

**ORDINANCE NO. (2001) 123 TC 210
TC-3-01**

**AN ORDINANCE TO ESTABLISH A NEW CITY OF RALEIGH LIGHTING
ORDINANCE**

Section 1. That section 10-2089 of the Raleigh City Code is hereby repealed, re-written, and re-enacted to read as follows:

**Sec. 10-2089.
LIGHTING.**

(a) Intent and purpose.

Outdoor lighting *shall* be designed to provide the minimum lighting necessary to ensure adequate safety, night vision, and comfort, and not create or cause excessive *glare* onto adjacent properties and public *street* rights of way.

(b) Definitions.

Cutoff Fixture – An outdoor light fixture shielded or constructed in such a manner that no more than two and one half (2½) percent of the total light emitted by the fixture is projected above the horizontal plane of the fixture.

Flood Lamp – A form of lighting designed to direct its output in a specific direction with a reflector formed from the glass envelope of the lamp itself. Such lamps are so designated by the manufacturers and are typically used in residential outdoor area lighting.

Flood Light – A form of lighting designed to direct its output in a diffuse, more or less specific direction, with reflecting or refracting elements located external to the lamp.

Footcandle (FC) – A quantitative unit measuring the amount of light cast onto a given point, measured as one *lumen* per square foot.

Full Cutoff Fixture – An outdoor light fixture shielded or constructed in such a manner that it emits no light above the horizontal plane of the fixture.

Glare – The effect produced by a *light source* within the visual field that is sufficiently brighter than the level to which the eyes are adapted, to cause annoyance, discomfort, or loss of visual performance and ability.

IESNA – The Illuminating Engineering Society of North America, a non-profit professional organization of lighting specialists that has established recommended design standards for various lighting applications.

Internal Refractive Lens – A glass or plastic lens installed between the lamp and the sections of the outer fixture globe or enclosure. Refractive refers to the redirection (bending) of the light as it goes through the lens, softening and spreading the light being distributed from the *light source* thereby reducing direct glare.

Light Source – The element of a lighting fixture that is the point of origin of the lumens emitted by the fixture.

Lumen – A quantitative unit measuring the amount of light emitted by a *light source*.

Maintained Footcandles – Illuminance of lighting fixtures adjusted for a maintenance factor accounting for dirt build-up and lamp output depreciation. The maintenance factor used in the design process to account for this depreciation cannot be lower than 0.72 for high-pressure sodium and 0.64 for metal halide and mercury vapor.

Medium Base – The size of lamp socket designed to accept a medium or Edison base lamp.

Outdoor Sports Field – An area designed for active recreation, whether publicly or privately owned, including but not limited to baseball/softball diamonds, soccer fields, football fields, golf courses and ranges, tennis courts, racetracks, and swimming pools.

Outdoor Performance Area – An area permanently dedicated to the public presentation of music, dance, theater, media arts, storytelling, oratory, or other performing arts, whether publicly or privately owned, including but not limited to amphitheatres and similar open or semi-enclosed structures.

Right-of-Way – An interest in land to the City which provides for the perpetual right and privilege of the City, its agents, franchise holders, successors, and assigns to construct, install, improve, reconstruct, remove, replace, inspect, repair, maintain, and use a public *street*, including related and customary uses of *street* rights-of-way such as sidewalks, bike paths, landscaping, mass transit facilities, traffic control, traffic control devices and signage, sanitary sewer, stormwater drainage, water supply, cable television, electric power, gas, and telephone transmission and related purposes in, upon, over, below, and across the rights-of-way.

Semi-Cutoff Fixture – An outdoor light fixture shielded or constructed in such a manner that it emits no more than five (5) percent of its light above the horizontal plane of the fixture, and no more than twenty (20) percent of its light ten (10) degrees below the horizontal plane of the fixture.

Vehicular Canopy – A roofed, open, drive-through structure designed to provide temporary shelter for vehicles and their occupants while making use of a business' services.

Wall Pack – A type of light fixture typically flush-mounted on a vertical wall surface.

Wide-body Refractive Globe – A translucent lamp enclosure used with some outdoor fixtures to provide a decorative look (including but not limited to acorn- and carriage light-style fixtures). “Wide-body” refers to a wider than average size globe (greater than 15.75 inches in diameter). “Refractive” refers to the redirection (bending) of the light as it goes through the lens, rendering the light fixture more effective. Wide-body refractive globes are intended to soften and spread the light being distributed from the *light source* thereby reducing direct glare.

(c) **Light Measurement Technique.**

Light level measurements *shall* be made at the property line of the property upon which the light to be measured is being generated. If measurement on private property is not possible or practical, light level measurements *may* be made at the boundary of the public *street right-of-way* that adjoins the property of the complainant or at any other location on the property of the complainant. Measurements *shall* be made at finished grade (ground level), with the light-registering 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 below are *maintained footcandles*.

(d) General Standards for Outdoor Lighting.

- (1) Unless otherwise specified in subsections (e) through (j) below, the maximum light level *shall* be 0.5 *maintained footcandle* at any property line in a *residential district*, or on a *lot* occupied by a *dwelling, congregate care or congregate living structure*, and 2.0 *maintained footcandles* at any public *street right-of-way*, unless otherwise approved by the Planning Commission.
- (2) All *flood lights* *shall* be installed such that the fixture *shall* be aimed down at least forty-five (45) degrees from vertical, or the front of the fixture is shielded such that no portion of the light bulb extends below the bottom edge of an external shield. *Flood lights* and display lights *shall* be positioned such that any such fixture located within fifty feet (50) of a public *street right-of-way* is mounted and aimed perpendicular to the *right-of-way*, with a side-to-side horizontal aiming tolerance not to exceed fifteen (15) degrees from perpendicular to the *right-of-way*.
- (3) All *flood lamps* emitting 1,000 or more *lumens* *shall* be aimed at least sixty (60) degrees down from horizontal, or shielded such that the main beam from the *light source* is not visible from adjacent properties or the public *street right-of-way*.
- (4) All *wall pack* fixtures *shall* be *cutoff fixtures*.
- (5) Service connections for all freestanding fixtures installed after application* of this ordinance *shall* be installed underground.
* **Editor's note:** This provision first became applicable on November 20, 2001; Ord. No. (2001) 123-TC-210.
- (6) Within Thoroughfare and Special Highway Overlay Districts, all outdoor lighting fixtures *shall* be at minimum *semi-cutoff fixtures*.
- (7) All light fixtures installed by public agencies, their agents, or contractors for the purpose of illuminating public *streets* are otherwise exempt from this regulation.

(e) Lighting in Parking Lots and Outdoor Areas.

- (1) Other than *flood lights* and *flood lamps*, all outdoor area and parking lot lighting fixtures of more than 2,000 *lumens* *shall* be *cutoff fixtures*, or comply with subsection (3) below.
- (2) The mounting height of all outdoor lighting, except *outdoor sports field* lighting and *outdoor performance area* lighting, *shall* not exceed forty-one (41) feet above finished grade, unless approved by the Planning Commission as having no adverse effect.
- (3) Exceptions:
 - a. *Non-cutoff fixtures* may be used when the maximum initial *lumens* generated by each fixture *shall* not exceed 9500 initial lamp *lumens* per fixture.

- b. All metal halide, mercury vapor, fluorescent, induction, white high pressure sodium and color improved high pressure sodium lamps used in *non-cutoff fixtures* shall be coated with an internal white frosting inside the outer lamp envelope.
- c. All metal halide fixtures equipped with a *medium base* socket must utilize either an *internal refractive lens* or a *wide-body refractive globe*.
- d. All *non-cutoff fixture* open-bottom lights shall be equipped with *full cutoff fixture* shields that reduce *glare* and limit uplight.

(f) Lighting for Vehicular Canopies.

Areas under a *vehicular canopy* shall have a maximum point of horizontal illuminance of twenty-four (24) *maintained footcandles* (FC). Areas outside the *vehicular canopy* shall be regulated by the standards of subsection (d) above. Lighting under vehicular canopies shall be designed so as not to create *glare* off-site. Acceptable methods include one or more of the following:

- (1) Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the *vehicular canopy*.
- (2) Light fixture incorporating shields, or shielded by the edge of the *vehicular canopy* itself, so that light is restrained to five degrees or more below the horizontal plane.
- (3) Surface mounted fixture incorporating a flat glass that provides a *cutoff fixture* or shielded light distribution.
- (4) Surface mounted fixture, typically measuring two feet by two feet, with a lens cover that contains at least two (2) percent white fill diffusion material.
- (5) 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*.
- (6) Other method approved by the Planning Commission.

(g) Outdoor Sports Field /Outdoor Performance Area Lighting.

- (1) The mounting height of *outdoor sports field* and *outdoor performance area* lighting fixtures shall not exceed eighty (80) feet from finished grade unless approved by the Planning Commission as having no adverse effect or approved by the City Council as part of a Special Use Permit.
- (2) 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.
- (3) The hours of operation for the lighting system for any game or event shall not exceed one hour after the end of the event.

Cross reference: Outdoor stadium/theater/racetrack §§10-2072 and 10-2145.

(h) Lighting of Outdoor Display Areas.

- (1) Parking lot outdoor areas shall be illuminated in accordance with the requirements for subsection (e), above. Outdoor *display areas* shall have a maximum point of illuminance of twenty-four (24) *maintained footcandles* (FC).

- (2) All light fixtures *shall* meet the *IESNA* definition of *cutoff fixtures*. Forward throw fixtures (type IV light distribution, as defined by the *IESNA*) are required within twenty-five (25) feet of any public *street right-of-way*. Alternatively, directional fixtures (such as flood lights) may be used provided they *shall* be aimed and shielded in accordance with subsections (d)(1) and (d)(2) of this ordinance.
- (3) The mounting height of outdoor *display area* fixtures *shall* not exceed forty-one (41) feet above finished grade, unless approved by the Planning Commission as having no adverse effect.

(i) Sign Lighting.

Lighting fixtures illuminating signs *shall* be aimed and shielded so that direct illumination is focused exclusively on the *sign*.

Cross Reference: Illumination of Signs §10-2083.1 (g).

(j) Lighting of Buildings and Landscaping.

Lighting fixtures *shall* be selected, located, aimed, and shielded so that direct illumination is focused exclusively on the building façade, plantings, and other intended site feature and away from adjoining properties and the public *street right-of-way*.

(k) Permits.

The applicant for any permit required for work involving outdoor lighting *shall* submit documentation at time of site plan or plot plan approval that the proposed lighting plan complies with the provisions of this Code. The submission *shall* contain, but not be limited to the following, all or part of which *may* be part of or in addition to the information required elsewhere in this Code:

- (1) A point-by-point *footcandle* array in a printout format indicating the location and aiming of illuminating devices. The printout *shall* indicate compliance with the maximum *maintained footcandles* required by this Code.
- (2) Description of the illuminating devices, fixtures, lamps, supports, reflectors, poles, raised foundations and other devices (including but not limited to manufacturers or electric utility catalog specification sheets and/or drawings, and photometric report indicating fixture classification [*cutoff fixture, wall pack, flood light, etc.*]).

The Inspections Director or his/her designee(s) *may* waive any or all of the above permit requirements, provided the applicant can otherwise demonstrate compliance with this Code.

(l) Nonconformities.

- (1) Following application* of this regulation, the installation of outdoor lighting, replacement of outdoor lighting, and changes to existing light fixture wattage, type of fixture, mounting, or fixture location *shall* be made in strict compliance with this Code. Routine maintenance, including changing the lamp, ballast, starter, photo control, fixture housing, lens and other required components, is permitted for all existing fixtures not subject to subsection (2) below.

* **Editor's note:** This provision first became applicable on November 20, 2001; Ord. No. (2001) 123-TC-210.

- (2) All outdoor lighting that fails to conform with subsection (d) above which is either located in a *residential zoning district* or which affects a lot occupied by a *dwelling, congregate care, or congregate living structure* located in a *residential zoning district* shall be discontinued, removed, or made to conform with subsection (d) within five and one-half (5 ½) years from the effective date of this provision. All such lights which are made nonconforming by a subsequent amendment to this chapter or extension of areas in which this section is applicable shall be discontinued, removed, or made to conform within five and one-half (5 ½) years after the date of such amendment or extension.

Cross references: Residential Institutions §10-2002; Thoroughfare District §10-2045(e)(4); Airport Overlay District §10-2050(e)(3); Metro Park Protection Overlay District §10-2053(e)(3); Special Highway Overlay District-1 §10-2058(e)(4), -II §10-2059(e)(4), -III §10-2060(e)(4), and -IV §10-2061(e)(4); Signs §10-2083.1(g) and 10-2083.3(2); Underground Utilities §10-3059.

Section 2. That Section 10-2146.1, Roman numeral III, of the City Code is amended to insert between the words “surfaces” and “and” appearing in the first paragraph the language: “outdoor lighting.” Roman numeral III is further amended to insert a last entry, which shall read as follows: “Outdoor lighting, §10-2089”.

Section 3. That Section 10-2146.5(a) of the City Code is amended to insert a last entry, which shall appear before subsection (1). Said entry shall read as follows:

Outdoor lighting §10-2089

”

Section 4. All laws and clauses of laws in conflict herewith are hereby repealed to the extent of said conflict.

Section 5. If this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the ordinance that can be given separate effect and to this end the provisions of this ordinance are declared to be severable.

Section 6. This ordinance has been adopted following a duly advertised joint public hearing of the Raleigh City Council and the City Planning Commission following a recommendation of the Planning Commission.

Section 7. This ordinance has been provided to the North Carolina Capital Commission as required by law.

Section 8. This ordinance shall be enforced as provided in N.C.G.S. 160A-175 or as provided in the Raleigh City Code. All criminal sanctions shall be the maximum allowed by law notwithstanding the fifty-dollar limit in G.S. 14-4(a) or similar limitations.

Section 9. This ordinance shall become effective five days following its adoption.

ADOPTED: November 20, 2001

EFFECTIVE: November 25, 2001

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