

Sec. 32-600. Lighting.

- (a) *Purpose.* The purpose of this section is to protect the public health, safety, and general welfare by regulating lighting levels, eliminating glare, promoting safety and security within the community, enhancing the appearance of the township, discouraging energy waste, decreasing urban sky glow, and reducing light trespass.
- (b) *Definitions.* The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this subsection, except where the context clearly indicates a different meaning:

Abandon means to intentionally cease or suspend from developing or maintaining a building or use for a stated period of time.

Ambient lighting means the general overall level of lighting in an area.

Baffle or light shield means an opaque or translucent element to shield a light source from direct view.

Brightness means strength of the sensation that results from viewing surfaces from which the light comes to the eye.

Building canopy means a portion of the building, whether structural or architectural in character, that projects outward.

Bulb or lamp means the source of electric light. The term "bulb or lamp" is to be distinguished from the whole assembly (see *Luminaire*).

Canopy structure means an overhead structure which is designed to allow vehicles or pedestrians to pass under it.

Cutoff angle of a luminaire means the angle, measured from the nadir (straight down), between the vertical axis and the first line of sight at which the base source (the bulb or lamp) is not visible.

Cutoff fixture means a fixture that provides a cutoff (shielding) of the emitted light.

Existing lighting means any and all lighting installed prior to the effective date of the ordinance from which this section is derived.

Exterior lighting means temporary or permanent lighting that is installed, located or used in such a manner to cause light rays to shine outside. Fixtures that are installed indoors that are intended to light something outside are considered exterior lighting for the purposes of this section.

Fixture means the assembly that holds a lamp and may include an assembly housing, a mounting bracket or pole socket, a lamp holder, a ballast, a reflector or mirror, and a refractor or lens.

Footcandle means a unit of illumination produced on a surface. One footcandle is equal to one lumen per square foot.

Full cutoff fixture means a fixture that allows no emission above a horizontal plane through the fixture. (See Exhibit 1.)

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Glare means harsh, uncomfortably brilliant light caused by the ability to see an unshielded light source.

Illuminance means density of luminous flux evident on a surface.

Lamp means the component of a luminaire that produces the light.

Light pole means the structure to support and elevate a luminaire.

Light pollution means any adverse effect of manmade light including, but not limited to, light trespass, uplighting, the uncomfortable distraction to the eye, or any manmade light that diminishes the ability to view the night sky. Often used to denote urban sky glow.

Light trespass means light that is unnecessarily emitted beyond the purpose and intent of the light. (See section (e)(3) of this section.)

Luminaire means the complete lighting unit, including the lamp, the fixture, and other parts necessary for attachment to a structure or building.

Luminaire, full cutoff, means a luminaire that allows no direct light emissions above a horizontal plane through the luminaire's lowest light-emitting part. All appurtenances, including the lens, shall not project below the bottom of the luminaire.

Luminaire, non-cutoff, means a luminaire that allows direct light emissions in all directions. (See Exhibit 1.)

Luminance means the perceived brightness that we see, the visual effect of the illuminance, reflected, emitted or transmitted from a surface.

Lumen means a unit of measurement of luminous flux. One footcandle is equal to one lumen per square foot.

Photometric plan means a photometric diagram prepared by a lighting professional that is certified by the National Council on Qualifications for the Lighting Professions (NCQLP), or a state licensed professional engineer, architect, or landscape architect showing predicted maintained lighting levels produced by the proposed lighting fixture.

Recessed means when a light is built into a structure or portion of a structure such that the light is fully cut off by the structure to which it is attached.

Shielded means a bulb or lamp concealed by a baffle or light shield.

Spotlight means a luminaire designed to light only a small, well defined area or object.

Temporary lighting means lighting that is intended to be used for a special event lasting seven days or less.

Uniformity ratio means the ratio of the highest horizontal illuminance point at grade to the lowest horizontal illuminance point at grade.

Unneeded lighting means lighting that is not necessary for its intended purpose.

Urban sky glow means the brightening of the night sky due to manmade lighting.

Visibility means being perceived by the eye.

(c) *Scope of application.* Except as provided below, these requirements shall apply to all multi-family and nonresidential uses in all zoning districts. Any lighting in existence before the effective date of the ordinance from which this section is derived that does not comply with its requirements shall be considered legally noncomplying and may remain, except for lighting subject to subsection (p) of this section and the following provisions:

(1) *Alterations to existing lighting.*

- a. When poles and support structures are removed and replaced, or destroyed by any means to an extent of more than 50 percent of their replacement value at time of destruction, they must be replaced with poles and supports that comply with this section; and
- b. When luminaries are removed and replaced, or destroyed by any means to an extent of more than 50 percent of their replacement value at time of destruction, they must be replaced with luminaries that comply with all provisions of this section.

(2) *Removal and replacement of parking lot surface.* When less than 50 percent of the gross area of the parking lot surface on a particular site is removed and replaced, only the parking area replaced must be provided with lighting in compliance with this section. If greater than 50 percent of the parking area on a particular site is removed and replaced at one time, the entire parking lot on the site where the construction activity occurs must be in full compliance with this section. A parking lot or portion thereof is "removed and replaced" when any portion of the existing parking surface material is removed and a new surface is installed.

(3) *New parking lots or parking lot additions.* When a new parking lot or addition to an existing parking lot is constructed, the new lot or lot addition must be provided with lighting in compliance with this section.

(4) *New structures, additions, or replacements.* When a site is improved with new structures, or additions to, or replacements of existing structures, the lighting for the new structure, addition or replacement on the site must be upgraded with complying lighting and the parking lot lighting must be upgraded with complying lighting over a portion of the parking area that is equivalent to the amount of parking that would be required for the new structure, addition or replacement by section 32-655. In the event that the new structure, addition, or replacement is accompanied by new or replaced parking area, the amount of upgraded lighting area shall be that required under this subparagraph d, or that required under the combination of subparagraphs b and c, whichever is greater.

(5) *Change of type of occupancy.* When the type of occupancy of a site is changed, the lighting for the site shall be upgraded, as necessary, to comply with this section for the structure and the parking lot for the parking required for occupancy as established in section 32-655. For purposes of determining the type of occupancy of a site, the occupancy classifications of the North American Industry Classification System (NAICS) shall be utilized.

- (6) *Unoccupied sites.* When a site has been abandoned for a period of one year, the lighting shall be upgraded to fully comply with this section prior to any reoccupation of the site.
- (d) *Exemptions.* The following outdoor lighting fixtures are exempt from the requirements of this section:
- (1) Fixtures producing light directly by the combustion of fossil fuels, such as kerosene lanterns, gas lamps, or fire pits.
 - (2) Emergency lighting necessary to conduct rescue operations, support public safety, provide emergency medical treatment, to illuminate emergency means of egress, or address any other emergency situation.
 - (3) Lighting operated by a public utility or agency during the course of constructing, repairing, or replacing public utilities and infrastructure.
 - (4) Holiday lighting.
 - (5) Unshielded luminaries that have a maximum output of 260 lumens per fixture, regardless of number of bulbs, (equal to one 20-watt incandescent light), provided the fixture has an opaque top to keep light from shining upward.
 - (6) Shielded luminaries that have a maximum output of 1,000 lumens per fixture, regardless of number of bulbs, (equal to one 60-watt incandescent light).
 - (7) Sensor activated lighting may be unshielded provided it is located in such a manner as to prevent direct glare and lighting into properties of others or into a public right-of-way, and provided the light is set to only go on when activated and to go off within five minutes after activation has ceased, and the light shall not be triggered by activity off the property.
 - (8) Lights on communication towers and other hazards to aerial navigation as may be required by the Federal Aviation Administration.
 - (9) Lighting used to illuminate a flag of the United States continuously displayed over a 24-hour period, subject to subsection (n)(5) of this section.
- (e) *Prohibitions.*
- (1) Uplighting is prohibited, except in cases where the luminaire is contained by a roof, overhang, or canopy (see subsection (j) of this section), for illuminating a flag of the United States (see subsection (n)(5) of this section), or for ground-mounted decorative fixtures designed to enhance site landscaping or plant materials.
 - (2) All neon, argon, or krypton outdoor lighting fixtures are prohibited.
 - (3) Light from any outdoor lighting onto adjacent residentially zoned or used property or residentially zoned or used property that is within a direct line from the light source that interferes with viewing of the night sky, eliminates the ability to have darkness on the property, or shines on any area on these properties or structures. Any determination of light trespass shall be made through a quantitative measurement utilizing a standard yard stick (three feet by 1 1/2 inches). The yard stick shall be placed at the required building setback line in the

complainant's yard. The yard stick shall be in contact with the ground or may be raised to window level of the dwelling and in a vertical position. The person taking the measurement shall then determine if a shadow is cast by the light source. Such incidence shall be a determination of light trespass. The light source, yard stick, and shadow must be in alignment. Measurements shall not be taken when there is a moon in the night sky or during periods of precipitation such as, but not limited to, rain, snow, or fog, which may interfere with an accurate measurement of light trespass. Additional landscaping may be required by the building official to provide light screening between commercial zones and residential zones to help prevent light trespass. Where landscaping is used for light screening, the building official shall take into consideration the applicable landscaping standards found elsewhere in these regulations, the creation of excessive shadows or dark spaces, and views into and out of a site.

- (4) Lighting fixtures shall not be mounted directly to the building facade, except for signage illumination, or as indicated in subsection (k) of this section for loading zones and subsection (l) of this section for pedestrian doorways.
- (f) *Compliance.* All site plans submitted in accordance with section 32-586 shall provide the following information:
- (1) A photometric plan showing footcandle readings every ten feet within the subject site and ten feet beyond the property lines.
 - (2) Manufacturer specification sheets, cut-sheets or other manufacturer provided information for all proposed lighting fixtures.
 - (3) The location of all exterior lights, including but not limited to light poles, building-mounted lights, and canopy lights.
 - (4) The height of all light fixtures and poles.
 - (5) If building elevations are proposed for illumination, drawings shall be provided for all relevant building elevations showing the fixtures, the portions of the elevations to be illuminated, the illuminance levels of the elevations, and the aiming point for any remote light fixture.
- (g) *General provisions.*
- (1) Whenever practicable, lighting installations shall include timers, dimmers, and/or sensors to reduce overall energy consumption and eliminate unneeded lighting.
 - (2) Except as provided by subsection (c) of this section, when an outdoor lighting plan is being modified, extended, expanded, or added to as part of an amended site plan, the entire outdoor lighting installation shall be subject to the requirements of this article.
 - (3) Electrical service to freestanding outdoor lighting fixtures shall be underground unless the fixtures are mounted directly on utility poles. (See section 32-606.) No electrical service for surface mounted building lights shall be exposed.
 - (4) For the purposes of these regulations, the mounting height of a lighting fixture shall be defined as the vertical distance from the grade elevation of the surface being illuminated to the top of the lighting fixture. Any light intensity

measurement taken at the property line shall be measured at the greatest point of illumination at said property line. Any measurements to determine the minimum and maximum lighting levels internal to a site will be measured by positioning the meter horizontally at ground level at the greatest and least points of artificial illumination.

- (5) All outdoor lighting shall be shielded, shaded, designed and/or directed away from all adjacent districts and uses; and further shall not glare upon or interfere with persons and vehicles using public streets. Lighting fixtures are to be of the full cutoff design with horizontally aligned flush-mounted (non-protruding) lens. (See Exhibit 2.)

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- (6) All general parking area lighting is to be reduced to an average of 0.4 footcandle at four feet zero inches above the parking surface, with a uniformity ratio of 10:1, after established hours of operation. These hours are to be indicated during the site plan review and filed with the township building department. Any change in these hours of operation is to be refiled with the building department. Established hours of operation are defined as one-half hour before and one-half hour after the published business hours. At the time of site plan review, the applicant can define the specific nature of after hours operation that require an additional need for limited lighting above the permitted 0.4 footcandle necessary for purposes of maintenance and/or shipping and receiving activities. Such areas and levels of lighting shall be delineated on the site plan.
 - (7) All landscape material is to be trimmed so that it does not interfere with the intent of the fixture.
 - (8) No sound shall be emitted from the fixture that is detectable on any adjacent property or roadway. This sound is to be measured with a calibrated decibel meter using the A scale.
 - (9) All exterior installations must be provided with ground fault circuit interrupters (GFCI).
 - (10) Exterior lighting installation shall be designed to avoid harsh contrasts in lighting levels.
- (h) *Parking lots.*
- (1) Any open area used for motor vehicle parking, storage or access shall be illuminated with decorative, freestanding luminaries and fixtures. Freestanding luminaries are permitted to be a maximum height of 25 feet; however, they shall be no higher than 15 feet for installations within 50 feet of residentially zoned or used property.
 - (2) Lighting shall be arranged in an overlapping pattern of light at a height of about seven feet above grade throughout the off-street parking areas. Lighting levels shall respond to site hazards such as steps, ramps and steep embankments. Posts and standards should be placed so that they do not create hazards for

pedestrians or vehicles including obstructing the view of an oncoming pedestrian or car.

- (3) The parking area shall be illuminated so that the minimum horizontal illuminance on pavement is 0.2 footcandle and no more than 4.0 footcandles. The uniformity ratio shall be no greater than 20:1.
 - (4) The luminaire shall be of a mercury vapor or metal halide type.
- (i) *Signs.* Signs may be lighted only in accordance with article VII of this chapter.
- (j) *Canopy lighting and lighting of service stations.*
- (1) Lighting of such areas shall not be used to attract attention to the business.
 - (2) Lighting levels shall be adequate to facilitate the activities taking place in such locations.
 - (3) In order to minimize the extent of direct glare, light fixtures mounted on canopies shall be recessed so that the lens cover is recessed or flush with the bottom surface (ceiling) of the canopy or shielded by the fixture of the edge of the canopy so that light is restrained to 85 degrees or less from vertical. (See Exhibit 3.)

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- (4) As an alternative (or supplement) to recessed ceiling lights, indirect lighting may be used where light is beamed upward and then reflected down from the underside of the canopy. When this method is used, light fixtures must be shielded so that direct illumination is focused exclusively on the underside of the canopy.
 - (5) Lights shall not be mounted on the top or sides (fascias) of the canopy. The sides shall not be illuminated in a manner other than that prescribed under the section of these regulations regulating signs.
 - (6) Areas around service station pump islands shall be illuminated so that the minimum horizontal illuminance at grade level is at least 1.0 footcandle and no more than 5.0 footcandles. The uniformity ratio shall be no greater than 4:1.
- (k) *Loading areas.*
- (1) Loading areas shall be illuminated with wall mounted light fixtures located not more than 15 feet above grade, directed downward and confined to the loading area.
 - (2) The luminaire shall be of a high pressure sodium type.
- (l) *Pedestrian walkways and doorways.*
- (1) The illumination of pedestrian doorways (man-doors) when proposed, shall be illuminated with a wall-mounted decorative light fixture. The means of egress illumination shall not be less than one footcandle, or more than 1.5 footcandle at the floor level, regardless of the type of light source utilized. Such lighting shall

be shielded to reduce glare, and directed downward.

- (2) Lighting for pedestrian walkways shall be a minimum of 2.0 footcandles and shall not exceed a height of four feet above the walkway surface.
 - (3) All pedestrian walkways, sidewalks, and aisles located along major thoroughfares shall be illuminated with:
 - a. Decorative fixtures. The fixtures shall be manufactured by Hadco, Vm71A TONECE, modified or approved equal.
 - b. Ten- to 15-foot maximum height to the top of fixture or pole. The posts shall be manufactured by Hadco, Model #174088 or approved equal.
 - c. Luminaire. The lamp shall be a h45dl4050DX or approved equal.
 - d. The planning commission may, however, recommend an approved equal as a substitute fixture during the site plan review process.
- (m) *Landscape islands and greenbelts around buildings.*
- (1) Landscape islands shall be illuminated with:
 - a. Ground-mounted decorative fixtures directed at required landscape or plant material.
 - b. Thirty-six-inch maximum height to the top of the fixture.
 - c. The luminaire shall be of a mercury vapor or metal halide type.
 - (2) Landscape or greenbelts around buildings shall be illuminated with:
 - a. Ground-mounted decorative fixtures designed to enhance landscape or plant material.
 - b. Thirty-six-inch maximum height to the top of the fixture.
 - c. The luminaire shall be of mercury vapor or metal halide type.
- (n) *Architectural accent lighting.*
- (1) Fixtures used to accent architectural features, materials, colors, style of buildings, or art shall be located, aimed and shielded so that light is directed only on those features. Such fixtures shall be aimed or shielded so as to minimize light spill into the dark night sky. The planning commission may recommend, and the township board may approve, exceptions to this provision if minimal light escapes into the dark night sky or onto adjacent properties.
 - (2) If illuminated, exterior building facades shall be illuminated with a ground-mounted decorative fixture, extending not more than 12 inches above grade. Luminaires shall be of a mercury vapor or metal halide type.
 - (3) The maximum illumination of any vertical surface or angular roof surface in dark surroundings shall not exceed one footcandle.
 - (4) The maximum illumination of any vertical surface or angular roof surface in lighted surroundings shall not exceed three footcandles.

- (5) Only minimal lighting shall be used to illuminate a flag of the United States, statutes, or any other objects mounted on a pole, pedestal or platform. Such lighting shall consist of full cutoff or directionally shielded lighting fixtures that are aimed and controlled so that the direct light shall be substantially confined to the object intended to be illuminated. Directional control shields shall be used where necessary to limit stray light.
- (o) *Lighting of public and private outdoor sport facilities.*
- (1) Lighting at public and private outdoor sports facilities, including but not limited to playing fields, arenas, tracks, and swimming pools, shall be shielded as well as is practicable to reduce glare, safety hazards, light trespass, and light pollution; and shall provide levels of illuminance consistent with nationally recognized standards; and shall be operated on a schedule that coincides with scheduled events.
- (2) Each outdoor recreation facility pursued under this section shall meet the following requirements and standards for exterior lighting.
- a. The main lighting of the facility (spotlighting or floodlighting, etc.) shall be turned off no later than 45 minutes after the end of the day's activities or event. A low-level lighting system shall be installed to facilitate patrons leaving the facility, cleanup, nighttime maintenance, etc. The low-level lighting system shall provide an average horizontal illumination level, at grade level, of no more than 1.0 footcandle.
- b. Where playing fields or other special activity areas are to be illuminated, lighting fixtures shall be specified, mounted, and aimed so that their beams fall within the primary playing area and immediate surroundings, and so that no direct illumination is directed off the site.
- (p) *Nonconforming lights causing light trespass or light pollution.* Existing nonconforming lights causing light trespass or light pollution shall be allowed to continue, subject to the following provisions:
- (1) To reduce glare, safety hazards for drivers and pedestrians, light trespass, and light pollution, all existing spotlights, floodlights, and wall packs shall be adjusted in accordance with the following provisions, excepting the lights at existing sports facilities used temporarily during a scheduled sporting or related events:
- a. For spotlights and floodlights mounted overhead on poles and used for area lighting, the axis of illumination shall be adjusted to an angle not more than 20 degrees from the vertical line between the fixture and the ground. (See Exhibit 4.)

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- b. For spotlights and floodlights mounted at or near ground level and used to light a building, billboard, or other structure, the axis of illumination shall be adjusted to minimize the amount of light escaping above, below, and to the sides of the illuminated object.

- c. Wallpacks shall be adjusted where possible to minimize the amount of light emitted above the horizontal.
- (2) It shall be the responsibility of the township to disseminate the ordinance from which this section is derived by appropriate means; to identify those spotlights, floodlights, and wallpacks requiring adjustment; and to inform their owners of these provisions. Required adjustments made as part of subsection (p)(1) of this section, shall be completed within six months from the effective date of the ordinance from which this section is derived. Any owner who fails to comply with these provisions shall be issued a warning notice. Any owner who further fails to comply after 30 days from the issuance of such warning shall be subject to a fine as may be established by resolution of the township board for each day of noncompliance. It is not the intent of this section to require an additional investment in order to comply with these provisions. Existing light fixtures, other than spotlights, floodlights, and wallpacks, installed prior to the effective date of the ordinance from which this section is derived may continue in service without adjustment or modification through the remainder of their useful lives.
- (3) Should the building official or his authorized designee determine that a legal nonconforming lighting fixture results in light pollution or light trespass, the building official may require the light to either be shielded, filtered, redirected, replaced with a less intense light source or otherwise modified (including removal if necessary) to eliminate the light pollution or light trespass. (See subsection (f)(3) of this section.)
- (4) In those cases where the building official has determined that light pollution or light trespass exists, the building official or an authorized designee, may grant additional time for the property owner to remedy the light pollution or light trespass where a hardship exists. In determining if a hardship exists, the following factors shall be considered:
 - a. The degree of difficulty in accessing the fixture;
 - b. Financial difficulty or cost of correcting the light pollution or light trespass;
 - c. Degree of light pollution or light trespass; and
 - d. Other similar issues.
- (5) When a hardship exists and a request for temporary relief from immediate compliance of a remedy action has been submitted to the building official, the following findings must be made to grant the relief:
 - a. There are special circumstances or conditions applying to the land, building, or outdoor light fixtures for which temporary administrative relief is sought, which circumstances or conditions are peculiar to such land, buildings, or outdoor light fixtures and do not apply generally to the land, buildings or outdoor light fixtures in the general vicinity; and
 - b. The granting of the temporary administrative relief will generally be in harmony with the intent of this section and will not be injurious to properties within the general vicinity or otherwise detrimental to the public welfare.

- (6) When a request for temporary relief has been submitted to the building official in a hardship case, the building official, or his authorized designee shall make a determination within ten business days from the date of the submission of the request and promptly notify the applicant in writing of his decision. Temporary relief shall not exceed a period of 90 days. The building officials' determination may be appealed to the planning commission within ten days of the decision. Should additional time be required, the request shall be forwarded to the planning commission for review and consideration through the special approval use permit process and requirements. (See section 32-35.)
- (7) The building official, or his authorized designee, may forward the request for temporary relief to the planning commission based upon the degree of light pollution or light trespass, costs for correcting the light pollution or light trespass, or other similar issues.
- (8) In those cases where the building official has determined that light pollution or light trespass exists, and that adjustment or removal of the nonconforming light structure is required, he or his authorized designee shall fix a time for the adjustment or removal of the nonconforming lighting fixture commensurate with the investment value and related to the depreciated value of the lighting fixture. Such determination may only be made after notice to the owner.
- (9) Where the building official, or his authorized designee, has determined the continued existence of a nonconforming light is detrimental to the public health, safety or general welfare, or is a public nuisance, the use of such light could be immediately terminated or abated in accordance with the following procedure. A public hearing before the planning commission shall be used to process the termination or abatement. Such hearing shall be noticed in accordance with section 103 of Public Act No. 110 of 2006 (MCL 125.3103). A notice of termination and a copy of the findings shall be sent to the property owner at least 30 days prior to the public hearing. If a termination is ordered, the planning commission may provide for a reasonable period of time to amortize any lawfully existing lighting on the site. Extensions of this time period may be granted for good cause shown on later application to the reviewing authority by any affected person.

(Code 1992, § 19-105; Ord. No. 156-A-121, § 1(19-105), 3-21-2007)