

STUFF IN THIS COLOR FONT TO BE DELETED IF STAYS IN UDC.

Outdoor Lighting Ordinance

A. Purpose

Artificial light at night is necessary to help ensure the safe performance of outdoor activities. However, some forms of such night-time lighting are a public safety concern. **Glare** impedes visibility on roads and pedestrian walkways creating a threat to roadway users, particularly cyclists and pedestrians. **Light trespass** and **skyglow** disrupt human sleep cycles and are linked to multiple medical conditions. Artificial light at night is also a major threat to the environment because of associated energy inefficiencies that contribute to climate change, and disruption of the natural ecosystem.

Therefore, the purpose of this Lighting Ordinance is to:

1. Minimize adverse impacts of lighting such as **light trespass, glare** and **skyglow**.
2. Protect the natural environment from artificial light at night.
3. Promote energy efficiency.
4. Foster an environment that supports and/or enhances commerce and lawful nighttime activities.

B. Applicability

1. The requirements in this Lighting Ordinance apply to all lighting applications that cause exterior illumination after sunset and before sunrise.
2. **All new lighting installed after the effective date of this Lighting Ordinance shall be in conformance with the requirements established below and any other applicable ordinances. All existing lighting shall come into compliance as specified in Section G.**
3. For new construction of single family residences, and any multi-family and non-residential projects, applications for site plans, special exception use, subdivision and/or applicable building permits shall include lighting plans showing location, type, height, **CCT, CRI, lumen** output, **illuminance**, and number of all proposed and existing **luminaires** and exterior lighting control systems. The applicant shall provide sufficient information to verify that lighting conforms to the provisions of this Ordinance.
4. For existing single family residences, applications for building permits shall provide sufficient information to verify that all exterior luminaires are **fully shielded**.

C. Exemptions

1. Federal or state lighting regulations shall supersede the specifications of this Lighting Ordinance in cases where all regulations cannot be satisfied, as specified in UDC 5.6.3 & 5.6.4. These include provisions for emergency lighting and building code.
2. The following **luminaires** and lighting systems are exempt from the provisions of this Lighting Ordinance.
 - a. Any single temporary light installation is permitted for a total of 90 days in one calendar year. Examples include seasonal decorative lighting and lighting for temporary public art installations, screenings, performances, and art fairs.
 - b. Lighting for flags of the United States of America and the State of Michigan.

D. Prohibitions

The following lighting systems are prohibited: Any dynamically changing lights, including strobe lights, or lights that are programmed to be flashing, blinking, or moving.

E. Exterior Lighting Specifications

1. Color Spectrum Management

- a. All permanently installed lighting for multi-family residential developments and all non-residential lighting shall have a **minimum color rendering index (CRI)** of 70.
- b. All permanently installed lighting for multi-family residences and all non-residential lighting shall have a **correlated color temperature (CCT)** of no greater than 3000 K.

2. Luminaire Design and Installation

- a. Except in D1 and D2 districts, **light trespass** beyond the property line from any use shall at no time exceed 0.1 **foot-candle** onto any property that is primarily for a residential use, public land, or public right of way; or 2 **foot-candles** onto a neighboring non-residential use. This **illuminance** shall be measured at any point within the receiving property, including at any height above grade at the property line. In D1 and D2 districts, the total **illuminance** from all sources at the property line shall not exceed 8 **foot-candles**. Additionally, no luminaire shall cause **glare** onto any property that is primarily for a residential use, public land, or public right of way.
- b. Where lighting targets primarily the ground or surface grade (i.e., horizontal targets), such as, but not limited to, parking areas, loading docks, recreational areas, and site entrances, **luminaires** shall meet **fully shielded** criteria, so that no light will cause **glare** or **light trespass** as specified in Section E.2a.

- c. Where lighting targets primarily features well above grade (i.e., vertical targets), such as, but not limited to, architectural features, landscaping, fountains, and sculptures, luminaires shall be **partially shielded** and shall be installed and aimed to minimize their output past the object being illuminated, skyward or otherwise. Such lighting shall not generate **glare** or **light trespass** as specified in Section E.2a.
 - d. The maximum average **illuminance** on the building facades shall be 3 **foot-candles** for non-residential uses and 1 **foot-candle** in any residential use, as measured at a distance of 10 feet from the facade, provided that the **illuminance** does not violate the light trespass limit specified above in Section E.2a. The measurement shall be made facing the facade. Facade illumination from above, rather than below, is strongly encouraged and must be shielded from **glare** as specified above in Section E.2c.
 - e. Illumination for building facades and/or landscapes whose primary purpose is decorative or for advertising is prohibited between 12:00 am and 6:00 am, except that such lighting situated on the premises of a non-residential establishment may remain illuminated during **business hours**. The lighting shall be controlled by an automated timer system.
 - f. Motion-activated lighting systems shall not be activated by movement beyond the property boundary.
 - g. Under-canopy lighting for such applications as gas/service stations, hotel/theater marquees, fast-food/bank/drugstore drive-ups, shall be **fully shielded**. The average maintained illumination in the area directly below the canopy shall not exceed 20 **foot-candles**, with no value exceeding 30 initial **foot-candles**.
3. Parking Lots
- a. Parking lots shall not exceed maximum **illuminances** at all unobstructed points of 8 **foot-candles** at any time after sunset and before sunrise. **Illuminances** shall be measured facing upward, three feet above the lot surface.
 - b. Lighting for parking areas and vehicular and pedestrian traffic ways for non-residential uses shall be extinguished nightly beyond **business hours**. For after-hours site safety lighting, or uses with no business hours, such lighting shall not be in excess of 2 **foot-candles**.

4. Outdoor Athletic and Recreational Facilities

Outdoor athletic and recreational facilities shall provide illuminances no greater than the recommended specifications in the most recent edition of *The Lighting Handbook* published by the Illumination Engineering Society of North America (IESNA).

F. Indoor lighting

Indoor lighting shall not be the source of exterior **light trespass** or **glare** as specified in Section E.2a and E.2b above.

THE FOLLOWING SECTIONS WILL MOVE ELSEWHERE IN UDC.

G. Amortization of non-conforming lighting installations **Move to UDC article VI**

All non-residential and residential outdoor lighting **luminaires** that were lawfully installed prior to the effective date of this ordinance, but that do not comply with the requirements of this ordinance, are declared to be legal non-conforming **luminaires**. All legal non-conforming **luminaires** shall be brought into compliance with its requirements upon the first to occur of any of the following:

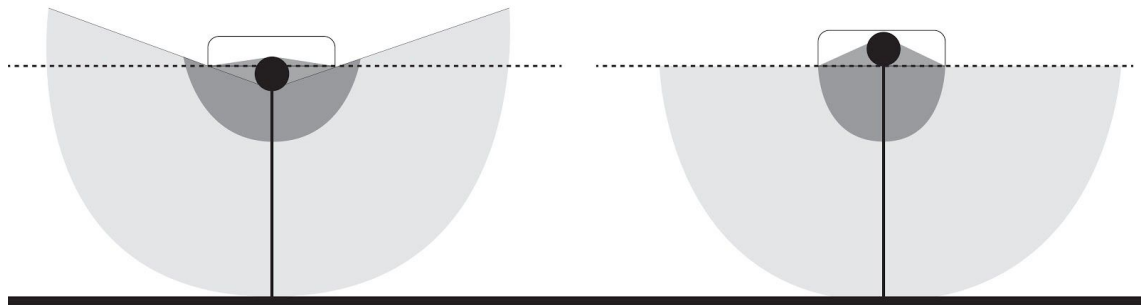
1. An application for a site plan design review, special use, subdivision permit, or building permit for an exterior modification;
2. A certificate of occupancy is issued for a property previously determined by the Building Official to be abandoned for at least six (6) months;
3. The replacement of at least 10% of the site exterior **lumen** or wattage lighting load. Any other legal non-conforming **luminaires** shall only be replaced with ones in compliance.
4. **July 1, 2029.**

H. Definitions -- **Move to article VIII of UDC**

1. **Business Hours** - The period from one-half hour before to one-half hour after published business hours.
2. **Color Rendering Index (CRI)** - A standard measure of how closely the color spectrum of a light source corresponds to that of a pure thermal spectrum, for sources having CCT < 5000 K. A value of CRI = 100 indicates perfect correspondence.
3. **Correlated Color Temperature (CCT)** - Quantity describing the perceived color of light. It is specified by the temperature of a pure thermal spectrum having the same perceived color. The corresponding thermal temperature is ordinarily given in degrees Kelvin.
4. **Foot-candle** – Unit of **illuminance** corresponding to one **lumen** of light falling on one square foot of surface area. This brightness is measurable with a light meter. One foot-candle = 10.76 lux. One **foot-candle** represents the **illuminance** cast on a surface by a candle at a distance of one foot.

5. **Fully Shielded** – Designation for a **luminaire** from which no light is emitted at or above a horizontal plane drawn through the lowest light-emitting portion.

POLE LIGHT



NON-COMPLIANT LIGHT

COMPLIANT FULLY SHIELDED

WALL MOUNTED LIGHT

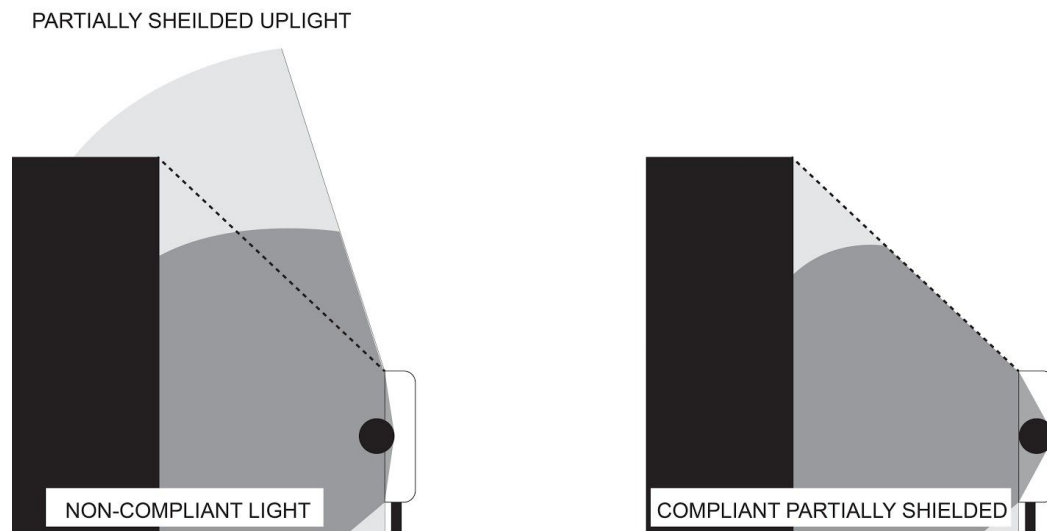


NON-COMPLIANT LIGHT

COMPLIANT FULLY SHIELDED

6. **Glare** – Excessive brightness from a light source whose contrast against the background causes impaired vision or physical discomfort.
7. **Illuminance** – Light incident on a surface or plane perpendicular to the direction of the light source, measured in **foot-candles** or lux; illumination.
8. **Light Trespass** – Light that is received beyond the boundary of the property on which the lighting installation is sited.
9. **Lumen** – SI unit measuring the power per solid angle of visible light emitted by a source. A 60-watt incandescent bulb produces about 800 **lumens**.

10. **Luminaire** - A lighting fixture, excluding the mounting surface or pole, consisting of a multi-component unit housing one or more light-emitting devices, e.g., LEDs or light bulbs.
11. **Partially shielded** - Designation for a **luminaire** from which some light is emitted at or above a horizontal plane drawn through the lowest light-emitting portion, for the purpose of illuminating specific targets above grade. Any light from the **luminaire** that is not illuminating the target must be fully shielded to the greatest extent possible.



12. **Skyglow** - Unnatural brightening of the night sky due to artificial light at night.
13. **Uniformity Ratio** - The ratio of maximum to minimum **illuminance** in a given area.

END of A2LO.
