

17-90. LIGHTING. [4Ord. #03-1297, § 1; amended 6-3-2019 by Ord. No. 19-1709]

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 (luminaires), 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 (Illuminating Engineering Society of North America) with an upright rating of U0 in accordance with the B-U-G (Backlight, Uplight, Glare) rating system defined in the current Model Lighting Ordinance (MLO) authored jointly by the IDA (International Dark-Sky Association) and IES. Full cut-off fixtures shall not have vertical swivel mounting capability. Exceptions will be considered for the following situations:
 1. Luminaires used to illuminate statues or other objects varying in shape that are mounted on a pole, pedestal or platform, which are lamped and aimed such that 90% of the beam angle is not greater than the size of the object illuminated. Luminaires shall be shielded to minimize direct glare.
 2. Luminaires used to illuminate American flags that can rotate 360°, shall have a beam angle 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 10 feet in width. Flags greater than 10 feet in width shall be illuminated by a beam with a radius not greater than 2/3 the flag width.
 3. Luminaires used for architectural accent and landscape lighting shall be lamped and aimed such that 100% of the distribution pattern falls within the illuminated structure. Luminaires shall be shielded to minimize direct glare.
 - (a) Landscape and accent up lighting shall be turned off automatically by 10:00 p.m.
 4. Luminaires used for signage.
 - (a) Top-mounted luminaires are preferred for externally illuminated signs. Luminaires shall be lamped and aimed such that 100% 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 (footlambert).
 - (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% 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 prevent direct view of the light source from normal viewing angles. The luminance shall not exceed an average maintained vertical existence of 10 fL (footlambert).

(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.

(d) Signage lighting shall be controlled by photocell for energy conservation during daylight hours and/or by timer for energy conservation outside of business hours.

5. 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.
 6. 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 § 17-101b (Hopewell ecode)
 - f. Hopewell Township shall be considered Lighting Zone 1, in accordance with the IES/IDA MLO referenced by the Leadership in Energy and Environmental Design (LEED) and other sustainability programs, desiring low ambient lighting levels in a community of predominantly single-family housing and rural community town centers. The MLO shall complement and in no case supersede the requirements of this section.
 - g. Flashing or strobing of light installations is not permitted. Temporary seasonal lighting is excluded.

17-90.2. Light Trespass and Sky Glow.

- a. Luminaire design and placement shall be utilized to prevent light trespass along property lines. External shielding accessories to luminaires shall be used where it can be demonstrated that luminaire selection and placement alone could not prevent light trespass.
- b. Site lighting installations shall further meet the specifications below:

1. For commercial, industrial 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 footcandle 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 footcandle after 10:00 p.m.
 2. For single-, two-family and multi-family dwellings, illuminance from exterior lighting, facade lighting, and landscape lighting shall not exceed 0.1 footcandle 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 any dwelling.
- c. For commercial, industrial 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; emergency lighting is encouraged to be controlled by occupancy sensors. 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.
 2. For commercial, industrial and institutional applications, outdoor light fixtures shall have a color temperature of 3500 Kelvin or lower. Luminaire maintenance protocols shall assure luminaires are maintained with lamps and LED (light emitting diode) modules that comply with this section.
 3. For residential applications, outdoor light fixtures shall have a color temperature of 2700 Kelvin or lower. The use of minimal illumination is encouraged.
 4. Outdoor light fixtures shall be continually maintained to assure light distribution compliant with this section and illuminance requirements.

17-90.3. Illuminance Requirements.

- a. The principle of minimum necessary 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, in developments with average densities of two units per acre or greater, and dangerous areas as may be determined by the Township Committee, Planning Board, or Zoning Board of Adjustment. All street lighting shall be photocell controlled, use house-side shielding when adjacent to dwelling units, and utilize shielding or refractive lenses to mitigate direct source glare.
 1. 2700 Kelvin or lower luminaires shall be utilized.

2. Lights located at roadway curves shall be located on inside radius of curves wherever possible.
- c. Outdoor Parking Facilities. All parking lot luminaires shall be full cutoff light fixtures with 2700 Kelvin color temperature or lower. 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 footcandle (0.5 footcandle is acceptable in commercial zones where unusual security concerns can be shown).
 - (b) Maximum 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 footcandle).
 - (c) Minimum vertical illumination shall be at least 0.5 footcandle measured five feet above finished grade at pedestrian crossings.
 2. Parking Structures.
 - (a) Lighting within 30 feet of structure entrances shall be reverse photocell controlled, increasing illumination with increased daylight.
 - (b) Use of dual-level motion sensed lighting is encouraged.
 - (c) Open roof deck parking shall comply with requirement for on-grade parking outlined above.
 3. All outdoor luminaires, exempting those used on single- and two-family dwellings, shall comply with the following glare ratings as defined by the MLO.

Building-mounted luminaires	Glare rating
>2 mounting heights from property line	G1
1-2 mounting heights from property line	G0
<1 and >0.5 mounting height from property line	G0
0.5 mounting height or less from property line	G0
Other luminaire types	G1

17-90.4. Outdoor Lighting Energy Conservation.

- a. All outdoor lighting, other than that serving single-, two- and multi-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 activities.
 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.
 - c. The use of LED luminaires is encouraged. Luminaires shall contain integral lamp life sensing controls or have maintenance protocols that require LED module replacement when LED drivers are replaced. Luminaire maintenance protocols shall assure luminaires are maintained to be compliant with this article. The use of incandescent and halogen lamps is discouraged.
 - d. Dimming controls for outdoor lighting is encouraged. High-end trim settings shall be utilized to assure minimum necessary illumination and resolve compliance discrepancies upon Township inspection.

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 with all accessories and selections clearly indicated, dimensioned cross sections, B-U-G ratings, and photometric report prepared by independent testing lab graphically indicating candela distributions from 0° to 180°vertically. Pole-mounted lights shall include EPA (effective projected area) ratings. Adjustable fixtures, where permitted shall be capable of locking in place to prevent movement of fixture during servicing. Lamp description shall include type of lamp source, wattage, clear or coated bulb, color temperature, spectral power distribution curves, and initial and mean lumens. Spotlights or floodlights shall also include beam angles.
 2. Mounting heights and details should be included for all fixtures. Pole heights shall not exceed 25 feet.
 3. Light pole diameters and dimensioned foundation details shall be provided. Light poles and foundations shall be designed to withstand 100-mph winds.
 4. 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 10 feet are to be provided. Plans shall indicate location of all fixtures and aiming angles for spot and flood fixtures.

5. Site lighting plans, to scale, with computer-generated initial footcandle calculation points on a maximum calculation grid spacing of every 10 feet are to be provided (initial illumination calculations may be used to field verify compliance with lighting requirements at the completion of construction).
 6. 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.
 7. Adjustable site lighting fixtures shall indicate aiming angles, distribution patterns, and illumination or existence levels that illustrate compliance with Subsection 17-90.1b1, 2 or 3. (Hopewell ecode)
 8. Lighting calculations shall be performed by a NCQLP (National Council on Qualifications for the Lighting Professions), LC (Lighting Certified) professional, unless this requirement creates undue hardship that can be demonstrated.
- b. Once properly installed, fixtures are to be aimed, permanently affixed, and maintained in the approved position. All glare shield and cutoff devices shall be maintained.

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 sky glow.
- 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.
- d. Temporary seasonal lighting shall be excluded.