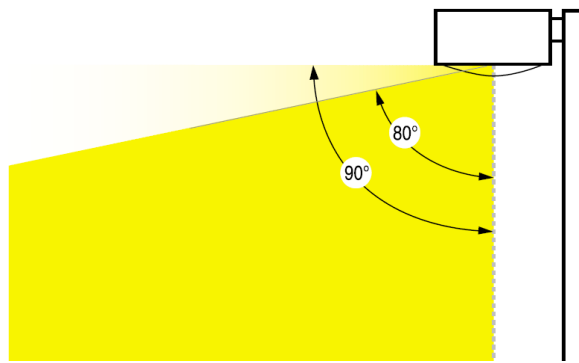


**Add new Definitions (sec 78-581)**

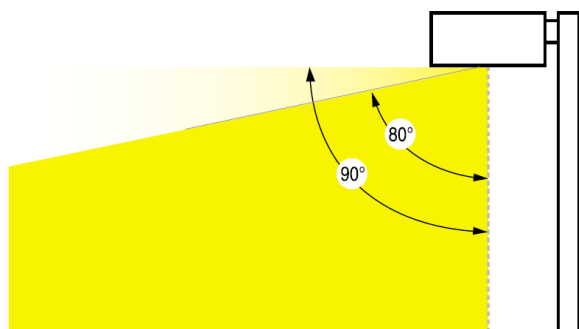
*Ballast* is a device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current, and waveform) for starting and operating.

*Candela* is the metric unit for luminous intensity (that is, power emitted by a light source in a particular direction, with wavelengths weighted by the luminosity function, a standardized model of the sensitivity of the human eye).

*Cutoff* means a luminaire light distribution where the candela per 1,000 lamp lumens does not exceed 25 (2.5 percent) at or above an angle of 90° above nadir, and 100 (ten percent) at or above a vertical angle 80° above nadir. This applies to all lateral angles around the luminaire.



*Full Cutoff* means a luminaire light distribution where zero candela intensity occurs at or above an angle of 90° above nadir. Additionally the candela per 1,000 lamp lumens does not numerically exceed 100 (10 percent) at or above a vertical angle of 80° above nadir. This applies to all lateral angles around the luminaire.



*Footcandle (FC)* is a quantitative unit which measures the amount of light (illumination) falling onto a given point. One footcandle equals one lumen per square foot. For the purposes of this article, footcandles shall be measured or calculated when the luminaires are new.

*Glare* means 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.

*Illuminance* means the amount of light (luminous flux index) at a point on a surface (measured in footcandles).

*Light Source* refers to the element of a lighting fixture that is the point of origin of the lumens emitted by the fixture.

*Light Trespass* is unwanted light spilling onto an adjacent property and/or an excessive brightness (i.e. glare) that occurs in the normal field of vision.

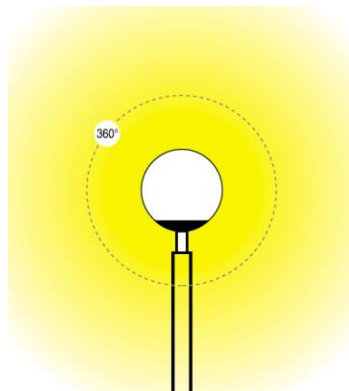
*Lumen* is the quantitative unit used to identify the amount of light emitted by a light source. A lamp is generally rated in lumens.

*Luminaire (light fixture)* is a complete lighting unit consisting of a lamp or lamps and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply.

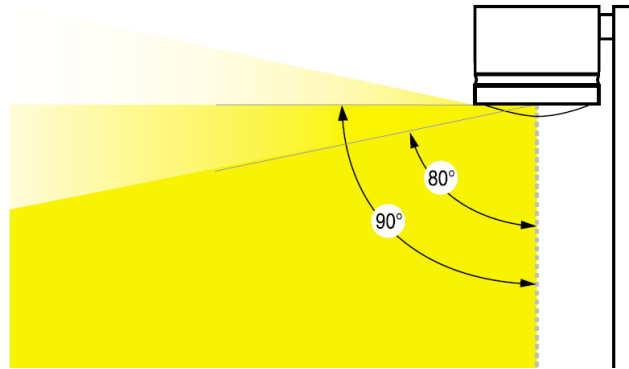
*Lux* is a unit of illuminance; one lux equals one lumen per square meter. One footcandle equals 10.76 lux (often rounded to 10 lux for ease of use).

*Nadir* is the point directly below the luminaire.

*Noncutoff* means a luminaire light distribution where there is no candela limitation in the zone above the light source.



*Semi-cutoff* means a luminaire light distribution where the candela per 1,000 lamp lumens does not exceed 50 (5 percent) at or above an angle of  $90^\circ$  above nadir, and 200 (20 percent) at or above a vertical angle  $80^\circ$  above nadir. This applies to all lateral angles around the luminaire.



*Shield* is a device that is attached onto or inserted into a luminaire to alter the direction of light being emitted. A luminaire that has a shield attached or inserted is considered to be “shielded.”

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

**Add new section: 78-668. Lighting Standards.**

- (a) Purpose. Lighting standards are established in order to permit reasonable uses of outdoor lighting for night-time safety, utility, security, productivity, enjoyment and commerce. These standards will minimize light pollution, light trespass and glare and will work to promote energy efficient lighting practices and systems.
- (b) Applicability. Lighting standards shall apply to new commercial and industrial development, new pole mounted dusk-to-dawn security lights mounted higher than 12 feet above the lowest adjacent grade, and new street lighting. To the extent regulated by this section, all existing outdoor lights or lighting systems, installed prior to the adoption of this ordinance shall be treated as nonconforming uses pursuant to Section 78-657.
- (c) Exemptions. The following are not regulated by the lighting standards set forth in this section:
  1. Lighting for residential use, other than those lighting types described in Sec. 78-668(b);
  2. Lighting required by federal, state, or local laws or regulations;
  3. Seasonal displays using multiple low-wattage bulbs;
  4. Lighting used during an emergency or by emergency services personnel or at their direction;
  5. Temporary lighting which does not utilize the lighting types described in Sec. 78-668(d)(1).
  6. Temporary lighting used for public purposes including but not limited to highway construction and public utility repairs.
- (d) Prohibitions. The following lighting types are specifically prohibited:
  1. Search lights, laser source lights, or any other similar high intensity lights except for those permitted in advance as required in Sec. 78-668(f)(5) to be used on a temporary basis;

2. Lighting that is oriented upward, except as otherwise provided for in this section;
3. Lighting that could be confused for a traffic control device;
4. A suspended string of lights, consisting of individual lamps larger than 45 lumens, unless used only for seasonal decorations.

(e) Lighting Specifications

1. Intensity.
  - i. Unless otherwise specified, the maximum light level at any point shall be 0.75 footcandles at any property line, or 3.0 footcandles at any public street right-of-way.
  - ii. The maximum average light level for the developed area of the project to be permitted shall be 4.5 footcandles.
  - iii. The maximum rating for LED lights shall be 4,300 degrees Kelvin.
2. Luminaire type. All lighting luminaires to be installed on a permanent basis shall consist of full cutoff and cutoff fixtures, unless otherwise stipulated by this section. Full cutoff fixtures shall be utilized where the luminaire has more than a 1,250 lumen output, unless as otherwise stipulated by this section. Lighting fixtures to be utilized on a temporary basis and as permitted through section 78-668(f)(5) shall be exempt from this requirement.
3. Accent and Façade Lighting. Accent or façade lighting shall be directed toward the face of the building or structure.
  - i. Lighting fixtures shall be directed downward rather than upward. The Zoning Administrator or the Board of Adjustment may waive this requirement in cases where it is impractical.
  - ii. Placement of low wattage fixtures with shields (as needed) close to the building to graze the façade is required to minimize reflected light from windows and other surfaces.
4. Vehicular Canopies. Areas under a vehicular canopy shall have a maximum average horizontal illuminance of 30 footcandles. All lighting under the canopy, including but not limited to luminaires mounted on the lower surface of the canopy and auxiliary lighting within signage or panels over the pumps, is to be included in the calculation. Lighting under vehicular canopies shall be designed so as not to create glare off-site. Acceptable methods include one or more of the following:
  - i. Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the vehicular canopy that provides a full cutoff or fully shielded light distribution.
  - ii. Surface mounted fixture incorporating a flat glass that provides a full cutoff or fully shielded light distribution.
5. Pole mounted dusk-to-dawn security lights mounted higher than 12 feet above the lowest adjacent grade. New pole mounted dusk-to-dawn security lights mounted higher than 12 feet above the lowest adjacent grade shall have a maximum rating of 9,500 lumens and shall be mounted at a maximum height of 25 feet above the lowest adjacent

grade. Pole mounted dusk-to-dawn security lights mounted higher than 12 feet above the lowest adjacent grade must consist of full cutoff fixtures.

6. Street lighting.
  - i. Alignment. Street lighting on newly constructed streets shall be alternately staggered on each side of the street. The Zoning Administrator or the Board of Adjustment may waive this requirement in cases where it is impractical.
  - ii. Intensity. Newly installed street lighting luminaires shall meet the following standards:
    1. Individual luminaires erected in residential areas shall have a rating which does not exceed 9,500 lumens.
    2. Individual luminaires erected in commercial and industrial areas shall have a rating which does not exceed 50,000 lumens.
  - iii. Luminaire type. All street lighting must consist of full cutoff fixtures. If the luminaire is a post mounted decorative fixture mounted at a height of no more than 18 feet above the lowest adjacent grade, the luminaire may consist of a cutoff fixture if the Zoning Administrator or Board of Adjustment determines that appropriate glare reduction measures are taken.
7. Outdoor parking, loading and storage areas. The mounting height of all outdoor parking, loading and storage area lighting shall not exceed 37 feet above the lowest adjacent grade. The lighting of outdoor parking areas shall have a maximum average horizontal illuminance of 6.0 footcandles.
8. Outdoor sales/display areas. The mounting height of all outdoor sales/display area lighting shall not exceed 37 feet above the lowest adjacent grade. The lighting of outdoor sales/display areas shall have a maximum average horizontal illuminance of 25 footcandles.

(f) Administration and Enforcement

1. Lighting Plan Required. A lighting plan designed and sealed by a licensed engineer shall be submitted with the application for a Zoning Certificate of Compliance. The plan shall indicate the following:
  - i. Location and mounted height of all exterior lighting on the property.
  - ii. A point-by-point footcandle array in a printout format indicating the location and aiming of illuminating devices.
  - iii. The printout shall indicate compliance with the lighting specifications required by this Section.
  - iv. The plan shall be accompanied by a 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, full cutoff fixture, etc) must be furnished.
  - v. The Zoning Administrator may waive the requirements for a lighting plan set forth above, provided the applicant has provided all other required information and can sufficiently demonstrate compliance with this section. If the lighting

plan requirements are waived, the requirements set forth in Section 78-668(f)(2) and 78-668(f)(3) shall also not apply.

2. A written statement signed and sealed by a licensed engineer, which indicates that the lighting plan complies with the standards set forth herein, shall be submitted with any application for a Zoning Certificate of Compliance that proposes permanent outdoor lighting.
3. A signed and sealed as-built drawing which demonstrates that the lighting plan described in Section 78-668(f)(1) and submitted with the Zoning Certificate of Compliance application was followed shall be submitted for review prior to the issuance of a Zoning Certificate of Occupancy for the project.
4. Light Measurement Technique. Light level measurements of light trespass shall be made at the property line of the property upon which light to be measured is being generated. Measurements shall be made at finished grade (ground level) with the light registering portion of the meter held parallel to the ground pointing up. Measurements shall be taken with a light meter that has been calibrated within the previous two years.
5. Permit for Temporary Lighting Required. Applicants who wish to utilize lighting on a temporary basis or lighting described in Sec. 78-668(d)(1) must submit a written request to the Zoning Administrator. The Zoning Administrator shall have 10 business days to approve or deny the permit application. The application shall include:
  - i. The purpose of the lighting;
  - ii. The hours of lighting operation;
  - iii. Where applicable, a plan showing the extent and intensity of light trespass upon adjacent properties;
  - iv. Signed certification that in no case shall such lighting be directed at roadways where such lighting could pose a public safety threat to vehicular traffic; and
  - v. An application fee for the Zoning Certificate of Compliance which shall be issued by the Zoning Administrator.

A permit for temporary lighting, in the form of a zoning certificate of compliance, shall be issued for an operation period of no more than 30 days. Once the permit has been issued, it may be renewed in 30-day periods for up to a total of 90 days unless the permit is for lighting as described in Section 78-668(d)(1). If operation is to continue past the close of the 90-day period, a new permit must be applied for and obtained. Temporary lighting of the type described in Section 78-668(d)(1) shall be event-specific and shall not be permitted for a duration of more than five (5) days. In no case shall temporary lighting be permitted on a single property, in one or in multiple locations, for more than 180 days per calendar year.