

ARTICLE 23 OUTDOOR LIGHTING

Sec. 23.1. Findings.

Sufficient lighting increases security and decreases opportunities for criminal activity. The overall perception of safety is greatly affected by lighting. Both sufficient lighting levels and proper glare control are critical to preserving visibility and helping pedestrians and drivers see potentially dangerous situations. Insufficient or uneven lighting can cast shadows where an assailant might hide. Security lighting does not prevent or stop crime, but it can help owners protect people and property. Too much light can also be a problem, creating an unattractive image or a nuisance to residents and unnecessarily light the night-time sky. Light with no useful purpose is considered light pollution, and certain types of light fixtures cause energy waste.

Sec. 23.2. Purpose and Intent.

This Article is intended to reduce the problems created by improperly designed and installed outdoor lighting. The regulations are intended to eliminate problems of glare and minimize light trespass, with regulations that avoid unnecessary direct light from shining onto abutting properties or streets.

Sec. 23.3. Definitions.

For purposes of this Article, the following terms are defined:

Candlepower: The unit of intensity of a light source in a specific direction. One candela directed perpendicularly to a surface one foot away generates one foot-candle of light.

Cobrahead light: A standard roadway light, usually mounted to a mast arm and suspended over a roadway at a height of 25 to 40 feet, and usually mounted on aluminum poles, and which do not always control glare.

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

Fixture: The assembly that houses the lamp or lamps and can include all or some of the following parts: a housing, a mounting bracket or pole socket, a lamp holder, a ballast, a reflector or mirror, and/or a refractor or lens.

Footcandle: A unit of illuminance on a surface that is everywhere one foot from a uniform point source of light of one candle and equal to one lumen or candela per square foot (1 fc = 1 lumen/sq. ft.) or (candelas/distance sq.). One footcandle (FC) is the equivalent of 10.76 Lux (1 Lux = 0.0929 FC).

Full cutoff luminaire: Outdoor light fixtures shielded or constructed so that no direct light rays are emitted by the installed fixture at angles above the horizontal plane.

Glare: Light emitting from a luminaire with an intensity great enough to reduce a viewer's ability to see, and in extreme cases causing momentary blindness, or that causes annoyance or discomfort.

High-mast lights: Outdoor lighting with average heights of 60 to 100 feet, used for highway interchanges and sports fields.

Illuminance: The area density of the luminous flux incident at a point on the surface. It is a measure of light incident on a surface, expressed in lux or foot-candles.

Isofootcandle plan: A site plan of a proposed development showing proposed outdoor illuminance with a series of isofootcandle lines that join points on a surface where the illuminance is the same.

Light trespass: The shining of light produced by a luminaire beyond the boundaries of the property on which it is located.

Luminaire: A complete lighting system, including a lamp or lamps and a fixture. This term shall be interpreted broadly as applying to all outdoor electrically powered illuminating devices, outdoor lighting or reflective surfaces, lamps and similar devices, permanently installed or portable, used for illumination.

Outdoor lighting: The night-time illumination of an outside area or object by any man-made device located outdoors that produces light by any means; electrically powered illuminating devices, outdoor lighting or reflective surfaces, lamps and similar devices, permanently installed or portable, used for illumination or advertisement. Outdoor lighting includes but shall not be limited to outdoor lighting fixtures for the following, except as may be otherwise specifically exempted from the requirements of this Article: Safety lighting: Exterior lighting that involves ensuring proper levels of illumination to provide safe working conditions, safe passage, and the identification of outdoor hazards.

Security lighting. Exterior lighting installed solely to enhance the security of people and property.

Sec. 23.4. Exemptions.

The following shall be exempt from the provisions of this Article:

- (a) All temporary emergency lighting needed by police or fire departments or other emergency services.
- (b) All hazard warning luminaires required by federal regulatory agencies.
- (c) All vehicular luminaires.
- (d) Safety lighting, as defined in this Article.
- (e) Security lighting, as defined in this Article, including lighting activated by motion sensor devices.
- (f) All outdoor light fixtures producing light directly by the combustion of natural gas or other fossil fuels.
- (g) All outdoor light fixtures associated with airports, railroads, and public roads.
- (h) Outdoor lighting fixtures temporarily installed for short events such as circuses, fairs, carnivals, or other civic, religious or educational temporary uses, and which is discontinued immediately upon completion of the event or activity.

Sec. 23.5. Cut-off Fixtures.

All luminaries not exempted from this Article hereafter installed for outdoor lighting shall be full cutoff luminaires, as defined by this Article, or another luminaire which does not emit any direct light above a horizontal plane through the lowest direct-light-emitting part of the luminaire. Cutoff fixtures are not required for incandescent lighting with an intensity of 160 watts or less.

Sec. 23.6. Glare.

Any luminaire that is aimed, directed, focused, or produces output 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, shall be redirected or its light output controlled as necessary to eliminate such conditions.

Sec. 23.7. Intensity Specifications.

Illuminance levels for outdoor lighting fixtures shall comply with the standards in Table 23.1, measured at three feet above the ground or finished grade.

Table 23.1

Outdoor Lighting Intensity Regulations

At Property Lines Including Rights-of-Ways	Minimum Footcandles		Maximum Footcandles
At property line abutting a residential use	None		0.5
At property line abutting an office or institutional use	None		1.0
At property line abutting a commercial or light industrial use	None		1.5
Off-Street Parking Lots	Minimum Footcandles	Average Footcandles	Maximum Footcandles
Residential areas	0.5	2	4
Office-professional areas	1.0	3	6
Commercial areas	2.0	6	12
Light industrial areas	1.0	4	8

Sec. 23.8. Lighting Plan Required.

A lighting plan, approved by the Zoning Administrator, shall be required for all non-single family residential developments of two (2) acres or more in size, and for community recreation, as defined, when lighting is proposed. Small sites with a limited number of fixtures are exempted from preparing and submitting a professional lighting plan, and it is the intent of this Section that the Zoning Administrator will exercise discretion to provide such relief where appropriate with regard to this lighting plan requirement. Where it has jurisdiction via a certificate of appropriateness, the Historic Preservation Commission’s approval of the lighting plan shall be required.

Sec. 23.9. Specifications for Lighting Plans.

When required, lighting plans shall meet the specifications of this Section:

- (a) Location. The location on the premises, of illuminating devices, fixtures, lamps, supports, reflectors, and other lighting devices.
- (b) Type. Description or graphic depiction of the type of illuminating devices, fixtures, lamps, supports, reflectors, and other lighting devices; such description may include, but is not limited to, catalog cuts by manufacturers and drawings (including cross-sections where appropriate or required for compliance

review). Light fixtures may be broadly categorized into four main types: low-level landscape lights; intermediate-height pedestrian lights; parking lot and roadway lights; and high-mast lights.

(c) Emissions or Intensity Measures. Areas on the premises of night illumination and the amount of light at various places, measured in foot-candles. When required, the lighting plan shall consist of either isofootcandles (connecting points of equal light illumination levels, similar to a topographic contour) or a photometric grid with individual spot readings.

(d) Certification. A statement by the designing engineer, indicating that no direct light that exceeds the requirements or is otherwise inconsistent with this Article.

(e) Modification of Lighting Plan Requirements. The Zoning Administrator may modify the strict requirements for lighting plans when in his opinion an isofootcandle plan or photometric grid or other requirement of this Section is not necessary to secure and uphold the purposes of this Article.

Sec. 23.10. Description of Lamp Types.

This Section provides descriptions of types of lamps that may be useful in preparing, reviewing and approving proposed outdoor lighting plans:

(a) Fluorescent lamps: Most fluorescent lamps are long and linear, making optical control difficult; Disadvantages include a tendency to produce glare. They have good color rendition, whitish appearance and superior life. Light output may be severely diminished by very cold weather. Fluorescent lamps are an excellent choice for low-level pedestrian lighting.

(b) Incandescent lamps: Incandescent lamps have superior color rendition and a warm, white appearance. Disadvantages include short lamp life and high energy cost. An advantage is they are inexpensive. Not recommended for intermediate-level pedestrian lights.

(c) Mercury vapor lamps: These lamps have excellent life but are not very energy efficient. They are strong in the blue-green end of the color spectrum but other than for foliage lighting they are not acceptable for color rendering properties. Not recommended for low-level landscape or intermediate-level pedestrian lights. May be appropriate for parking lot and roadway lights.

(d) Metal halide lamps: These lamps offer superior optical control and color rendition and a white light source. May be appropriate for parking lot and roadway lights; appropriate for high-mast lights.

(e) High-pressure sodium lamps. Efficiency drops when peripheral detection is important. They are low maintenance. The orange-yellow appearance and mediocre color rendition are disadvantages. Not recommended for low-level landscape lights or intermediate height pedestrian lights. Appropriate and preferred for parking lot and roadway lights and high-mast lights.

(f) Low-pressure sodium lamps. These lamps have poor optical control but a superior life. Color rendering properties are very poor.

Sec. 23.11. Specific Lighting Practices Prohibited.

The following outdoor lighting practices are prohibited:

(a) Glass tubes filled with neon, argon, or other gas and used for outdoor lighting, or window or door outlining of a building.

(b) The internal illumination of canopies, constructed of transparent or translucent plastic and attached to a principal building.

(c) Metal halide, and/or quartz lighting, except when the designing engineer deems that color rendering is critical, as may be specifically approved by the Zoning Administrator as a part of an approved lighting plan for development within a commercial or industrial zoning district.

(d) The outdoor use of laser source light, search lights or any similar high intensity light, when used for purposes of advertising, attraction, or entertainment.

(e) Lighting underneath the ceiling of a freestanding canopy or accessory structure (e.g., gasoline pump island) that are not recessed into the ceiling of the canopy.

Sec. 23.12. Compliance with Codes.

In addition to compliance with this Article, all outdoor electrically powered illuminating devices shall be installed in conformance with applicable state and/or local building code, electrical code, sign codes. Lighting activities that require a permit under such code or codes shall not take place until said permit, if required, is applied for and issued.

Sec. 23.13. Reference to Professional Standards.

In administering the requirements of this Article, the Zoning Administrator may consult and may rely on professional standards for outdoor lighting, including but not limited to those that are or may in the future be published by the Illuminating Engineering Society of North America, or similar reputable professional association.