

(2) Non-Cutoff Luminaire Requirements. When illumination is permitted pursuant to the Sign Ordinance and non-cutoff luminaires such as floodlights are used, all non-cutoff luminaires shall be shielded and aimed so that the candlepower distribution is directed toward the sign being illuminated. Luminaires shall not be directed toward property lines if such direction causes light trespass. The maximum initial illuminance level produced by any luminaire shall not exceed 4,000 lumens.

(3) Backlit Awnings, Canopies, and Marquees. The maximum illuminance level permitted on the outside surface of a backlit awning, canopy, or marquee shall not exceed 10 footcandles, as measured with a light meter 1 inch or less off of the outside surface of the awning, canopy, or marquee. Transparent materials are not permitted.

Backlit awnings, canopies, and marquees and the internal illumination of signs are not permitted in the UV zoning district.

(Ordinance 1631, August 14, 2000, Section VI.g, as amended by Ordinance 1682, October 15, 2001, Section 1, and by Ordinance 1709, October 15, 2002, Section 11.)

#### **h. Residential Outdoor Lighting Requirements.**

(1) Applicability. The requirements specified in this Chapter Part applies to outdoor lighting installations at 1- and 2-family dwellings. (Note: Also, see Section 2706.d of this Chapter for specific requirements pertaining to illumination of tennis courts or other recreational facilities at 1- and 2-family homes.)

(2) Floodlight and Spotlight Requirements. All floodlights and spotlights used for any purpose whatsoever shall be aimed and equipped with glare shields, visors, barn doors, or shielding to prevent glare and light trespass across property lines.

(3) Other Non-Cutoff Luminaires. Unshielded luminaires other than floodlights and spotlights such as lamppost lights, porch lights, garage lights, driveway lights, etc. are permitted provided that the maximum initial illuminance level shall not exceed 1,750 lumens. All installations that exceed 1,750 lumens (approximate brightness of a 100-watt incandescent light bulb) shall be equipped with glare shields, visors, barn doors, or other shielding to prevent glare and light trespass across property lines.

(e) Exception for Period Style Luminaires in Parks. Non-cutoff luminaire installations are permitted in park applications provided all of the following are met: (1) Style of lighting fixtures and posts shall be vintage or architectural or historic; (2) the maximum initial illuminance level of any non-cutoff luminaire shall not exceed 9,500 lumens; and (3) no luminaire shall be mounted higher than 15 feet above grade.

(Ordinance 1631, August 14, 2000, Section VI.h.)

**Section 2707. Measurement Instrument.** The light meter used for verification of illuminance levels shall be certified by the manufacturer as meeting N.I.S.T. (National Institute of Standards and Technology) standards for light meters. The accuracy of the light meter shall be certified yearly by an approved facility for testing light meters. (Ordinance 1631, August 14, 2000, Section VII.)

**Section 2708. Administration and Enforcement.** The provisions of this ordinance, to be known as the Lighting Ordinance, shall be administered and enforced as part of the Zoning Ordinance. (Ordinance 1631, August 14, 2000, Section VIII.)

**Section 2709. Lighting Plan Requirements.** Whenever a Lighting Plan is required pursuant to Section 2706 of this Chapter, the plan shall provide a site plan and other information as listed in this Chapter Part. The site plan for a lighting installation may be included as a part of the site plan submitted for land development when a lighting installation is proposed incidental to land development. The following drawings and information shall be provided as part of the lighting plan:

a. **Site Plan.** drawn to scale with the following information identified on the plan:

- (1) Zoning district and use of the property.
- (2) Property boundary lines.
- (3) Zoning districts and uses of adjoining properties.
- (4) Public roadways and rights-of-way on or adjoining the property.
- (5) Principal buildings and structures on the property.
- (6) Areas or elements to be illuminated on the property.
- (7) Proposed layout of the outdoor lighting installation on the property including, but not limited to, all pole-mounted luminaires, bollard or pedestal-mounted luminaires, canopy-mounted luminaires, and luminaires mounted on the exterior of buildings and structures. Each luminaire must be identified by a type designation.
- (8) Results of the lighting design superimposed on the site plan. This may be in the form of isofootcandle diagrams or isoflux diagrams, drawn to scale with the value contours labeled; or indicated with a point-by-point value. In either case, the information presented shall be of sufficient quantity and detail to determine compliance with the requirements of this ordinance.
- (9) The lighting design information required in “b” below.

(Ordinance 1631, August 14, 2000, Section IX.a.)

b. **Required Lighting Design Information.**

- (1) The total light loss factor(s) used in the calculations to determine maintained illuminance values.

- (2) The maximum maintained illuminance value at grade within the functional area being illuminated (in horizontal footcandles or horizontal lux).
- (3) The average maintained illuminance value at grade of the functional area being illuminated (in horizontal footcandles or horizontal lux).
- (4) The maximum maintained illuminance values at grade along all property lines (in horizontal footcandles or horizontal lux).

(Ordinance 1631, August 14, 2000, Section IX.b.)

**c. Required Luminaire Information.**

(1) A luminaire (light fixture) schedule of all luminaires used for the outdoor lighting installation. Each luminaire type shall be indicated by a type designation that correlates with those indicated on the site plan. The luminaire schedule may be indicated on the site plan or submitted separately. The luminaire schedule shall include the following information for each luminaire type: description of luminaire, mounting configuration and height, IES candlepower distribution classification (cutoff, semi-cutoff, or non-cutoff), IES lateral light distribution if applicable (Type I, Type II, Type III, Type IV, or Type V), lamp type, lamp wattage, and lamp initial lumens.

(2) Manufacturer's product data sheets (catalog cuts) for each luminaire type.

(3) Manufacturer's photometric report (certified to IES standards) for each luminaire type. The photometric report shall clearly indicate the cutoff classification of the luminaire.

(Ordinance 1631, August 14, 2000, Section IX.c.)

**Section 2710. Accuracy of Design, Field Illuminance, and Lamp Baring.** The lighting design information and luminaire information submitted for approval shall correlate with the actual lighting equipment installed in the field. Installation of lighting equipment in the field that is not the same as the approved equipment in the design submittal is prohibited, unless otherwise approved by the Zoning Official. If for any reason the approved design does not produce actual field illuminance levels that are within the ranges permitted by this ordinance, the applicant or property owner, as the case may be, shall be required to modify the lighting installation so as to comply with permitted illuminance levels. Failure to modify shall constitute a zoning violation.

In addition, upon oral or written request of the zoning officer, the property owner or his agent shall be required to show the zoning official lamps installed in luminaires by removing same if necessary for the purpose of ascertaining compliance with lumen levels as provided for in this ordinance. Failure to show and remove lamps within a reasonable time upon request shall constitute a zoning violation.

(Ordinance 1631, August 14, 2000, Section X.)

**Section 2711. Field Measurement of Initial Illuminance Level.** For purposes of enforcement, initial illuminance levels produced by outdoor lighting installations shall be the maintained illuminance levels allowed by the ordinance for specific applications divided by the light loss factor (LLF). As measured in the field, a 10 percent deviation from the illuminance levels allowed by the ordinance is permissible. (Ordinance 1631, August 14, 2000, Section XI.)

**Section 2712. Definitions:**

Candela: The SI unit of luminous intensity. One candela is one lumen per steradian (lm/sr).

Candlepower: Luminous intensity expressed in candelas.

Cutoff Angle: The vertical angle measured above nadir at which the light source from a luminaire is no longer visible.

Cutoff Luminaire: A luminaire light distribution is designed as cutoff when the candlepower per 1,000 lamp lumens does not numerically exceed 25 (2.5%) at an angle of 90° above nadir (horizontal) and 100 (10%) at a vertical angle of 80° above nadir.

Fixture: The assembly that holds the lamp along with any globe, shade, or other covering surrounding the lamp.

Floodlight or Spotlight: Any lamp or luminaire that by its design concentrates light output into a directional beam.

Footcandle (FC): A unit of illuminance. One footcandle is one lumen per square foot (lm/ft<sup>2</sup>).

Glare: A subjective term used to describe any illumination from a light source that strikes the viewer's eye causing annoyance, discomfort, or loss in visual performance or visibility.

Height of Luminaire: It is measured as the vertical distance between the top of the luminaire and the ground directly below the luminaire.

Illuminance: The areal density of the luminous flux incident at a point on a surface. It is measured in footcandles.

Illumination: A non-technical term designating the state of emitting visible light or having visible light reflected off an object.

Lamp: The component of a luminaire that produces the actual light.

Light: Radiant energy that is capable of exciting the retina and producing a visual sensation.

Light Loss Factor (LLF): The ratio of illuminance for a given area to the value that would occur if lamps operated at their initial rated lumen output and if no system variation or depreciation had occurred.

Light Trespass. A subjective perception of undesirable illumination including the following examples:

- The classic light shining in a window
- Unwanted light on an adjacent property
- Excessive brightness (glare) in the normal field of vision

Lighting System: A functionally related group of interacting luminaires used to illuminate a specific area.

Lumen: SI unit of luminous flux. Photometrically, it is the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

Luminaire: A complete lighting unit consisting of a light source(s) together with all parts designed to control the light distribution, and any other mechanical, electrical, or decorative parts.

Luminance: The emitted or reflected light from a surface the amount of which causes perceived brightness. The unit of luminance is the candela per square meter (cd/m<sup>2</sup>)

Luminous Flux. Radiant flux (radiant power); the time rate of flow of radiant energy evaluated in terms of a standardized visual response.

Luminous Intensity. The luminous flux per unit solid angle in the direction in question. Can be expressed in candelas or lumens per steradian (lm/sr).

Maintained Average Illumination. The average of all points on the surface of the illuminated area.

Motion Sensor Device: A device that switches lighting on and off in response to the motion.

Park: A tract of land reserved for public use as playgrounds, trails, paths, natural areas, or recreational areas and other public areas.

Security Lighting: Lighting designed for and expressly used to deter criminal activity by illuminating a specific area at nighttime.

(Ordinance 1631, August 14, 2000, Section XII.)

**Table 1  
Outdoor Area Lighting Standards**

Zoning District	Maximum Maintained Illuminance at the Property Line	Maximum Permitted Height of Luminaire
R-1 and R-2	0.2 FC	15 feet
R-3, R-3A, R-3H, R-O, RO-A and R-4, UV	0.2 FC	20 feet
R-3B	0.2 FC	25 feet
PK and PA	0.5 FC	25 feet
CP-1, CP-2, MP, and P-O	0.5 FC (0.2 when adjoining residential uses)	25 feet (20 feet within 100 feet of residential district or building)
C and UPD	0.5 FC (0.2 when adjoining residential uses)	25 feet (20 feet within 100 feet of residential district or building)

(Table amended by Ordinance 1823, November 9, 2005, Section 2 and 3.)

**Addendum**

**Typical Lumens per Watt by Lamp Type**

20 lumens	Incandescent
54 lumen	Mercury Vapor
80 lumens	Metal Halide (white light)
125 lumens	High-pressure Sodium (HPS)
183 lumens	Low-pressure Sodium (LPS)

Source: *Light Pollution: Problems & Solutions*, Astronomical Society of the Pacific