

ARTICLE XV

PART II. OUTDOOR LIGHTING

Section 15-242 Purpose and Intent (AMENDED 4/20/10)

(a) The Board finds that outdoor lighting serves a number of beneficial purposes. For work or recreation, it enables people to see essential detail in order that they may undertake their activities at night. It facilitates the safety and security of persons and property, for example through lighting on roads and pathways and the entrances to buildings. It may be used to emphasize features of architectural or historical significance, and to light parks and gardens. It is used for advertising or display to promote products or services, or to call attention to commercial premises by means of area lighting or signs. However, excessive or inappropriately directed lighting may create unwanted glare, interfere with observation of the nighttime sky, waste valuable energy supply, and otherwise interfere with the use or enjoyment of adjoining or nearby public or private property.

(b) It is the intent of this part to preserve, protect, and enhance the lawful nighttime use and enjoyment of any and all property through the use of appropriate lighting practices and systems by providing for the installation of individual fixtures and lighting systems that are designed and installed to maintain safety, security and productivity, and to curtail the degradation of the nighttime visual environment.

Section 15-242.1 Definitions

Unless otherwise specifically provided, or unless clearly required by the context, the words and phrases defined in this section shall have the meaning indicated when used in this part.

- (1) Direct Light: Light emitted directly from the lamp, off of the reflector diffuser, or through the refractor or diffuser lens, of a luminaire.
- (2) 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.
- (3) Floodlight: A form of lighting designated to direct its output more or less in a specific direction.
- (4) Footcandle: (fc) The total amount of light or illuminance cast on a surface and equivalent to the light produced by a source of one (1) candle measured at a distance of one (1) foot

- (5) Full cut-off luminaires: A luminaire designed and installed where no light is emitted at or above a horizontal plane running through the lowest point on the luminaire.
- (6) Fully Shielded: Outdoor light fixtures with opaque top and sides, capable of only emitting light in the lower photometric hemisphere as installed.
- (7) Glare: Light emitting from a luminaire with an intensity great enough to reduce a viewer's ability to see, or cause annoyance and discomfort, and, in extreme cases, causing momentary blindness.
- (8) IESNA: Illuminating Engineering Society of North America, a non-profit society of professional lighting specialists that has developed a series of recommended standards for a variety of lighting applications.
- (9) Lamp: The component of the luminaire that produces the light and commonly referred to as the "bulb."
- (10) Light Trespass: The shining of light produced by a luminaire beyond the boundaries of the property on which it is located.
- (11) Lumen: The unit used to quantify the amount of light energy produced by a lamp at the lamp. Lumen output of most lamps is listed on the packaging. For example, a 60-watt incandescent lamp produces 950 lumens while a 55-watt low-pressure sodium lamp produces 8000 lumens.
- (12) Luminaire: A complete lighting system that includes light source and all necessary mechanical, electrical, and decorative parts.
- (13) Maintained Foot Candle: Illuminance of lighting fixtures adjusted for dirt buildup and lamp output depreciation.
- (14) Wall Pack: A type of light fixture typically flush-mounted on a vertical wall surface.

Section 15-242.2 Applicability

(a) The provisions of this part apply to developments for which permits are issued after the effective date of this part; therefore developments that exist on the effective date of this part that do not comply with its provisions shall not be regarded as nonconforming. However, when new luminaires are installed or existing luminaires are replaced, they shall comply with this part.

(b) Notwithstanding the provisions of subsection (a) of this section, luminaires installed prior to the effective date of this part that violate the following provisions shall be brought into compliance or removed within three months after the date of notification of the violation:
Section 15-242.5 (d).

(c) Regulations applicable to the lighting of signs are found in Article XVII of this chapter, particularly Section 15-281.

(d) The provisions of this part do not apply to:

- (1) Streetlights installed on public streets.
- (2) Traffic control signals and devices.
- (3) Temporary emergency lighting (i.e. fire, police, repair workers, etc.).
- (4) Moving vehicle lights.
- (5) Navigation lights (i.e. airports, heliports, radio/television towers, etc.).
- (6) Seasonal decorations with individual lights in place no longer than 60 consecutive days.
- (7) Security lights that are controlled by a motion-sensor switch that does not allow the lights to remain on longer than 12 minutes after activation, so long as the lamps do not exceed 150 watts and 2,200 lumens.

Section 15-242.3 Minimum Lighting Requirements for Security

(a) All streets, sidewalks, and other common areas or facilities in subdivisions shall be sufficiently illuminated to ensure the security of property and the safety of persons using such streets, sidewalks, and other common areas or facilities.

(b) All roads, driveways, sidewalks, parking lots, and other common areas or facilities in unsubdivided developments shall be sufficiently illuminated to ensure the security of property and the safety of persons using such roads, driveways, sidewalks, and other common areas or facilities.

(c) All entrances and exits in buildings used for non-residential purposes and in multi-family residential dwellings containing more than four dwelling units shall be adequately lighted to ensure the safety of persons and the security of such buildings.

Section 15-242.4 Subdivisions

(a) With respect to street lighting for subdivision streets that (i) are located on property within the town at or about the time of final plat approval, and (ii) are intended to be dedicated to the town, the developer shall coordinate with the electric utility company to ensure that all facilities necessary for the installation of street lights in accordance with the town's street lighting policy are put in place. "As a condition of construction plan approval, all public street lighting is to be installed by the developer prior to street acceptance by the town. The developer shall be responsible for all installation cost and monthly billing until the public streets are accepted onto the town's street maintenance system."

(b) With respect to street lighting for subdivision streets that (i) are located on property that is not within the town at or about the time of final plat approval, and (ii) are intended to be dedicated to the public (i.e. to the N.C. Department of Transportation initially and eventually to the town when the subdivision is annexed), the developer shall coordinate with the electric utility company to see that all facilities necessary for the installation of street lights in accordance with the town's street lighting policy are put in place. The installation of street lights that are consistent with town policies may then be provided for either by an arrangement between the developer or a property owners association and the electric utility company until such time as the subdivision is annexed.

(c) With respect to street lighting for subdivision streets that are not intended to be dedicated to the town, the developer shall provide for the installation and maintenance (either by the developer or a successor property owners association) of a street lighting system that will provide sufficient lighting for safety and security purposes.

Section 15-242.5 General Standards

(a) Unless otherwise specified, under no circumstances may the light level at a lot line exceed .2 foot candles. A limitation of 2.0 footcandles shall generally apply to lot lines in the B-1(c) and B-1(g) zoning districts. However, a limitation of .2 footcandles shall apply to lot lines of properties zoned B-1(c) or B-1(g) under any of the following circumstances:

- (1) Where such lot lines separate properties zoned B-1(c) or B-1(g) from properties zoned residential;
- (2) If and to the extent that properties zoned residential lie directly across a street from the lot lines of properties zoned B-1(c) or B-1(g);
- (3) Where such lot lines separate properties zoned B-1(c) or B-1(g) from properties that are not zoned residential but that are used for residential purposes and were so used on the effective date of this subsection;
- (4) If and to the extent that properties that are not zoned residential but are used for residential purposes and were so used on the effective date of this

subsection lie directly across a street from the lot lines of properties zoned B-1(c) or B-1(g).

(b) Vegetative buffers shall not be used to satisfy the standards set forth in subsection (a) of this section.

(c) Any luminaire with a lamp or lamps rated at a total of more than 1,800 lumens shall be fully shielded and shall be located to prevent glare and light trespass beyond the property boundary (including onto adjacent streets).

(d) The recommended maximum light output is 70,000 lumens per acre for lots developed for commercial or multi-family purposes and 6,500 lumens per acre for lots developed for all other purposes. This recommended maximum does not apply to those uses regulated by Sections 15-242.6, 15-242.7, and 15-242.8.

(e) Floodlights with external shielding shall be angled provided that no light is directed above a twenty-five (25) degree angle measured from the vertical line from the center of the light extended to the ground, and only if the luminaire does not cause glare or light to shine on adjacent property or public or private rights-of-way. Photocells with timers that allow a floodlight to go on at dusk and off by 11:00 p.m are encouraged.

(f) The presumptive standard for the maximum height of light poles is fifteen (15) feet in height. The Board recognizes that due to the particularities of any given development, the inflexible application of a height maximum for lighting fixtures may result in a development with excessive energy consumption or light fixtures that are incompatible with the scale or style of a development. These situations can result in a waste of money that could more desirably be used for valuable development amenities or environmentally useful features. Therefore, the permit-issuing authority may permit deviations from the presumptive requirements and may require shorter light fixtures or allow taller light fixtures whenever it finds that such deviations are more likely to satisfy the standard set forth in subsections 15-242 (a) and (b) and that the lighting complies in all other respects with the requirements of this part.

(1) Without limiting the generality of the foregoing, the permit-issuing authority may allow or require deviations from the light fixture height maximum set forth in Subsection 15-242.5 (f) when it finds that:

- a. An existing multi-family residential development of greater than four (4) units is seeking to improve security and safety for residents by increasing the number of light fixtures and is also seeking to utilize light fixtures that are similar in size and style to existing fixtures; or
- b. Lighting fixtures on neighboring property are substantially lower in height than the maximum that would be allowed and taller light fixtures would

result in a discernible negative impact in terms of excessive illumination and glare.

(2) Whenever the permit-issuing authority allows or requires a deviation from the presumptive lighting fixture height requirements set forth in Subsection 15-242.5(e) it shall enter on the face of the permit the lighting fixture height requirement that it imposes and the reasons for allowing or requiring the deviation.

- (g) All wall packs shall be fully shielded.
- (h) All luminaires shall be shielded or oriented in such a way as to direct light toward the earth's surface and away from reflective surfaces.
- (i) Luminaires designed to illuminate building facades, architectural features, or landscaping shall be oriented and shielded so that direct illumination is focused exclusively on such building façade, architectural feature, or landscaping and away from adjoining properties, public or private way, and the night sky.
- (j) Upward flagpole lighting is permitted for governmental flags, either publicly or privately owned, provided that the maximum lumen output is 1,300 lumens. It is encouraged that flags be taken down at sunset to avoid the need for lighting.
- (k) Any luminaire must be installed in such a manner that the light emitting source is not visible from any residence not located on the same lot as the luminaire or from any public street.

Section 15-242.6 Vehicular Canopies

(a) The light level beneath vehicular canopies (e.g. for gas stations or convenience stores) shall not exceed 10 foot candles average maintained at the perimeter of the canopy and measured at ground level. Acceptable ways of achieving this objective include, but are not limited to, one or more of the following:

- (1) Recessed fixtures incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the vehicular canopy.
- (2) Surface mounted fixtures incorporating a flat glass that provides a full cut-off or fully shielded light distribution.
- (3) Indirect lighting where light is beamed upward and then reflected down from the underside of the vehicular canopy. Such fixtures shall be shielded such that direct illumination is focused exclusively on the underside of the vehicular canopy.

- (4) Any other method approved by the permit issuing authority that achieves an effect similar to the foregoing illustrations.

(b) During hours when the business is not open, the lighting level shall be reduced to security lighting only.

Section 15-242.7 Outdoor Display Areas

(a) All display area lighting shall utilize fully shielded luminaires that are installed in a fashion that maintains the fully shielded characteristics.

(b) Display area lighting shall be installed such that glare is not visible from residential properties.

(c) The display area shall not be illuminated in a manner that exceeds the minimal illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA Rp-33, or as updated).

(d) For purposes of this section, an “outdoor display area” is an outdoor area where nighttime sales activity regularly occurs and where accurate color perception of merchandise by customers is required. Examples include sales areas for automobiles, boats, building supplies, or plants.

(e) During hours when the business is not open, the lighting level shall be reduced to security lighting only.

Section 15-242.8 Outdoor Sports Fields and Performance Areas

(a) The mounting height of outdoor sports fields and outdoor performance area lighting fixtures shall not exceed 60 feet from finished grade unless approved by the permit-issuing authority after receipt of substantial information justifying the need for additional height.

(b) All outdoor sports field and outdoor performance area lighting fixtures shall be equipped with a glare control package (louvers, shields, or similar devices). The fixtures must be aimed so that their beams are directed and fall within the primary playing or performance area.

(c) Outdoor sports field and performance area lighting systems shall not be operated between the hours of eleven p.m. and sunrise.

Section 15-242.9 Prohibited Uses of Light

The following are prohibited:

- (1) The use of laser source light or any similar high intensity light for outdoor advertising or entertainment, when projected above the horizon;

- (2) The operation of searchlights for advertising purposes;
- (3) Use of mercury vapor luminaires.

Section 15-242.10 Light Measurement Techniques

- a) Light measurements shall be made at finished grade (ground level), with the light-registered portion of the meter held parallel to the ground pointing up. The meter shall have cosine and color correction and have an accuracy tolerance of no greater than plus or minus five (5) percent. Measurements shall be taken with a light meter that has been calibrated within the year. Light levels are specified, calculated and measured in footcandles (FC). All FC values are maintained footcandles unless otherwise specified.
- b) Compliance with an approved light plan associated with a permit can be verified in the field by confirming that the light fixtures and bulbs do not exceed those shown on the engineered plans. When there is no approved light plan then compliance can be verified by enforcing that the light source is blocked and/or directed in compliance with this Part or by the owner obtaining and providing a professional engineer's certification that verifies that the existing conditions comply with the ordinance.

Section 15-243 RESERVED (AMENDED 4/20/10)