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1 **IDA-IESNA Model Lighting Ordinance (MLO)**

2
3 **FOR PUBLIC REVIEW**

4 **NOT INTENDED FOR PUBLIC ADOPTION AT THIS TIME**

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1 **I. Preamble**

2 The purpose of this Ordinance is to provide regulations for outdoor lighting
3 that will:

4 Permit reasonable uses of outdoor lighting for night-time safety, utility,
5 security, productivity, enjoyment and commerce.

6 a. Conserve energy and resources to the greatest extent possible.

7 b. Minimize adverse offsite impacts including, light trespass, and
8 obtrusive light.

9 c. Curtail light pollution and preserve the nighttime environment.

10 d. Help preserve the dark night sky for astronomy and enjoyment.

11 e. Help protect the natural environment from the adverse effects of night
12 lighting from electric sources.

13

1 II. Definitions

<i>Authority</i>	The adopting municipality, agency or other governing entity having jurisdiction.
<i>Astronomic Time Switch</i>	An automatic lighting control device that operates as an on/off switch for outdoor lighting relative to time of solar day with time of year correction.
<i>Adjacent Grade</i>	Grade directly below luminaire on a plumb line or, nearest grade thereto.
<i>Backlight</i>	For an exterior luminaire, light emitted in the quarter sphere below horizontal and in the opposite direction of the intended orientation of the luminaire. For luminaires with symmetric distribution, backlight will be the same as frontlight.
<i>BUG</i>	A luminaire classification system that is used in the Prescriptive method for evaluating optical distribution of outdoor luminaires that denotes levels of backlight (B), uplight (U) and glare (G).
<i>Canopy</i>	A covered, unconditioned structure with at least one side open for pedestrian and/or vehicular access..
<i>Common Outdoor Areas</i>	One or more of the following: a common parking lot for three or more domiciles or buildings; a common parking garage or covering entrance intended to be used by three or more domicile or buildings; a common entrance for three or more domiciles or buildings.
<i>Curfew</i>	A time defined by the authority when outdoor lighting is reduced to a specified maximum level or extinguished.
<i>Emergency conditions</i>	Loss of electrical power, fire, security alarm, or other situation requiring uninterrupted illumination for the path of egress.
<i>Fully Shielded Luminaire</i>	A residential luminaire with opaque top and sides, capable of only emitting light in the lower photometric hemisphere as installed.
<i>Frontlight</i>	For an exterior luminaire, light emitted in the quarter sphere below horizontal and in the direction of the intended orientation of the luminaire.
<i>Glare</i>	Light entering the eye directly from luminaires that causes visual discomfort or reduced visibility.
<i>Hardscape</i>	Permanent improvements to a site, including but not limited to parking lots, drives, entrances, curbs, ramps, stairs, steps, and similar construction.
<i>Hardscape Area</i>	Area in square feet of all hardscape including any medians, walkways, landscape areas 10 feet or less in width within the hardscape area used to calculate complete site method allowed lumens.
<i>Hardscape Perimeter</i>	Perimeter in linear feet of all hardscape outside perimeter plus perimeter around buildings and structures greater than 10 feet in width used to calculate complete site method allowed lumens.
<i>IDA</i>	International Dark-Sky Association, Tucson, AZ USA
<i>IES</i>	Illuminating Engineering Society, New York, NY USA
<i>Illuminated area</i>	An exterior area for which lighting of reasonable uniformity and illumination is provided; not incidentally lighted or partially lighted.
<i>Improved area</i>	The area of a specific use, measured in plan view.
<i>Initial Lamp Lumens</i>	Lumen rating of a lamp when the lamp is new and has not depreciated in light output (rated lamp lumens) Lamp lumen depreciation equals 1.0.

<i>Intended manner</i>	The manner of use of the product generally as listed, advertised and/or per manufacturer's standard installation instructions.
<i>Lamp</i>	A generic term for a source created to produce optical radiation (i.e. "light"), often called a bulb or tube.
<i>Lamp Watts</i>	The rated watts of the lamp, not including the watts of external auxiliaries.
<i>Landscape Lighting</i>	Lighting not mounted to poles or buildings, for the purpose of illuminating trees, shrubbery and other natural external elements.
<i>Light Pollution</i>	Light scattered by the atmosphere that interferes with the appreciation or observation of night skies
<i>Light Trespass</i>	Unwanted light that falls on neighboring properties or produces glare or distraction for observers away from the area for which the light is intended (also called "nuisance glare")
<i>Lighting</i>	Light produced by man-made sources, including electric lamps, gas lamps, and similar sources.
<i>Lighting Equipment</i>	Equipment specifically intended to provide electric illumination, including but not limited to, luminaire(s), poles, posts, and related structures, electrical wiring, and other necessary or auxiliary components.
<i>Lighting System</i>	On a site, all exterior man-made lighting sources, associated infrastructure and controls.
<i>Low Voltage Landscape Lighting</i>	Electric lighting powered at less than 15 volts and limited to lamps of 50 watts or less, not mounted to poles or buildings, for the purpose of illuminating trees, shrubbery and other natural external elements.
<i>Lumens (lm)</i>	International unit of luminous flux; light power corrected for V_{λ} , the human photopic sensitivity function.
<i>Lighting Zone (LZ)</i>	A designation assigned by the Authority for specified parcels, areas or districts within its jurisdictional boundaries defining allowable ambient lighting levels, operational characteristics and other control criteria.
<i>Luminaire</i>	The complete lighting unit assembly (fixture), consisting of a lamp, or lamps and ballast(s) (when applicable), together with the parts designed to distribute the light (reflector, lens, diffuser), to position and protect the lamps, and to connect the lamps to the power supply.
<i>Mounting height</i>	The height of a luminaire above grade level. The horizontal spacing of poles is often measured in units of "mounting height". Example: "The luminaires can be spaced up to 4 mounting heights apart."
<i>New lighting</i>	Lighting for areas not previously illuminated; newly installed lighting of any type except for replacement lighting or lighting repairs.
<i>Obtrusive light</i>	Light that produces sky glow, light trespass, glare or other undesirable environmental impacts.
<i>Opaque</i>	A solid material allowing no light to pass through.
<i>Ornamental lighting</i>	Lighting that is not a sign and does not impact the function and safety of an area but is purely decorative, or used to illuminate architecture and/or landscaping, and installed for aesthetic effect.
<i>Partly Shielded Luminaire</i>	A residential luminaire in which the lamp is shielded by a translucent shade so as to prevent light from being directly emitted by the lamp or reflector into the upper photometric hemisphere

<i>Photoelectric Switch</i>	A control device employing a photocell or photodiode to detect daylight and automatically switch lights off by day.
<i>Project</i>	Installation of a lighting system under a single electrical permit or for a specific construction project, multiple permits when required for phased construction.
<i>Property line</i>	The edges of the legally-defined extent of privately owned property
<i>Public Right of Way</i>	Any sidewalk, planting strip, alley, street, or pathway, improved or unimproved, that is dedicated to public use.
<i>Radiosity</i>	A method for calculating lighting system performance that accounts for direct and reflected light by using Fourier coefficients to describe the transfer of radiative energy from sources to surfaces and among surfaces.
<i>Ray Tracing</i>	A method for calculating lighting system performance that accounts for direct and reflected light by tracing each ray from sources to surfaces and among surfaces until dissipated.
<i>Replacement Lighting</i>	Lighting installed specifically to replace existing lighting equipment that is sufficiently inoperable to be beyond repair(s).
<i>Repair(s)</i>	The reconstruction or renewal of any part of an existing luminaire for the purpose of its on-going operation, including but not limited to relamping or replacement of components such as; capacitor, ballast or photoelectric control.
<i>Residential Luminaire</i>	Luminaires used solely for compliance with Section V.
<i>Sales area</i>	Uncovered area used for sales of retail goods and materials, including but not limited to automobiles, boats, tractors and other farm equipment, building supplies, and gardening and nursery products.
<i>Seasonal lighting</i>	Temporary lighting installed and operated in connection with holidays, community celebrations or traditions.
<i>Service yard</i>	Uncovered hardscape specifically used for vehicular, marine or aviation service or for outdoor storage and/or loading of goods and materials
<i>Shielded Directional Luminaire</i>	A fully shielded residential luminaire with an adjustable mounting device allowing aiming in a direction other than straight downward.
<i>Sign</i>	Advertising, directional or other signs (governed by the sign ordinance)
<i>Site</i>	A geographic area within the jurisdiction of the Authority delineated by specific dimensions and coordinates or a complete land parcel defined by designated property boundaries as recorded by the Authority..
<i>Skyglow</i>	The illumination of clouds, moisture and airborne matter by lighting
<i>Temporary lighting</i>	Lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for at least 30 days.
<i>Third Party</i>	A party contracted to provide lighting, such as a utility company.
<i>Time Switch</i>	An automatic lighting control device that operates as an on/off switch for outdoor lighting according to time of day.
<i>Translucent</i>	A material allowing light to pass through while obscuring or diffusing the lamp.
<i>Uplight</i>	For an exterior luminaire, light emitted in the hemisphere at or above the horizontal plane.
<i>Urban Park</i>	A publicly accessible park in or near a town or city and not specified as a wildlife refuge or nature preserve.

1 **III. General Requirements for All Outdoor Lighting**

2 **A. Conformance with All Applicable Codes**

3 All outdoor lighting shall be installed in conformance with the provisions of
4 this Ordinance, applicable Electrical and Energy Codes, and applicable
5 sections of the Building Code.

6 **B. Applicability**

7 Except as described below, all outdoor lighting installed after the effective
8 date of this Ordinance shall comply with these requirements. This includes,
9 but is not limited to, new lighting, replacement lighting, or any other lighting
10 whether attached to structures, poles, the earth, or any other location,
11 including lighting installed by any third party.

12 *Exemptions to III.(B.)* The following are not regulated by this
13 Ordinance:

- 14 a. Lighting equipment within public right-of-way or easement for
15 the principal purpose of illuminating streets, roadways and/or
16 other areas open to public transport by vehicle or pedestrian
17 traffic. No exemption shall apply to any lighting equipment
18 within the public right of way or easement when the purpose of
19 the luminaire is to illuminate areas outside the public right of way
20 or easement.
- 21 b. Lighting equipment for roadway rest areas without gas stations,
22 restaurants or retail stores.
- 23 c. Lighting equipment for public monuments and statuary.
- 24 d. Lighting equipment solely for signs, (as this lighting is regulated
25 by the Sign Ordinance).
- 26 e. Repairs to existing lighting equipment.
- 27 f. Temporary lighting equipment for theatrical, television,
28 performance areas and construction sites.
- 29 g. Lighting equipment in swimming pools and other water features.
- 30 h. Temporary lighting equipment and seasonal lighting equipment
31 provided that individual lamps are 10 watts or less.
- 32 i. Lighting equipment that is only used during emergency
33 conditions.

1 j. Lighting equipment used solely for security and controlled by a
2 motion sensor with photoelectric switch.

3 k. In Lighting Zones 2, 3 and 4, low voltage landscape lighting
4 equipment controlled by a photoelectric switch or programmable
5 time switch.

6 ***Exceptions to III. (B.)*** When the requirements herein conflict with
7 specific lighting provisions of any of the following, only those
8 specific provisions shall take precedence and all other requirements
9 herein shall remain in force:

10 a. Lighting equipment specified or identified in a specific special
11 use permit.

12 b. Lighting equipment required by laws and/or regulation of a
13 government, authority or entity having applicable jurisdiction.

14 **C. Use of Lighting Zones**

15 The Authority shall establish Lighting Zones (LZ) within its jurisdictional
16 boundaries. The Lighting Zone shall define the limitations for outdoor
17 lighting as specified in this ordinance. The descriptive criteria for each
18 Lighting Zone shall be as follows:

19 **LZ0: No ambient lighting**

20 Areas where the natural environment will be seriously and adversely
21 affected by lighting. Impacts include disturbing the biological cycles
22 of flora and fauna and/or detracting from human enjoyment and
23 appreciation of the natural environment. Human activity is
24 subordinate in importance to nature. The vision of human residents
25 and users is adapted to the total darkness, and they expect to see little
26 or no lighting. When not needed, lighting should be extinguished.

27 **LZ1: Low ambient lighting**

28 Areas where lighting might adversely affect flora and fauna or disturb
29 the character of the area. The vision of human residents and users is
30 adapted to low light levels. Lighting may be used for safety, security
31 and/or convenience but it is not necessarily uniform or continuous.
32 After curfew, most lighting should be extinguished or reduced as
33 activity levels decline.

34

1 **LZ2: Moderate ambient lighting**

2 Areas of human activity where the vision of human residents and
3 users is adapted to moderate light levels. Lighting may typically be
4 used for safety, security and/or convenience but it is not necessarily
5 uniform or continuous. After curfew, lighting may be extinguished or
6 reduced as activity levels decline.

7 **LZ3: Moderately high ambient lighting**

8 Areas of human activity where the vision of human residents and
9 users is adapted to moderately high light levels. Lighting is generally
10 desired for safety, security and/or convenience and it is often uniform
11 and/or continuous. After curfew, lighting may be extinguished or
12 reduced in most areas as activity levels decline.

13 **LZ4: High ambient lighting**

14 Areas of human activity where the vision of human residents and
15 users is adapted to high light levels. Lighting is generally considered
16 necessary for safety, security and/or convenience and it is mostly
17 uniform and/or continuous. After curfew, lighting may be
18 extinguished or reduced in some areas as activity levels decline.
19

20 **D. Lighting Controls and Curfews**

21 1. Automatic Control Requirements

22 Controls shall be provided that automatically extinguish all outdoor
23 lighting by day using a switching device such as a photoelectric
24 switch, astronomic time switch or a control system such as a
25 programmable lighting controller, building automation system,
26 lighting energy management system or equivalent.

27 *Exceptions to III.(D.) 1.* Automatic lighting controls are not
28 required for the following:

- 29 a. Lighting under canopies.
- 30 b. Lighting for tunnels, parking garages, garage entrances, and
31 similar conditions.
32

