

## **LIGHTING ORDINANCE TASK FORCE MEETING – MAY 21, 2014 – 4:00 PM**

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### Task Force Members in Attendance:

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

### Consultants:

Jeffrey Berg  
Paul Lutkevich

### City Staff in Attendance:

Rona Abrahams  
Iram Farooq  
Jeff Roberts

### Members of Public in Attendance:

Kelly Beatty  
Glenn Heinmiller  
Gary Mello  
Kenneth Taylor  
Marilyn Wellons

Fifth meeting of Lighting Ordinance Task Force was held in the Fourth Floor Conference Room of the City Hall Annex at 344 Broadway, Cambridge, Massachusetts.

The sixth meeting of the Lighting Ordinance Task Force will be held on Wednesday, August 20, 2014 (revised from July 16, 2014) from 4:00-6:00 PM at 344 Broadway.

## **MEETING NOTES:**

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Chris Basler welcomed everyone to the 5<sup>th</sup> meeting and stated the 6<sup>th</sup> and possibly final meeting would be July 16<sup>th</sup>. (The 6<sup>th</sup> meeting has been postponed to August 20<sup>th</sup>. Based on necessary revisions to the initial draft there will be need for a 7<sup>th</sup> meeting to bring the committee to a consensus.)

After the Task Force finalizes the recommendations for the City Manager, he will forward the document to the City Council for discussion and consideration. Public hearings will be held during the ordinance consideration process.

Paul Lutkevich went over the DRAFT Ordinance dated May 19, 2014. (Attached at the end of the meeting notes.) 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 through June 2<sup>nd</sup>.

Conversation by the task force members included the following concerns:

1. The draft ordinance indicated a replacement schedule for fixtures. TFMs reiterated the concern that grandfathering fixtures would be difficult to monitor and would not

address the existing problems of light pollution and light trespass created by problem fixtures. Some TFMs suggested a phasing-out period for existing non-compliant fixtures.

2. The conversation continued about enforcement and how it will be applied. The draft ordinance is complaint driven but there was a concern that any zoning changes would automatically grandfather existing fixtures.
3. It was observed that the limit on the number of fixtures was not in the draft ordinance. It was pointed out that the types of fixtures under the Prescriptive Standard would be limited by the lumens and shielding requirements. This prescriptive method will be easy for property owners to follow without hiring a professional beyond what is currently required to pull an electrical permit.
4. The zoning map and proposed districts that could opt into using the performance method was discussed. Commercial districts would be more complex but also receive greater scrutiny. Concern over the five foot monitoring height for the performance method was raised since lights above that height might be shining into a window. Unnecessary lights around the Green Street Garage and on the roof of this parking facility were mentioned.
5. Concerns over the definition of shielding were raised and required additional clarification on what is partially and fully shielded.
6. Concerns over the restrictions on architectural up-lighting were expressed. Most TFMs expressed an interest in allowing exclusion for proper up-lighting of historic structures.
7. Questions over the fairness of excluding City Parks but not private open spaces accessible by the public were raised.
8. Clarification on the spacing between lights was raised. Paul Lutkevich clarified that each light source would be considered independently in the prescriptive method but collectively at the property line for the performance method. Additional concerns were raised about lights at the property line over egress doors and how that would conflict with state or federal requirements.
9. It was agreed that TFMs require more than 24 hours to review documentation properly when covering the complex task that this committee is charged to address.
10. There needs to be clarification on the definition of temporary sites and construction sites.
11. Concerns over the length of time for allowing seasonal lighting were expressed along with the spillage of light onto neighboring property.
12. Another concern raised by a TFM was that the ordinance was still too obscure and not precise enough for most applications. Why can exterior light be monitored but not interior light? Paul Lutkevich responded that interior light can be monitored from the outside but it would take very expensive equipment and would be difficult to implement.
13. Concern was raised that the existing and new street lights were too bright for some second story bedrooms. City staff mentioned that the lighting for the public way follows specific guidelines and is exempt from this ordinance. However, the City does receive complaints and will address the problems on a case by case basis to reach a solution.
14. Similar to the parks, concerns were raised by some TFMs that the City buildings should not be exempt from the ordinance. City staff responded that the Cambridge Electrical

Department addresses any complaints over lighting on a case by case basis and will continue to do so with the new Lighting Ordinance.

15. TFMs requested that the common term of “bulb” and “light fixture” be used to replace “lamp” and “luminaire” to make it easier for the reader.
16. TFM questioned whether the light fixture needs to be replaced if the compliant bulb needs to be replaced.
17. Some TFMs believe that 14 feet is too high and would like to see that lowered.
18. The educational component was emphasized to instruct the public on the lumen levels so they can make the proper choice when purchasing light bulbs since they won’t be automatically switching fixtures. If it is a public health issue then it doesn’t have to be complaint driven.
19. Concerns over fairness of requiring property owners that installed light fixtures just prior to the lighting ordinance process were raised.
20. A tiered system of enforcement was suggested that would be complaint driven but would include an appropriate timeline for the lights to be brought into compliance based on efforts made by the property owner.
21. A vote was taken by TFMs to choose amongst 3 options: complaint driven with automatic compliance; a sunset clause for existing fixtures; or a complaint driven process with a tiered system for compliance. Consensus was not achieved for any of these approaches.

## **PUBLIC COMMENT**

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1) First person, resident and lighting professional, to comment.

- Wanted to see the details on the complaint process in the ordinance.
- Agreed with the proposal to exclude up lighting for buildings, monuments and landmarks.
- Felt that the color temperature of 4,000K is too high and that 3,500K should be the maximum.

2) Second person, resident and lighting professional, to comment.

- Asked if this draft ordinance will eliminate the façade up-lighting since it would be counter to the definition of shielding.
- Feels that the performance method is too restrictive and recommends that the alternate performance method mirror the LEED light credit standard, version 4.

3) Third person, resident, to comment.

- Concerned about allowing temporary construction lighting language since construction can continue for a very long time.
- Concerned that the lighting from commercial projects in mixed-use areas won’t be addressed properly with the close proximity of residents.
- Feels that the shielding height limits don’t account for changes in ground level between properties.

- Proposed zoning is oversimplifying the issues related to light pollution and light trespass.
- Wanted to remind the Task Force that light pollution is a public health hazard and that children are particularly susceptible to its negative impact.
- Feels that the City should not be exempt from the lighting ordinance.
- She is concerned about the Courthouse development proposals and the commercial/dry lab/office space it will bring.

4) Fourth person, resident and lighting professional, to comment.

- Recommends a tiered system of compliance. Without a tiered system there will be a quick change to cheap and inappropriate LED bulbs.
- City should not be exempt from the ordinance.
- Suggest that a lumen cap for commercial properties be implemented.

# CITY OF CAMBRIDGE LIGHTING ORDINANCE TASK FORCE

## DRAFT OUTDOOR LIGHTING ORDINANCE – MAY 19, 2014

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### Purpose

The purpose of this Lighting Ordinance of the City of Cambridge is to regulate the installation of electric lighting 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 potential nuisance (in the form of light trespass and glare) to abutters and the public at large, reducing light pollution and promoting energy conservation.

### I. General Requirements

#### A. Conformance with All Applicable Codes

All outdoor electric lighting (including luminaires, light fixtures, lamp posts, floods, 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 installed after the date of effect of this ordinance 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 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 luminaire 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 or federal agency
3. Lighting for public monuments and statuary
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
6. Temporary lighting for work areas at construction sites
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. Lighting that is only used under emergency conditions
10. Lighting required by federal or state regulations

#### Replacement of Luminaires

When any outdoor luminaire is replaced after the date of adoption of this Ordinance, the replacement luminaire shall comply with this Ordinance.

Where a lamp is replaced within a non-compliant luminaire existing on or prior to the date of adoption of this Ordinance, and the luminaire itself is not replaced or repaired aside from the replacement of the lamp, the luminaire may remain provided that the replacement lamp is compliant with the applicable initial lumen standards and vertical illuminance standards set forth in this Ordinance and that the luminaire is not otherwise altered to be in greater non-compliance with the requirements of this Ordinance.

Where a lot contains a series of non-compliant luminaires of an identical design, and all such luminaires are existing on the lot on or prior to the date of adoption of this Ordinance, it shall be permitted to replace some of those luminaires with identical non-compliant luminaires under the following limitations:

- (a) The number of luminaires replaced shall be less than twenty-five percent (25%) of the total number of identical luminaires on the lot, or one luminaire if the total number of identical luminaires is less than four. This limitation shall be applied cumulatively over time starting at the date of adoption of this Ordinance.
- (b) In no case and at no time shall this section authorize the replacement of all such identical non-compliant luminaires in existence on a lot as of the date of adoption of this Ordinance.
- (c) This provision shall not apply to luminaires intended to illuminate surface parking areas. All replacement lighting for surface parking shall comply with this Ordinance.

C. Light Color

- 1. Color Temperature of any outdoor light source shall not exceed ,4000°K. The preferred Color Temperature range for outdoor light sources shall be 2,700°K-3,500°K.
- 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 Luminaire | Maximum Height   | Shielding and Direction   |
|--|--------------------------------------|--|---|
| Unshielded or partially shielded luminaire (general)   | 390                                  | 12 feet above the surface of the area to be illuminated                |   |
| Unshielded or partially shielded luminaire located in a front yard between the building and street | 630                                  | 12 feet  |   |
| Shielded luminaire 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 luminaire for automobile surface parking areas, driveways or outdoor loading bays         | 1,260                                | 14 feet above the surface of the parking area, driveway or loading bay | Must be fully shielded and directed fully downward or away from all abutting residential properties |

### III. Alternative Performance Standards

For properties in certain zoning districts, 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 below.

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; any Special District whose general zoning limitations derive from one of the previously listed base districts; all Planned Unit Development (PUD) districts and Alewife Overlay Districts (AOD).

All lighting shall have no light emitted above the fixture. The maximum allowable vertical illuminance value at 5 feet in height, measured at the property line, shall be no greater than 8 lux.

Exception: Unshielded ornamental lighting shall be permitted providing the luminaire lumens of any individual unshielded luminaire does not exceed 630 lumens.

### 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 by the area of the surface when the latter is uniformly illuminated.

Lamp – a generic term for a source created to produce light. Note: Through popular usage, a portable luminaire consisting of a lamp with shade, reflector, enclosing globe, housing, or other accessories is also sometimes called a lamp. To distinguish between the assembled unit and the light source within it the latter is often called a bulb or tube, if it is electrically powered.

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

Luminaire – a complete lighting unit consisting of a lamp or 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 includes ballasts or drivers, and photocells.

Lux - 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.

Shielding – a screen made of opaque material that is designed to prevent a light source from being directly visible.