

III. GENERAL REQUIREMENTS - Ordinance Text

A. Conformance with All Applicable Codes

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

B. Applicability

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

Exemptions from III.(B.) The following are not regulated by this Ordinance

- a. Lighting within public right-of-way or easement for the principal purpose of illuminating streets or roads. No exemption shall apply to any lighting within the public right of way or easement when the purpose of the luminaire is to illuminate areas outside the public right of way or easement, **unless regulated with a streetlighting ordinance.**

10 - To streamline and simplify, revise B, Applicability, as follows:

Except as described below, all outdoor lighting installed after the effective date of effect of this Ordinance shall comply with these requirements. This includes, but is not limited to, new lighting, replacement lighting, or any other lighting whether attached to structures, poles, the earth, or any other location, including lighting installed by any third party new and replacement lighting and includes all types, regardless of what the lights may be attached to or who may install them

Reject - Adds unnecessary language - the intent is already clear.

30. Section III,B. "Exemptions from III.(B.) a. page 8– this article may significantly limit a municipal or utility entity from providing security lighting for commercial properties. Might this be reconsidered under the same criteria as listed in Section V, A. General Requirements, #4 page 19 – whereas the use of shielded flood lighting aimed away... " reconfigured to allow for more sufficient lumen package. We suggest this in deference to Section I Preamble Article a. page 5 – "To permit reasonable uses for outdoor lighting for night-time safety, utility, security, productivity, enjoyment and commerce" and Section I Preamble Article e. page 5 - "Conserve energy and resources to the greatest extent possible". Not allowing the lighting provider to use existing poles lighting the public right-of way and easement will require additional poles be set for the purpose of lighting only the non-easement property resulting in use of more copper for wiring, more aluminum or steel for poles and limited sidewalk area inconvenience due to increased number of required poles to provide this additional lighting.

REJECT - Commenter misread the section. It does not prevent lighting from being installed on poles, but they must meet the requirements of the section

43 - Revise exemption a. for clarity. We can't propose a revision because the intent of this exemption is unclear. This exemption is very confusing.

REASON: We don't understand the two optional exemptions for street lighting. In the base exemption, lighting of "streets and roads" is exempt. Then in the optional exemption if using the street lighting ordinance, the same exemption applies for "roads and highways". The optional street lighting ordinance defines "Roadway Lighting" and "Street Lighting", but we can't figure out how these definitions apply to the exemptions, or even if they are supposed to. If the jurisdiction adopts the street lighting ordinance, why would lighting for roads and highway be exempt? If you are saying that streetlights are exempt from the main part of the ordinance but are covered by the street lighting ordinance, then you need to make that clear.

ACCEPT IN PART - Comment illustrates the need to be consistent about streets, road and highways. Also the need to coordinate with optional street lighting section.

25 - Delete Exemption "b," lighting for public monuments and statuary.
REASON: Exemption B.b: Ornamental lighting of this type is largely wasteful and unnecessary. It is already mostly covered in Section VI (special permitting), which is appropriate so that such lighting is limited to cases where the municipality has expressly chosen to authorize it. **REJECT - Public monuments should be lighted**

#27. Section III. General Requirements

"Exemptions: b. Lighting for public monuments and statuary" -

Although unintended, this is often a cause of light trespass, light pollution, and it is harder to justify the energy use in today's world. Therefore, this cannot be considered an exemption and should have restrictive guidelines/curfews. **ACCEPT IN PART - Some reasonable limits should be discussed for public monuments. See note above.**

36. Flags are not addressed here. Are they considered monuments, or perhaps statuary?

They should be specifically mentioned, included or excluded, for clarity.

ACCEPT - Exemption for flags should be clarified

#12 - **DELETE**

Lighting solely for signs (lighting for signs is regulated by the Sign Ordinance).

ADD:

On Premise sign Illumination of any kind, including but not limited to On Premise signs, On Premise wayfinding signs, On Premise directional signs of any type, and other incidental On Premise signs having illumination at night.

Reasoning

1. The Code language should be more clear as to what signs are covered by the MLO; having a general reference may lead to some jurisdictions to misunderstand or misinterpret the Code language and attempt to include On Premise signs in any local Lighting Ordinance that may be adopted.

The current language may be subject to varying interpretations by jurisdictions that adopt the IGCC. The suggested replacement language makes the Exemption clear and will not be subject to differing interpretations, and will help avoid confusion.

The USSC also suggests that the wording within the parenthesis be deleted entirely; please see next comment for reasons for this suggestion.

The USSC has no comment on whether Off Premise signs or Billboards should be included in the IDA/IESNA MLO, for the following reasons: (a) there are significant legal distinctions between On Premise and Off Premise signs; (b) Motorists use On Premise signs in a different way compared to Off Premise signs i.e. the traffic safety implications for limiting On Premise sign illumination are different compared to Off Premise signs;

Rejected: The MLO does not currently address signs. This is handled under separate sign ordinances.

16. d. Repairs to existing luminaires not exceeding 25 40% of total installed luminaires.

REASON: A 25% metric represents a small addition and is too aggressive to require compliance for the entire installed system, given the state of the economy and business in general. On the other hand, 50% is too liberal and lenient. A 40% metric would be a reasonable compromise and is consistent with the other 40%

Reject - Replacment threshold at 25% for consistency. Will add language in User's Guide that this 25% may be revised per communities compliance of non-conforming site regulation.

b. Lighting for public monuments and statuary.

c. Lighting solely for signs (lighting for signs is regulated by the Sign Ordinance).

d. Repairs to existing luminaires not exceeding 25% of total installed luminaires.

III. GENERAL REQUIREMENTS (cont.) - Ordinance Text

- e. Temporary lighting for theatrical, television, performance areas and construction sites;
- f. Underwater lighting in swimming pools and other water features
- g. Temporary lighting and seasonal lighting provided that individual lamps are less than 10 watts and 70 lumens.
- h. Lighting that is only used under emergency conditions.
- i. In lighting zones 2, 3 and 4, low voltage landscape lighting controlled by an automatic device that is set to turn the lights off at one hour after the site is closed to the public or at a time established by the authority.

25 Add the following sentence at the end of Exemption “i”:

Any lumens devoted to such lighting on non-residential properties shall be counted toward the applicable Total Site Lumen Limits established in Section IV and associated tables.

REJECT - Intent is to not regulate low voltage light sources, since low voltage lighting is limited in intensity.

~~Exceptions to III. (B.) When the requirements herein conflict with specific lighting provisions of any of the following, only those specific provisions shall take precedence, and all other requirements herein shall remain in force.~~ **All lighting shall follow provisions in this ordinance; however, any special requirements for lighting listed in a) and b) below shall take precedence.**

25 - The text following “Exceptions to III.B” is not clear. Does “herein” refer to all of Section III, the entire ordinance, or something else? And to what does “any of the following” refer? “a” and “b”? If so, please so state.

ACCEPT - Clarify “herein” good idea - Revised to make paragraph clearer.

- a. Lighting specified or identified in a specific use permit.
- b. Lighting required by federal, **state, territorial, commonwealth**, or provincial laws or regulations.

#10 - Under Exceptions to III. (B), wording should be revised to:

b. Lighting required by federal, state, territorial, commonwealth, or provincial laws or regulations.
(To allow MLO's applicability to current and future U.S. territories and commonwealths – not only the states. Note that Kentucky, Massachusetts, Pennsylvania, and Virginia formally refer to themselves commonwealths, too.)

ACCEPT - Good Comment - Revised Statement

C. Lighting Control Requirements

1. Automatic Switching Requirements

Controls shall be provided that automatically extinguish all outdoor lighting when sufficient daylight is available using a control device or system such as a photoelectric switch, astronomic time switch or equivalent functions from a programmable lighting controller, building automation system or lighting energy management system, **all with battery or similar backup power or device.**

25. C.1 should include a requirement for battery or spring backup of automatic switching.

ACCEPT IN PART - Revised Text

III. GENERAL REQUIREMENTS (cont.) - Ordinance Text

Exceptions to III.(C.) 1. Automatic lighting controls are not required for the following:

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

2. Automatic Lighting Reduction Requirements

The Authority shall establish curfew time(s) after which total outdoor lighting lumens shall be reduced by at least 30% or extinguished.

Exceptions to III.(C.) 2. Lighting reductions are not required for any of the following:

- a. With the exception of landscape lighting, lighting for residential properties including multiple residential properties not having common areas.
- b. ~~When there is only 1 conforming luminaire on the property~~
When the Outdoor Lighting includes only one luminaire.
- c. Code required lighting for steps, stairs, walkways, and building entrances.
- d. When in the opinion of the Authority, lighting levels must be maintained.
- e. Motion activated lighting.
- f. Lighting governed by special use permit in which times of operation are specifically identified.
- g. Businesses that operate on a 24 hour basis.

D (CCT)

Both 25 and 10 - REJECT - Spectral distribution regulation will not be a part of MLO version 1. This will be considered in future MLO revisions. CCT requirement is an appealing idea but might slow down release of MLO until many issues are resolved

25 - In C.1.a, delete the exception for lighting under canopies. REASON C.1.a: Canopy lighting is one of the big "moth-effect marketing" offenders and should be subject to the same controls/curfews as any other lighting. **REJECT - Lighting under canopies by day does not affect dark skies**

#30 - Section III General Requirements, "Exceptions to III.(C.)1.", b. page 10 – parking garages provide one of the least complex opportunities for dimming and daylight harvesting. Considering current technology and practices, might the MLO reconsider this exception with a codicil to allow for "opt out" on lighting controls for parking garages rather than complete exemption?

REJECT - Regulating energy use is the purview of the energy code

25 - In C.2, we recommend that post-curfew lighting be reduced by 75% rather than the 30% shown. REASON C.2: We believe a much larger post-curfew reduction should be required than the 30% shown.

REJECT - HID lamps can't be reduced more than 30%

10 - (C). 2. Automatic Lighting reduction Requirements - A requirement to reduce lighting lumens by 30% will be met the most economically way possible by extinguishing 30% of the luminaires.

The result will be a nonuniform area that will not meet the IES recommended practice for parking areas. A substandard light level will expose a city or Municipality to lawsuits from personal injury or property damage. This will also be a point of argument in adaption as well as enforcement.

REJECT - Energy codes such as ASHRAE 90.1 provides for this.

53 - I'm concerned that not enough guidelines are given to accomplish this. The requirement to reduce lighting lumens by 30% will most likely be met the most economical way possible - by extinguishing 30% of the luminaires. The result could likely be a nonuniform area that will not meet the IES recommended practice for parking areas.

A substandard light level will expose a utility or Municipality to lawsuits from personal injury or property damage. This will also be a point of argument in adoption as well as enforcement.

REJECT - Energy codes such as ASHRAE 90.1 provides for this.

55. When there is only 1 conforming applicable luminaire on the property. REASON: For clarification. (Non-conforming luminaires shouldn't be exempt.)

25 - The C.2.b exception is unworkable as written. What if there are also a dozen non-conforming fixtures on the same site?

ACCEPT BOTH 55 and 25

43. - b. When there is only 1 ~~the Outdoor Lighting includes only one~~ conforming Luminaire. on the property. REASON: Improves clarity. "Property" is not a defined term. (See comment IALD#22 for a revised definition of Outdoor Lighting.)

ACCEPT - Revised section

25 - We recommend the addition of a new subsection D, as follows:

D. Color of light

Any lamp used to illuminate an outdoor area, surface, or object shall have a Correlated Color Temperature no greater than 3000 kelvin. REASON IDA has rightly called attention to the problems associated with blue-rich light. It is only logical to back this up with a recommended prohibition on such light in MLO.

#10 - III. General Requirements ADD

D. Spectral Distribution Requirement

All outdoor lighting shall have either a nominal correlated color temperature (CCT) no higher than 3500 Kelvin or emit less than 10% of total radiant power in the 380 nm to 500 nm band. Compliance with this requirement may, for example, be achieved by installation of an appropriate filter onto an existing luminaire. REASONS: See Next Page

#10 - REASONS to add new Section D Spectral Distribution Requirement: The recent research review by IDSA indicates that blue light emissions in outdoor lighting should be strictly limited.

While many blue-rich LED luminaires are fully shielded, there are numerous non-ornamental LED fixtures on the market that are not adequately shielded by any stretch of the imagination.

Various manufacturers now produce LED versions of prismatic refractor ornamental luminaires – which are often offered with 4000K or higher as the lowest available CCT. A number of manufacturers are offering LED retrofit packages for existing post-top and acorn style fixtures – also, for the most part, at high CCT.

Many, if not most, recent LED street light installations are being done with CCT's in the 4000K – 6000K range, despite the recommendations by experts that outdoor lighting, including street lighting, should have a CCT not higher than 3000K.

In any case, since pale concrete and other high-albedo paving materials are coming into widespread use simultaneously with high CCT lighting, much blue light is likely to be reflected into the atmosphere by such paving materials in the absence of strict limits on spectral distribution, regardless of luminaire shielding.

REJECT - Spectral distribution regulation will not be a part of MLO version 1. This will be considered in future MLO revisions. CCT requirement is an appealing idea but might slow down release of MLO until many issues are resolved

III. GENERAL REQUIREMENTS - User's Guide

This Section sets out the requirements that apply to all lighting, both residential and non-residential.

Each adopting jurisdiction should incorporate their existing standards as to when compliance with new regulations is required, when repair or remodeling triggers compliance and if the new ordinance will be retroactive to existing development. The Applicability section of this **model** ordinance should serve as a guide if the adopting jurisdiction does not have standards or policies in place. Likewise, the adopting jurisdiction should use their existing policies and definitions of what constitutes public monuments, and temporary and/or emergency lighting. Community attitudes and precedents should be taken into account in deciding to regulate seasonal holiday lighting.

EXEMPTIONS - User's Guide

This is standard language intended to prevent conflict of laws and to give the community the ability to set specific lighting requirements in special plans and under use permits. It can be amended to conform to similar language in other ordinances. **For example, while public monuments, statuary, and flags should be lighted, the lighting also should be limited to avoid excess.**

Lighting for streets, roads, and highways is usually regulated by a street lighting ordinance, and is not covered by this model ordinance. However, since street lighting can affect nearby areas, some recognition of its effect is appropriate. (See Section XI)

SIGN LIGHTING - User's Guide

A sign **LIGHTING** ordinance is strongly recommended if not already in place. It should carefully limit lighting **as TO PREVENT** over-lighted signs **are sometimes FROM BEING** used to circumvent lighting ordinances.

Garvey, Philip M., Pietrucha, Martin T., Cruzado, Ivette, The Effects of Internally Illuminated On-Premise Sign Brightness on Nighttime Sign Visibility and Traffic Safety, Pennsylvania Transportation Institute at the Pennsylvania State University, 2009
Garvey, Philip M., Pietrucha, Martin T., Damin, Steve, Deptuch, Damian, Internal vs. External On-Premise Sign Lighting: Visibility and Safety in the Real World, Pennsylvania Transportation Institute at the Pennsylvania State University, 2009

#12 - DELETE SIGN LIGHTING – USERS GUIDE

A sign ordinance is strongly recommended if not already in place. It should be carefully limit lighting as over-lighted signs are sometimes used to circumvent lighting ordinances.

Reasons: 1. If the MLO is going to exempt On Premise sign illumination, we suggest that it do so clearly and without equivocation. The Sign Lighting references appear to compromise the exemption.

REJECTED: On Premises Signs are exempted for this edition of the MLO only.

The MLO Task Force intends to include ordinance text governing On Premises Sign Lighting in the next edition of the MLO.

2. In 2010, very few if any jurisdictions in the United States do not have land development and Zoning Codes with provisions that regulate On Premise signs. Those jurisdictions that may still lack local zoning are so few, and so sparsely populated, that inclusion of this language is superfluous and unnecessary.

ACCEPTED IN PART: While many jurisdictions may have regulations for On Premises Signs, lighting requirements are often absent or poorly addressed. Sentence reworded.

3. The warning in the second sentence is also unnecessary and not supported by any empirical evidence or research – that sign lighting is used to circumvent lighting ordinances. The feelings expressed here may be anecdotal, but the USSC suggests that when local jurisdictions are writing Sign Codes, the standards and metrics included in these Codes should be based on science and the needs of traffic safety.

We are unaware of any research that suggests that sign owners are using On Premise sign illumination to circumvent local lighting Codes. We would however be very interested in seeing this research, for our own information and understanding.

ACCEPTED IN PART: The second sentence has been reworded to remove the claim that over-lighted signs are sometimes used to circumvent lighting ordinances.

4. Finally, the USSC suggests that care should be taken when local jurisdictions are encouraged to write sign lighting regulations.

There is a great deal of misinformation out there about On Premise Sign illumination, and most local jurisdictions lack the understanding and expertise to properly craft rational sign lighting regulations based on the research and the needs of traffic safety.

On premise signs are not lighting fixtures or luminaires or outdoor lighting devices and are not used to illuminate a task or an area. On Premise sign lighting is used to properly display protected First Amendment communication at night, at a lighting level that complies with the needs of the intended viewer. Any arbitrary diminution of On Premise sign illumination at night could interfere with this Communication, and could have serious traffic safety consequences for the Motorist, based on current research.

Four research studies performed by the Pennsylvania Transportation Institute at the Pennsylvania State University, State College PA, have addressed the subject of On Premise Sign illumination at night directly. Two of these studies have already been published by or presented to the Illuminating Engineering Society of North American (IESNA) and the Transportation Research Board (TRB).

Garvey, Philip M., Environmental Impact of On-Premise Identification Sign Lighting with Respect to Potential Light Trespass, Sky Glow, Glare, Pennsylvania Transportation Institute at the Pennsylvania State University, 2004

Garvey, Philip M., Ramaswamy, Chandreashekar, Ghebrial, Ramy, De La Riva, Miguel, Pietrucha, Martin T., Relative Visibility of Internally and Externally Illuminated On-Premise Signs, Pennsylvania Transportation Institute at the Pennsylvania State University, 2004

Section 3 Page 10 User Guide

CURFEW REQUIREMENTS - User's Guide

The intent is to reduce or eliminate lighting after a given time. Benefits include reduced environmental impact, longer hours of improved astronomy, energy savings, and improved sleeping conditions for residents. Additionally, some police departments have indicated that post-curfew light reductions make drive-by patrolling easier because it allows them to see further into and through a site.

The authority should determine the time of curfew and the amount of lighting reduction based on the character, norms and values of the community.

Typically, curfews go into effect one hour after the close of business. Restaurants, bars and major entertainment facilities such as sports stadiums, may require the curfew go into effect two hours after the close of business. The authority may elect to have no curfew for facilities with shift workers and 24 hour operations, or to extend the curfew time to meet specific needs. The MLO can be modified to address those concerns.

Areas without street lights or with very low ambient light levels should consider turning off all non-emergency lighting at curfew while commercial areas or urban areas may prefer a reduction in lighting levels. A reduction of at least 30% is recommended for most uses.

#10 - CURFEW REQUIREMENT – Users Guide

The intent to reduce or extinguish lighting after the close of business will expose life and property to increased risk of harm or damage. The comment that “light reductions make drive-by patrolling easier because it allows to see further into and through a site” is a false statement. A patrol of the parking area will be done with a vehicle using the headlights to search or scan the area. An area with low light levels or worse yet, no light at all, will encourage criminal activity.

REJECTED: Use of Motion-activated lighting will offer maximum security. Motion-activated lighting is exempt from the MLO.

New subsection D on Color

25 Add the following to User's Guide to explain reason for proposed new subsection D: *“It is well established that light with high blue content contributes substantially more to sky glow than equivalent amounts of light of warmer hue. Increased scattering exacerbates the ecological impacts of outdoor lighting. Blue-rich light also increases the likelihood of glare and interferes with the ability of the eye to adapt to low light levels. And the blue portion of the spectrum most strongly suppresses production of melatonin, a hormone known to slow the growth of some types of cancer.”*

REJECTED - CCT requirement is an appealing idea but might slow down release of MLO until many issues are resolved