



## CITY OF CAMBRIDGE

Community Development Department

**IRAM FAROOQ**  
Assistant City Manager for  
Community Development

**To:** Richard C. Rossi, City Manager

**From:** Iram Farooq, Assistant City Manager for Community Development

**CC:** Lisa Peterson, Lisa Hemmerle

**Date:** June 15, 2016

**Re:** Outdoor Lighting Ordinance Update

Please find attached the recommendations of the Outdoor Lighting Task Force that address the potential detrimental impact of outdoor lighting and propose solutions that diminish existing problems and address problems that may be created by new development.

### **A. TASK FORCE CHARGE**

In 2013, the City Manager appointed the Outdoor Lighting Task Force ("Task Force") in response to the City Council's Policy Order O-29, which requested that the City Manager create a short term task force to consider drafting a municipal ordinance related to outdoor lighting.

The Task Force met eighteen (18) times between December 2013 through April 2016 to identify issues, explore potential solutions and draft recommendations to improve outdoor lighting on public, and private residential and commercial properties throughout the City of Cambridge. The Task Force consisted of four (4) members of the public representing residents, a large property owner/developer, the original petitioner, as well as four (4) City staff members including representatives from the Inspectional Services Department, License Commission, Electrical Department, and the Community Development Department.

The City engaged a lighting consultant, Parsons Brinkerhoff, to provide technical expertise and guidance to the Task Force. This process required extensive coordination and integration among the Task Force, City staff, and the lighting consultant, engaging the community at each of the meetings throughout the process.

### **B. BACKGROUND AND CONTEXT**

The recommendations are a reflection of balancing multiple goals: providing sufficient lighting for public safety, limiting excess lighting for protection of the night sky and broader environmental impacts, informed by the context of discussions taking place nationwide. The goal of good lighting standards is to improve nighttime visibility, create a pleasant ambiance, maintain safety in Cambridge neighborhoods, while being considerate of others.

While it is important to have adequate lighting in the City to ensure that people can go out after dark, excessive lighting can also have negative impacts such as light trespass, glare, light pollution and energy waste. In their discussions related to a zoning petition on outdoor lighting, the City Council, Planning Board and City staff supported the need to assess the customary characteristics of lighting and

344 Broadway  
Cambridge, MA 02139  
Voice: 617 349-4600  
Fax: 617 349-4669  
TTY: 617 349-4621  
[www.cambridgema.gov](http://www.cambridgema.gov)

ensure negative impacts are mitigated, while ensuring full enjoyment and safety of Cambridge's citizenry. These include:

**Lighting for Public Safety** – Proper lighting provides better visibility at night and creates a sense of security for pedestrians. This safe environment allows residents and visitors to enjoy neighborhood activities without the fear of criminal activity that takes place in poorly lit areas. However, over-lighting outdoor areas can create shadows that hide potential dangers and glare that blinds the pedestrian. The proposed lighting standard recommends consistent lighting levels to direct light to the areas intended to be illuminated without hindering visibility.

**Protection of the Night Sky** – Light pollution is the scattering of artificial light in the night sky as a byproduct from an inefficient light fixture. Light emitted beyond the surface intended to be illuminated contributes to the cumulative glow that blocks the night from view in urban settings and causes negative impacts to wildlife that are disrupted by artificial light. The proposed lighting standards include a limit to the amount of light that shines above the horizontal plane of each fixture and more efficiently illuminate the intended surface.

**Broader Environmental Impacts** – Excessive light uses energy in an inefficient manner. The City's campaign to reduce the community's carbon foot print includes energy conservation as a cornerstone for this environmental platform. Reducing light levels throughout the City conserves electricity which limits the use of fossil fuels and the production of greenhouse gases. The proposed lighting ordinance recommends lumen levels that may reduce power consumed by higher wattage bulbs by 25-50%.

## C. RECOMMENDATIONS

1. **Outdoor Lighting Ordinance:** The principal recommendation is to create a new Outdoor Lighting Ordinance. The proposed ordinance represents a comprehensive effort to meet Task Force goals in a dense, varied, urban environment especially due to the proximity of some residential and commercial properties. With some exceptions, the proposed ordinance would regulate all outdoor lighting in the City of Cambridge. Major elements of the proposed ordinance include:
  - All outdoor lighting installed after the proposed ordinance is adopted would be required to comply with the new standards. The standards of the proposed ordinance would also apply to a substantial renovation of an existing building or property. The rationale of the Task Force in recommending a municipal ordinance instead of a change to the Zoning Ordinance was so that existing properties would not be "grandfathered in" and would have to comply with the new standards.
  - Pre-existing outdoor lighting would be required to comply with the new standards within five (5) years from the adoption date of the proposed ordinance. However, property owners would also be required to make certain improvements in the interim, such as changing a light bulb to a lower lumen level or adjusting the direction of a light fixture. This was

a compromise between several Task Force members. It provides the public, particularly homeowners and small property owners, sufficient time to come into compliance with the standards, while requiring changes to offer relief from more egregious lighting in the interim.

- Flashing or intermittent light and laser light would be prohibited by the proposed ordinance. This was suggested by Task Force members in response to a new rooftop lighting structure with flashing light and changing colors on a recent development that caused several community members to request mitigation. In most instances, this type of lighting does not align with the city's design objectives.
- A Light Color Standard of a maximum of 3,500 Kelvin would be included in the Ordinance for all outdoor lighting except for that used in façade and landscape lighting. The City converted its 5,000 streetlights from high-pressure sodium to LED lamps in 2014. They have a color temperature of 4,000 Kelvin. In addition, the City converted 2,000 park/pedestrian scale lights; they have a color temperature range of 3,000-3,500 Kelvin. As color temperature drops, light bulbs become less energy efficient. LED technology is evolving fast, and the Task Force proposed 3,500 Kelvin as lightbulbs in this color spectrum are now starting to be available. The Task Force wished to balance a desire for a warmer temperature and to avoid energy waste.
- Inspectional Services Department would be the enforcement agency for the proposed ordinance, would monitor complaints, and oversee waiver of the ordinance standards when necessary.
- Administrative waivers from ordinance standards could be authorized by the Commissioner of ISD where there is either a demonstrably unreasonable hardship on the applicant or the standards would be materially detrimental to the applicant's health, safety, or welfare. The draft ordinance proposes two compliance paths: either the Prescriptive Standard or a Performance Standard. Both Standards are based on the Model Lighting Ordinance (MLO), a nationally recognized standard, created by the Illuminating Engineering Society and the International Dark Sky Association to address light pollution and provide communities with a consistent process that reduces light pollution and glare using consistent lighting practices.
  - o The Prescriptive Standard would contain precise and easily verifiable requirements for lumen output and fixture design that limit glare, uplight, light trespass, and the amount of light that can be used. This simple method would likely be used by most homeowners and small property owners.
  - o The Performance Standard would allow greater flexibility and creativity in meeting the intent of the proposed ordinance. This Performance Standard follows the U.S. Green Building Council's Leadership in Energy Environmental Design ("LEED") Light Pollution Reduction ("LPR") credit. Note: The LEED LPR is based

directly on the MLO standards mentioned above. We would expect this method to be used by larger developers and it would require a licensed architect or engineer. Those using the Performance Standard would follow specific lighting standards under the LEED LPR credit within districts established in the Zoning Map Lighting Zones (see attached map: “Lighting Zones”). LEED LPR credit recognizes five Lighting Zones, Lighting Zone 0 to 4. Lighting Zone 2 (“LZ2”) and Lighting Zone 3 (“LZ3”) are the two zones appropriate for Cambridge. Lighting Zones 0 and 1 are designed for low light suburban areas and Lighting Zone 4 is for high ambient lighting levels, e.g. Times Square in New York City. Lighting Zone 2 is proposed for residential districts of the City and Lighting Zone 3 would be appropriate for more commercial/mixed use districts (refer attached map).

In addition, the proposed ordinance creates a 100 foot buffer where LZ3 is adjacent to LZ2, meaning properties in LZ3 must comply with LZ2 standards along that boundary.

2. **Suggested Changes to Special Permit Application and Article 19:** To supplement the proposed ordinance and provide for more fine-grained review of lighting in large projects, changes are recommended to special permit application requirements and Article 19 (Project Review Special Permit) of the Zoning Ordinance. The purpose would be to:
  - Ensure that special permit project submittals include information about proposed outdoor lighting, including façade and landscape lighting.
  - Require new rooftop lighting for certain buildings to be reviewed by the Planning Board.
  - Strengthen reference to design guidelines and references to outdoor lighting to support the Planning Board’s review of outdoor lighting, including on facades and rooftops.
3. **Education and Outreach:** The Task Force recommends that educational and outreach measures be taken with a two-fold purpose:
  - 1) Provide information to residents and business about the ordinance once it is adopted and how to comply.
  - 2) Provide ‘good neighbor’ information to help people understand how small changes on their property could enhance the quality of life for their neighbors.

The Task Force recommendations could be implemented by City Staff through a multifaceted outreach and education campaign. This could include a new landing page on the Inspectional Services Department (ISD)’s website specifically for the Outdoor Lighting Ordinance, upon adoption, and include information about the ordinance, how to file a complaint, and how to file for a waiver. The City could have online and printed materials, including a “Good Neighbor” brochure which will could be used for outreach to residents, businesses, property owners, facility managers, developers, designers, electricians, realtors, contractors, etc., about the new standards. The City could also offer advice and technical assistance on complying with the

proposed ordinance standards. In the short term, CDD would continue to act as the point of contact for questions regarding the proposed ordinance allowing ISD to build capacity and take over this responsibility.

#### **D. FINAL COMMENT**

A wide range of topics were raised during the Task Force meetings. While all of the Task Force members' opinions and those raised during public comment were considered, not all ideas could be incorporated into the recommendations. The Task Force worked diligently to balance a multitude of goals within the context of a dense urban area -- minimizing outdoor lighting and related impacts, environmental sustainability, safety, not creating a burden for homeowners and small property owners, and creating a fair and implementable ordinance.

The proposed ordinance is based on nationally recognized standards and best practices created by the Illuminating Engineering Society, the International Dark Sky Association, and the U.S. Green Building Council. The standards proposed are comprehensive, offering a simplified, prescriptive standard for residents and small businesses, while allowing for additional design creativity for large property owners using a more complex, performance standard. The proposed standards can be easily implemented while not creating an undue burden on residents and small business owners. Overall, Task Force members' recommendations will lower light levels in the city to protect the night sky, while allowing the city to be lit appropriately for public safety and quality of life.

The following supporting documents are attached to this memo:

- Outdoor Lighting Task Force Memo
- Proposed Outdoor Lighting Ordinance
- Map of proposed Lighting Zones for Cambridge
- Draft Good Neighbor Brochure