

## IX. TABLES (cont.) - Ordinance Text

**Table D Performance Method Allowed Total Initial Site Luminaire Lumens**

May be used on any project.

Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Zero (0) lumens per site; plus,	<del>22,000</del> 3,500 lumens per site; plus,	<del>33,000</del> 7,000 lumens per site; plus,	<del>55,000</del> 14,000 lumens per site; plus,	<del>80,000</del> 21,000 lumens per site; plus,
<del>1.0</del> 0.4 lumens per sf of hardscape; plus	<del>2.0</del> 1.0 lumens per sf of hardscape; plus	<del>3.0</del> 2.0 lumens per sf of hardscape; plus	<del>7.0</del> 4.0 lumens per sf of hardscape; plus	<del>10</del> 6.0 lumens per sf of hardscape; plus
<del>10 lm per lin. ft. of hardscape perimeter; plus</del>	<del>20 lm per lin. ft. of hardscape perimeter; plus</del>	<del>30 lm per lin. ft. of hardscape perimeter; plus</del>	<del>65 lm per lin. ft. of hardscape perimeter; plus</del>	<del>100 lm per l. ft. of hardscape perimeter; plus</del>
The smaller of the specific use allowance(s) from Table E or the actual lighting lumens for that lighting				

### REPLACEMENT TABLE D

Lighting Zone	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
Allowed Lumens Per SF	0.5	1.25	2.5	5.0	7.5
Allowed Base Lumens Per Site	0	3,500	7,000	14,000	21,000

**Table E Performance Method Additional Initial Luminaire Lumen Allowances. All of the following are "use it or lose it" allowances.**

All area and distance measurements in plan view unless otherwise noted.

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Building Entrances or Exits.</b> This allowance is per door. In order to use this allowance, luminaires must be within 20 feet of the door.	<del>750</del> 400 lumens	<del>2,000</del> 1,000 lumens	<del>4,000</del> 2,000 lumens	<del>6,000</del> 4,000 lumens	<del>8,500</del> 6,000 lumens
<b>Entrances at Senior Care Facilities, Police Stations, Hospitals, Fire Stations, and Emergency Vehicle Facilities.</b> This allowance is lumens per primary entrance. To use this allowance, luminaire(s) must be installed within 100 feet of the entrance door.	<del>750</del> 525 lumens	<del>2,000</del> 1,400 lumens	<del>4,000</del> 2,800 lumens	<del>6,000</del> 4,200 lumens	<del>8,500</del> 5,950 lumens

#19 - Request: Do not stair-step lumen limits for higher LZs. Establish a very strict limit for LZ-0 and a single, slightly greater allowance for illuminance in LZ 1, 2, and 3.  
 Rationale: I have yet to hear a cogent argument to justify why hardscape lighting needs to be greater in more urban environments than in residential ones. We must strive, everywhere, for the minimum level needed for adequate safety and security.

**Response: Reject.** The lumen limits stair stepping approach was established to respond to varying IES lighting criteria. This approach was used determining design criteria selection for particular lighting zones and first established in the development of California's Title 24 energy code.  
 We understand your opinion that there may not be a lighting requirement difference between urban environments and residential environments for adequate safety and security. Yet, most existing zoning criteria appear to treat these environments differently with different contrast between the zones. Existing lighting criteria does differ depending on pedestrian activity levels and security requests. For instance, there is lighting criteria for basic parking lot lighting, and different criteria for enhanced security parking lot lighting. The public may also perceive a difference in urban versus residential environments lighting requirements.  
 The MLO used established criteria to lighting zone mapping as shown below in determining lumen limit values in Tables D & E.

T-24 Lighting Application	Recommended LPD and Criteria per Lighting Zone			
	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Hardscape for automotive vehicular use, including parking lots, driveways, and site roads	RP-20 NO VERTICAL (.2 hfc min)	RP-20 Basic (.2 hfc min, .1 vfc)	RP-20 Enhanced (.5 hfc min, 25 vfc)	RP-20 Enhanced Security/Retail (1.0 hfc min, 25 vfc)
Hardscape for pedestrian use, including plazas, sidewalks, walkways, and bikeways	DG-5 Sidewalk along Street - Residential (0.2 fc ave. 10:1 ave:min)	DG-5 Sidewalk along Street - Intermediate (0.5 fc ave. 4:1 ave:min)	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	DG-5 Sidewalk along Street - Commercial Special Conditions (2.0 fc ave. vertical 5:1 ave:min)
Hardscape for driveways, side roads, sidewalks, walkways, and bikeways	RP-8 Walkway/Bikeway Mixed use - Pedestrian Low Conflict (.5 fc)	RP-8 Walkway/Bikeway Mixed use - Pedestrian Medium Conflict (1 fc)	RP-8 Walkway/Bikeway Mixed use - Pedestrian High Conflict (2 fc)	DG-5 Sidewalk along Street - Commercial Special Conditions (2.0 fc ave. vertical 5:1 ave:min)
Building Entrances (without canopy)	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)
Outdoor Sales Lot	RP-33 Secondary Business District General Display (5 hfc, 10:1 max:min)	RP-2 Auto Retail Lot Low Level (20 hfc)	RP-2 Auto Retail Lot Medium Level (30 hfc)	RP-2 Auto Retail Lot High Level (50 hfc)

Specific Lighting Application	Recommended LPD and Criteria per Lighting Zone			
	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Building Facades	NA	RP-33 Dark Surrounds and Medium Light Surface (3 fc)	RP-33 Bright Surrounds and Light Surface (5 fc)	RP-33 Bright Surrounds and Dark Surface (10 fc)
Outdoor Sales Frontage (in linear feet)	NA	RP-2 Auto Dealership Feature Display (35 hfc)	RP-2 Auto Dealership Feature Display (50 hfc)	RP-2 Auto Dealership Feature Display (75 hfc)
Vehicle Service Station with or without canopies	RP-33 Service Station Pump Island (10 hfc)	RP-2 Service Station Gas Islands (20 hfc)	RP-2 Service Station Gas Islands (30 hfc)	RP-2 Service Station Gas Islands (50 hfc)
Vehicle Service Station Hardscape	RP-20 Basic (.2 hfc min, .1 vfc)	RP-2 Service Station Approach (5 hfc)	RP-2 Service Station Approach (10 hfc)	RP-2 Service Station Approach (15 hfc)
All other Sales Canopies	NA	RP-2 Seasonal Outdoor Merchandise Display Low (10 hfc)	RP-2 Seasonal Outdoor Merchandise Display Medium (20 hfc)	RP-2 Seasonal Outdoor Merchandise Display High (30 hfc)
Non-sales Canopies	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)
Ornamental Lighting	NA	NA	NA	NA
Drive-Up Windows	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)
Guarded Facilities	G-1 Fast Food Drive Up Window (6 hfc)	RP-2 Seasonal Outdoor Merchandise Display Low (10 hfc)	RP-2 Seasonal Outdoor Merchandise Display Medium (20 hfc)	RP-2 Seasonal Outdoor Merchandise Display High (30 hfc)
Outdoor Dining	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)

IX. TABLES (cont.) - Ordinance Text

**Table D Performance Method Allowed Total Initial Site Luminaire Lumens**

*May be used on any project.*

Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Zero (0) lumens per site; plus,	<del>22,000</del> 3,500 lumens per site; plus,	<del>33,000</del> 7,000 lumens per site; plus,	<del>55,000</del> 14,000 lumens per site; plus,	<del>80,000</del> 21,000 lumens per site; plus,
<del>1.0</del> 0.4 lumens per sf of hardscape; plus	<del>2.0</del> 1.0 lumens per sf of hardscape; plus	<del>3.0</del> 2.0 lumens per sf of hardscape; plus	<del>7.0</del> 4.0 lumens per sf of hardscape; plus	<del>10</del> 6.0 lumens per sf of hardscape; plus
<del>10 lm per lin. ft. of hardscape perimeter; plus</del>	<del>20 lm per lin. ft. of hardscape perimeter; plus</del>	<del>30 lm per lin. ft. of hardscape perimeter; plus</del>	<del>65 lm per lin. ft. of hardscape perimeter; plus</del>	<del>100 lm per l. ft. of hardscape perimeter; plus</del>
The smaller of the specific use allowance(s) from Table E or the actual lighting lumens for that lighting				

**REPLACEMENT TABLE D**

Lighting Zone	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
Allowed Lumens Per SF	0.5	1.25	2.5	5.0	7.5
Allowed Base Lumens Per Site	0	3,500	7,000	14,000	21,000

**Table E Performance Method Additional Initial Luminaire Lumen Allowances. All of the following are “use it or lose it” allowances.**

All area and distance measurements in plan view unless otherwise noted.

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Building Entrances or Exits.</b> This allowance is per door. In order to use this allowance, luminaires must be within 20 feet of the door.	<del>750</del> 400 lumens	<del>2,000</del> 1,000 lumens	<del>4,000</del> 2,000 lumens	<del>6,000</del> 4,000 lumens	<del>8,500</del> 6,000 lumens
<b>Entrances at Senior Care Facilities, Police Stations, Hospitals, Fire Stations, and Emergency Vehicle Facilities.</b> This allowance is lumens per primary entrance. To use this allowance, luminaire(s) must be installed within 100 feet of the entrance door.	<del>750</del> 525 lumens	<del>2,000</del> 1,400 lumens	<del>4,000</del> 2,800 lumens	<del>6,000</del> 4,200 lumens	<del>8,500</del> 5,950 lumens

#19 - Request: Remove “baseline” lumen allowance per site; set lumens per sf of hardscape equal to those in Table B

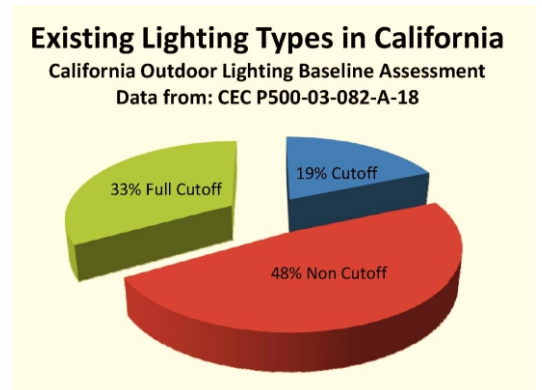
Rationale: These limits, which are cumulative by type (per site, per sf, per linear foot) seem overly generous “bonuses”.

**Response: Reject. The Performance Method is used for projects that cannot meet the easier Prescriptive Method. Where these allowances are particularly important are for very small “mom and pop” sites where the lumen per square foot method may not allow more than one pole per site. The initial lumen allowance gives these smaller sites the opportunity to have at least two lighting poles for better uniformity. In larger sites, the allowances are small percentages in the overall allowed lighting lumens.**

#19 - Request: The MLOTF should be required to “benchmark” a selection of lighting installations that the IDA feels has been designed responsibly, so as to ascertain whether the derived values for BUG and lumen limits would comply with those set forth in the MLO for that particular facility and LZ.

Rationale: We must certify that the MLO values will actually reduce light pollution.

**Response: Accept, IDA is in the process of benchmarking lighting installations and have found that the MLO lumen allowances are similar to the Pima County Arizona lumens per acre code. (NC to confirm this fact) In addition, by requiring restrictions on uplight, overall light pollution from non shielded luminaires will be greatly reduced. Below is a chart developed with data from a California Energy Commission study “California Outdoor Lighting Baseline Assessment P500-03-082-A-18”, October 2003, which shows that only 33% of all lighting in California is full cutoff, 19% is cutoff and semi-cutoff, 48% is non cutoff. This alone presents a huge opportunity to reduce light pollution and regulate uplight and glare.**



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## IX. TABLES (cont.) - Ordinance Text

**Table E Performance Method Additional Initial Luminaire Lumen Allowances. All of the following are “use it or lose it” allowances.**

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29 - Table E - Request: Do not stair-step lumen limits for higher LZs. Establish a very strict limit for LZ-0 and a single, slightly greater allowance for illuminance in LZ 1, 2, and 3.

Rationale: I have yet to hear a cogent argument to justify why special lighting situations need higher illuminance in more urban environments than in residential ones. We must strive, everywhere, for the minimum level needed for adequate safety and security.

**Response: See response above.**

29 - Request: The MLOTF should be required to “benchmark” a selection of lighting installations that the IDA feels has been designed responsibly, so as to ascertain whether the derived values for BUG and lumen limits would comply with those set forth in the MLO for that particular facility and LZ.

Rationale: We must certify that the MLO values will actually reduce light pollution.

**Response: Accept. IDA is performing that benchmark. (NC to confirm)**

#25 In Table E, eliminate the bonus lumen allowances for “building facades” and “hardscape ornamental lighting.”

REASON These types of lighting are wasteful and unnecessary. If they are to be employed, they should be done within the already-generous Total Site Lumen Limit rather than being encouraged by bonus lumen allowances

**Response: The Performance Method follows very closely the language used in several energy codes including California's Title 24 and ASHRAE 90.1. These methods and codes separate out the lighting into layers. Since the Performance Site Lumen Limit have lower values than the Prescriptive Site Lumen Limits, layering of more lumens is the most effective method to address specific application requirements while controlling excessive light. Table E is also a use it or lose it category and can only be applied to these specific applications.**

# Page 27 - continued

## IX. TABLES (cont.) - Ordinance Text

The smaller of the specific use allowance(s) from Table E or the actual lighting lumens for that lighting

**Table E Performance Method Additional Initial Luminaire Lumen Allowances. All of the following are “use it or lose it” allowances.**

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#16 - Special Security Lighting for Retail Parking and Pedestrian Landscape for LZ-2. The metric of an additional 2 lumens per sq. ft. in LZ-2 will not be sufficient to meet the enhanced security levels of .5 FC maintained for parking lots per the 9th edition IES handbook and RP-20 using standard equipment. One of the following will have to occur for compliance: 1) A special permit will be required for LZ-2 enhanced security parking lot applications using standard equipment, 2) the MLO metrics will need to be changed, 3) the IES recommended standards will need to be lowered for enhanced security areas or 4) a combination of options 2 and 3.

Review the metrics in table E for Special Security Lighting for Retail Parking and Pedestrian Landscape for LZ-2 and adjust as appropriate. Look at LZ-3 and LZ-4 also to see if adjustments are required.

Add a definition for “pedestrian hardscape”. REASON: Summary of metrics from point x point layout for a parking lot in LZ-2. Standard GE Decashield type III and FT type IV shoebox fixtures were used in this example.

Size D drawings 08-0115A using 250w HPS and 08-0115B using 250w PSMH (.PDF files attached and sent in same E-mail as this file outline a typical small parking lot in an LZ-2 zone.

**Response: The lumen limits approach was established to respond to varying IES lighting criteria. This approach was used determining design criteria selection for particular lighting zones and first established in the development of California's Title 24 energy code. The MLO followed the same rationale as Title 24.**

**The establishments of Lighting Zones by the City Planning Department can take into account areas where enhanced security lighting is required and assign it to a Lighting Zone 3 area.**

**The MLO used established criteria to lighting zone mapping as shown below in determining lumen limit values in Tables D & E. The lumen limits in the various zones were established to meet the listed IES recommended criteria.**

Specific Lighting Application	Recommended LPD and Criteria per Lighting Zone			
	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Building Facades	NA	RP-33 Dark Surrounds and Medium Light Surface (3 fc)	RP-33 Bright Surrounds and Light Surface (6 fc)	RP-33 Bright Surrounds and Dark Surface (10 fc)
Outdoor Sales Frontage (in linear feet)	NA	RP-2 Auto Dealership Feature Display (35 hfc)	RP-2 Auto Dealership Feature Display (50 hfc)	RP-2 Auto Dealership Feature Display (75 hfc)
Vehicle Service Station with or without canopies	RP-33 Service Station Pump Island (10 hfc)	RP-2 Service Station Gas Islands (20 hfc)	RP-2 Service Station Gas Islands (30 hfc)	RP-2 Service Station Gas Islands (50 hfc)
Vehicle Service Station Hardscape	RP-20 Basic (.2 hfc min, .1 vfc)	RP-2 Service Station Approach (5 hfc)	RP-2 Service Station Approach (10 hfc)	RP-2 Service Station Approach (15 hfc)
All other Sales Canopies	NA	RP-2 Seasonal Outdoor Merchandise Display Low (10 hfc)	RP-2 Seasonal Outdoor Merchandise Display Medium (20 hfc)	RP-2 Seasonal Outdoor Merchandise Display High (30 hfc)
Non-sales Canopies	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)
Ornamental Lighting	NA	NA	NA	NA
Drive-Up Windows	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)	G-1 Fast Food Drive Up Window (6 hfc)
Guarded Facilities	G-1 Fast Food Drive Up Window (6 hfc)	RP-2 Seasonal Outdoor Merchandise Display Low (10 hfc)	RP-2 Seasonal Outdoor Merchandise Display Medium (20 hfc)	RP-2 Seasonal Outdoor Merchandise Display High (30 hfc)
Outdoor Dining	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)

T-24 Lighting Application	Recommended LPD and Criteria per Lighting Zone			
	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Hardscape for automotive vehicular use, including parking lots, driveways, and site roads	RP-20 NO VERTICAL (.2 hfc min)	RP-20 Basic (.2 hfc min, .1 vfc)	RP-20 Enhanced (.5 hfc min, .25 vfc)	RP-20 Enhanced Security/Retail (1.0 hfc min, .25 vfc)
Hardscape for pedestrian use, including plazas, sidewalks, walkways, and bikeways	DG-5 Sidewalk along Street - Residential (0.2 fc ave. 10:1 ave:min)	DG-5 Sidewalk along Street - Intermediate (0.5 fc ave. 4:1 ave:min)	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	DG-5 Sidewalk along Street - Commercial Special Conditions (2.0 fc ave. vertical 5:1 ave:min)
Hardscape for driveways, side roads, sidewalks, walkways, and bikeways	RP-8 Walkway/Bikeway Mixed use - Pedestrian Low Conflict (.5 fc)	RP-8 Walkway/Bikeway Mixed use - Pedestrian Medium Conflict (1 fc)	RP-8 Walkway/Bikeway Mixed use - Pedestrian High Conflict (2 fc)	DG-5 Sidewalk along Street - Commercial Special Conditions (2.0 fc ave. vertical 5:1 ave:min)
Building Entrances (without canopy)	DG-5 Sidewalk along Street - Commercial (1.0 fc ave. 4:1 ave:min)	RP-2 Seasonal Outdoor Merchandise Circulation Low (5 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation Medium (7 hfc)	RP-2 Seasonal Outdoor Merchandise Circulation High (10 hfc)
Outdoor Sales Lot	RP-33 Secondary Business District General Display (5 hfc, 10:1 max:min)	RP-2 Auto Retail Lot Low Level (20 hfc)	RP-2 Auto Retail Lot Medium Level (30 hfc)	RP-2 Auto Retail Lot High Level (50 hfc)

## IX. TABLES (cont.) - Ordinance Text

The smaller of the specific use allowance(s) from Table E or the actual lighting lumens for that lighting

**Table E Performance Method Additional Initial Luminaire Lumen Allowances. All of the following are “use it or lose it” allowances.**

All area and distance measurements in plan view unless otherwise noted.

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Building Entrances or Exits.</b> This allowance is per door. In order to use this allowance, luminaires must be within 20 feet of the door.	<del>750</del> 400 lumens	<del>2,000</del> 1,000 lumens	<del>4,000</del> 2,000 lumens	<del>6,000</del> 4,000 lumens	<del>8,500</del> 6,000 lumens
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29 - Request: Remove “baseline” lumen allowance per site; set lumens per sf of hardscape equal to those in Table B

Rationale: These limits, which are cumulative by type (per site, per sf, per linear foot) seem overly generous “bonuses”.

**Response: The Performance Method follows very closely the language used in several energy codes including California's Title 24 and ASHRAE 90.1. These methods and codes separate out the lighting into layers. Since the Performance Site Lumen Limit have lower values than the Prescriptive Site Lumen Limits, layering of more lumens is logical. Table E is also a use it or lose it category and can only be applied to these specific applications.**

**Table E - Performance Method Additional Initial Luminaire Lumen Allowances (cont.)**

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Building Facades.</b> This allowance is lumens per unit area of building façade that are illuminated. To use this allowance, luminaires must be aimed at the façade and capable of illuminating it without obstruction.	Not allowed	Not allowed	<del>12</del> 8 lumens per square foot	<del>25</del> 16 lumens per square foot	<del>40</del> 24 lumens per square foot
<b>Outdoor Sales Lots.</b> This allowance is lumens per square foot of uncovered sales lots used exclusively for the display of vehicles or other merchandise for sale, and may not include driveways, parking or other non sales areas. To use this allowance, luminaires must be within 10 mounting heights of sales lot area.	Not allowed	<del>10,000</del> lumens plus 10 4 lumens per square foot	<del>10,000</del> lumens plus 40 8 lumens per square foot	<del>15,000</del> lumens plus 60 12 lumens per square foot	<del>22,000</del> lumens plus 125 18 lumens per square foot
<b>Outdoor Sales Frontage.</b> This allowance is for lineal feet of sales frontage immediately adjacent to the principal viewing location(s) and unobstructed for its viewing length. A corner sales lot may include two adjacent sides provided that a different principal viewing location exists for each side. In order to use this allowance, luminaires must be located between the principal viewing location and the frontage outdoor sales area	Not allowed	Not allowed	<del>1,500</del> 1,000 lumens per foot	<del>2,850</del> 1,500 lumens per foot	<del>2,850</del> 2,000 lumens per foot
<b>Hardscape Ornamental Lighting.</b> This allowance is in lumens per square foot of the total illuminated hardscape area. In order to use this allowance, luminaires must be rated for 1000 lumens or less	Not allowed	Not allowed	<del>1.2</del> 0.8 lumens per square foot	<del>2.4</del> 1.7 lumens per square foot	<del>3.6</del> 2.5 lumens per square foot
<b>Drive Up Windows.</b> This allowance is lumens per window. In order to use this allowance, luminaires must be within 20 feet of the center of the window.	Not allowed	<del>2,700</del> 4,000 lumens	<del>4,000</del> 8,000 lumens	<del>8,000</del> 16,000 lumens	<del>13,000</del> 24,000 lumens

#25 In Table E, eliminate the bonus lumen allowances for “building facades” and “hardscape ornamental lighting.” REASON These types of lighting are wasteful and unnecessary. If they are to be employed, they should be done within the already-generous Total Site Lumen Limit rather than being encouraged by bonus lumen allowances.

**Response: The Performance Method follows very closely the language used in several energy codes including California's Title 24 and Ashrae 90.1. These methods and codes separate out the lighting into layers. Since the Performance Site Lumen Limit have lower values than the Prescriptive Site Lumen Limits, layering of more lumens is logical. Table E is also a use it or lose it category and can only be applied to these specific applications.**

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Much of MLO is contingent on the area of “hardscape”... The lighting specifier gets a bigger lumen budget the larger their hardscape area. But what exactly is “hardscape” material? Is it defined by material or by use? If it's really use you're trying to address, then do so less obliquely.

If material is what is important, does “hardscape” include: concrete, asphalt, terrazzo, slate, other hard material and masonry pavers, but not wood decks, gravel, balconies, tennis courts, basketball courts, clay, etc? Contact a landscape architect for an industry standard definition, in greater detail than the section X glossary. Specifiers will “game” it without a “hard” definition of hardscape.

Since no attempt has been made to explain how MLO was developed, it's not clear why hardscape is the basis for much of the limits, and what hardscape even means. Do we only need to control illumination of paved surfaces, but we don't care about light on other surfaces? Does MLO therefore encourage the increased paving of our exterior world in 10' wide strips? Will people pour concrete all over grassy areas in order to increase their lumen budget elsewhere on the site?

**Response: Hardscape is defined in the definitions as: “Permanent hardscape improvements to the site including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways and non-vegetated landscaping that is 10 feet or less in width. “ We will add impervious materials to this definition and also exclude the building footprint area.**

**Most jurisdictions have hardscape restrictions and minimum landscape requirements in their land use codes and requirements for percentages of landscape versus hardscape areas. Hardscape was used since this is common terminology for site submittals.**

Table IX. Table “E”, page 28 – According to ASHRAE 2004 and 2007 for a drive-up window application, their recommendation is up to 400W or 36000 lumens, Based on the referenced table, the MLO places this maximum allowance at 13000 lumens. Depending on the pole location, mounting height and luminaire distribution, the 13000 lumens may not provide required light levels.

**Response: Drive-up window lumen allowances are layered on the base lumen allowance. So the 13,000 lumens are added to the base lumen allowance and lumens per linear feet**

**if applicable. Also, the lighting equipment needs to be within 20' of the window to qualify so a combination of a luminaire directly over the window with the addition of adjacent parking lot lighting should be more than adequate. ASHRAE 90.1 2004 did not layer light in a similar manner as the MLO so it is more difficult to compare with the MLO. ASHRAE 90.1 – 2007 does have a lighting layer approach but does not have the watts per linear foot.**

**Table E - Performance Method Additional Initial Luminaire Lumen Allowances (cont.)**

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Guard Stations.</b> This allowance is lumens per unit area of guardhouse plus 2000 sf per vehicle lane. In order to use this allowance, luminaires must be within 2 mounting heights of a vehicle lane or the guardhouse.	Not allowed	<del>10</del> 6 lumens per square foot	<del>25</del> 12 lumens per square foot	<del>50</del> 24 lumens per square foot	<del>80</del> 36 lumens per square foot
<b>Outdoor Dining.</b> This allowance is lumens per unit area for the total illuminated hardscape of outdoor dining. In order to use this allowance, luminaires must be within 2 mounting heights of the hardscape area of outdoor dining	Not allowed	1 lumens per square foot	<del>10</del> 5 lumens per square foot	<del>15</del> 10 lumens per square foot	<del>25</del> 15 lumens per square foot
<del><b>Special Security Lighting for Retail Parking and Pedestrian Hardscape.</b> This allowance is lumens per unit area for the total area of illuminated retail parking and pedestrian hardscape identified as having special security needs. This allowance shall be in addition to the building entrance or exit allowance.</del>	<del>Not allowed</del>	<del>0.2</del> lumens per square foot	<del>2</del> lumens per square foot	<del>3</del> lumens per square foot	<del>3</del> lumens per square foot
<b>Vehicle Service Station Hardscape.</b> This allowance is lumens per unit area for the total illuminated hardscape area less area of buildings, area under canopies, area off property, or areas obstructed by signs or structures. In order to use this allowance, luminaires must be illuminating the hardscape area and must not be within a building, below a canopy, beyond property lines, or obstructed by a sign or other structure	Not allowed	<del>5</del> 4 lumens per square foot	<del>10</del> 8 lumens per square foot	<del>25</del> 16 lumens per square foot	<del>40</del> 24 lumens per square foot

#16 - Special Security Lighting for Retail Parking and Pedestrian Landscape for LZ-2. The metric of an additional 2 lumens per sq. ft. in LZ-2 will not be sufficient to meet the enhanced security levels of .5 FC maintained for parking lots per the 9th edition IES handbook and RP-20 using standard equipment. One of the following will have to occur for compliance:

- 1) A special permit will be required for LZ-2 enhanced security parking lot applications using standard equipment,
- 2) the MLO metrics will need to be changed,
- 3) the IES recommended standards will need to be lowered for enhanced security areas or
- 4) a combination of options 2 and 3.

Review the metrics in table E for Special Security Lighting for Retail Parking and Pedestrian Landscape for LZ-2 and adjust as appropriate. Look at LZ-3 and LZ-4 also to see if adjustments are required.

Add a definition for "pedestrian hardscape".

REASON: Summary of metrics from point x point layout for a parking lot in LZ-2. Standard GE Decashield type III and FT type IV shoebox fixtures were used in this example.

Size D drawings 08-0115A using 250w HPS and 08-0115B using 250w PSMH (.PDF files attached and sent in same E-mail as this file outline a typical small parking lot in an LZ-2 zone.

**Response: Accepted. We will add to the hardscape definition "pedestrian" hardscapes.**

I did notice that we have some overlap on the table. Driveways are included in the first and third rows – which might cause some confusion.

**Response:**

**The lighting levels or criteria used in the Size D drawings do not match the criteria for an LZ-2 zone and design criteria similar to RP-20 basic. For LZ-2, a luminaire with a 250 watt source will provide a higher lumen package than necessary to achieve proper uniformity for the lower lighting level. This design appears to be appropriate for an area designated as LZ-3.**

## IX. TABLES (cont.) - Ordinance Text

**Table E - Performance Method Additional Initial Luminaire Lumen Allowances (cont.)**

Lighting Application	LZ 0	LZ 1	LZ 2	LZ 3	LZ 4
<b>Vehicle Service Station Canopies.</b> This allowance is lumens per unit area for the total area within the drip line of the canopy. In order to use this allowance, luminaires must be located under the canopy.	Not allowed	<del>30</del> 6 lumens per square foot	<del>60</del> 16 lumens per square foot	<del>80</del> 32 lumens per square foot	<del>80</del> 32 lumens per square foot
<del>Vehicle Service Station Uncovered Fuel Dispenser. This allowance is lumens per fueling side (2 max) per dispenser. In order to use this allowance, luminaires shall be within 2 mounting heights of the dispenser.</del>	Not allowed	7,500 lumens	15,000 lumens	20,000 lumens	20,000 lumens
<b>All Other Sales Canopies.</b> This allowance is lumens per unit area for the total area within the drip line of the canopy. In order to qualify for this allowance, luminaires must be located under the canopy.	Not allowed	<del>10</del> 7 lumens per square foot	<del>40</del> 28 lumens per square foot	<del>65</del> 45 lumens per square foot	<del>65</del> 45 lumens per square foot
<b>Non-sales Canopies.</b> This allowance is lumens per unit area for the total area within the drip line of the canopy. In order to qualify for this allowance, luminaires must be located under the canopy.	Not allowed	<del>5</del> 3 lumens per square foot	<del>13</del> 6 lumens per square foot	<del>25</del> 12 lumens per square foot	<del>25</del> 18 lumens per square foot