

Incorporated March 12, 1738

TINICUM TOWNSHIP

Bucks County

BOARD OF SUPERVISORS

163 Municipal Road
Pipersville, Pennsylvania 18947

GARY PEARSON, CHAIRPERSON
NICHOLAS C. FORTE, VICE-CHAIRPERSON
BOYCE BUDD, MEMBER

February 12, 2004

ORDINANCE 159

AN AMENDMENT TO THE ZONING ORDINANCE OF TINICUM TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA, TO REVISE THE ENVIRONMENTAL RESTRICTIONS BY ADDING AN ORDINANCE TO REGULATE OUTDOOR LIGHTING

BE IT ENACTED AND ORDAINED by the Board of Supervisors, Tinicum Township, after public hearing, duly advertised and held on May 4, 2004. Add an Amendment to Tinicum Township Zoning Ordinance Article VIII, Section 803 Environmental Restrictions, Replace Section 803.06 Glare with the following Ordinance to regulate outdoor lighting by establishing exterior lighting standards and criteria, procedures for plan submission, provisions for non-conforming uses and penalties for non-compliance.

The purpose of this ordinance is to manage and regulate outdoor lighting so that its safety security, and economic benefits are maintained while minimizing dangerous glare, negative environmental impact, disturbance of wildlife habitats, energy waste, light pollution, and light trespass. Poorly designed lighting creates dangerous glare, is intrusive to neighbors, impairs experience of the night sky and negatively affects the quality of life in Tinicum Township. Decreasing light pollution and reducing wasteful lighting are important elements of sound land use practices. Outdoor lighting should be

19. Used only where needed
20. Used only when needed
21. Be in conformance with the standards of this ordinance

Section A. Purpose: to require and set standards for outdoor lighting in order to:

1. protect neighbors and the night sky from nuisance glare, light trespass, light disturbance, and stray light due to poorly aimed, placed, applied, maintained, or shielded light sources.
2. protect the rural character and ecological resource values of the township from light disturbance.
3. protect drivers and pedestrians from the glare of non-vehicular light sources that shine into their eyes and thereby impair safe traverse through the community.
4. limit height, intensity and design of light standards and devices to preclude or lessen light pollution, encourage efficiency, and promote energy conservation.
5. control lighting in outdoor public places where public health, safety and welfare are potential concerns.

Office Hours: Mon. Tue. Thurs. Fri. 9am-5pm, Wed. 9am-Noon

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Section B. Applicability:

1. This ordinance shall apply to all outdoor lighting in Tinicum Township, where permitted or required by the Zoning Ordinance or other township ordinances, including residential, commercial, industrial, recreational, and institutional use.
2. The glare control requirements herein contained shall apply to all lighting, including signage.
3. Where more stringent requirements concerning light abatement are contained in other rules, regulations, or ordinances, the more stringent regulations shall apply.

Section C. Definitions

1. Candela – The SI unit of luminous intensity. One candela is one lumen per steradian (lm/sr).
2. Candlepower – Luminous intensity expressed in candelas.
3. Cutoff Angle (of a luminaire) – The angle, measured up from nadir, between the vertical axis and the first line of sight at which the bare source is not visible.
4. Direct Light – Light emitted directly from the lamp, off of the reflector or reflector diffuser, or through the refractor or diffuser lens, of a luminaire.
5. Fixture – The assembly that house the lamp or lamps and can include all or some of the following parts: a housing; a mounting bracket or pole socket, a lamp holder, a ballast, a reflector or mirror, and/or a refractor or lens.
6. Flood or Spot Light – Any light fixture or lamp that incorporates a reflector or a refractor to concentrate the light output into a directed beam in a particular direction.
7. Footcandle – a unit of light intensity on a plane (horizontal or vertical) stated in lumens per square foot and measurable with a light meter. One footcandle is one lumen per square foot (lm/ft²). Horizontal footcandles are measured on the horizontal plane of a lamp (bulb), and vertical footcandles on a perpendicular line above the bulb.
8. Full cutoff- attribute of a lighting fixture from which no light is emitted at or above a horizontal plane drawn through the bottom of the fixture, and no more than 10% of the lamp's intensity is emitted at or above an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.

9. Fully Shielded Lights – Outdoor light fixtures shielded or constructed in such a manner that all light emitted by the fixture, either directly from the lamp or diffusion element or indirectly by reflection or refraction, is projected below the horizontal plane through the fixture's lowest light-emitting part as certified by a photometric test report and does not cause glare at normal viewing angles.
10. Glare – The sensation produced by luminances within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance or visibility.
19. Blinding Glare: Glare that is so intense that for an appreciable length of time after it has been removed, no object can be seen.
20. Direct Glare: Glare resulting from high luminances or insufficiently shielded light sources in the field of view.
21. Disability Glare: The effect of stray light in the eye whereby visibility and visual performance are reduced.
22. Discomfort Glare: Glare that produces discomfort. It does not necessarily interfere with visual performance or visibility.
23. Reflected Glare: Glare resulting from reflections of high luminances in polished or glossy surfaces in the field of view.
11. Height of Luminaire – The height of a luminaire shall be the vertical distance from the ground directly below the centerline of the luminaire to the lowest direct-light-emitting part of the luminaire.
12. Illuminance – the quantity of light measured in footcandles or lux
13. Illumination – An alternative term for illuminance. Commonly used in a qualitative or general sense to designate the act of illuminating or the state of being illuminated.
14. Indirect Light – Direct light that has been reflected or has scattered off of other surfaces.
15. Lamp – The component of a luminaire that produces light. A generic term for a man-made source of light, i.e. a light bulb.
16. Light – Radiant energy that is capable of exciting the retina and producing a visual sensation. The visible portion of the electromagnetic spectrum extends from about 380 to 770 nanometers.
17. Light disturbance – any light that:
 - a. endangers or jeopardizes the safety or health of humans or animals, or
 - b. annoys or disturbs a reasonable person of normal sensibilities, or
 - c. jeopardized the value of property or erodes the integrity of the environment, or
 - d. exceeds the allowable light levels established in this ordinance.

18. Light trespass -- light emitted by a lighting installation that extends beyond the boundaries of the property on which the installation is sited.
19. Lumen -- the light output of a lamp (light bulb), as specified by the manufacturer. More technically, it is the luminous flux emitted within a solid angle (one steradian) by a point source having a uniform luminous intensity of one candela. One footcandle is one lumen per square foot. For the purposes of this Ordinance, the lumen-output values shall be the initial output ratings of a lamp, as specified by the manufacturer of the lamp. For example, a 60 watt GE Soft White bulb emits 840 lumens, a similar 100 watt bulb, 1690 lumens.
20. Luminaire -- A complete lighting unit consisting of one or more lamps together with the fixture; other parts designed to control the light distribution; and other mechanical and electrical components.
21. Luminaire Cutoff -- A luminaire whose candle power per 1000 lumens does not numerically exceed 25(2.5%) at an angle of 90 above nadir (horizontal) and 100 (10%) at a vertical angle of 80 above nadir.
22. Luminance -- A quantity of light measurable with a luminance meter (light meter). It may be expressed in candelas per square meter (cd/m^2) footcandles (lm/m^2), or lux.
23. Lux -- a unit of light intensity stated in lumens per square meter. (approximately 10.7 lux per footcandle. May be measured with a light meter.
24. Outdoor lighting -- The nighttime illumination of an outside area or object by any man-made device that produces light by any means.
25. Steradian, sr (unit of solid angle) -- The solid angle subtended at the center of a sphere by an area on the surface of the sphere equal to the square of the sphere radius.

Section D. Criteria

1. Illumination levels
 - a. Lighting shall have intensities and uniformity ratios in accordance with the current recommended practices of the Illuminating Engineering Society of North America (IESNA) contained in the IESNA Lighting Handbook and from time to time amended.
 - b. Future amendments to the recommended practices shall become part of this a Ordinance without further action of Tinicum Township.
 - c. Examples of intensities for typical outdoor applications are presented below:

**MAXIMUM MAINTAINED ILLUMINANCE
LEVELS PERMITTED AT PROPERTY LINES
PRODUCED BY OUTDOOR AREA LIGHTING INSTALLATION**

For outdoor area lighting installations to which the requirements of this Ordinance apply:	Maximum maintained illuminance level permitted at property line measured at grade in Horizontal Footcandles	Maximum maintained illuminance level permitted at property line measured at grade in Horizontal Lux
Outdoor area lighting installation is located on said property and property line adjoins a public roadway or public right-of-way.	0.5	5.4
Outdoor area lighting installation is located on said property and property line adjoins a non-residential property.	0.2	2.2
Outdoor area lighting installation is located on said property and property line adjoins a residential property.	0.1	1.1

2. Lighting Fixture Design

- a. Fixtures shall be of a type and design appropriate to the lighting application and acceptable to the Environmental Advisory Committee (EAC) and the Planning Commission (PC) for recommendation to the Supervisors.
- b. For horizontal tasks (roadways, sidewalks, parking areas), fixtures shall meet IESNA "full cutoff" criteria, i.e., no light output emitted above 90 degrees at any lateral angle around the fixture.
- c. The use of floodlights, spotlights, wall-mounted fixtures, decorative globes and spheres, and other fixtures not meeting IESNA "full cut-off" criteria shall be permitted only with the approval of Tinicum Township, based upon success in retaining the rural character of the municipality and achievement of acceptable glare control.
- d. Fixtures shall be equipped with , or be modified to incorporate, light directing and/or shielding devices, such as shields, visors, skirts, or hoods to redirect offending light distribution and/or reduce direct or reflected glare.

- e. For residential applications, omni-directional fixtures (post top, wall bracket, wallpack, globe and sphere) shall meet IESNA "full-cutoff" criteria.
- f. Barn lights and dusk-to-dawn lights shall not be permitted where they are visible from other uses, unless fitted with a reflector to render them full cut-off

3. Control of Nuisance and Disabling Glare

- a. All outdoor lighting, whether or not required, on private, residential, commercial, industrial, municipal, recreational, or institutional property, shall be aimed, located, designed, fitted and maintained so as not to present a hazard to drivers or pedestrians by impairing their ability to travel safely, and so as not to create a nuisance or disturbance by projecting or reflecting objectionable light onto a neighboring use or property.
- b. All outdoor lighting fixtures shall be shielded in such a manner that no light be emitted above a horizontal plane passing through the lowest point of the light emitting element, i.e., no direct light is emitted above the horizontal plane. This includes outdoor lighting fixtures that illuminate the area under outdoor canopies, including fuel island canopies, storefront and shopping mall canopies, driveway and building entrance canopies, and pavillions and gazebos.
- c. Floodlights and spotlights where permitted, shall be installed or aimed so that they do not project their output into the windows of neighboring residences, adjacent uses, skyward or onto a roadway.
- d. Unless otherwise permitted by the Board of Supervisors for safety or security or all-night operations, exterior lighting shall be controlled by automatic switching devices such as time clocks or combination motion detectors and photocells, to permit extinguishing outdoor lighting fixtures between 10 p.m. and dawn to mitigate nuisance glare and sky-lighting consequences.
- e. Where all-night safety or security lighting is to be provided, the lighting intensity levels shall not exceed 25% of the levels normally permitted by this Ordinance for the use. (Lighting shall be reduced by 75% from normally permitted levels.)
- f. All lighting for advertising signs, buildings and/or surrounding landscapes serving decorative, advertising or esthetic purposes is prohibited between 10:00 p.m. and sunrise; except that such lighting on the premises of a commercial establishment may remain illuminated while the establishment is open for business, and until one hour after closing.
- g. Vegetation screens shall not be employed as the primary means for controlling glare, although they are encouraged for additional protection against nuisance lighting. Rather, glare control shall be achieved primarily through the use of cutoff fixtures, shields and baffles, and

appropriate application of mounting heights, wattage, aiming angle and fixture placement.

- h. In no case shall the intensity of illumination exceed 0.1 vertical footcandle measured at 30" above the ground.
- i. Externally lit signs and billboards shall be lighted by top mounted fixtures aimed downwards. Such fixtures shall be automatically extinguished between the hours of 10 p.m. and dawn unless specifically approved by Tinicum Township.
- j. Directional fixtures for applications such as façade, fountain, feature, and landscape illumination shall be aimed so that they do not project output beyond the objects to be illuminated, shall be extinguished between the hours of 10 p.m. and dawn, and shall not be in conflict with the Municipality's aim to protect its natural resources and maintain its rural character.
- k. Service station canopy lighting shall use flat-lens full cutoff downlighting fixtures, shielded in such a manner that the edge of the fixture shall be level with or below the light source envelope.
- l. The use of white strobe lighting for tall structures such as smokestacks, chimneys, radio/communication/television towers is prohibited.

4. Installation

- a. Electrical feeds for fixtures mounted on poles shall be run underground, not overhead.
- b. Poles supporting lighting fixtures for the illumination of parking areas and located directly behind parking spaces, shall be placed a minimum of five (5) feet outside paved area, or suitably protected by other means.
- c. Lighting fixtures shall not be mounted more than twenty (20) feet above finished grade, except that fixtures not meeting IESNA "cutoff" criteria shall not be mounted more than 16 feet above grade.

5. Maintenance

- a. lighting fixtures and ancillary equipment shall be maintained so as always to meet the requirements of this ordinance.

Section E. Recreational Lighting

- 1. Recreational lighting shall not be permitted in residential zoning districts and the standards for recreational lighting have not been addressed by this ordinance.

Section F. Plan Submission

1. Lighting plans shall be submitted to the municipality for review and approval for all proposed outdoor lighting, including but not limited to proposals that are part of a subdivision or land development plan and shall include:
 - a. a site plan, complete with all structures , parking spaces, building entrances, traffic areas (vehicular and pedestrian), vegetation that might interfere with lighting, and adjacent uses that might be adversely impacted by the lighting, containing a layout of all proposed fixtures by location and type.
 - b. Isofootcandle plots for individual fixtures installations, or 10' by10' illuminance plots for multi-fixture installations, which demonstrate compliance with intensity and uniformity requirements as set forth in this ordinance. Larger grid spacing may be used if the scale of the plan is such that a 10' x 10' grid would be unreadable.
 - c. Description of the proposed equipment, including fixture catalog cuts, photometrics, glare reduction devices, lamps, on/off control devices, mounting heights, pole foundation details, and mounting methods.
2. When requested, applicant shall also submit a visual impact plan that demonstrates the steps that have been taken to mitigate on-site and off-site glare, and to retain the rural character of the municipality.
3. Post-approval alterations to lighting plans or intended substitutions for approved lighting equipment shall be submitted to the Township for review and approval.

Section G. Post Installation Inspection and Compliance Monitoring

1. The Township reserves the right to conduct a post-installation nighttime inspection to verify compliance with the requirements of this ordinance, and , if appropriate, to require remedial action at no expense to the Township.
2. If appropriate officers or agents of the Township judge that a lighting installation creates a safety or personal security hazard, the person (s) responsible shall be notified in writing and required to take remedial action.
3. If appropriate corrective action has not been effected within thirty (30) days of written notice, the Township may commence legal action as provided below.
4. When officers or agents of the Township judge that an installation produces unacceptable levels of nuisance glare, skyward light, excessive or insufficient illumination levels, or otherwise varies from this ordinance, the Township may send written notification to the person(s) responsible and require appropriate remedial action, as provided below.

Section H. Nonconforming Lighting

1. Any lighting fixture or lighting installation existing on the effective date of this ordinance that does not conform to the requirements of the ordinance, shall be considered as a lawful nonconformance, subject to the following:
 - a. Unless minor corrective action is deemed by the Township to be an acceptable alternative, a non-conforming lighting fixture or lighting installation shall be made to conform with the applicable requirements of this ordinance when:
 - i. it is deemed by the Township to create a safety hazard.
 - ii. it is replaced, abandoned, or relocated.
 - iii. there is a change in use or ownership.
 - b. Nonconforming lighting fixtures shall be made to conform with the requirements of this ordinance or removed within two (2) years after the effective date of this ordinance.

Section I. Violations and Penalties

1. Any person who violates or permits a violation of this ordinance shall, upon being found liable therefore in a civil enforcement proceeding commenced by the Township before a District Justice, pay a fine of not more than \$500, plus all court costs including reasonable attorney's fees, incurred by the Township in the enforcement of this Ordinance. No judgement shall commence or be imposed, levied or payable until the date of the determination of the violation. If the defendant neither pays nor timely appeals the judgement, the Township may enforce the judgement pursuant to the applicable Rules of Civil procedure. Each day a violation exists shall constitute a separate offense.
2. The appropriate officers or agents of the Township are hereby authorized to seek legal and/or equitable relief, including injunction, to enforce compliance with this Ordinance.

Section J. Abatement of Nuisances

1. In addition to any other remedies provided in this ordinance, any violation of Section D.3. ,Control of Nuisance and Disabling Glare, shall constitute a nuisance, and shall be abated by the Township by either seeking mitigation of nuisance or appropriate equitable or legal relief from a court of competent jurisdiction, including enforcement under the Township's nuisance ordinance.

Section K. Severability

1. If any section, provision or clause of this Ordinance is deemed to be illegal, invalid, inapplicable, or unconstitutional this shall not affect the validity of any other section, provision or clause hereof.

2. Where the standards in other sections of the Tinicum Township Zoning Ordinance are less restrictive with respect to lighting outlined for regulation purposes within the text of this ordinance, the standards herein shall apply.

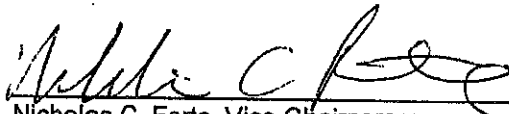
ENACTED AND ORDAINED the 4th of May, 2004.

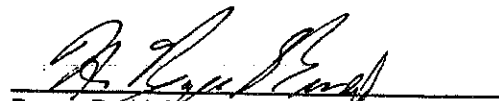
TINICUM TOWNSHIP SUPERVISORS

Attest:


Gary Pearson, Chairperson


Linda Wieand, Township Manager


Nicholas C. Forte, Vice-Chairperson


Boyce Budd, Member