

OUTDOOR LIGHTING ORDINANCE TASK FORCE MEETING

WEDNESDAY, AUGUST 20, 2014 – 4:00-6:00 PM

Task Force Members in Attendance:

Carol Lynn Alpert
Chris Basler
Andrea Boyer
Peter Calkins
David Chilinski
Steve Lenkauskas
Ranjit Singanayagam
Charles Teague
Bob Woodbury

City Staff in Attendance:

Iram Farooq
Tracey Joyce
Jeff Roberts

Consultants:

Jeffrey Berg
Paul Lutkevich

Members of Public in Attendance:

Tom Grande
Harriet Provine
Kenneth Taylor
E. Sarot
Ellen Aronson
Ed Abrams
Kathleen Marruta
Marilyn Wellons
Naomi Yang
Damon Krukowski
Gary Mello
Lizzie deRham
Carolyn Shipley

Sixth meeting of Outdoor Lighting Ordinance Task Force was held in the 4th Floor Conference Room of the City Hall Annex, 344 Broadway, Cambridge, Massachusetts.

MEETING NOTES:

Chris Basler welcomed everyone to the 6th meeting and pointed out the handouts to the Task Force Members (TFMs), including a draft of the proposed ordinance, a narrative description of the updates made since the last meeting, and a draft of the proposed “Good Neighbor Brochure”.

Carol Lynn Alpert joined the meeting by conference call.

Chris Basler started the meeting by going over the proposed lighting ordinance draft that was provided to TFMs prior to the meeting. The draft included:

I. General Requirements

A. Conformance with All Applicable Codes

All outdoor electric lighting (including luminaires, light fixtures, lamp posts, flood lighting, etc.) shall be installed in conformance with the provisions of this ordinance,

applicable electrical and energy codes, and applicable sections of the building code and Cambridge Zoning Ordinance.

B. Applicability

Except as described below, all outdoor electric lighting shall comply with these requirements. This includes, but is not limited to, new lighting, replacement lighting, or any other lighting whether attached to structures, poles, the earth, or any other location, including lighting installed by any third party.

Exemptions from General Requirements, Applicability:

1. Lighting within a public right-of-way or easement for the principal purpose of illuminating streets or roads. No exemption shall apply to any lighting within the public right of way or easement when the purpose of the light fixture is to illuminate areas outside the public right of way or easement, unless regulated with a street lighting ordinance
2. Lighting for public parks operated by a city, state, federal agency or that are required to be publicly accessible as a result of zoning or some other requirement of the City
3. Lighting for public monuments, statuary and art
4. Lighting solely for signs as regulated under Article 7.000 of the Cambridge Zoning Ordinance
5. Temporary lighting for theatrical, television, and performance areas with proper permits
6. Temporary lighting for work areas at construction sites with proper permits
7. Underwater lighting in swimming pools and other water features
8. Temporary lighting for seasonal events in use for not longer than four weeks total in any calendar year
9. Hospital emergency departments, including associated helipads
10. Lighting that is only used under emergency conditions
11. Lighting required by federal or state regulations

Replacement of Light Fixtures

When any outdoor light fixture is replaced, the replacement light fixture shall comply with this Ordinance.

Where a bulb is replaced within an existing non-compliant light fixture, and the light fixture itself is not replaced or repaired aside from the replacement of the bulb, the light fixture may remain provided that the replacement bulb is compliant with the applicable initial lumen standards and vertical illuminance standards set forth in this

Ordinance and that the light fixture is not otherwise altered to be in greater non-compliance with the requirements of this Ordinance.

C. Light Color

1. Color Temperature of any outdoor light source shall not exceed 4000°K. The preferred Color Temperature for outdoor light sources shall be 3,500°K or less.
2. Color Rendering Index of any outdoor light source shall not be less than 65.

II. Prescriptive Standards

Exterior lighting that meets the following standards shall be permitted in any district of the City. Any lighting that does not meet the qualifying standards set forth in the table below may be permitted in certain districts if it meets the Alternative Performance Standards set forth in Section III of this Lighting Ordinance.

Outdoor Lighting Category	Maximum Initial Lumens Per Light Fixture	Maximum Height	Shielding and Direction
Unshielded or partially shielded light fixture (general)	390	12 feet above the surface of the area to be illuminated	
Unshielded or partially shielded light fixture located in a front yard between the building and street	630	12 feet	
Shielded light fixture for entries, walkways, open spaces or buildings	1,050	12 feet above the surface of the area to be illuminated	Must be fully shielded and directed away from all abutting residential properties
Shielded light fixture for automobile	1,260	14 feet above the surface of the parking	Must be fully shielded and directed fully downward and

surface parking areas, driveways or outdoor loading bays		area, driveway or loading bay	away from all abutting residential properties
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III. Alternative Performance Standards

For properties in those applicable zoning districts set forth below, an outdoor lighting installation may exceed the limitations set forth in the Prescriptive Standards if the lighting on the lot complies with the alternative requirements of this section.

A. Applicable Zoning Districts: Residence C-3, C-3A or C-3B; Office 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).

B. Standards

1. All lighting shall have no light emitted above the fixture, with the exception of lighting that is used solely for façade and landscape lighting, provided that such lighting shall not exceed 630 lumens per light fixture.
2. The maximum allowable vertical illuminance value shall be eight (8) lux at the perimeter of the lot, which shall be measured as follows. For portions of the lot abutting another lot under separate ownership (i.e., a side or rear lot line), the vertical illuminance shall be measured at 5 feet in height at the property line. For portions of the lot abutting a street, the vertical illuminance shall be measured at five (5) feet in height at the centerline of the street.

C. Application Requirements

In order to apply these Alternative Performance Standards, a Lighting Plan must be prepared by a qualified lighting engineer in accordance with the Procedures set forth in Section ____, with accompanying calculations certifying that the lighting depicted in the Lighting Plan shall conform to the Standards set forth in this Section. These Alternative Performance Standards shall not be applied to any lot unless such a Lighting Plan has been approved.

IV. Definitions

Color Rendering Index – a measure of the degree of color shift objects undergo when illuminated by the light source as compared with those same objects when illuminated by a reference source of comparable color temperature.

Correlated Color Temperature – the absolute temperature of a blackbody radiator whose chromaticity most nearly resembles that of the light source

Illuminance – the density of the luminous flux incident on a surface; it is the quotient of the luminous flux divided by the area of the surface when the latter is uniformly illuminated. Illuminance shall be measured in Lux. For the purpose of this Ordinance, Vertical Illuminance shall refer to the illuminance on a surface oriented vertical to the ground and parallel to a line along which the illuminance is measured at a specific point above the ground.

Light Bulb – a generic term for the element within a light fixture that directly produces light. For the purpose of this Ordinance, bulb shall be synonymous with lamp or tube.

Lumen - the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

Light Fixture – a complete lighting unit consisting of one or more bulbs 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 includes ballasts or drivers, and photocells. For the purpose of this Ordinance, light fixture shall be synonymous with luminaire.

Lux - the unit of measure for illuminance, defined as the illuminance on a surface one square meter in area on which there is a uniformly distributed flux of one lumen, or the illuminance produced at a surface all points of which are at a distance of one meter from a uniform point source of one candela.

Shielded Light Fixture – a Light Fixture that includes a screen made of opaque material that is designed to prevent light from being emitted in one or more directions. A Fully Shielded Light Fixture allows light to be emitted in only one direction relative to the fixture. A Partially Shielded Light Fixture prevents light from being emitted in one or more directions relative to the fixture. An Unshielded Light Fixture emits light in all directions.

Chris Basler went around the table to get input and comments and questions were solicited from the task force members. In addition, the public and Task Force Members (TFMs) were encouraged to submit written comments on the draft.

Discussion by the task force members included the following concerns:

- 1) It was pointed out that the enforcement and monitoring of the ordinance would be complaint driven. Chris Basler mentioned that the Law Department would need to take a closer look at the applicability of the draft but it was not clear on who would have standing to complain, if it would be direct abutters or anyone from public property.
- 2) A TFM mentioned that not all situations will be covered or anticipated with this draft and asked who would be in charge of overseeing and reviewing the ordinance and light fixture submittals. The Law Department would need to take a review but it is

- anticipated that the Inspectional Services Department would be in charge and would provide property owners with information on what is allowed and review submittals.
- 3) A TFM asked if the alternative performance standards go far enough. Also brought up concerns about defining certain lighting terms like up-lighting and how does the 8 Lux measurement at the property line relate to the public street. Where is the measurement taken? Suggested that we consider better standards that focus on improving efficiency and looking closely at what the property owner wants to light.
 - 4) A TFM expressed concerns about how the draft ordinance is getting developed and that the wording and language in the ordinance is not consistent and that more of the words need to be defined.
 - 5) A TFM expressed concerns that the Public Building and Public Parks would be exempt under this ordinance and questioned the application to athletic facilities.
 - 6) A TFM raised concerns that 4000 K color temperature was too high and that the Color Rendering Index (CRI) was not necessary to highlight. However, the color temperature and CRI are not the primary concern, which is light trespass.
 - 7) A TFM raised concerns that the Prescriptive Standard was flawed and would be difficult to enforce. Was concerned that the lumen levels were not consistent and that the shielding requirements were not specific enough. Also raised concerns that the number of fixtures were not limited.
 - 8) A TFM suggested that we utilize the LEED Standard as a performance method and that we might consider a lumen cap for properties. Concerns were raised that the properties along the edges of the districts allowed to use the Performance Standard would be impacted with more light. The number of abutters would need to be expanded to protect from commercial districts.
 - 9) A TFM was concerned that the Prescriptive Standard was not allowing the property owner to address safety around their house.
 - 10) Another TFM seconded the concern over the ability to light unsafe areas on their property. The standing for people to complain should only be abutters. Also, there needs to be flexibility in the ordinance to address unanticipated issues.
 - 11) Another TFM agreed that safety should be a concern but also glare can raise safety issues. Suggested that shielded lighting in specific locations would help and we should include a better definition of glare in the ordinance.
 - 12) A TFM suggested that we need to promote the changing of bulbs and add shielding to light fixtures to improve a consistent level of lighting and reduce glare. This would promote good lighting.
 - 13) A TFM would like to see a demonstration of taking an 8 lux reading at 5 feet above the property line to see what it captures under the proposed Performance Standard.
 - 14) A TFM requested that we remove the language that suggests a preference of 3500 K color temperature while the ordinance also stipulates that the limit would be 4000 K since that is confusing. The ordinance should only give specific limits and not include preferences.

Jeff Berg with Parsons Brinckerhoff continued the meeting with a presentation on a proposed addition to the Performance Standard that would include an option for property

owners with the proposed districts to follow the LEED Light Pollution Reduction Credit, v. 4. This would be an alternative to property owners rather than following the 8 Lux limit at the property line. Property owners in the proposed Performance Standards Districts could choose to follow either the Prescriptive Standard or a Performance Standard. If they choose to follow the Performance Standard then they could choose to limit light from escaping the property to 8 lux or choose to follow the LEED Light Pollution Reduction Credit requirements in version 4.

The TFMs expressed interest in this addition but need further information about how it would work.

PUBLIC COMMENT

Comments and concerns raised by members of the public attending include:

- 1) Resident
 - Suffers from light and unshielded fixtures and requested ISD to address the the situation. The Church across from their property changed the shielding.
 - Now the new Cambridge LED street lights pose a threat to the public health and the color temperature is too high.

- 2) Resident
 - Suffers from the light from the new LED street lights. This poses a severe health risk to Cambridge residents.

- 3) Resident
 - Has concerns about the new LED street lights and the level of blue light because of the high color temperature.

- 4) Resident and lighting professional
 - Has concerns that lighting of public monuments are effectively addressed and needs to have an additional exemption or standard.
 - Believes that color temperature should not be more than 3000 K.
 - Light trespass from new LED street lights needs to be remediated.

- 5) Resident
 - Doesn't like the new LED street lights and feels it is negatively impacting her health.

- 6) Resident
 - Lighting is a public health issue and needs to be addressed.
 - LEED standards are inadequate.

- Performance Districts include residential properties and those need to be afforded protection from higher lighting levels.
- Shielding light fixtures is critical.
- Interior fixtures need to be addressed.
- Loading docks need to be address since many have high levels of light.

7) Resident

- The new lights on Western Avenue are very bright. Energy use is down but at what expense with an increase in light pollution and what is the impact on the wildlife?

8) Resident and lighting professional.

- Shielding definitions need to be addressed.
- LEED is an option for commercial projects but the ordinance needs to consider future LEED updates.
- As a resident he did receive information about the proposed change to the street lights and did look at the demonstration project that were installed prior to the approval of the new LED street lights.

9) Resident

- Noise pollution is a problem and study shows it can kill trees.
- Neighboring church makes life unbearable with light fixtures.
- The new LED street lights are a health concern and impact the property values.

10) Resident

- Concerned about light pollution.
- LED street lights are an ugly shape but the bigger problem is the negative impact on health.
- LED street lights are a concern on narrow city streets that have too much lighting.

11) Resident

- Concerned that color temperature is too high.
- Should include lighting curfews and consider using e-flux and lower color temperatures.

The meeting was adjourned.