

§ 119-48. Control of light and glare. [Amended 5-1-2014 by Ord. No. 2014-01]

Lighting shall be controlled in both height and intensity to maintain community character; and lighting design should be an inherent part of the project design. The applicant shall provide the specifications of the proposed lighting and its arrangement on the site. Any proposal which is considered a land development as defined by Chapter 98 shall be governed by the light and glare standards in Chapter 98. Following the establishment of any land development, the ongoing operation and maintenance of the lighting facilities shall comply with the requirements of this § 119-48, and violations shall be subject to the enforcement provisions of this chapter.

A. Purpose. To set standards for outdoor lighting to:

- (1) Provide for and control lighting in outdoor places where public health, safety and welfare are potential concerns;
- (2) Protect drivers and pedestrians from the glare of nonvehicular light sources;
- (3) Protect neighbors, the environment and the night sky from nuisance glare and light trespass from improperly selected, placed, aimed, applied, maintained or shielded light sources; and
- (4) Promote energy-efficient lighting design and operation.

B. Applicability.

- (1) This section shall apply to all uses within the Township where there is exterior lighting that is viewed from outside, including, but not limited to, residential, commercial, industrial, public and private recreational/sports and institutional uses, and sign, billboard, architectural and landscape lighting.
- (2) Exemptions. The following lighting applications are exempt from the requirements of this section:
 - (a) Lighting within a public right-of-way or easement for the principal purpose of illuminating streets or roads. No exemption shall apply to any lighting within the public right-of-way or easement when the purpose of the luminaire is to illuminate areas outside the public right-of-way or easement.
 - (b) Lighting for public monuments and statuary.
 - (c) Underwater lighting in swimming pools and other water features.
 - (d) Low-voltage landscape lighting.
 - (e) Individual porch lights of a dwelling.
 - (f) Repairs to existing luminaires not exceeding 25% of the number of total installed luminaires.
 - (g) Temporary lighting for theatrical, television, performance areas and construction sites.

- (h) Temporary lighting and seasonal decorative lighting, provided that individual lamps are less than 10 watts and 70 lumens.
- (i) Emergency lighting, as may be required by any public agency while engaged in the performance of its duties, or for illumination of the path of egress during an emergency.

C. Standards.

(1) Illumination levels. Lighting shall have illuminances, uniformities and glare control in accord with the recommended practices of the Illuminating Engineering Society of North America (IESNA), unless otherwise directed by the Township.

(2) Luminaire design.

(a) Horizontal surfaces.

[1] For the lighting of predominantly horizontal surfaces, such as, but not limited to, parking areas, roadways, culs-de-sac, vehicular and pedestrian passage areas, merchandising and storage areas, automotive-fuel dispensing facilities, automotive sales areas, loading docks, active and passive recreational areas, building entrances, sidewalks, bicycle and pedestrian paths, and site entrances, luminaires shall be aimed straight down and shall meet IESNA full-cutoff criteria.

[2] Luminaires with an aggregate rated lamp output not exceeding 500 lumens, e.g., the rated output of a standard nondirectional 40-watt incandescent or ten-watt compact fluorescent lamp, are exempt from this § 119-48C(2). In the case of decorative streetlighting, the Township may approve the use of luminaires that are fully shielded or comply with IESNA cutoff criteria rather than full-cutoff.

(b) Nonhorizontal surfaces.

[1] For the lighting of predominantly nonhorizontal surfaces, such as, but not limited to, facades, landscaping, signs, billboards, fountains, displays and statuary, when their use is specifically permitted by the Township, luminaires shall be shielded and shall be installed and aimed so as to not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto a public roadway.

[2] Luminaires with an aggregate rated lamp output not exceeding 500 lumens, (e.g., the rated output of a standard nondirectional 40-watt incandescent or 10-watt compact fluorescent lamp) are exempt from the requirements of this § 119-48C(2)(b).

(3) Control of glare.

(a) All lighting shall be aimed, located, designed, fitted and maintained so as not to present a hazard to drivers or pedestrians by impairing their ability to safely traverse and so as not to create a nuisance by projecting or reflecting objectionable

light onto a neighboring use or property.

- (b) Directional luminaires, such as floodlights and spotlights, when their use is specifically approved by the Township, shall be so shielded, installed and aimed that they do not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto a public roadway or pedestrian way. Floodlights installed above grade on residential properties, except when motion-sensor actuated, shall not be aimed out more than 45° from straight down. When a floodlight creates glare as viewed from an adjacent residential property, the floodlight shall be required to be reaimed and/or fitted with a shielding device to block the view of the glare source from that property.
- (c) "Barn lights," aka "dusk-to-dawn lights," when a source of glare as viewed from an adjacent property, shall not be permitted unless effectively shielded as viewed from that property.
- (d) The use of floodlights and wall-mounted luminaires (wall packs) shall not be permitted to illuminate parking areas unless it can be proven to the satisfaction of the Township that the employment of no other means is possible.
- (e) Parking facility and vehicular and pedestrian way lighting (except for safety and security applications and all-night business operations) for commercial, industrial and institutional uses shall be automatically extinguished no later than one hour after the close of business or facility operation. When safety or security lighting is proposed for after-hours illumination, it shall not be in excess of 25% of the number of luminaires or illumination level required or permitted for illumination during regular business hours. When it can be demonstrated to the satisfaction of the Township that an elevated security risk exists, e.g., a history of relevant crime, an appropriate increase above the 25% limit may be permitted.
- (f) Luminaires shall be automatically controlled through the use of a programmable controller with battery power-outage reset, which accommodates daily and weekly variations in operating hours, annual time changes and seasonal variations in hours of darkness. The use of photocells is permitted when in combination with the programmable controller to turn luminaires on at dusk and also for all-night safety/security dusk-to-dawn luminaire operation when such lighting is specifically approved by the Township. The use of motion detectors is permitted.
- (g) Vegetation screens shall not be employed to serve as the primary means for controlling glare. Rather, glare control shall be achieved primarily through the use of such means as cutoff luminaires, shields and baffles, and appropriate application of luminaire mounting height, wattage, aiming angle and luminaire placement.
- (h) Light spillover.

[1] Residential. The illumination projected from any use onto a residential use or permanent open space shall at no time exceed 0.1 initial footcandle, measured line-of-sight at any time and from any point on the receiving residential property. This shall include glare from digital or other illuminated signs.

[2] Nonresidential. The illumination projected from any property onto a nonresidential use shall at no time exceed 1.0 initial footcandle, measured line-of-sight from any point on the receiving property.

- (i) Height. Except as permitted for certain recreational lighting and permitted elsewhere in this subsection, luminaires shall not be mounted in excess of 20 feet above finished grade (AFG) of the surface being illuminated. Luminaires not meeting full-cutoff criteria, when their use is specifically permitted by the Township, shall not be mounted in excess of 16 feet AFG. "Mounting height" shall be defined as the distance from the finished grade of the surface being illuminated to the optical center of the luminaire. Where proposed parking lots consist of 100 or more contiguous spaces, the Township may, at its discretion, based partially on mitigation of potential off-site impacts, permit a luminaire mounting height not to exceed 25 feet AFG. For maximum mounting height of recreational lighting, refer to § 119-48D(6).
 - (j) The United States, state and other official flags may be illuminated from dusk to dawn. All other flags shall not be illuminated past 11:00 p.m. Flag lighting sources shall not exceed 7,000 aggregate lamp lumens per flagpole. The light source shall have a beam spread no greater than necessary to illuminate the flag.
 - (k) Under-canopy lighting for such applications as gas/service stations, hotel/theater marquees, and fast-food/bank/drugstore drive-ups shall be accomplished using flat-lens full-cutoff luminaires aimed straight down and shielded in such a manner that the lowest opaque edge of the luminaire shall be below the light source and its light-directing surfaces, at all lateral angles around the luminaire. The average illumination intensity in the area directly below the canopy shall not exceed 20 maintained footcandles, and the maximum density shall not exceed 30 initial footcandles.
 - (l) Soffit lighting around building exteriors shall not exceed 15 initial footcandles.
 - (m) The use of white strobe lighting for tall structures such as smokestacks, chimneys and radio/communication towers is prohibited during hours of darkness, except as required by the FAA.
- (4) Installation.
- (a) Electrical feeds for lighting standards shall be run underground, not overhead, and shall be in accord with the National Electrical Code (NEC) Handbook.
 - (b) Poles supporting luminaires for the illumination of parking areas and located within the parking area or directly behind parking spaces, or where they could be hit by snow plows or wide-swinging vehicles, shall be protected by being placed a minimum of five feet outside paved area or tire stops, or placed on concrete pedestals at least 30 inches high above the pavement, shielded by steel bollards or protected by other Township-approved means.
 - (c) Pole-mounted luminaires for lighting horizontal surfaces shall be aimed straight down, and poles shall be plumb.

- (d) Poles and brackets for supporting luminaires shall be those specifically manufactured for that purpose and shall be designed and rated for the luminaire and mounting accessory weights and wind loads involved.
 - (e) Pole foundations shall be designed consistent with manufacturer's wind load requirements and local soil conditions involved.
- (5) Maintenance. Luminaires and ancillary equipment shall be maintained so as to meet the requirements of this chapter.
- (6) Billboards and signs. The lighting of new or relighting of existing billboards and signs shall require a zoning permit, which shall be granted when the Township is satisfied that excessive illumination, light pollution, glare and light trespass have been adequately mitigated, and shall be subject to the following requirements:
- (a) Externally illuminated billboards and signs shall have luminaires mounted at the top of the billboard or sign and aimed downward. The luminaires shall be designed, fitted and aimed to shield the lamp and its reflective surfaces from off-site view and to place the light output onto and not beyond the sign or billboard. Lighting shall be by linear fluorescent unless it can be demonstrated to the satisfaction of the Township that such a mounting arrangement is not possible. At no point on the face of the sign or billboard and at no time shall the illumination exceed 30 vertical footcandles during hours of darkness.
 - (b) Internally illuminated signs shall have a dark field and light message. The aggregate output of the light sources shall not exceed 500 initial lumens per square foot of sign face per side.
 - (c) Electronic signs shall comply with the requirements of § 119-65.
 - (d) The illumination of a billboard within 400 feet of a residential use shall not be permitted.
 - (e) Rotating, traveling, pulsing, flashing or oscillating light sources, lasers, beacons, searchlights or strobe lighting shall not be permitted.
 - (f) The use of highly reflective signage that creates nuisance glare or a safety hazard shall not be permitted.
- D. Recreational uses. The nighttime illumination of outdoor recreational facilities for such sports as baseball, basketball, soccer, tennis, track and field, and football typically necessitates higher than normally permitted luminaire mounting heights and aiming angles, utilizes very-high-wattage lamps and potentially produces unacceptable levels of light trespass and glare when located near residential properties. Permission to illuminate such facilities shall be granted only when the Township is satisfied that the health, safety and welfare rights of nearby property owners and the Township as a whole have been properly protected. When recreational uses are specifically permitted by the Township for operation during hours of darkness, the following requirements shall apply:
- (1) Racetracks and such recreational venues as golf driving ranges and trap-shooting

facilities that necessitate the horizontal or near horizontal aiming of luminaires and projection of illumination may be permitted by conditional use. A visual impact plan, as set forth in Subsection D(6) below, shall be required.

- (2) Recreational facilities for basketball, baseball, football, soccer, miniature golf, tennis or track shall not be illuminated if located within a residential district or sited on a nonresidential property located within 1,000 feet of a property within a residential district.
- (3) Sporting events shall be timed to end at such time that all lighting in the sports facility, other than lighting for safe exit of patrons, shall be extinguished by 10:00 p.m., except on the occurrence of extra innings or overtimes.
- (4) The Township reserves the right to limit the number of illuminated sporting events per week or season.
- (5) Maximum mounting heights for recreational lighting shall be in accord with the following:
 - (a) Basketball: 20 feet.
 - (b) Football: 70 feet.
 - (c) Soccer: 70 feet.
 - (d) Lacrosse: 70 feet.
 - (e) Baseball and softball:
 - [1] Two-hundred-foot radius: 60 feet.
 - [2] Three-hundred-foot and larger radius: 70 feet.
 - (f) Miniature golf: 20 feet. See driving range in § 119-48D(1).
 - (g) Swimming pool aprons: 20 feet.
 - (h) Tennis: 20 feet.
 - (i) Track: 20 feet.
 - (j) All uses not listed: 20 feet, including commercial recreational lighting not otherwise regulated in this § 119-48.
- (6) Visual impact plan. To assist the Township in determining whether the potential impacts of proposed lighting have been suitably managed, applications for illuminating recreational facilities shall be accompanied not only with the information required under § 119-48E, but also by a visual impact plan that contains the following:
 - (a) Plan views containing a layout of the recreational facility and showing pole locations and the location of residences on adjoining properties.
 - (b) Elevations containing pole and luminaire mounting heights, horizontal and vertical

aiming angles and luminaire arrays for each pole location.

- (c) Elevations containing initial vertical illuminance plots at the boundary of the site, taken at a height of five feet line-of-sight.
 - (d) Elevations containing initial vertical illuminance plots on the windowed facades of all residences facing and adjacent to the recreational facility. Such plots shall demonstrate compliance with the light trespass and glare control requirements of § 119-48C(3).
 - (e) Proposed frequency of use of the facility during hours of darkness on a month-by-month basis and proposed time when the sports lighting will be extinguished.
 - (f) A narrative describing the measures proposed to achieve minimum off-site disturbance.
- E. Plan submission. Lighting plans shall be submitted for Township review and approval for subdivision and land development, conditional use, variance, zoning permit and special exception applications. The submitted information shall include the following:
- (1) A plan or plans of the site, complete with all structures, parking spaces, building entrances, traffic areas (both vehicular and pedestrian), existing and proposed trees, and adjacent uses that might be adversely impacted by the lighting. The lighting plan shall contain a layout of all proposed and existing luminaires, including, but not limited to, area, architectural, building entrance, canopy, soffit, landscape, flags and signs, by location, orientation, aiming direction, mounting height, lamp, photometry and type.
 - (2) A ten-foot-by-ten-foot illuminance grid (point-by-point) plot of maintained horizontal footcandles overlaid on the site plan, plotted out to 0.0 footcandle, which demonstrates compliance with the light trespass, illuminance and uniformity requirements as set forth in this chapter. When the scale of the plan, as judged by the Township, makes a ten-foot-by-ten-foot grid plot illegible, a more-legible grid spacing may be permitted.
 - (3) Light-loss factors, IES candela test-filename, initial lamp-lumen ratings and specific lamp manufacturer's lamp ordering nomenclature, used in calculating the plotted illuminance levels.
 - (4) Description of the proposed equipment, including luminaire catalog cuts, photometrics, glare-reduction devices, lamps, on/off control devices, mounting heights, pole foundation details, pole-protection means and mounting methods.
 - (5) Landscaping plans shall contain luminaire locations, demonstrating that the site lighting and landscaping have been coordinated to minimize conflict between vegetation and intended light distribution, both initially and at vegetation maturity.
 - (6) When requested by the Township, the applicant shall also submit a visual impact plan in accord with § 119-48D(6).
 - (7) Plan notes. The following notes shall appear on the lighting plan:
 - (a) "Post-approval alterations to lighting plans or intended substitutions for specified

lighting equipment on the approved plan shall be submitted to the Township for review and approval prior to installation. Requests for substitutions shall be accompanied by catalog cuts of the proposed equipment that demonstrate the proposed substitution is equal to or exceeds the optical quality and maintainability of the specified luminaires; and accompanied by a lighting plan, including a point-by-point plot, which demonstrates that proposed substitutions will result in a lighting design that equals or exceeds the quality of the approved plan."

- (b) "The Township reserves the right to conduct post-installation inspections to verify compliance with ordinance requirements and approved lighting plan commitments and, if deemed appropriate by the Township, to require remedial action at no expense to the Township."
- (c) "All exterior lighting, including building-mounted lighting, shall meet IESNA full-cutoff criteria unless otherwise specifically approved by the Township."
- (d) "Installer shall notify Township to arrange for inspection and approval of all exterior lighting, including building-mounted lighting, prior to its installation."

F. Compliance monitoring.

- (1) Safety hazards. If the Zoning Officer determines that a lighting installation creates a safety hazard, enforcement proceedings shall be initiated in accord with § 119-7.
- (2) Nuisance glare and inadequate illumination levels. If the Zoning Officer determines that a lighting installation produces unacceptable levels of nuisance glare, skyward light, excessive or insufficient illumination levels or otherwise varies from the requirements of this chapter, enforcement proceedings shall be initiated in accord with § 119-7.

G. Nonconforming lighting. A nonconforming lighting fixture or lighting installation shall be made to conform with the applicable requirements of this § 119-48 when:

- (1) It is deemed by the Zoning Officer to create a safety hazard;
- (2) It is replaced, abandoned or relocated;
- (3) There is a change in use; or
- (4) Minor corrective action is deemed appropriate by the Zoning Officer to bring the fixture or installation into conformance with the requirements of this chapter. "Minor corrective action" shall be defined as having a cost not to exceed 25% of the cost of the replacement of the fixture or installation.

H. Definitions. The definitions in this § 119-48H shall supplement the definitions in § 119-21.

ARCHITECTURAL LIGHTING — Lighting designed to reveal architectural beauty, shape and/or form and for which lighting for any other purpose is incidental.

FOOTCANDLE — The amount of illumination the inside surface of a one-foot-radius sphere would receive if there were a uniform point source of one candela in the exact center of the sphere. The footcandle is equal to one lumen per square foot and is measurable with an illuminance meter (light meter).

FULL CUTOFF — Attribute of a luminaire from which no light is emitted at or above a horizontal plane drawn through the lowest light-emitting portion of the luminaire and no more than 10% of the lamp's intensity is emitted at or above an angle 10° below that horizontal plane, at all lateral angles around the luminaire. A full-cutoff luminaire, by definition, also is "fully shielded."

FULLY SHIELDED — A luminaire with opaque top and sides, capable of emitting light only in the lower photometric hemisphere as installed. See also "full cutoff."

GLARE — Light entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or loss in visual performance and visibility.

IESNA — Illuminating Engineering Society of North America.

LAMP — A generic term for a source of optical radiation, often called a "bulb" or "tube."

LED — Light-emitting diode.

LIGHTING SYSTEM — On a site, all exterior electric lighting and controls.

LIGHT TRESPASS — Light emitted by a luminaire or installation, which is cast beyond the boundaries of the property on which the lighting installation is sited.

LUMEN — As used in the context of this chapter, the light-output rating of a lamp (light bulb).

LUMINAIRE — The complete lighting unit (fixture), consisting of a lamp, or lamps and ballast(s), when applicable, together with the parts designed to distribute the light (reflector lens, diffuser), to position and protect the lamps, and to connect the lamps to the power supply.

LUMINAIRE, SHIELDED DIRECTIONAL — A fully shielded luminaire with an adjustable mounting device allowing aiming in a direction other than straight downward.