

II. LIGHTING ZONES - Ordinance Text

~~The Authority shall establish Lighting Zones within its boundaries of its jurisdiction.~~ The Lighting Zone shall determine the limitations for lighting as specified in this ordinance. The Lighting Zones shall be as follows:

LZ0: No ambient lighting

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

25 - Delete the first sentence of ordinance text. An ordinance regulates what others do, not what the Authority does.

REASON: We continue to believe that illuminance levels should be based on the visual tasks and activities involved for a particular use, not on the LZ in which the task is being performed. For example, if the amount of light allowed in LZ2 for a parking lot is based on IES RPs (as we have heard), then we see no reason to allow more in any Zone.

We are disappointed that this second MLO draft continues to insist on lock-step increments as Lighting Zone increases. This is antithetical to dark-sky principles and even good lighting principles and, what may be worse, appears to endorse the misbegotten notion that "more light is better."

It has been suggested that more light is required in, say, an LZ3 parking lot because the surroundings are brighter than in LZ2, but we do not believe this is a valid reason for the lock-step increments. Once the sun goes down, darkness is the prevailing condition. And while brightly illuminated areas may be more numerous in LZ3, there's no reason to assume they will be adjacent to any particular parking lot and therefore affecting visual adaptation of the parking lot's patrons.

We also believe that most municipalities will not want to deal with the complexities of Lighting Zones and their requirement to develop a new zoning overlay for the entire jurisdiction. We therefore recommend that an alternate path be presented based on a simple utilization of residential vs. non residential zones.

General Comment

#1 - From what we see, the MLO basically adopts current lighting levels of urban areas, and continues the existing lighting policies. For Zones 1+ (Table D, Page 27) it explicitly augments these with additional lighting based on the property surface area. This may "slow" the increase of lighting levels, but we don't think this is the correct approach if we wish to halt or to reverse growth in outdoor artificial light pollution, energy use and its impact on the environment, while also addressing its impact on wildlife and human health.

We believe that the IDA Lighting Ordinance or Bylaw must address issues that have not yet been addressed by current lighting policies and legislation so as to improve the cityscape, and reduce the adverse components of light pollution. We believe the lighting schedule in this MLO is "micromanaging" the lighting design process. (We suspect the authors would view this as "guiding" the design process.)

Response: The MLO is not designed to micromanage the lighting design process, but to mitigate the negative impacts of lighting on sky glow and light trespass. Many existing lighting installations meet or exceed expected lighting levels without regard to glare, light trespass or sky glow. The MLO will provide maximum limits on lighting levels and provide limits on backlight, uplight and glare.

Response: Accepted in part. First sentence is deleted.

Rejected:

Lighting zones offer a method of meeting design criteria that may be required for an application. A jurisdiction has the opportunity to select lighting zones that are appropriate for its community. If LZ3 or LZ4 is not appropriate for a jurisdiction, then they can limit lighting zones to LZ2 and below.

The MLO has been beta tested on several jurisdictions, and the assignment of Lighting Zones to their typical zoning has not been a problem. Lighting zones are similar to land use zones which incorporates more than two zones.

LZ1: Low ambient lighting

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

LZ2: Moderate ambient lighting

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

LZ3: Moderately high ambient lighting

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

LZ4: High ambient lighting

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

GENERAL COMMENT Page 5

#38 - The concept of Lighting Zones is completely absurd. It is very apparent that it is an invention of the lighting industry, to be able to maintain the current practice in the most relevant places: the heavily urbanized ones. All world is "LZ0":

"Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment." All people have the right to enjoy night sky, fireflies, healthy sleep in the natural darkness at home with open windows (no luminaire shining parts nor shining advertisements should be visible from a bedroom after 10 p.m., the window artificial illuminance should never be over 0.1 lx). Artificial lighting disturbs both wildlife and people everywhere, if present outdoors. If the illuminances/luminances are to have various limits at various instances, the limits should be physiology-based. Of course, with the knowledge, that white light over several lux compromises nighttime metabolism and should be avoided whenever possible. The current lighting practice is very probably a major cause of cancer, obesity, diabetes of the 2nd type and sleep disturbances. It is completely unsustainable even without global warming considerations. It should be abandoned, reducing illuminances by orders of magnitude at night and avoiding any wavelengths below 550 nm.

REASON: <http://www.astro.cz/darksky/>

#38 Response: Rejected: The concept of lighting zones has been accepted by many jurisdictions including the State of California. While the harmful effects of outdoor nighttime lighting are recognized, the social, economic, and safety factors also have to be recognized. Authorities do have the option to assign LZ0 to their entire community.

II. LIGHTING ZONES - User's Guide

Lighting zones reflect the base (or ambient) light levels desired by a community. The use of lighting zones (LZ) was originally developed by the International Commission on Illumination (CIE) and appeared first in the US in IES Recommended Practice for Exterior Environmental Lighting, RP-33-99.

It is recommended that the lowest possible lighting zone(s) be adopted.

Selection of lighting zone or zones should be based not on existing conditions but rather on the type of lighting environments the jurisdiction seeks to achieve. For instance, new development on previously rural or undeveloped land may be zoned as LZ-1.

Using lighting zones allows a great deal of flexibility and customization without the burden of excessive regulation. For example, a jurisdiction may choose to establish vertical lighting zones with the lighting zone at street level at a higher zone than the residential housing on upper levels.

However, if an adjacent use could be adversely impacted by allowable lighting, the adopting authority may require that a particular site meet the requirements for a lower lighting zone. For example, the authority could specify Lighting Zone 1 or 2 requirements if a commercial development were adjacent to a residence, hospital or open space or to any land assigned to a lower zone.

#10 - First sentence of second paragraph should read:

"It is recommended that the lowest possible lighting zone(s) be adopted and, in particular, that new development on previously rural or undeveloped land be zoned as LZ-1."

Since much new development is not infill development, this change would encourage municipalities to zone such non-infill development as LZ 1 by default, which may help to counteract present trends of geographic spread of light pollution.

#10 Response: Rejected: This is a decision for the local zoning authority.

25 - As we have previously noted, the LZ definitions provided appear designed to perpetuate existing ambient lighting levels everywhere--scarcely the desired result for an ordinance with the object of reducing light pollution! We therefore recommend addition of this sentence to follow the first sentence in the Section II User's Guide:

Since a municipality considering adoption of this ordinance is presumably looking to curtail light pollution, selection of a lighting zone or zones should be based not on existing conditions but rather on the type of lighting environment the municipality seeks to achieve.

#25 - Response: Accepted. User guide will add a sentence that explains that the lighting zones should be based on desired goals versus status quo.

25. Add to the last Guide sentence on page 5 as follows:

For example, the authority could specify Lighting Zone 1 or 2 requirements if a commercial development were adjacent to a residence, hospital, or open space or to any land assigned to a lower zone. REASON: 2. The sentence to be added at the bottom of Guide page 5 will help minimize adverse effects of light spilling over from a higher to lower zone.

#25 - Response: Accepted

II. LIGHTING ZONES (cont.) - User's Guide

Lighting zones are best implemented as an overlay to the established zoning especially in communities where ~~there is~~ a variety of zone districts ~~exists~~ within a defined area or along an arterial street. Where zone districts are cohesive, it may be possible to assign lighting zones to established land use zoning. It is recommended that the lighting zone includes churches, schools, parks, and other uses embedded within residential communities.

Zone	Recommended Uses or Areas	Zoning Considerations
LZ-0	Lighting Zone 0 should be applied to areas in which permanent lighting is not expected and when used, is limited in the amount of lighting and the period of operation. LZ-0 typically includes undeveloped areas of open space, wilderness parks and preserves, areas near astronomical observatories, or any other area where the protection of a dark environment is critical. Special review should be required for any permanent lighting in this zone. Some rural communities may choose to adopt LZ-0 for residential areas.	Recommended default zone for wilderness areas, parks and preserves, and undeveloped rural areas. Includes protected wildlife areas and corridors.
LZ-1	Lighting Zone 1 pertains to areas that desire low ambient lighting levels. These typically include single and two family residential communities, rural town centers, business parks, and other commercial or industrial/storage areas typically with limited nighttime activity. May also include the developed areas in parks and other natural settings.	Recommended default zone for rural and low density residential areas. Includes residential single or two family; agricultural zone districts; rural residential zone districts; business parks; open space include preserves in developed areas.

Section II, SS LZ1, page 6:

LZ-1 identifies business parks as one of the recommended use areas. Perhaps adding quantitative criteria would provide a more definitive decision point. These might include business hours, public traffic access, ingress and egress pathways, pedestrian conflict or population density. Additional guidelines may provide a criterion in determining the correct Zone for the applications, especially the mixed use zones. As stated in current MLO draft, the recommendations are highly subjective and may increase confusion of interpretation and create conflict within a given "zone".

Response: Rejected. This type of detail is beyond the scope of the user's guide. This could be in material developed specifically to help jurisdictions through the lighting zone assignment process. Frequently asked questions may be another avenue in going deeper into the lighting zone discussion.

II. LIGHTING ZONES (cont.) - User's Guide

Zone	Recommended Uses or Areas	Zoning Considerations
LZ-2	Lighting Zone 2 pertains to areas with moderate ambient lighting levels. These typically include multifamily residential uses, institutional residential uses, schools, churches, hospitals, hotels/motels, commercial and/or businesses areas with evening activities embedded in predominately residential areas, neighborhood serving recreational and playing fields and/or mixed use development with a predominance of residential uses. Can be used to accommodate a district of outdoor sales or industry in an area otherwise zoned LZ-1.	Recommended default zone for light commercial business districts and high density or mixed use residential districts. Includes neighborhood business districts; churches, schools and neighborhood recreation facilities; and light industrial zoning with modest nighttime uses or lighting requirements.
LZ-3	Lighting Zone 3 pertains to areas with moderately high lighting levels. These typically include commercial corridors, high intensity suburban commercial areas, town centers, mixed use areas, industrial uses and shipping and rail yards with high night time activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas stations, and other nighttime active exterior retail areas.	Recommended default zone for large cities' business district. Includes business zone districts; commercial mixed use; and heavy industrial and/or manufacturing zone districts.
LZ-4	Lighting zone 4 pertains to areas of high ambient lighting levels and limited to specific intense night uses within large metropolitan areas such as downtowns, entertainment districts or outdoor sales districts. Lighting zone 4 pertains to areas of very high ambient lighting levels. LZ-4 should only be used for special cases and is not appropriate for most communities cities. LZ-4 may be used for extremely unusual installations such as high density entertainment districts include professional sports, theme parks, and heavy industrial uses such as oil refineries.	Not a default zone. Includes high intensity business or industrial zone districts.

25. In the Guide discussion of LZ4 (page 7), remove the word "downtowns."
REASON: 3. As written, the Guide is suggesting that the "downtown" section(s) of every "large metropolitan area" should be classified as LZ4. This is a far cry from what Task Force members have been saying; their statements have indicated that LZ4 is to be reserved for highly specialized uses such as, perhaps, Times Square or Disneyland. In a "large metropolitan area" there are scores of cities, towns and villages, each of which has a "downtown." The existing Guide language will encourage each of them to establish its importance (for attracting investment, e.g.) by becoming a "downtown" with LZ4 lighting allowances.

#25 - Response: Accepted.

29 - Request: eliminate LZ-4 from this document; change definition of LZ-3 to be "High ambient lighting" (not moderately high)
Rationale: since the MLO is intended to be a model — an ideal — we should not be even hinting that the levels of lighting suggested by LZ-4 ("Las Vegas or Times Square") are in any way acceptable or permissible. If a jurisdiction feels an LZ-4 is needed, then let it create same on its own. (I'm not swayed by the argument that no jurisdiction in California has applied for LZ-4.)

#29 - Response: Rejected. LZ4 needs to be included to handle Time Square and Las Vegas applications. "Downtown" has been removed from LZ4. California provides a powerful example of the proper use of LZ4 (none). It has over 1/8 of the USA population and numerous large cities, and has not needed to adopt LZ4 in any case.