

## Chapter 15.22 Outdoor Lighting

**Section 15.22.010 Short Title.** This Ordinance may be cited as the “Outdoor Lighting Ordinance” of the City of Cambridge (the “City”).

**Section 15.22.020 Purpose.** The purpose of this Outdoor Lighting Ordinance is to regulate outdoor lighting, as defined in this Ordinance, in the City, the intent being to permit an amount of outdoor lighting that is appropriate to allow for the safe use and enjoyment of outdoor areas, while also mitigating light trespass and glare to abutters and the public at large, reducing light pollution, and promoting energy conservation.

**Section 15.22.030 Definitions.**

- A. Architectural lighting.** See “Façade lighting.”
- B. Building thermal envelope** means the basement walls, exterior walls, floor, roof, and any other building elements that enclose conditioned space or provides a boundary between conditioned space and unconditioned space.
- C. Conditioned space** means an area or room within a building being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space.
- D. Correlated color temperature (“CCT”)** means a specification of the color appearance of the light emitted by a lamp, relating its color to the color of light from a reference source when heated to a particular temperature, measured in Kelvin (K).
- E. Façade lighting** means illumination of exterior surfaces of buildings for the enhancement of their nighttime appearance. Achieved by shining light onto building surfaces, or by concealed illumination of translucent building surfaces.
- F. Glare** means light entering the eye directly from light fixtures, or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.
- G. Illuminance** means the density of the luminous flux incident on a surface; it is the quotient of the luminous flux by the area of the surface when the latter is uniformly illuminated.
- H. Lamp** means a source of optical radiation, often called a “bulb” or “tube,” such as incandescent lamps, fluorescent lamps, high-intensity discharge (“HID”) lamps, and low pressure sodium (“LPS”) lamps, as well as light-emitting diode (“LED”) modules and arrays.

**Commented [CA1]:** Does this include interior lighting? This addition requires a further amendment to the definition of “Outdoor or Exterior Lighting.” See below.

**Commented [L2]:** The way it is currently defined, it would include structures that are interiorly illuminated for purposes of façade lighting (as opposed to safety for example). It would, as an example, include the Leighton Street building lighting, which I believe is desired.

- I. **Landscape lighting** means lighting of trees, shrubs, or other plant material, as well as water features and sculptural objects.
- J. **Laser** means a device that emits light through a process of optical amplification based on the stimulated emission of electromagnetic radiation which is also a term that originated as an acronym for "light amplification by stimulated emission of radiation".
- K. **Light bulb.** See "Lamp."
- L. **Light fixture** means a complete lighting unit consisting of one or more lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply. Sometimes this includes ballasts or drivers, and photocells.
- M. **Light trespass** means lighting that falls beyond the boundaries of the property it is intended to illuminate.
- N. **Lighting** means electric, man-made, or artificial lighting. See "lighting equipment."
- O. **Lighting equipment** means equipment specifically intended to provide gas or electric illumination, including but not limited to, lamp(s), luminaire(s), ballast(s), poles, posts, lens(es), electrical wiring, and related structures or other necessary or auxiliary components.
- P. **Lighting plan** means a site plan depicting the property lines of all properties for which lighting is proposed, the location and specification of all exterior light fixtures to be installed within the property, their lumen values, mounting heights, shielding, and directionality and controls, ~~protections provided to minimize prevent light pollution, controls, and the location of all adjacent streets, the uses of nearby properties associated with parties in interest, and abutting properties and properties located directly across a street,~~ any other relevant site conditions, and any additional information required to demonstrate compliance with applicable standards.
- Q. **Light pollution** means adverse effects of lighting, as defined in this Ordinance, including, but not limited to glare, light trespass, sky glow, energy waste, compromised safety and security, and impacts on the nocturnal environment.

Q-R.

**Lighting zone ("LZ")** means an area or district within which particular lighting standards apply as set forth in this Ordinance. Lighting zones are delineated by reference to the districts established with the Zoning Map of the City of Cambridge. **Lighting Zone 3 includes the following applicable zoning districts:** Residence C-3, C-3A or C-3B; Office

**Commented [CA3]:** These two key amendments to this definition are intended to address concerns that have risen subsequent to the Zinc case.

**Commented [L4]:** "protections provided" are in fact the standards themselves. This statement is confusing and circular. If they adhere to the standards and document them in accordance to the ordinance, they've already done this.

"Nearby properties" is vague and we are looking into the inclusion of "Parties in Interest".

**Commented [BC5]:** As pointed out in other areas of the standard, prevent is absolute and not possible. "Minimize" is a feasible measure.

2, 2A or 3; Business B or C; Industry B, B-1, B-2 or C; Special Districts 1, 3, 4, 4A, 5, 6, 7, 8, 11, 15 and any other Special District whose general zoning limitations derive from one of the previously listed base zoning districts; Mixed-Use Development District: Kendall Square (MXD) and Cambridgeport Revitalization Development District (CRDD); all Planned Unit Development (PUD) districts and Alewife Overlay Districts (AOD).

**Lighting Zone 2 includes all zoning districts not listed under Lighting Zone 3.**

~~R.S.~~ **Lumen** means the unit of measure used to quantify the amount of light produced by a lamp or emitted from a light fixture (as distinct from “watt” or other measure of a lamp’s power consumption).

~~S.T.~~ **Lux** means the SI (International System of Units) unit of illuminance. One lux equals one lumen per square meter and is approximately equal to 1/10 of a foot candle.

~~T.U.~~ **New lighting** means lighting for areas not previously illuminated, or newly installed lighting of any type, except for replacement lighting or lighting repairs.

~~U.V.~~ **Outdoor or exterior lighting** means lighting equipment installed within the property line and outside the building thermal envelope of a subject property, whether attached to poles, building structures, the earth, or any other location, and any associated lighting control equipment, including façade and landscape lighting.

~~V.W.~~ **Parties in interest** means the applicant, abutters, owners of land directly opposite on any public or private street or way, and abutters to the abutters within three hundred feet of the property line of the applicant as they appear on the most recent applicable tax list, or others materially impacted by the lighting equipment within City boundaries.

~~W.X.~~ **Partly shielded light fixture** means a light fixture with opaque top and translucent or perforated sides, designed and maintained to emit most light downward.

~~X.Y.~~ **Public art** means art in any media that has been planned and executed with the intention of being staged in the physical public domain, usually outside or in publically accessible buildings that are open to all.

~~Y.Z.~~ **Replacement lighting** means lighting equipment, fixtures, or parts, including lamps installed in order to replace existing lighting equipment.

**AA. Seasonal lighting** means lighting in use for not longer than a six-week period in any calendar year.

**Commented [CA6]:** Pretty awkward. And, don't we want it reviewed by the City's art commission?

**Commented [L7]:** Under the exemptions it spells out clearly “accessible to the general public AND is commissioned, owned, or operated” by the city i.e., the Arts Council

- BB. Shielded directional light fixture** means a fixed or adjustable light fixture that also contains a shield, hood, cowl, louver, or baffle to minimize direct view of the lamp.
- CC. Substantial renovation** means work area as defined in the building permit that is 50% or more of the Gross Floor Area of the building or 50% of the exterior wall area of the building,
- DD. Sky glow** means the brightening of the nighttime sky that results from scattering and reflection of artificial light by moisture and dust particles in the atmosphere, caused by light directed or reflected upwards or sideways, and which reduces ability to view the night sky.
- EE. Unshielded light fixture** means a light fixture capable of emitting light in any direction.
- FF. Vertical illuminance** means illuminance measured or calculated in a plane perpendicular to the property boundary or property line of a subject property.

**Section 15.22.040 Effective Date.** This Ordinance shall take effect on three (3) months from the date of enactment.

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**Section 15.22.050 General Requirements.**

- A. Conformance with all Applicable Codes.** The provisions of this Ordinance shall be interpreted and applied at all times consistently with the provisions of all applicable federal, state, and local laws, rules, and regulations, including, but not limited to, applicable sections of the Massachusetts Building Code, the Cambridge Zoning Ordinance, and the Cambridge Municipal Code. In the event of a conflict, the most restrictive provision shall apply.
- B. Applicability.** Except as set forth in this Ordinance, all outdoor lighting installed after the effective date of this Ordinance shall comply with the requirements of this Ordinance. This includes, but is not limited to, new lighting equipment, light fixtures, replacement lighting, or any other lighting whether attached to structures, poles, the earth, or any other location. Except as otherwise provided in this Ordinance, all outdoor lighting installed prior to the effective date of this Ordinance shall be altered or changed so as to comply with these requirements within five (5) years of the effective date of this Ordinance. Nothing in this Ordinance shall be construed so as to extend a five-year compliance window to lighting already regulated under existing codes and zoning provisions.

**Commented [CA8]:** It is very important to add the highlighted line below, so that properties in violation of the Zoning ordinance's residential district, parking lot and sign regulations cannot argue they have 5 years to make amendments.

- ~~C.~~ **Interim Modifications.** Upon the effective date of this Ordinance, property owners shall make improvements where possible to eliminate or minimize light trespass on other properties by: (1) replacing a lamp(s) within an existing light fixture to be in conformance with the Prescriptive Standard's lumen limitations and Light Color Standard of this Ordinance, and/or (2) changing the shielding and direction of elements of an existing fixture to be directed downward and/or away from other properties.
- ~~D.~~ **Light Color Standard.** Correlated color temperature of any outdoor light source shall not exceed 3500 Kelvin unless introduced as part of a façade or landscape lighting scheme used exclusively for the decorative illumination through color of certain building façade or landscape features.
- E. **Substantial Renovation.** If any substantial renovation of an existing building or property occurs after the effective date of this Ordinance, then that property shall be required to meet the Standards set forth in this Ordinance.
- F. **Laser Light Ban.** Laser light is strictly prohibited for outdoor use unless otherwise exempted in this Ordinance.
- G. **Flashing or Intermittent Light.** Any lighting which flashes, moves, or incorporates rapid color or intensity changes is prohibited unless otherwise provided in this Ordinance.
- H. **Prescriptive and Performance Standards.** All outdoor lighting must comply with the Light Color Standard and either the Prescriptive Standard or the Performance Standard, as set forth below. For properties with building(s) totaling 10,000 square feet or larger of Gross Floor Area as defined by the Cambridge Zoning Ordinance, a lighting plan must be submitted to Inspectional Services Department (ISD).

**1. Prescriptive Standard**

<b>Outdoor Lighting Category</b>	<b>Maximum - Allowed Lumens Per</b>	<b>Maximum Height</b>	<b>Shielding and Direction</b>
Unshielded or partly shielded light fixture placed not less than 4 feet apart.	315	12 feet above the surface of the area to be illuminated	Not applicable
Up to two unshielded or partly shielded light fixtures located in a main entry area, placed not less than 4 feet apart.	630	12 feet above the surface of the area to be illuminated	Not applicable
Shielded directional light fixtures, placed not less than 4 feet apart, for entries, walkways, and <del>architectural</del> <b>façade lighting.</b>	1,050	12 feet above the surface of the area to be illuminated.	All light fixtures shall be located, aimed, and shielded so as to minimize light pollution and light trespass across property boundaries. Light fixtures for entries and walkways shall emit light in a downward direction only.

**Commented [CA9]:** We need to change this to "façade" or reinstall the definition of Architectural lighting. Note that the right column already provides the misplaced protection that was inserted into the definition of facade lighting. However, there is no mention of landscape lighting here.

**Commented [L10]:** Agree with change to façade lighting. We don't need to mention "landscape lighting" since the limitations covering that general category are already covered in the Prescriptive Table without mentioning the name. The new definition for "Landscape Lighting" is only to provide a general description for the LEED LPRC.

Shielded directional light fixtures for parking areas, driveways, or outdoor loading bays.	1,260	14 feet above the surface of the parking area, driveway or loading bay	All light fixtures shall be located, aimed, and shielded so as to minimize light pollution and light trespass across property boundaries.
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**2. Performance Standard.**

In order to apply the Performance Standard, permit applicants must submit a lighting plan and accompanying calculations that demonstrate compliance with the U.S. Green Building Council’s LEED Light Pollution Reduction (LPR) credit v4 BD+C. Once installed, actual compliance to the LPR credit must be certified— by registered architect or professional engineer licensed in the Commonwealth of Massachusetts and such certification must be submitted to the ISD. Even if approved and certified, should the lighting as installed and maintained fail to meet the Light Color Standard and/or the minimum LEED LPR Credit requirements, ~~and~~ ~~or~~ be determined -in violation of the light pollution and light trespass protections intended by this Ordinance. then that lighting shall be considered in violation of this Ordinance.

For properties in Lighting Zone 3 (LZ3) that are adjacent to Lighting Zone 2 (LZ2), compliance with the LZ2 Light Trespass limits must be shown for portions of the property that lie within 100 feet of LZ2. Where the Lighting Zone boundary occurs within a public street, the 100 feet shall be measured from the centerline of the street. Where the Lighting Zone boundary lies within a lot, the 100 feet shall begin at the lot line that divides the subject lot from another lot in a different Lighting Zone.

**I. Exemptions from Applicability.** The following exemptions assume a good faith effort has been made to achieve near or partial compliance with the provisions of the Ordinance where feasible and allowable by law.

1. Lighting within public ways for the principal purpose of illuminating public ways. No exemption shall apply to any lighting within a public way when the purpose of the light fixture is to illuminate areas outside the public way, other than as provided in this Ordinance.

2. Lighting for public parks or public art that is accessible to the general public and is commissioned, owned, or operated by the City or by a state or federal entity, or that is otherwise required by special permit, or law.
3. Lighting for public monuments, statuary, or the national flag in cases where compliance with the Standards of this Ordinance are specifically prohibited by law or conflicting with superseding requirements.
4. Lighting of historic buildings that has been reviewed by and has received a Certificate of Appropriateness from the Cambridge Historical Commission.
5. Lighting solely for signs as regulated under Article 7 of the Cambridge Zoning Ordinance.
6. Lighting for theatrical or television production or performance areas, if an electrical permit has been received from the City's Inspectional Services Department.
7. Lighting for work areas at construction sites, if an electrical permit has been received from the City's Inspectional Services Department.
8. Underwater lighting in swimming pools and other water features.
9. Seasonal lighting as defined in this Ordinance.
10. Lighting that is only used under emergency conditions.
11. Lighting required by federal, state, or local laws, rules or regulations.
12. Lighting for sports facilities, including but not limited to outdoor conditioned or unconditioned rinks, open courts, fields, and stadiums. All light fixtures shall be directed and shielded in a way that minimizes light trespass and sky glow. Lighting for the playing surfaces and spectator areas must be turned off after the activities have ceased or 11:00 PM, whichever is earlier.
- 12,13. Lighting as otherwise required by the City for purposes of safety, security, or general public interest.

Commented [CA11]: Pretty awkward and ambiguous.

**Section 15.22.060 Administrative Waiver.** The Commissioner of Inspectional Services ("the Commissioner") or, if that position is vacant, the person designated to act in his or her stead, shall have the authority to require or grant a partial or complete waiver of the requirements of this Ordinance according to the following procedures:

- A. Any applicant seeking an Administrative Waiver from all or some of the requirements of this Ordinance shall file an application with the Inspectional

Commented [BC12]: CT edit and comment4: THE CHANGE BELOW MEANS THAT THE COMMISSIONER MAY REVIEW ANY EXEMPTION. FOR INSTANCE, IN CASE THE ART PEOPLE WANT TO DO SOMETHING INAPPROPRIATE.



Services Department (ISD) describing in detail with supporting information and documentation the nature, duration, location, specifications, and other particulars of the waiver being sought. The Application for Administrative Waiver must demonstrate that: (a) bringing the source of light for which the Waiver is sought into full compliance with this Ordinance would constitute a demonstrably unreasonable hardship on the applicant, as balanced against the potential impacts on other parties in interest; or, (b) bringing the source of light for which the Administrative-Waiver is sought into full compliance with this Ordinance would result in conditions that are materially detrimental to health, safety, or welfare. The applicant may also provide for consideration an alternative plan(s) that demonstrate(s) their ability to substantially mitigate the negative effects of non-compliance.

- B.** ISD shall then give written notice to each of the parties in interest, including specific information on the nature, duration, location, and specifications and other particulars of the waiver being sought, at least 14 days in advance of any hearing, proceeding, or decision. Any person who claims that he/she or occupants of his/her property would be adversely affected by a grant of the Administrative Waiver may file a statement and materials with ISD containing information to support his/her claim.
- C.** In determining whether to grant or deny the Administrative Waiver and what, if any, conditions and limitations (including a time limit) to impose, the Commissioner shall balance the hardship to the applicant of not granting the Waiver, against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the Waiver. Applicants for an Administrative Waiver and persons contesting a Waiver may be required to submit ~~any~~ additional information and materials that the Commissioner may reasonably require. In granting or denying an Administrative Waiver the Commissioner shall place on public file copies of the application for Waiver, all accompanying submissions, the notices to parties in interest, including confirmation of when the notices were given, plus any statements and materials filed by the parties in interest, and the decision (including all conditions and limitations) and the reasons for granting or denying the Waiver, as well as any other documentation associated with the process.
- D.** Administrative Waivers or partial Waivers shall be granted by notice to the applicant containing all conditions and limitations, including any time limit on the activity. No Waiver shall become effective until all conditions and limitations are agreed to by the applicant in writing filed with ISD. Noncompliance with any condition of the Waiver shall terminate it and subject the person holding it to those provisions of this Ordinance.
- E.** Any Administrative Waiver may be reviewed, adjusted, or repealed by the Commissioner of Inspectional Services at any time after two years.
- F.** The Commissioner may issue guidelines further defining the procedures to be followed in applying for an Administrative Waiver and the criteria to be considered in deciding

whether to grant an Administrative Waiver. The Commissioner may determine and levy an appropriate Administrative Waiver application fee.

**Section 15.22.070 Enforcement.**

- A. Enforcement Officials.** The Commissioner of Inspectional Services or her/his designee shall be the authorized enforcement personnel charged with the enforcement of the provisions of this Ordinance.
- B. Complaints.** The Inspectional Services Department shall provide a system for receiving and responding to complaints of non-compliance with the Ordinance in a timely manner.
- C. Violations.** Authorized enforcement personnel may order and specify remedial actions to be taken by a violator of this Ordinance to achieve compliance, or issue citations, pursuant to G. L.c. 40, § 21D, for violations of these provisions, assessing fines of three hundred dollars for each such violation. Each day such a violation continues shall constitute a separate offense. Additionally, any person found to be in violation of any of the provisions of this Ordinance may be prosecuted for a misdemeanor and upon conviction thereof shall be fined three hundred dollars for each such misdemeanor.
- D. Injunction.** As an additional remedy, any outdoor lighting installed or maintained in violation of any provision of this Ordinance may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.
- E. Suspension or Revocation of Permit.** As an additional remedy, any enforcement official hereunder may summarily suspend, and after a hearing may revoke, any license or permit, including a building, demolition, or electrical permit.