

Section 170 Lighting Standards

Revised and Adopted July 12, 2010

Revised by Planning Board October 19, 2010

Amended by Council December 13, 2010

Purpose

- A. It is the purpose of this chapter to encourage lighting practices and systems that will: minimize glare, light trespass and light pollution; conserve energy and resources while maintaining nighttime safety, utility, security and productivity; and to curtail the degradation of the nighttime visual environment.
- B. It is the purpose of this chapter to establish clear and comprehensive outdoor lighting standards with an emphasis on reducing glare by requiring, in most circumstances, the installation of full cut-off lighting fixtures.
- C. It is the purpose of this chapter to allow for outdoor lighting that is appropriate for the task and to establish light fixture height limits that will help prevent light spillover to neighboring properties.
- D. It is the purpose of this chapter to establish specific standards for specific or special land uses that typically have unique lighting characteristics including automotive service stations, car and vehicle sales lots and sports facilities.

Applicability

These outdoor lighting standards apply to the development of all new multi-family housing, new minor or major residential and non-residential subdivisions, non-residential construction and the construction of parking lots where such developments include the installation of new outdoor lighting fixtures or the replacement of existing lighting fixtures. A replacement of existing lighting fixtures is defined as a change of the type of fixture; a change in the mounting height of fixtures on a pole, building or other structure; or a change in the location of a lighting fixture. Routine lighting fixture maintenance such as changing lamps or light bulbs, ballast, starter, photo control, housing or similar components will not constitute replacement of lighting fixtures and is permitted provided such changes do not result in a higher light output.

General Lighting Standard

All outdoor lighting (other than lighting for gas station canopies; signs; and street lighting for public or private roadways) shall conform to the following standard:

- A. In no case may emitted light be greater than one-half lux (0.05 fc) at the property line, except at site entry points (e.g., entry drives or pedestrian walkways) if determined by the Land Use Administrator that such lighting is necessary for pedestrian or traffic safety or direction. Commercial uses adjacent to residential zoned property or exclusively residential land uses shall maintain zero lux (0.0 fc) at the property line.

General Standards for Lighting Fixtures

- A. Fully shielded (full cut-off) fixtures are required. All outdoor lighting fixtures shall utilize fully shielded fixtures.
- B. The maximum fixture height above adjacent grade for all fixtures except those used for sports facility (field, arena or track) lighting shall be as follows:
 - 1. Commercial – 30 feet
 - 2. Residential – 20 feet
 - 3. Pedestrian Pathways – 12 feet
- C. The maximum wattage is 150 watt maximum wattage for “decorative” cut-off luminaries.
- D. The lamp type shall be metal halide, high pressure sodium or low pressure sodium. These lamp types are the most commonly used; other types typically require more maintenance or are less energy efficient.
- E. The maximum illumination will be 20 lux (2fc) directly under the luminary. A maximum of ten(10) lux (1fc) is permitted for paved driveway / fire lane at front of store or business, with a maximum of four (4) lux (.4fc) outside of the 20 foot radius of pole in parking areas.
- F. The location of lighting fixtures will comply with the required setbacks of the relevant zoning district and all lighting fixtures shall, at a minimum, have a setback from property lines equal to the total height of the luminary. The Land Use Administrator may permit exceptions from these setback requirements when lighting or lighting fixtures are necessary for pedestrian or traffic safety or direction.

Standards for Specific Uses

- A. Gas and Service Station Canopies
 - 1. All light fixtures mounted on the lower surface of canopies must be fully shielded in and of themselves (canopy edges do not qualify as shielding). Light fixtures mounted on canopies may be recessed so that the lens cover is recessed or flush with the bottom surface (ceiling) of the canopy or shielded by the fixture or the edge of the canopy so that light is restrained to 70 degrees. or less from vertical.
 - 2. The light source shall be metal halide, low pressure sodium or high pressure sodium (maximum of 150 watts).
 - 3. Lighting levels shall be no greater than 200 lux (20 fc) under the canopy.
 - 4. Areas outside the service station pump island canopy shall be illuminated so that the maximum horizontal luminance at grade level is no more than ten(10) lux (1 fc).
- B. Security and Display Lighting
 - 1. Security lighting should use the lowest possible illumination to effectively allow surveillance.

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2. The use of motion sensors, timers, photocells or other means to activate lighting during times when it is needed is required to conserve energy, provide safety and promote compatibility between different land uses. In all cases, light intensity shall be a maximum of ten(10) lux (1fc).
3. In order to direct light downward and minimize the amount of light spill from the light source, all security lighting fixtures shall be full cut-off fixtures as defined by the Illuminating Engineering Society of North America (IESNA).
4. Security lighting shall be shielded and aimed so that illumination is directed to the designated areas for product display or areas where security is needed.
5. Fixtures used to accent architectural features, materials, colors, style of buildings, landscaping or art shall be located, aimed and shielded so that light is directed only on those features. Such fixtures shall be aimed or shielded to minimize light spill from the light source in conformance with the luminaries' standards.
6. Accent lighting shall not generate excessive light levels, cause glare or direct light beyond the façade onto neighboring property, streets or night sky.
7. The American flag may be illuminated from below provided such lighting is focused primarily on the individual flag or flags to limit light trespass and spill into the sky. No corporate flags are permitted to have illumination.

Compliance

- A. A photometric site plan and cut sheets for all proposed exterior fixtures shall be included with the required application for a subdivision of land or a site plan. Depending on the size and type of the project, the Land Use Administrator may require that the photometric site plan include the following:
 1. The location of lighting relative to the principal land uses and relative to the abutting streets.
 2. The zoning district classifications of all properties abutting the site.
 3. The location and site coverage of service station canopies and outdoor sales and display areas.
 4. The location and height of all lighting poles, building mounted lights and ground-mounted lighting fixtures.
 5. A photometric diagram showing predicted levels of maintained lighting from the proposed fixtures.
 6. The manufacturer's product descriptions showing that the proposed lighting feature meets the requirements of the code.

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- B. The Land Use Administrator may require the installation of full cut-off shielding or directional shielding when a zoning applicant proposes repair or replacement of any component of any luminary where the town has found that the existing lighting creates a public hazard due to glare or light spillover.
- C. Any person, firm or company, whether principal, agent, employee or otherwise, who violates any of the provisions of this section shall be fined an amount not to exceed \$300 for each such violation, such fine shall be paid to the town. Each day of the documented existence after written notification of any situation held to be in violation shall be deemed an equal and separate offense.
- D. Lighting for fields, courts or tracks shall not exceed maximum luminance criteria as defined by the Illuminating Engineering Society of North America (IESNA).
- E. Lighting for non-field, non-court and non-track areas shall conform to all provisions of this section.
- F. Any temporary outdoor lighting that conforms to the requirements of this chapter shall be allowed. Any temporary lighting that does not conform to these outdoor lighting standards may be permitted after considering: (a) the public and/or private benefits that will arise from the temporary lighting; (b) any annoyance or safety problems that may result from the use of the temporary lighting, and (c) the duration of the temporary nonconforming lighting. The applicant shall provide a detailed description of the proposed temporary outdoor lighting to the Land Use Administrator for review and approval.
- G. All streets and sidewalks should be sufficiently illuminated to ensure the security of the street right-of-way and safety of pedestrians traveling in the area.
 - 1. Street lighting may be included on all new residential and commercial streets. Thoroughfare street lighting must be installed on the perimeter of the development along a thoroughfare or boulevard and any collector road.
 - 2. For a new subdivision, a lighting layout and overall design is required in the subdivision design submittal documents.

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3. Subdivision developers are required to have the lighting design approved by the planning department and to submit the approved design to the power company prior to installing the lights. An accurate scale reference must be included on all layout drawings.
 4. In general, the layout of roadway lighting should conform to the current version of NCDOT Standards and the following standards:
 - a. All lights are to be placed 200 feet apart. Due to geometric limitations, this distance can be adjusted up to 40 feet.
 - b. All corners are to have at least one light for a three-way intersection and two lights for a four-way intersection.
 - c. All cul-de-sacs are to have at least one light, located such that the entire cul-de-sac right-of-way has light.
 - d. Lights should be placed on the side of the street with the sidewalk. If both sides have sidewalks, lights should be alternated.
 - e. Lights should be placed on the outside of the curve and the spacing should be decreased.
 - f. All lights must be on new metal poles or decorative posts. Wood poles are not permitted.
 - g. No overhead wires shall be allowed.
 - h. Collector and thoroughfare lighting shall be AEL 125 cutoff style cobrahead 400 watt high pressure sodium or metal halide and conform to NC DOT standards.
 - i. Sag lens shall not be allowed. Poles shall be free standing in aluminum finish. No overhead wires shall be allowed.
- H. The town may withhold certificates of occupancy for any use that installs luminaries that do not comply with this section.

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