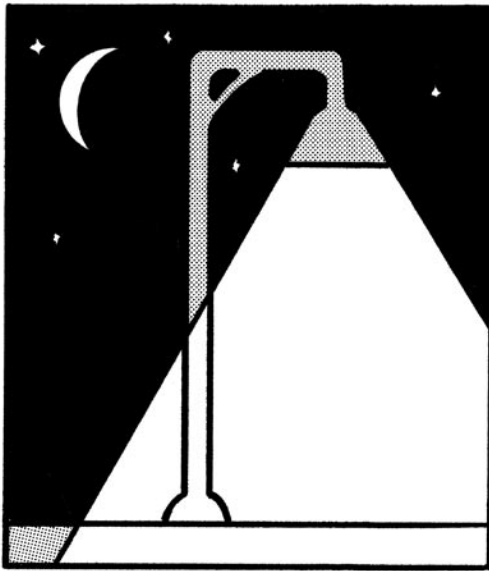


A Guide to the
**RALEIGH
LIGHTING
ORDINANCE**



*City of Raleigh
North Carolina*

Introduction

To most of us, adequate outdoor lighting is a modern birthright, a fact of urban life we've come to depend upon.

However, poor lighting—either ill directed or excessively bright—can be more a nuisance than a boon. Unshielded glare, beaming into traffic, can actually pose a hazard.

In 1999, citizen concern led the City of Raleigh to take a more comprehensive approach to addressing local lighting issues. Through the combined efforts of the Raleigh Appearance Commission, lighting professionals, corporate and institutional stakeholders, and other citizen volunteers, a new lighting ordinance was drafted. In November 2001, by unanimous vote of City Council, the ordinance became part of the City Code. The text and drawings below are provided as an interpretive guide to ordinance provisions and standards.

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.”

Summary of Provisions

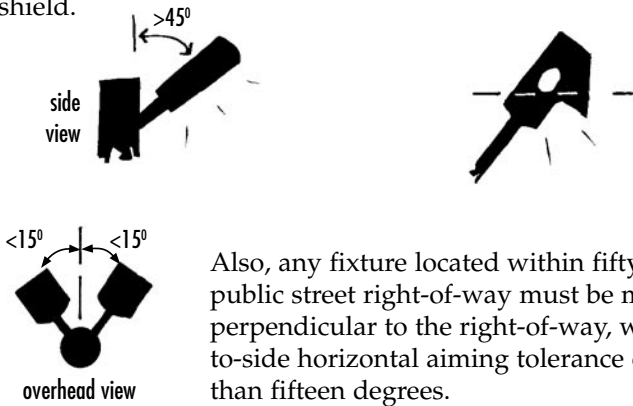
- Limits light spillover into right-of-way (to 2.0 footcandles) and spillover at residential property lines (0.5 footcandle)
- Requires flood lights and flood lamps to be aimed and/or shielded to minimize glare
- Requires wall packs and most parking lot lighting to be of cut-off (shielded) design
- Requires service connections for new outdoor lighting to be placed underground
- Discourages excessive fixture mounting heights
- Limits light levels under vehicular canopies and in outdoor sales areas (to 24 footcandles); provides six different methods of compliance for the former
- Requires sports lighting and outdoor performance area lighting to have a glare control package, and to be turned off an hour after an event ends
- Permits decorative and historically styled lighting fixtures (provided they meet certain glare reduction standards)
- Permits flexibility (e.g., Planning Commission can approve many alternative configurations)
- Grandfathers in most existing fixtures (Exception: fixtures affecting residential properties, which have till May, 2007 to comply)
- Does not affect street lights

The following provisions apply to all outdoor lighting installations, both within the Raleigh City Limits and the city's Extra-Territorial Jurisdiction (ETJ):

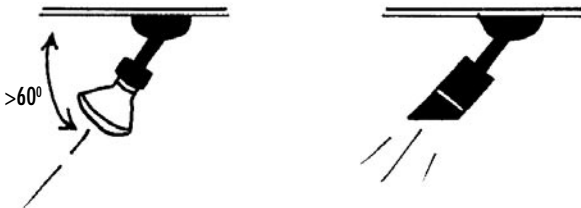
General Standards

MAXIMUM LEVELS: Unless specified otherwise, the maximum light level cannot exceed 0.5 maintained footcandle at any residential property line, and 2.0 maintained footcandles at any public street right-of-way (unless otherwise approved by the Planning Commission).

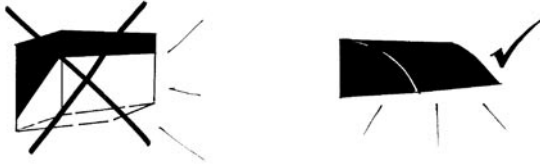
FLOOD LIGHT POSITIONS: Floodlights should be directed away from streets. The fixture must either be aimed down at least forty-five (45) degrees from vertical, or with the front of the fixture shielded so that no portion of the light bulb extends below the bottom edge of the shield.



FLOOD LAMP POSITIONING: All flood lamps emitting 1,000 or more lumens must be aimed at least sixty (60) degrees down from horizontal, or shielded so that the main beam is not visible from adjacent properties or the public street right-of-way.



NO UNSHIELDED WALL PACKS: All wall pack fixtures must be cutoff (shielded) fixtures.



SERVICE CONNECTIONS: Service connections for all freestanding fixtures installed must be installed underground (no overhead wires).



ZONE-SPECIFIC DESIGN: Within Thoroughfare and Special Highway Overlay Districts, all outdoor lighting fixtures must of semi-cutoff design (standard “cobrahead”) or better.

STREET LIGHTING EXEMPT: All light fixtures installed under authorization of public agencies for illuminating streets are exempt from the ordinance.

In addition, the following ordinance provisions apply to specific types of lighting installations:

Parking & Outdoor Areas

These areas include parking lots, pedestrian ways, yards, and drive-ways.

CUTOFF DESIGN GENERALLY REQUIRED: Other than flood lights and flood lamps, all outdoor area and parking lot lighting fixtures of more than 2,000 lumens must be cutoff fixtures (fully shielded), unless they are among the “Exceptions/Special Considerations” listed below.

MAXIMUM HEIGHT: Outdoor lighting, except sports field lighting and performance area lighting, should not be more than forty-one (41) feet tall.

EXCEPTIONS/SPECIAL CONSIDERATIONS:

- Non-cutoff (unshielded) fixtures can be used when the maximum initial lumens generated by each fixture is less than 9500 initial lamp lumens. These fixtures generally feature globes or vertical glass planes:



– If the unshielded fixtures have metal halide, mercury vapor, fluorescent, induction, white high pressure sodium and color improved high pressure sodium lamps, the outer lamp envelope must be coated with an internal white frosting to diffuse light.

– Additionally, all metal halide fixtures equipped with a medium base socket must use either an internal refractive lens or a wide-body refractive globe.

- All non-cutoff fixture open-bottom lights (dusk-to-dawn or barn lights) must be equipped with full cutoff fixture shields:



Vehicular Canopies

These canopies are often installed at gas stations and convenience stores.

MAXIMUM LEVEL: Lighting under a vehicular canopy must be less than 24 maintained footcandles, and designed to prevent glare off-site.

ACCEPTABLE LIGHTING DESIGNS:

- (1) Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the canopy.



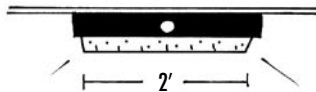
- (2) Light fixture incorporating shields, or shielded by the edge of the vehicular canopy itself, so that light is restrained to five degrees or more below horizontal.



- (3) Surface mounted fixture incorporating a flat glass that provides cutoff design 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.

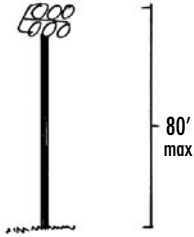


- (5) Indirect lighting where light is beamed upward and then reflected by the underside of the vehicular canopy. Such fixtures must be shielded, with direct illumination focused exclusively on the underside of the canopy.

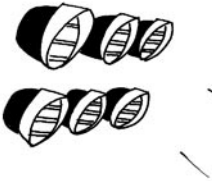


- (6) Other method approved by the Planning Commission.

Sports Fields & Performance Areas



MAXIMUM HEIGHT: The mounting height of outdoor sports field and outdoor performance area lighting fixtures must 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).



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



HOURS LIMITED: The hours of operation for the lighting system for any game or event must not exceed one hour after the end of the event.

Signs

CAREFUL AIMING REQUIRED: Lighting fixtures illuminating signs must be aimed and shielded so that direct illumination is focused exclusively on the sign. Signs must also meet the other provisions of the city sign ordinance.

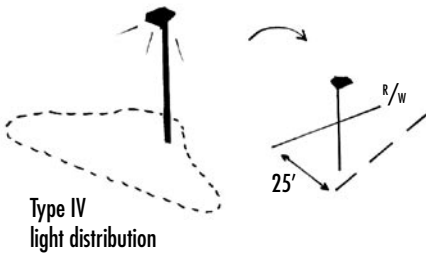
Buildings & Landscaping

CAREFUL AIMING REQUIRED: Lighting fixtures must be selected, located, aimed, and shielded so that direct illumination is focused solely on the building façade, plantings, and other intended site feature, and away from adjoining properties and the public street right-of-way.

Display Areas

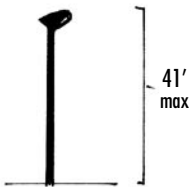
These outdoor areas are used for displaying such goods as automobiles, boats, and yard care equipment.

MAXIMUM LIGHTING LEVEL: Lighting in outdoor display areas must measure less than 24 maintained footcandles.



FIXTURE TYPE: All light fixtures must be of cutoff design. Forward throw fixtures (type IV light distribution, as defined by the IESNA) are required within 25 feet of street rights-of-way.

Alternatively, directional fixtures (such as flood lights) can be used provided they are aimed and shielded to prevent glare.



MAXIMUM HEIGHT: 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.

The following provisions apply to all lighting installations:

Permits

Applicants must submit proof that their lighting plans meet the ordinance at the time of site plan or plot plan approval. Information to be submitted includes:

- (1) A point-by-point footcandle array in a printout format indicating the location and aiming of light fixtures, and the maximum maintained footcandles of each.
- (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.]).

NOTE: The Inspections Director can waive any or all of the above permit requirements provided the applicant can otherwise demonstrate compliance with the ordinance.



Compliance

All new fixtures must comply with the ordinance.

These installations include:

- All new outdoor lighting fixtures,
- All replacement fixtures (in cases of total replacement),
- Changes to existing fixture wattage, fixture type, mounting, or fixture.

The following routine maintenance does not require compliance:

- Changing the lamp, ballast, starter, photo control, fixture housing, lens and other required components.

All existing fixtures in residential areas must comply by May, 2007.

This includes lighting within all residentially-zoned areas, and all other areas containing residences. Existing non-compliant fixtures in non-residential areas can stay in use until they need replacement.

Measuring Light

Light level measurements are to be made:

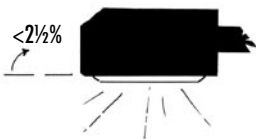
- At the property line of the property from which the light is generated.
- At ground level, with the light-registering portion of the meter held parallel to the ground, pointing up.



All light levels are specified, calculated and measured in footcandles. All footcandle values in the ordinance are maintained footcandles.

Definitions

The following lighting terms appear in the ordinance:



Cutoff Fixture – An outdoor light fixture shielded or constructed in such a manner that no more than two and one half ($2\frac{1}{2}$) percent of the total light emitted by the fixture is projected above the horizontal plane of the fixture.

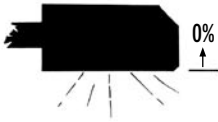


Flood Lamp – A form of lighting designed to direct its output in a specific direction with a reflector formed from the glass envelope of the lamp itself. Such lamps are so designated by the manufacturers and are typically used in residential outdoor area lighting.



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.

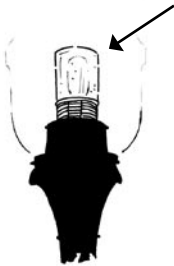
Footcandle (FC) – A quantitative unit measuring the amount of light cast onto a given point, measured as one lumen per square foot.



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.

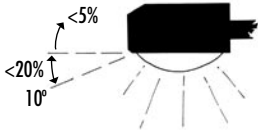
Maintained Footcandles – Illuminance of lighting fixtures adjusted for a maintenance factor accounting for dirt build-up and lamp output depreciation. The maintenance factor used in the design process to account for this depreciation cannot be lower than 0.72 for high-pressure sodium and 0.64 for metal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

The complete text of the
Raleigh Lighting Ordinance
(City Code § 10-2089)
is available online at:

<http://www.raleighnc.gov/appearancecommission>

Further questions?

**Contact the
City of Raleigh
Inspections
Department:
919-516-2555**