



Text File

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Committee: Committee on Public Works

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Ordinance supplementing the Pittsburgh Code by adding Title Twelve entitled Lighting Code, to create uniformity and guidelines for lighting standards throughout the City.

Be it resolved by the Council of the City of Pittsburgh as follows:

Section 1. The Pittsburgh Code is hereby supplemented by adding Title Twelve, Lighting Code, to create uniformity and guidelines for lighting standards throughout the City, as follows:

CHAPTER 1201 LIGHTING CODE

SEE ATTACHMENT

§1201.01 COMMITMENT TO SUSTAINABILITY

a) The City of Pittsburgh Lighting Code is constructed to allow for the use of sustainable technologies and design methods in the application of all lighting systems.

b) The development of sustainable technologies and their benefit to energy conservation and elimination of light pollution shall be utilized to the fullest extent under this Code.

c) To act in accordance with the *Pittsburgh Climate Action Plan*, adopted by the City of Pittsburgh on August 5, 2008, in its effort to afford opportunities that will “reduce the impacts of local and global climate change, improve the local environment and the local economy, and enhance Pittsburgh’s reputation as an environmentally progressive city”.

§1201.02 DEFINITIONS

a) B50/L70: The effective life of a solid state lighting fixture, at which 50% of installed LEDs have decayed 70% of the initial

lumens.

b) **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.

c) **FOOTCANDLE:** A unit of illuminance equal to 1 lumen per square foot of area (fc).

d) **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 luminaire and no more than 10% of the candela is emitted at or above an angle 10° below that horizontal plane, at all lateral angles around the luminaire viewing angles.

e) **CUTOFF-** Attribute of a lighting luminaire from which no more than 2.5% of the candela is emitted at or above a horizontal plane drawn through the bottom of the luminaire and no more than 10% of the candela is emitted at or above an angle 10% below that horizontal plane, at all lateral angles around the luminaire viewing angles.

f) **FULLY SHIELDED:** Condition of an installed outdoor luminaire such that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal as determined by photometric test or certified by the manufacturer. Any structural part of the light fixture providing this shielding must be permanently attached.

g) **GLARE:** Lighting entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.

h) **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.

i) **IESNA:** Illuminating Engineering Society of North America.

j) **ILLUMINANCE:** The amount of luminous flux falling onto a unit area of surface measured in lumens per square foot (footcandles, fc) or lumens per square meter (lux).

k) **INDIRECT LIGHT:** Direct light that has been reflected or has scattered off of other surfaces.

l) **LAMP:** The component of a luminaire that produces actual light.

m) **LIGHT TRESPASS:** Illuminance emitted by a lighting installation, which extends beyond the boundaries of the property on which the installation is sited as measured from any orientation of the measuring device.

n) **LUMEN:** SI unit of luminous flux. One footcandle is one lumen per square foot. For the purposes of this section, the lumen output values shall be the initial lumen output ratings of a lamp.

o) **LUMINAIRE:** The complete lighting unit (fixture), consisting of a lamp, or lamps and ballast(s) or driver(s) (when applicable), together with the parts designed to distribute the light (reflector, lens, diffuser), to position and protect the lamp(s) and to connect the lamp(s) to the power supply.

p) LUMINANCE: The quotient of the luminous flux at an element of the surface surrounding a point, and propagated in the direction of measurement.

q) OUTDOOR LIGHTING FIXTURE: An illuminating device, luminous tube, lamp or similar apparatus located exterior to the building envelope for the purpose of illumination, decoration or advertisement. Such devices shall include, but are not limited to luminaires used for: parking lots, roadways, recreational areas, landscaping, façades, product displays, building overhangs, and open canopies.

r) SI: Abbreviation for the International System of units.

§1201.03 APPLICABILITY

The Pittsburgh Lighting Code shall apply to the following installations:

- a) Public Realm: All government and public buildings and areas within the City of Pittsburgh are required to follow this Code.
- b) New Uses and Buildings: For all proposed new land uses, developments, buildings, and structures that require a permit, all outdoor lighting installations shall meet the requirements of this Code.
- c) Major Additions and Modifications: For all building additions or modifications exceeding twenty-five percent (25%) in terms of additional dwelling units, gross floor area, or parking spaces, and that require a permit, either with a single addition or cumulative additions, shall invoke the requirements of this Code. This requirement shall hold for the entire property, including previously installed and any new outdoor lighting.
- d) Minor Additions and Modifications: For all additions or modifications of less than twenty-five percent (25%), gross floor area, or parking spaces, and that require a permit, new lighting on the site shall meet the requirements of 1201.06 LIGHT POLLUTION. The total outdoor light output after the modifications are complete shall not exceed that on the site before modification, or that permitted by this Ordinance, whichever is smaller.
- e) Resumption of Use Following Abandonment: If a property or use with non-conforming lighting is considered abandoned as classified by the City of Pittsburgh, then all outdoor lighting shall be reviewed and brought into compliance with this Code before the use is resumed.

§1201.04 LIGHTING CLASSIFICATIONS

a) For purposes of determining appropriate lighting levels and distinguishing the applicability of all or specific parts of this Code to areas within the City of Pittsburgh, the following classes of lighting are defined:

- 1) Class 1 Lighting - Roadway: Exterior lighting used for roadways.
- 2) Class 2 Lighting - Public Realm: All exterior lighting used for, but not limited to, illumination for walkways, parking areas (including garages), and outdoor security, where general illumination for

circulation, safety, or security of the illuminated area is the primary objective.

3)Class 3 Lighting - Residential: Any lighting used for exterior illumination of a single family home or duplex that is not considered part of the public realm.

4)Class 4 Lighting - Commercial: Any lighting used for exterior illumination of a storefront, office building, multi-unit dwelling (other than a duplex), restaurant, or commercial establishment, that is not considered part of public realm. This shall include, but not be limited to; properties in LNC zoned areas and other commercially zoned districts.

5)Class 5 Lighting - Industrial: Any lighting used for exterior illumination of an industrial use in an industrially zoned area. This includes, but is not limited to, properties in the UI and GI zoning categories.

6)Class 6 Lighting - Decorative (including façade lighting): Any lighting used for aesthetic effects including but not limited to, architectural illumination of a building, flag and monument lighting, and illumination of landscape.

b) Applicability: Refer to each Code section to determine applicability to each Lighting Classification defined by this section.

§1201.05 ENERGY CONSERVATION AND CONFORMANCE WITH ALL APPLICABLE CODES

a. Energy Conservation

1)Applicability: Class 1 - Roadway, Class 2-Public Realm, and Class 4-Commercial

2)Purpose: All lighting installations shall be designed to minimize the usage of energy for the purposes of illumination. Use of advanced lighting technologies in combination with optically designed reflectors shall be considered in conjunction with lighting controls.

3) Exterior Power Densities: Exterior lighting energy calculations shall conform to the required exterior power densities as listed in Table 5 - Lighting Power Densities for Exterior Areas.

4) Exterior Lighting Control: All installed lighting fixtures shall be controlled to eliminate or reduce energy consumption by use of individual, group, or master control systems. The system provided shall be automatic and programmable. Example controls include photocells, astronomic timers (complete with 10 hour battery backup), and remote controlled dimmers or switching.

b. Conformance with All Applicable Codes: All exterior lighting installations shall conform to all other applicable codes adopted by the City of Pittsburgh under appropriate permit and inspection.

c. All exterior lighting installations shall not exceed lighting power densities per chapter 1002 of the UCC Building Codes adopted by the City of Pittsburgh

§1201.06 LIGHT POLLUTION

- a) **Applicability:** Refer to each individual lighting metric defined in this section for applicability of defined Lighting Areas.
- b) **Minimal Shielding Requirement:**
- 1) **Applicability:** Class 1-Roadway, Class 2-Public Realm, and Class 4-Commercial
 - 2) All lighting installations shall be designed to minimize or eliminate Light Pollution to the fullest extent possible by use of permanently installed shielding on luminaires. The extent of shielding shall be determined in conjunction with the optical classification to meet trespass requirements listed in Section 7.
- c) **Cutoff Optics Required:**
- 1) **Applicability:** Class 1-Roadway, Class 2-Public Realm, and Class 4-Commercial
 - 2) All exterior lighting luminaires with an initial lamp lumens output greater than 3500 lumens and less than 14,000 lumens shall be classified as having CUTOFF OPTICS.
 - 3) All exterior lighting luminaires with an initial lamp lumens output greater than 14,000 lumens shall be classified as having FULL CUTOFF OPTICS.
- d) **Exterior Vertical Surface Illumination (i.e. Façade illumination):**
- 1) **Applicability:** Class 5 - Decorative (Class 6 - Signage, refer to Section 9)
 - 2) All lighting installations utilizing vertical surface illumination for aesthetic effects, where the initial lamp lumens of the luminaires are greater than 3500 lumens, must provide calculations indicating building uplight being accomplished with 80% direct illumination (as a percentage of lumens) of the intended surface.
 - 3) **Grazing and Moveable Objects:** Where properly demonstrated that the 80% criteria cannot be met due to individual project constraints, lighting must utilize time clock management for automatic shutoff at midnight.

§1201.07 REQUIRED CALCULATIONS FOR LIGHTING INSTALLATIONS

- a. **Applicability:** Refer to each individual lighting metric defined in this section for applicability of defined Lighting Areas.
- b. **Purpose:** Each lighting installation shall be required to submit evidence per Section 9 that the intended design meets required values for lighting metrics defined under this code.
- c. **Illuminance (E)**
- 1) **Applicability:** Class 1-Roadway, Class 2-Public Realm, and Class 4-Commercial
 - 2) Illumination levels, in foot-candles (FC), shall be used as the defining metric for evaluating the overall lighting levels on surfaces.

3)Required Calculations: The required levels for illuminance shall meet the listed values in Table 7 - Recommended Maintained Illuminance and Luminance Values contained in this Section. Calculations shall be performed by recognized lighting software listed for this purpose.

4) Required Submission: The approved design shall clearly indicate on the submitted "Site Lighting Plan" illuminance levels measured in Footcandles (FC). Refer to Section 9 for overall submission requirements.

d. Luminance (L)

1)Applicability: Class 1-Roadway

2) Luminance Level, in candela per meter squared (CD/M²), shall be the defining metric for evaluating surface brightness on surfaces:

3)Required Calculation: The required levels for Luminance shall meet the listed values in Table 7 - Recommended Maintained Illuminance and Luminance Values contained in this Section. Calculations shall be performed by recognized lighting software listed for this purpose.

e. All exterior lighting installations shall be designed to meet the values listed in Table 7 - Recommended Maintained Illuminance and Luminance Values.

1)Minimum Values: The levels presented in the table are minimum values.

2)Higher than Minimum Value Requests: Values higher than those listed may be required due to public safety concerns. Request to exceed values listed in this ordinance shall be detailed in a project specific Request For Proposal (RFP) issued by the City of Pittsburgh.

Table 7 - Recommended			
A. Roadways - Average			
Roadway	Pavement	Illuminance	Luminance
	R2 or R4	at R4	at R4
Commercial	1.4	1.3	3 to
Commercial	1.7	1.5	3 to
Commercial	1.2	1.0	4 to

Comm	0.9	0.8	6 to
B. Roadways- Maint			
Road	Ave	Lumina	V
		L_v	L_{max}
Ex	Con	0.1	3 5 to 10.
M	Con	0.12	3 5 to 10.
C	Con	0.08	3 5 to 10.
L	Con	0.06	6 10 to 0.
C. Pedestrian Sidewalk			
Walkway	Mini	Aver	
		Pedes	
Sidew	Con	1.0	0 2.2 1
Walk	Wal	0.5	0.5
Pedestrian		4.3	5.4
D . Exterior Non-Defined Surface Areas - Average Maintained Illuminance Values (E_{avg}) in foot			
Class	Mini	Unifor	Maximum Trespass
			PrePost-Curfew
<i>Amb</i>			
Sky	0.25	2.5:1	0.1 0.1
Low	0.5	5:1	0.3 0.1
Med	1	5:1	0.8 0.2
Hig	2	5:1	1.5 0.5
Table Notes for A, B, and C: 1. L_v = veiling luminance 2. Shall be calculated for areas where facia on the other, calculations should be made on each roadway independently. 5. Pavement reference			
E. Parking Lots - Average Maintained Illuminance Values (E_{avg}) in Footcandles			
Fields of	Basic	Special	Pedestrian Security
Minimum	0.2	0.5	
Uniform	20:1	15:1	
Minimum	0.1	0.25	
F. Recommend Maintained Illuminance for Parking Garages			
	Minimum	Max	Minimum Vertical ⁴ fc
		Hor	
Ba	1.0	10:1	0.5

Ra	2.0		
Da	2.0	10:1	1.0
Nig	1.0	10:1	0.5
En			
Da	50		25
Nig	1.0	10:1	0.5
Sta	2.0		1.0

¹For typical conditions. While these values are intended to address personal security issues, some effect from parked vehicles or columns. For preliminary design, and average value of 50 horizontal illuminance, excluding facing outward along boundaries. ⁵Applies to clearway ramps (

§1201.08 LUMINAIRES AND LAMP SOURCES

- a) Applicability: Class 1-Roadway, Class 2-Public Realm, Class 4-Commercial
- b) Purpose: Lighting sources utilized in the illumination of exterior areas shall be chosen with specific regard to meet the criteria established in the Code and for sensitivity to environmental impacts.
- c) Minimum Lamp Criteria: refer to Table 8 below for required criteria for lamps and ballast depending on classification:

	Class 1 - Roadway		Class 2-Public Realm, Class 4-Commercial	
	High Intensity Discharge (HID)	Solid State Lighting (SSL)	High Intensity Discharge (HID)	Solid State Lighting (SSL)
Luminous Efficacy	93 Lumens/W	80 Delivered Lumens/W per IES LM-79-08 testing	93 Lumens/W	80 Lumens/W

Lamp Life	20,000 hours at 70% rated life	50,000 hours at B50/L70 life between -20C and 40C operating temp	20,000 hours at 70% rated life	50,000 hours at 70% rated life between -20C and 40C operating temp
Correlated Color Temperature (CCT)	Between 3000K and 5000K	Between 3000K and 5000K	Between 3000K and 5000K	Between 3000K and 5000K
Color Rendering Index (CRI)	60 or higher	60 or higher	70 or higher	70 or higher

d) Minimum Ballast Criteria:

1) High Intensity Discharge Sources: All ballast shall utilize end-of-life features that include automatic shutdown to protect the ballast from damage during lamp end-of-life.

§1201.09 SUBMISSION OF PLANS AND EVIDENCE OF COMPLIANCE

a) Submission Contents: The applicant in connection with proposed work involving outdoor lighting within the City of Pittsburgh shall submit (as part of the design process) evidence that the proposed work will comply with this Code. The submission shall contain but shall not necessarily be limited to the following, all or part of which may be part or in addition to the information required elsewhere in the City of Pittsburgh upon application for performance of the work:

1. Complete plans indicating the location of luminaires, and the type of illuminating devices, fixtures, supports, reflectors, and other devices, shall be clearly indicated.
2. Description of the illuminating devices, fixtures, lamps, supports, reflectors, and other devices as summarized in a fixture schedule.
3. Catalog cutsheets by manufactures including photometric information.

b) Additional Information: The above required submission contents are intended to enable the plans examiner to readily determine whether compliance with the requirements of this Code are met. If such plans, descriptions and data cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures, or lamps proposed, the applicant will provide additional information to substantiate code compliance.

1. Lamp or fixture Substitution: Should any outdoor light fixture or type of light source therein be changed after permit has been issued, a change request must be submitted to design professional and building official for his/her approval, together with adequate information to assure compliance with this code, which must be received prior to substitution.

§1201.10 PROHIBITIONS

Mercury Vapor Lamps Fixtures and Lamps: The installation, sale, offer for sale, lease or purchase of any mercury vapor lamp for use

as outdoor lighting is prohibited.

§1201.11 TEMPORARY EXEMPTION

- a) Request; Renewal; Information Required: Any person may submit a written request, to the City of Pittsburgh for a temporary exemption request. A temporary exemption shall contain the following information:
- 1) Specific exemption or exemptions requested;
 - 2) Type and use of outdoor light fixture involved;
 - 3) Duration of time of the requested exemption;
 - 4) Type of lamp and lamp lumens;
 - 5) Total wattage of lamp or lamps and number of lamps to be used;
 - 6) Proposed location on premises of the outdoor light fixture(s);
 - 7) Previous temporary exemptions, if any, and addresses or premises thereunder;
 - 8) Physical size of outdoor light fixture(s) and type of shielding provided;
 - 9) Such other data and information as may be required by the building official.
 - 10) Approval; Duration: The City of Pittsburgh shall have thirty business days from the date of submission of the request for temporary exemption to act, in writing, on the request. The request shall only be granted if the building official determines it will not interfere with existing observations. The building official may approve a request subject to conditions. If approved, the exemption shall be valid for not more than thirty calendar days from the date of issuance of the approval. The approval shall be renewable at the discretion of the building official upon a consideration of all the circumstances. Each such renewable exemption shall be valid for not more than thirty additional calendar days.
 - 11) Disapproval; Appeal. If the request for temporary exemptions is disapproved, the person making the request will have the appeal rights provided in Section 13.

§1201.12 NONCONFORMANCE

All other outdoor light fixtures lawfully installed prior to and operable on the effective date of the Ordinance are exempt from all requirements of this Code. There shall be no charge in use or lamp type, or any replacement or structural alteration made, without conforming to all applicable requirements of this Ordinance. Further, if the property is abandoned, or if there is a change in use of the property, the provisions of this Ordinance will apply when the abandonment ceases or the new use commences.

§1201.13 ENFORCEMENT AND PENALTY

Enforcement shall be done by the Department of Public Works. Violation of any section of this code shall result in a fine of \$100 per

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§1201.14 SEVERABILITY

If any of the provisions of this Chapter or the application thereof is held invalid, such invalidity shall not affect other provisions or applications of the chapter which can be given effect, and to this end, the provisions of this chapter are declared to be severable.