PENNSYLVANIA OUTDOOR LIGHTING COUNCIL

MODEL OUTDOOR LIGHTING ORDINANCE

FOR INCLUSION IN

ZONING ORDINANCES

This Model Lighting Ordinance is intended to be placed in the zoning ordinance as a separate section covering lighting in all zoning districts in the municipality. If there are special or unique lighting requirements for a particular zoning district that do not apply to other districts, it is recommended that they be included in that district's or an overlay district's requirements. As a model, it is recommended that it be modified as appropriate to suit the municipality's unique needs.

POLC MODEL LIGHTING ORDINANCE 02/10

ZONING ORDINANCE VERSION

OUTDOOR LIGHTING

A. Purpose – To Require and set minimum standards for outdoor lighting to:

1. Provide for and control lighting in outdoor public places where public health, safety and welfare are potential concerns
2. Protect drivers and pedestrians from the glare of non-vehicular 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
4. Promote energy efficient lighting design and operation
5. Protect and retain the intended visual character of the various Municipality venues

B. Applicability

1. All uses within the Municipality where there is interior or exterior lighting that creates a nuisance or hazard as 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. The Municipality may require lighting be incorporated for other uses, applications and locations or may restrict lighting in any of the above uses or applications when health, safety and welfare are issues.
3. The glare-control requirements herein contained apply to lighting in all uses, applications and locations.
4. Temporary seasonal decorative lighting is exempt from all but the glare-control requirements of this Ordinance.
5. Emergency lighting, as may be required by any public agency while engaged in the performance of their duties, or for illumination of the path of egress during an emergency as described in NFPA 75 and NFPA 101, are exempt from the requirements of this Ordinance.

C. Definitions

1. Footcandle – Unit of light density incident on a plane (assumed to be horizontal unless otherwise specified), and measurable with an illuminance meter, a.k.a. light meter.
2. 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 10º below that horizontal plane, at all lateral angles around the luminaire. A full-cutoff luminaire, by definition, also is "fully shielded."
3. Fully Shielded – 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.
4. Glare – Excessive brightness in the field of view that is sufficiently greater than thsy to which the eyes are adapted, to cause annoyance or loss in visual performance and visibility, so as to jeopardize health, safety or welfare
5. Illuminance – Quantity of incident light, measured in footcandles
6. 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.
7. Lumen – As used in the context of this Ordinance, the light-output rating of a lamp (light bulb).
8. Shielded – A luminaire from which no direct glare is visible at normal viewing angles by virtue of its being properly aimed, oriented, and located and properly fitted with such devices as shields, barn doors, baffles, louvers, skirts or visors.

D. Criteria

1. Illumination Levels – Lighting, where required by this Ordinance, or otherwise required or allowed by the municipality or other applicable jurisdiction, shall have illuminances, uniformities and glare control in accordance with the recommended practices of the Illuminating Engineering Society of North America (IES), unless otherwise directed by the Municipality.

2. Luminaire Design

   a. Luminaires shall be of a type and design appropriate to the lighting application and shall be aesthetically acceptable to the Municipality.

   b. For the lighting of predominantly horizontal surfaces such as, but not limited to parking areas, roadways, vehicular and pedestrian passage areas, merchandising and storage areas, automotive-fuel dispensing facilities, automotive sales areas, loading docks, cul-de-sacs, 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. Luminaires with an aggregate rated lamp output not exceeding 500 lumens, e.g., the rated output of a standard non-directional 40-watt incandescent or 10-watt compact fluorescent lamp, are exempt from the requirements of this paragraph. In the case of decorative street lighting, the Municipality may approve the use of luminaires that are fully shielded or comply with IES cutoff criteria rather than full cutoff.

   c. For the lighting of predominantly non-horizontal surfaces such as, but not limited to, facades, landscaping, signs, billboards, fountains, displays and statuary, when their use is specifically permitted by the Municipality, 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. Luminaires with an aggregate rated lamp output not exceeding 500 lumens, e.g., the rated output of a standard non-directional 40-watt incandescent or 10-watt compact fluorescent lamp, are exempt from the requirements of this paragraph.

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 Municipality, 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 45º 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. Illumination for signs, billboards, building facades and/or surrounding landscapes for decorative, advertising or aesthetic purposes is prohibited between 11:00 p.m. and dawn, except that such lighting situated on the premises for a commercial establishment may remain illuminated while the establishment is actually open for business, and until no more than one-half hour after closing. Such lighting shall be automatically extinguished using a programmable controller.

   d. "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.

e. 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 Municipality that the employment of no other means is possible.

f. 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-half 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 twenty-five (25) percent 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 Municipality that an elevated security risk exists, e.g., a history of relevant crime, an appropriate increase above the twenty-five (25) percent limit may be permitted.

g. 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 municipality. The use of motion detectors is permitted.

h. 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.

i. The illumination projected from any use onto a residential use shall at no time exceed 0.1 footcandle, measured line-of-sight at any time and from any point on the receiving residential property.

j. The illumination projected from any property onto a non-residential use shall at no time exceed 1.0 initial footcandle, measured line-of-sight from any point on the receiving property.

k. Except as permitted for certain recreational lighting and permitted elsewhere in this paragraph, luminaires shall not be mounted in excess of twenty (20) feet above finished grade of the surface being illuminated. Luminaires not meeting full-cutoff criteria, when their use is specifically allowed by the Municipality, shall not be mounted in excess of 16' 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 Municipality may, at its sole discretion, based partially on mitigation of potential off-site impacts, allow a luminaire mounting height not to exceed 25' AFG. For recreational lighting maximum mounting height requirements, refer to "Recreational Uses" elsewhere in the Ordinance.

l. Only the United States and the state flag shall be permitted to 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 and shall be shielded so the light source (lamp and reflector) is not visible at normal viewing angles.

m. Under-canopy lighting for such applications as gas/service stations, hotel/theater marquees, 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 maintained illumination in the area directly

below the canopy shall not exceed 20 initial footcandles and the maximum shall not exceed 30 initial footcandles.

4. Installation

   a. Electrical feeds for lighting standards shall be run underground, not overhead and shall be in accordance with the 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 suitably protected by being placed a minimum of five (5) feet outside paved area or tire stops, or placed on concrete pedestals at least thirty (30) inches high above the pavement, shielded by steel bollards or protected by other Municipality-approved means.

   c. Pole mounted luminaires for lighting horizontal tasks 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 always meet the requirements of this Ordinance.

6. Billboards and Signs – The lighting of new or relighting of existing billboards and signs shall require a Building Permit, which shall be granted when the Municipality 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 Municipality 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. Channel letter signs shall have dimming capability to allow adjustment of sign brightness to meet local ambient conditions.

   d. The illumination of billboards shall be limited to commercial and industrial zoning districts and the illumination of billboards within 400' of a residential use shall not be permitted.

   e. Off-premises billboards and signs shall be extinguished automatically by a programmable controller, with astronomical and daylight savings time control and spring or battery power-outage reset, by no later than 11:00 each evening until dawn, except that signs for establishments (not companies) that operate or remain open past 11:00 p.m. may remain on no later than ½ hour past the close of the establishment.

   f. Rotating, traveling, pulsing, flashing or oscillating light sources, lasers, beacons, searchlights or strobe lighting shall not be permitted.

   g. LED billboard and sign lighting shall only be permitted in commercial and industrial districts, shall be static, shall not be allowed to operate between 11:00 p.m. and dawn when

located where visible form a residential district or use, and shall not be located within 1,000 feet of an approaching interchange or traffic-merging lanes. Except for time and weather signs, the message shall not be permitted to change more than once each hour. The LED output shall be automatically reduced to a brightness level that does not create glare during hours of darkness.

h. The use of highly reflective signage that creates nuisance glare or a safety hazard shall not be permitted.

E. Residential Development Luminaire Placement

1. For residential developments where lot sizes are or average less than 20,000 square feet, if the Municipality so directs, street lighting shall be provided at:

   a. the intersection of public roads with entrance roads to the proposed development,

   b. intersections involving proposed public or non-public major-thoroughfare roads within the proposed development,

   c. the apex of the curve of any major-thoroughfare road, public or non-public, within the proposed development, having a radius of 300 feet or less,

   d. cul-de-sac bulbs

   e. terminal ends of center median islands having concrete structure curbing, trees and/or other fixed objects not having breakaway design for speeds of 25 m.p.h. or greater,

   f. defined pedestrian crossings located within the development,

   g. Where lot sizes permit the parking of less than three (3) vehicles on the residential lot, thereby necessitating on-street parking.

   h. At other locations along the street as deemed necessary by the Municipality

2. In residential developments with lots of less than twenty thousand (20,000) square feet, where five (5) or more common contiguous parking spaces are proposed, such spaces shall be illuminated.

3. In multi-family developments, common parking areas of 4 spaces or greater shall be illuminated.

F. Recreational Uses – The nighttime illumination of outdoor recreational facilities for such aerial sports as baseball, basketball, soccer, tennis, track and field, and football typically necessitate higher than normally allowed luminaire mounting heights and aiming angles, utilize very high-wattage lamps and potentially produce unacceptable levels of light trespass and glare when located near residential properties. Permission to illuminate such facilities shall be granted only when the Municipality is satisfied that the health, safety and welfare rights of nearby property owners and the municipality as a whole have been properly protected. When recreational uses are specifically permitted by the Municipality for operation during hours of darkness, the following requirements shall apply:

1. Race tracks 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, shall not be permitted to be artificially illuminated.

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 containing a residential use.

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 ten (10:00) p.m., regardless of such occurrences as extra innings or overtimes.

4. The Municipality 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 accordance with the following:

a.	Basketball	20’
b.	Football	70’
c.	Soccer	70’
d.	Lacrosse	70’
e.	Little League Baseball	
	(1) 200’ Radius	60’
	(2) 300’ Radius	70’
f.	Miniature Golf	20’
g.	Swimming Pool Aprons	20’
h.	Tennis	20’
i.	Track	20’

6. To assist the Municipality 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 Section G. below 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 5’ 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 this Ordinance.

   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.

G. Plan Submission – Where site lighting is required by this Ordinance, is otherwise required by the Municipality or is proposed by Applicant, lighting plans shall be submitted for Municipality review and approval for Subdivision & Land Development, Conditional Use, Variance, Building 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, flag, sign, etc., by location, orientation, aiming direction, mounting height, lamp, photometry and type.

2. A 10’x10’ illuminance grid (point-by-point) plot of maintained horizontal footcandles overlaid on the site plan, plotted out to 0.0 footcandles, which demonstrates compliance with the light trespass, illuminance and uniformity requirements as set forth in this Ordinance or as otherwise required by the Municipality. When the scale of the plan, as judged by the Municipality, makes a 10’x10’ 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 Municipality, Applicant shall also submit a visual-impact plan that demonstrates appropriate steps have been taken to mitigate potential consequences of on-site and off-site glare and to retain the intended character of the Municipality. This plan may require the inclusion of initial vertical footcandle values at specific off-site venues, e.g., bedroom windows of adjacent residential uses.

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 Municipality 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 Municipality 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 Municipality, to require remedial action at no expense to the Municipality.

   c. All exterior lighting, including building-mounted lighting, shall meet IESNA full-cutoff criteria unless otherwise specifically approved by the Municipality.

   d. Installer shall notify Municipality to arrange for inspection and approval of all exterior lighting, including building-mounted lighting, prior to its installation.

H. Compliance Monitoring

1. Safety Hazards

   a. If the Municipality judges a lighting installation creates a safety hazard, the person(s) responsible for the lighting shall be notified and required to take remedial action.

   b. If appropriate corrective action has not been effected within fifteen (15) days of notification, the Municipality may take appropriate legal action.

2. Nuisance Glare and Inadequate Illumination Levels

   a. When the Municipality judges an installation produces unacceptable levels of nuisance glare, skyward light, excessive or insufficient illumination levels or otherwise varies from this Ordinance, the Municipality may cause notification of the person(s) responsible for the lighting and require appropriate remedial action.

   b. If the infraction so warrants, the Municipality may act to have the problem corrected as in F.1.b. above.

I. Nonconforming Lighting – Any luminaire or lighting installation existing on the effective date of this Ordinance that does not conform with the requirements of this Ordinance, shall be considered as a lawful nonconformance.

1. A nonconforming luminaire or lighting installation shall be made to conform with the requirements of this Ordinance when:

   a. Minor corrective action, such as reaiming or shielding can achieve conformity with the applicable requirements of this Ordinance

b. It is deemed by the Municipality to create a safety hazard

c. It is replaced by another luminaire or luminaires or abandoned or relocated

d. The number of existing luminaires is increased by 50% or more

e. There is a change in use

2. Regardless of the requirements of Section I.1. above, when requested by the Municipality, nonconforming luminaires and lighting installations shall be made to conform with the requirements of this Ordinance or removed within three (3) years from the effective date of this Ordinance.