

# 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, and **light trespass** and **sky glow** 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. The purpose of this Lighting Ordinance is to improve public safety and health, promote energy efficiency, and protect the natural environment, while supporting and promoting lawful night-time activities. Another goal is to foster a nocturnal aesthetic ambiance that enhances commerce and citizen experience.

## 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. All applications for design review, conditional use, subdivision and/or building permits shall include lighting plans showing location, type, height, **CCT**, **CRI**, **lumen** output, **illuminance**, and number of all proposed and existing **luminaires**. The applicant shall provide sufficient information to verify that lighting conforms to the provisions of this Ordinance.

## 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 5.634. 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 60 days in one calendar year. Examples include seasonal decorative lighting and lighting for temporary public art installations, screenings, performances, art fairs, and construction projects.

- b. Lighting in swimming pools, fountains, and other water features governed by Article 680 of the National Electrical Code.

#### D. Prohibitions

The following lighting systems are prohibited:

1. Searchlights used for advertising purposes.
2. Any dynamically changing lights, including strobe lights, or lights that are programmed to be flashing, blinking, or moving. Lit signs must comply with the specifications in [**Sign Ordinance\***]

#### E. Exterior Lighting Specifications

##### 1. Spectral Power Distribution

- 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 2700 K.

##### 2. Luminaire Design and Installation

- a. **Light trespass** beyond the property line from any use shall at no time exceed 0.1 **foot-candle** onto a residential use or public right of way; or 0.3 **foot-candle** onto a neighboring commercial use. The **illuminance** shall be measured at any point within the receiving residential property, including at any height above grade at the property line.
- 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 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 **illuminance** on the building facades shall be 3 **foot-candles** in commercial zones and 1 **foot-candle** in residential zones, as measured at a distance of 10 feet from the facade, with an exception for no more than 20% of the facade area illuminating details or features with an **illuminance** up to 3 times

these limits. If the facade is less than 10 feet from the property line, then the illuminances measured at the property line must comply with the **light trespass** limits as specified above in Section E.2a. 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 for decorative, advertising or aesthetic purposes is prohibited between 12:00 am midnight and dawn, except that such lighting situated on the premises of a commercial or institutional establishment may remain illuminated during **business hours**.
  - f. Only flags of the United States of America and the State of Michigan shall be permitted to be illuminated past midnight. If illuminated from below, flagpoles may be illuminated with up to two spot-type **luminaires**, utilizing shields or diffusers to minimize **glare**, whose maximum combined **lumen** output is 75 lumens per linear foot of pole height, measured from the level of the **luminaire** above grade to the top of the flagpole.
  - g. Motion-activated lighting systems shall not be activated by movement beyond the property boundary.
  - h. Illuminated and electronic signs and billboards shall be installed and operated as specified in [**Sign Ordinance\***].
  - i. Under-canopy lighting for such applications as gas/service stations, hotel/theater marquees, fast-food/bank/drugstore drive-ups, shall be accomplished using **fully shielded luminaires**. The average maintained illumination in the area directly below the canopy shall not exceed 20 initial **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: 0.5, 1.0, and 2.0 **foot-candles** for small (5 - 10 spaces), medium (11 - 99 spaces), and large (> 100 spaces) lots, respectively, at any time after sunset and before sunrise. **Illuminances** shall be measured three feet above the lot surface.
  - b. Parking lots shall be designed and maintained with a maximum **uniformity ratio** of 10:1.
  - c. Light poles shall not be taller than 30 feet.
  - d. Lighting for parking areas and vehicular and pedestrian traffic ways for commercial, industrial and institutional uses shall be extinguished nightly beyond **business hours**. For after-hours site safety lighting, such lighting shall not be in excess of 0.3 **foot-candle**.

#### 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

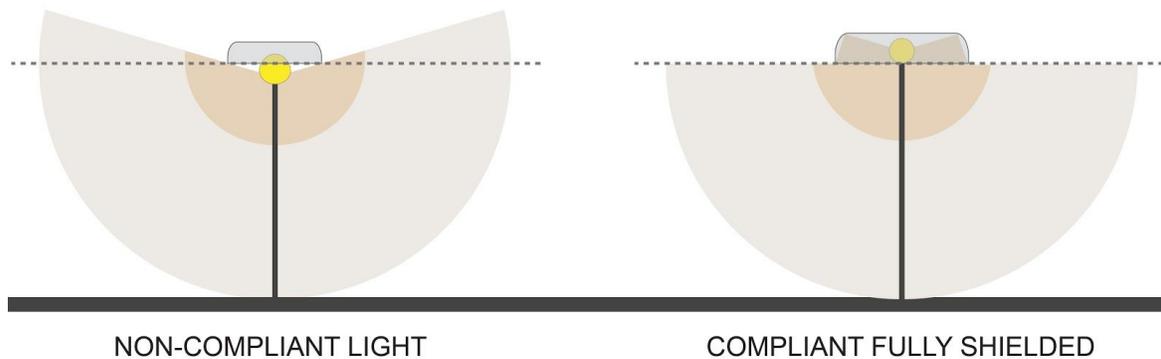
All commercial and residential outdoor lighting **luminaires** that were lawfully installed prior to the effective date of this ordinance, but that do not comply with the requirements of this ordinance, are declared to be legal non-conforming **luminaires**. All legal non-conforming **luminaires** may continue to be used and maintained after the adoption of the Lighting Ordinance, but 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, conditional use, subdivision permit, or building permit;
2. A change of use of the property;
3. A certificate of occupancy is issued for a property previously determined by the Building Official to be abandoned for at least six (6) months;
4. A determination by the Building Official that the previously legal non-conforming luminaire constitutes a public hazard or nuisance;
5. The replacement of any legal non-conforming **luminaire** with new lighting equipment whose **illuminance** levels exceed the existing.
6. 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 by specifying the temperature of a pure thermal spectrum having the equivalent 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.
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.



6. Glare – Excessive brightness from a light source whose contrast against the background causes impaired vision or physical discomfort.
7. Illuminance – Incident light 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.
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. Sky Glow - Unnatural brightening of the night sky due to artificial light at night.
12. Uniformity Ratio - The ratio of maximum to minimum **illuminance** in a given area.