Outdoor Lighting Ordinance

DRAFT ORDINANCE HIGHLIGHTS

COLOR TEMPERATURE

TWO STANDARDS

Exemptions

What it all means

Education and Outreach

Prezi
Outdoor Lighting Ordinance

DRAFT ORDINANCE HIGHLIGHTS
- Aesthetic, commercial, and safety considerations
- Color temperature regulation

TWO STANDARDS
- PRESCRIPTIVE: Defined for commercial properties
- PERFORMANCE: Designed for lower commercial properties and those seeking to improve outdoor lighting design

COLOR TEMPERATURE
- Light sources must not exceed 5000 Kelvin

Exemptions
- Public houses, schools, and public utility
- Public monuments, statues, or historical sites
- Terraces in public buildings or commercial premises
- Come under area 29 (Grange Park Precinct)
- Special buildings
- Certain locations
- Certain times

What it all means
- Use of lighting for aesthetic purposes

Prezi
Creation of Task Force - Policy Order O-29

Mission: 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.

Basis of Work - Model Lighting Ordinance

- Developed by the International Dark-Sky Association and the Illuminating Engineering Society (IES) of North America over a several year period.
- Purpose of MLO was "to address the need for strong, consistent outdoor lighting regulation in North America."
- "MLO encourages communities to adopt comprehensive outdoor lighting ordinances without devoting extensive staff time and resources to their development."
- "The MLO outdoor lighting template is designed to help municipalities develop outdoor lighting ordinances that reduce glare, light trespass, andskyglow."
Basis of Work - Model Lighting Ordinance

- Developed by the International Dark Sky Association and the Illuminating Engineering Society (IES) of North America over a seven-year period.

- Purpose of MLO was "to address the need for strong, consistent outdoor lighting regulation in North America."

- "MLO encourages communities to adopt comprehensive outdoor lighting ordinances without devoting extensive staff time and resources to their development."

- "The MLO outdoor lighting template is designed to help municipalities develop outdoor lighting standards that reduce glare, light trespass and skyglow."
Glare
Light Trespass

Light trespass  The better way
Sky Glow
DRAFT ORDINANCE HIGHLIGHTS

APPLICABILITY - New, replacement, substantial renovation, or existing

COLOR TEMPERATURE STANDARDS

PRESCRIPTIVE OR PERFORMANCE STANDARDS

INSPECTIONAL SERVICES DEPARTMENT OVERSIGHT

EXEMPTIONS

APPLICABILITY

NEW or REPLACEMENT LIGHTING
Must comply after effective date

SUBSTANTIAL RENOVATION
(Over 50% GFA building OR exterior wall area)
Must comply after effective date

EXISTING
Must comply with five (5) years of effective date
BUT - Encouraged to eliminate/minimize light trespass by:
• Changing the bulb, shielding, or fixture
APPLICABILITY

NEW or REPLACEMENT LIGHTING
Must comply after effective date

SUBSTANTIAL RENOVATION
(Over 50% GFA building OR exterior wall area)
Must comply after effective date

EXISTING
Must comply w/i five (5) years of effective date
BUT - Encouraged to eliminate/minimize light trespass by:
  • Changing the bulb, shielding, or fixture
COLOR TEMPERATURE

Light source may not exceed 3,500 Kelvin

EXCEPTION: Facade and landscape lighting (commercial or residential) is exempt from the color temperature standard
TWO STANDARDS

PRESCRIPTIVE - Geared to residential & small commercial property owners

PERFORMANCE - Geared to larger commercial properties &/or those looking for more creative lighting design
Prescriptive Standard
Light Category - Shielded or unshielded
Maximum Lumen Level
Maximum Height above surface to be illuminated
Licensed electrician
Prescriptive Standard

Light Category - Shielded or unshielded

Maximum Lumen Level

Maximum Height above surface to be illuminated

Licensed electrician
Outdoor Lighting Category 1

- Unshielded or partly shielded placed not less than 4 feet apart
- Lumen Max 315
- Maximum height 12 feet
Outdoor Lighting Category 2

Up to two unshielded or partly shielded in a main entry area, placed not less than 4 feet apart

Lumen Max 630

Maximum height 12 feet
Outdoor Lighting Category 3

Shielded directional light fixtures, placed not less than 4 feet apart, for entries, walkways, and architectural lighting.

Lumen Max 1,050

Maximum height 12 feet
Outdoor Lighting Category 4

Shielded directional light fixtures for parking areas, driveways, or outdoor loading bays

Lumen Max 1,260

Maximum height 14 feet
Performance Standard

Based on the USGBC LEED Light Pollution Reduction Credit V4

Lighting plan submitted by licensed architect or engineer

Must refer to lighting zones as defined in the ordinance.
LEED Light Pollution Credit Model Lighting Ordinance Lighting Zones
April 7, 2016 DRAFT
Cambridge, Massachusetts
Option 1 - BUG Rating

Backlight, Uplight, and Glare (BUG) Ratings

Fixture-based system

Developed by IES to make comparing and evaluating outdoor luminaires fast, easy and more complete than older systems.
Bug rating example
Option 2 - Calculation Method

Computer modeling

Calculation Method Example
Calculation Method Example
### File for Electrical Permit

<table>
<thead>
<tr>
<th></th>
<th>Prescriptive</th>
<th>Performance</th>
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</thead>
<tbody>
<tr>
<td>Sign Affidavit</td>
<td>Electricians</td>
<td>Architects/engineer</td>
</tr>
<tr>
<td>Lighting Plan Req'd</td>
<td>Projects over 10KSF</td>
<td>All</td>
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### Administrative Waiver

**Must Demonstrate:**
- (a) demonstrably unreasonable hardship on the applicant
- OR (b) materially detrimental to health, safety, or welfare

### Enforcement:

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<tr>
<td>Enforcement Officials</td>
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<tr>
<td>Complaints</td>
</tr>
<tr>
<td>Violation Remedy</td>
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</tbody>
</table>
Exemptions

Lighting of:

- Public ways, public parks, or public art
- Public monuments, statuary, or the national flag
- Theatrical or television production or performance areas
- Construction areas OR Emergency conditions
- Seasonal Lighting
- Sports facilities
- Some historic buildings
- Required by federal, state, local laws or public safety
- Underwater lighting of pools
- Lighting undertaken as a result of a City-appointed panel
What it all means

Use either the Prescriptive Standard or the Performance Standard

1. Replacement or New Lighting
   - Immediate compliance

2. Substantial Renovation
   - Immediate compliance

3. Existing Lighting
   - 5 years to comply and be a good neighbor and help the public
Replacement or New Lighting

Immediate compliance
Substantial Renovation

Immediate compliance
Existing Lighting

5 years to comply
BUT
Be a good neighbor
and try for sooner
Education and Outreach

ISD Web pages

Good Neighbor Brochure
Outdoor Lighting Ordinance

Objectives of Ordinance

The purpose of this ordinance is to regulate outdoor 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 mitigating potential nuisance in the form of light trespass and glare to citizens and the public at large, reducing light pollution and promoting energy conservation.

Lighting Best Practices

Adequate lighting in the city ensures people can go out after dark but excessive lighting can have negative impacts such as light trespass, glare, light pollution and wasting energy. Sound lighting practices make good lighting into a good neighbor. Good lighting achieves the following:

- Promotes safety and security in our neighborhoods.
- Preserves and enhances neighborhood visual character.
- Reduces or prevents light from spilling onto neighboring properties.
- Promotes energy conservation and saves money.
- Enhances the nighttime beauty.
- Improves the quality of life for people and wildlife.

For more information about the Outdoor Lighting Ordinance, frequently asked questions, Good Neighbor Lighting Brochure, sample lighting plans to file a complaint, to apply for an Admin Waiver/Exemption or other resources, please click on the Links in the menu on the left side of this page.
Outdoor Lighting Ordinance

Objectives of Ordinance

The purpose of this ordinance is to regulate outdoor 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.

Lighting Best Practices

Adequate lighting in the city ensures people can go out after dark but excessive lighting can have negative impacts such as light trespass, glare, light pollution and wasting energy. Sensible lighting practices make good lighting AND good neighbors! Good lighting achieves the following:

- Promotes safety and security in our neighborhoods.
- Preserves and enhances neighborhood character.
- Reduces or prevents light from spilling onto neighboring properties.
- Promotes energy conservation and saves money.
- Enhances the night-sky beauty.
- Improves the quality of life for people and wildlife

For more information about the Outdoor Lighting Ordinance, frequently asked questions, Good Neighbor Lighting Brochure, sample lighting plan, to file a complaint; to apply for an Administrative Exemption; or other resources, please click on the LINKs in the menu on the left-side of this page.
These types of fixture designs **DO NOT** comply in all locations.

- Unacceptable / Discouraged
  - Fixtures that produce glare and light trespass
    - Unshielded Floodlights
    - Unshielded Wallpacks & Unshielded Wall Mount Fixtures
    - Drop-Lens & Cage-Lens Fixtures w/ exposed bulb
    - Unshielded Streetlight
    - Unshielded Security Light
    - Unshielded PAR Floodlights
    - Drop-Lens Canopy Fixtures

These types of fixture designs **DO** comply in all locations.

- Acceptable
  - Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night
    - Fully Shielded Fixtures
    - Fully Shielded Wallpack & Wall Mount Fixtures
    - Fully Cutoff Fixtures
    - Full Cutoff StreetLight
    - Fully Shielded Period Style Fixtures
    - Fully Shielded Security Light
    - Shielded / Properly aimed PAR Floodlights
    - Flush Mounted Canopy Fixtures

**Good Neighbor Lighting**

**Lighting Requirements and Practices in Cambridge**

This illustration courtesy of Bob Crelin / NELPAG

Photo by Jeffrey Berg
Lighting best practices

Adequate lighting ensures safety and enjoyment of outdoor areas. Excessive lighting causes light trespass, glare, light pollution and energy waste. Good lighting:

- Promotes **SAFETY** and **SECURITY** in our neighborhoods.
- **PRESERVES** and **ENHANCES** neighborhood character.
- Reduces or **PREVENTS LIGHT TRESPASS** onto neighboring properties.
- Promotes **ENERGY CONSERVATION** and saves money.
- Enhances the **NIGHT-SKY BEAUTY**.
- Improves the **QUALITY OF LIFE** for people and wildlife.

Sensible lighting practices make good lighting AND good neighbors!

Easy steps for **existing lights**

Meeting the new requirements can be as easy as changing your light bulb! Use the lowest lumen necessary to safely illuminate the space; save money on energy costs; and eliminate light pollution. Look at the **Lighting Facts** label (example at right) that is on all light bulb packages to determine if it meets the City standards.

These simple rules cover most lights:

**Facing the Neighbors.** Partially or unshielded light fixture can be 315 lumens placed not less than 4 feet apart and mounted up to 12 feet above the surface to be illuminated.

**Facing the Street.** Partially or unshielded light fixture can be 630 lumens placed not less than 4 feet apart and mounted up to 12 feet above the surface to be illuminated.

**Entrances, Walkways, & Facade Lighting.** Fully shielded light fixtures can be 1,050 lumens placed not less than 4 feet apart and mounted up to 12 feet above the surface to be illuminated. They also must be located and aimed to minimize light pollution.

**Parking Areas, Driveways & Outdoor Loading Bays.** Fully shielded light fixtures can be 1,260 lumens placed not less than 4 feet apart and mounted up to 14 feet above the surface to be illuminated. They also must be located and aimed to prevent light pollution.

Other good practices include:

- Redirect fixtures to illuminate your property, not your neighbor’s.
- Use manufacturer-provided shieldings to direct light as needed.

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**Lighting Facts** Per Bulb

<table>
<thead>
<tr>
<th>Brightness</th>
<th>800 lumens</th>
</tr>
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<tbody>
<tr>
<td>Estimated Yearly Energy Cost</td>
<td>$1.57</td>
</tr>
<tr>
<td>Based on 3 hours/day, 11 cKwh</td>
<td></td>
</tr>
<tr>
<td>Cost depends on rates and use</td>
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</tr>
<tr>
<td>Life</td>
<td>9 years</td>
</tr>
<tr>
<td>Based on 3 hours/day</td>
<td></td>
</tr>
<tr>
<td>Light appearance</td>
<td>Warm to Cool</td>
</tr>
<tr>
<td>Energy Used</td>
<td>13 watts</td>
</tr>
</tbody>
</table>

The light Appearance must be below 3500 K.

Easy steps for **new lights**

1. Always consult with the Cambridge Inspectional Services Department (ISD) about the applicable electrical and energy codes and proper permitting process. A licensed electrician needs an approved permit from ISD prior to beginning work.

2. Review the light level requirements listed in the Prescriptive Standards outlining the lumen limits, fixture shielding requirements, mounting height limits, and recommended bulb limits.

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The full Outdoor Lighting Ordinance is located in Section 15.22.010 in the Cambridge Municipal Code. For more information:

www.cambridgema.gov/outdoorlighting
or Inspectional Services Department
831 Massachusetts Avenue
Cambridge, MA 02139
Phone: 617-349-6100 | TDD: 617-349-6112
Outdoor Lighting Ordinance