17-90 LIGHTING.*

17-90.1 Outdoor Lighting.

a. *Purpose.* The governing body of Hopewell Township does herein find that regulation of site lighting in Hopewell Township is necessary to prevent negative impacts caused by misdirected or excessive illuminance, inappropriate or misaligned light fixtures, glare, light trespass, and skyglow. Such regulation is necessary to encourage conservation of energy and to prevent destructive light pollution.

b. All site light fixtures installed and thereafter maintained, other than those serving one or two family dwellings, shall be full cut-off fixtures as defined by the IESNA. Full cut-off fixtures shall not have vertical swivel mounting capability. Exceptions will be considered for the following situations:

   1. Luminaires used to illuminate flags, statues, or other objects varying in shape that are mounted on a pole, pedestal or platform, shall be lamped and aimed such that 90 percent of the beam angle is not greater than the size of the object illuminated. Luminaires shall be shielded to minimize direct glare.

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*Editor's Note: Prior ordinance history includes portions of Ordinance No. 00-1171.

(a) For flags that can rotate 360 degrees, the beam angle shall be based on a circle having a radius equal to the width of the flag at the height of the flag, unless the flag is greater than ten feet. Flags greater than ten feet shall be illuminated by a beam with a radius not greater than two-thirds the flag width.

2. Luminaires used for architectural accent and landscape lighting shall be lamped and aimed such that 100 percent of the distribution pattern falls within the illuminated structure. Luminaires shall be shielded to minimize direct glare.

3. Signage.

(a) Top mounted luminaires are preferred for externally illuminated signs. Luminaires shall be lamped and aimed such that 100 percent of the distribution pattern or beam angle falls on the face of the sign. Beam angles shall not exceed the size of the sign. Luminaires shall be shielded to minimize direct glare. In residential areas, the luminance shall not exceed an average maintained vertical existence of 10 fL.

(b) When top mounted luminaires are not feasible for good cause shown, alternate locations may be used provided that the luminaires are lamped and aimed such that 100 percent of the distribution pattern or beam angle falls on the face of the sign. Beam angles shall not exceed the size of the sign. Luminaires shall be shielded to minimize direct glare. In residential areas, the luminance shall not exceed an average maintained vertical existence of 10 fL.

(c) Internally illuminated signage is permitted only on commercial properties with frontage on Route 31. The majority of the sign surface, typically the background, shall be a dark color.

4. Outdoor recreational and sports facilities where it can be demonstrated that the arrangement of playing surfaces is such that illumination using full cutoff luminaires would result in poles located on or dangerously close to playing surfaces, may utilize semi-cutoff luminaires. Luminaires shall be constructed, located and aimed such that illumination at grade does not cross any property line. Lamps shall be shielded from normal viewing angles.

5. Luminaires used within the interior of a parking structure or where deemed necessary along roadways shall meet cutoff classification requirements.

c. The use of mercury vapor lamps is prohibited.

d. Outdoor light fixtures for purposes of private usage shall not be attached or mounted from public property (i.e. public buildings, utility poles, street lights, road/street signs). Furthermore, these fixtures shall not tap or extend power from sources servicing public lighting and/or power devices.

e. *Recreational Facilities.* All recreational areas which require lighting shall comply with the standards set forth in section 17-101b.
(Ord. #03-1297, § 1)

17-90.2 Light Trespass.

a. The principle of shielding whenever light trespass will otherwise occur shall guide the design, installation and maintenance of outdoor lighting in institutional, commercial and residential installations. All light fixtures shall further meet the specifications below:

   1. For commercial and institutional applications, illuminance from exterior lighting, facade lighting, landscape lighting, light emissions through windows caused by interior illumination, and all other forms, shall not exceed 0.3 footcandles in the vertical plane at a height of five feet or higher at the property line of any neighboring residential property, and shall not exceed 0.1 footcandles after 10:00 p.m.

   2. For one- and two-family dwellings, illuminance from exterior lighting, facade lighting, and landscape lighting shall not exceed 0.1 footcandles in the vertical plane at a height of five feet or higher at the property line of any neighboring residential property. Exceptions may be granted provided these requirements are adhered to within 30 feet of the dwelling itself.

b. For commercial and institutional applications, interior lighting shall be controlled automatically to turn off by 10:00 p.m. unless the building is occupied. Interior luminaires used for emergency illumination are excluded. Minimal security night lighting shall be allowed to remain on. Interior ceilings and vertical surfaces within view from exterior of building shall not be illuminated at night. This provision is designed to minimize nuisance glare on neighboring residential properties, and enhance energy conservation. Acceptable exemptions are:

   1. Interior display lighting in retail facilities may remain on for security purposes. The use of minimal required illumination is encouraged.

c. All outdoor light fixtures that utilize lamps 50 watts or larger shall be full cutoff as defined by IESNA. The use of minimal illumination is encouraged.

   1. Light fixtures controlled by motion detector switches shall be exempt.

d. Outdoor light fixtures shall be continually maintained to assure light distribution compliant with this section and prevent direct view of lamps from any adjacent residential property.
(Ord. #03-1297 § 1)

17-90.3 Illuminance Requirements.

a. The principle of minimum required illuminance shall guide the design, installation, and maintenance of all outdoor lighting.

b. *Street Lighting.* Roadway lighting shall occur at intersections, roadways with designated bikeways, dangerous areas as may be determined by the township committee, or in developments with average densities of two units per acre or greater. All street lighting shall be photocell controlled, use house-side shielding when adjacent to residential areas, and utilize shielding or refractive lenses to mitigate direct lamp glare.

1. The use of low pressure sodium lamps is encouraged. High pressure sodium lamps may be used as an alternate.

2. Lights shall be located on inside radius of curves in roadways wherever possible.

c. *Outdoor Parking Facilities.* All parking lot luminaires shall be full cutoff light fixtures. Use of high pressure sodium lamps in luminaires is encouraged; in retail applications where security is a large concern, metal halide lamps may be utilized. Parking facility illumination shall comply with the following specifications:

1. On-Grade Parking.

(a) Minimum maintained horizontal illuminance at grade shall not exceed 0.2 footcandles. (0.5 footcandles is acceptable in commercial zones where unusual security concerns can be shown.)

(b) Maximum maintained to minimum maintained horizontal illumination uniformity ratio shall not exceed 20:1. (15:1 ratio used when minimum maintained illumination at grade is 0.5 footcandles.)

(c) Minimum vertical illumination shall be at least 0.1 footcandles measured five feet above finished grade at the point of minimum horizontal illuminance, facing inward along parking lot perimeter.

2. Parking Structures.

(a) Open roof deck parking shall comply with requirement for on-grade parking, outlined above.
(Ord. #03-1297, § 1)

17-90.4 Outdoor Lighting Energy Conservation.

a. All outdoor lighting, other than that serving one- and two-family dwellings, shall be turned off through the use of automatic control devices during nonoperating hours, or by 10:00 p.m., except where it can be demonstrated that safety or security purposes require illumination. The following are acceptable exemptions from this requirement:

1. Operating hours of the facility are past 10:00 p.m., in which case the lighting shall turn off at the conclusion of business.

2. Exterior retail and merchandise display lighting may remain on until 10:00 p.m., but shall not remain on after 10:00 p.m. unless the business is open to the public later than 10:00 p.m., in which case the lighting shall be turned off at the conclusion of the business period.

3. Exterior lighting for recreational areas, athletic fields, and courts shall not remain on after 10:00 p.m. unless athletic or public activity is in progress. If organized activity warrants lighting of these facilities after 10:00 p.m., it is the responsibility of the participants to ensure lights are turned off at the conclusion of activity.

b. Minimal required levels of illumination are to be used in all applications. All lighting shall be designed, selected and installed both to prevent negative impacts caused by misdirected or excessive light and to conserve energy.
(Ord. #03-1297, § 1)

17-90.5 Evidence of Compliance.

a. Evidence of compliance shall include all of the following:

1. Descriptions of all outdoor luminaires, including lamps. Manufacturer catalog cut sheets for luminaire shall include model number, dimensioned cross section, optics, angle of cutoff, shielding, and photometric report prepared by independent testing lab graphically indicating candela distributions from 0 to 180 degrees vertically. Adjustable fixtures shall be capable of locking in place to prevent movement of fixture during relamping. Lamp description shall include type of lamp source, wattage, clear or coated bulb, and initial lumens. Lamps used in spotlights or floodlights shall also include beam angles.

2. Mounting heights and details should be included for all fixtures. Light pole diameters and dimensioned foundation details shall be provided.

3. Where horizontal illumination metrics are required, site lighting plans, to scale, with computer generated maintained footcandle calculation points on a maximum calculation grid spacing of every ten feet are to be provided. Plans shall indicate location of all fixtures, and aiming angles for spot and flood fixtures.

4. Site lighting plans, to scale, with computer generated initial footcandle calculation points on a maximum calculation grid spacing of every ten feet are to be provided. (Initial illumination calculations may be used to field verify compliance with lighting requirements at the completion of construction.)

5. Calculation summary shall include minimum, average, and maximum maintained illumination levels in footcandles, as well as uniformity ratios as described in subsection 17-90.3. In addition provide light loss factor used for each fixture type.

6. Adjustable site lighting fixtures shall indicate aiming angles, distribution patterns, and illumination or existence levels that illustrate compliance with subsection 17-90.1 b,1, 2, or 3.

7. Lighting calculations shall be performed by a NCQLP certified LC' professional, unless this requirement creates undue hardship that can be demonstrated.

b. Once properly installed, fixtures are to be aimed, permanently affixed, and with written agreement, maintained in the approved position. All glare shield and cutoff devices shall be maintained.
(Ord. #03-1297, § 1)

17-90.6 Compliance, Monitoring Penalties and Prohibitions.

a. The township may conduct post-installation inspections of lighting fixtures in order to ensure compliance with ordinance requirements and intents. Corrective action may be required for any installation that does not meet ordinance criteria or which causes unacceptable levels of light trespass, glare or contributions to skyglow.

b. The township may recommend changes in the field that would correct problem situations, such as re-aiming floodlights, adding appropriate shielding, decreasing lamp wattage, or replacing equipment.

c. Searchlights or flashing or animated signs are prohibited, other than as approved by the township committee.
(Ord. #03-1297, § 1)