

## Case No. PZ-21-00066 Outdoor Lighting Standards

### Division 10-50.70: Outdoor Lighting Standards

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#### **10-50.70.010 Purpose**

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A.—~~The City was recognized as the world's first International Dark Sky City on October 24, 2001, for its pioneering work in the development and implementation of lighting codes that balance the need to preserve Flagstaff's dark sky resource with the need for safe lighting practices. The purpose of this division is to help assure that dark skies remain a resource to be enjoyed by the Flagstaff community and its visitors, and to provide safe and efficient outdoor lighting regulations that protect Flagstaff's dark skies from careless and wasteful lighting practices. Dark starry nights, like natural landscapes, forests, clean water, wildlife, and clear unpolluted air, are valued in many ways by the residents of this community, and they provide the natural resource upon which our world renowned astronomical industry depends.~~

B.—~~The use of outdoor lighting is often necessary for adequate nighttime safety and utility, but common lighting practices can also interfere with other legitimate public concerns. Principal among these concerns is:~~

- ~~1.—The degradation of the nighttime visual environment by production of unsightly and dangerous glare;~~
- ~~2.—Lighting practices that produce excessive glare and brightness that interfere with the health and safety of Flagstaff's citizens and visitors;~~

3.—Unnecessary waste of energy and resources in the production of too much light or wasted light;

4.—Interference in the use or enjoyment of property that is not intended to be illuminated at night by light trespass, and the loss of the scenic view of the night sky due to increased urban sky glow; and

5.—The impact of inappropriately designed outdoor lighting that disrupts nocturnal animal behavior, particularly migrating birds and other species.

C.—The concerns of safety, utility, dark sky protection and aesthetic appearance need not compete. Good modern lighting practices can provide adequate light for safety and utility without excessive glare or light pollution. Careful attention to when, where and how much night time lighting is needed results in better lighting practices, darker skies and reduced energy use and costs.

D.—It is therefore the intent of this division to encourage lighting practices and systems that will:

1.—Minimize light pollution, glare, light trespass;

2.—Conserve energy and resources while maintaining night time safety, utility, security, and productivity; and

3.—Curtail the degradation of the night time visual environment.

E.—It is recognized that since topographic and atmospheric conditions surrounding the City are uniquely suited for astronomical observation and since observatories have been established in the City's vicinity, the City promotes the reduction of light pollution which interferes with the successful operation of these observatories.

F.—The sensitivity of different areas to the different obtrusive impacts of outdoor lighting use depends on many factors, including the dominant use of the area (e.g., residential, industrial, or commercial). Further, the effect of outdoor lighting on light pollution to the observatories is strongly dependent on the distance of those lights from the observatories. Therefore, three lighting zones are established, with varying standards designed to address the principal issues associated with the different areas.

**A. The City was recognized as the world's first International Dark Sky City on October 24, 2001, for its pioneering development and implementation of lighting codes that balance the need to preserve Flagstaff's dark sky resource with the need for safe outdoor lighting practices. This division is to help assure that dark skies remain a resource to be enjoyed by the Flagstaff community and its visitors, minimize light pollution and light trespass across property lines, maintain an environment that the**

City's astronomical industry depends upon, reduce energy consumptions, minimize the potential disruption to nocturnal ecosystems, and to allow safe and efficient outdoor lighting.

### 10-50.70.20 Conformance with Applicable Codes

~~All outdoor lighting fixtures shall be installed in conformance with the provisions of this division and the applicable building codes currently in effect in the City under appropriate permit and inspection.~~

### **10.50.70.020 Compliance with the Zoning Code and Permit Requirements**

**A. An Outdoor Lighting Permit shall be obtained prior to the installation, modification, or replacement of any Outdoor Light Fixture subject to Section 10-20.40.100.**

- 1. Any modification of an existing Outdoor Light Fixture shall comply with this division.**
- 2. All outdoor lighting shall be installed in compliance with the provisions of this Division 10-50.70; Title 4, Building Regulations; and Title 5, Fire Code of the City Code.**

### **10-50.70.030 Applicability**

~~A. **Existing Buildings and Uses.** Any new outdoor lighting installed on a building or parcel shall meet the requirements of this division with regard to shielding and lamp type. The total outdoor light output after the new outdoor lights are installed shall not exceed that legally nonconforming or pre-approved on the site before the modification, or as permitted by this division, whichever is larger.~~

**A. New Development and Parking Areas.** The provisions of this division shall apply to any new development of a vacant lot or parcel and any installation of outdoor lighting to support that development, including parking areas and areas within an unenclosed parking garage.

~~B. **New Uses, Buildings and Major Additions or Modifications.**~~

- ~~1. The requirements of this division apply to any and all new and major additions to land uses, developments, buildings or structures.~~
- ~~2. If a major addition occurs on a property, the entire property shall comply with the requirements of this code. For purposes of this section, the following are considered to be major additions:
  - ~~a. Additions of 25 percent or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions subsequent to the effective date of this provision; or~~~~

~~b. Single or cumulative modification or replacement of outdoor legally installed lighting fixtures constituting 25 percent or more of the lumens that would be permitted under this division for the property, no matter the actual amount of lighting already on a nonconforming site, constitutes a major addition for purposes of this section.~~

**B. Major Additions, Modifications, Replacements, and Change of Use.** The provisions of this division shall apply to all major additions, modifications, replacements, or change of use. The entire property shall comply with the requirements of this division when any of the following occur:

1. A major addition shall be defined as an addition of 25 percent or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions after the effective date of this provision; or
2. Single or cumulative modifications or replacements of legally installed Outdoor Light Fixtures after August 5, 1999, constituting 25 percent or more of the Lumens that would be permitted under this division for the property, regardless of the Total Outdoor Light Output currently existing on a site.

~~C. **Minor Additions or Modifications.** Additions or modifications of less than 25 percent in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces to existing uses shall require the submission of a complete inventory and site plan detailing all existing and any proposed new or modified outdoor lighting. Any new or modified outdoor lighting on the site shall meet the requirements of this division with regard to shielding and lamp type; the total amount of lighting after the modifications are complete shall not exceed that on the site before the modification, or that permitted by this division, whichever is larger.~~

**C. Minor Additions, Modifications, Replacements, and Change of Use.** The provisions of this division shall not apply to minor additions (less than 25% as referenced above), modifications, replacements, or change of use after August 5, 1999, except for the following:

1. All new or modified Outdoor Light Fixtures shall comply with the requirements of this division.
2. The Total Outdoor Light Output shall not exceed the amount allowed by this division, or the total legal non-conforming light output, whichever is greater.

**D. Change of Use.**

~~1. Except as provided in Section 10-20.60.080, Nonconforming Outdoor Lighting, whenever the use of any existing building, structure or premises is intensified through the incorporation of~~

~~additional dwelling units, gross floor area, seating capacity, or other units of measurement which create a need for an increase in the total number of parking spaces of 25 percent or more either with a single change or cumulative changes subsequent to the effective date of this Zoning Code, then all outdoor lighting shall be reviewed and brought into compliance with the requirements of this division before the use is resumed to the maximum extent feasible as determined by the Director.~~

~~2. For changes of use or intensity which require an increase in parking of less than 25 percent cumulative, the applicant shall only have to meet the requirements of this division for any new outdoor lighting provided.~~

~~E. **Public Rights of Way Exempt.** The provisions of this division shall not apply to street lights installed in public rights of way.~~

~~F. In accordance with A.R.S. § 49-1101, all outdoor light fixtures on property or buildings that are owned and operated by the City of Flagstaff shall be fully shielded.~~

**D. In accordance with A.R.S. § 49-1102, all Outdoor Light Fixtures on property or buildings that are owned and operated by the City of Flagstaff shall be fully shielded.**

#### **10-50.70.040 Establishment of Lighting Zones**

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~~A. **Establishment of Lighting Zones.** Three lighting zones are established, with varying development standards specific to their location within the City. Lighting zones are shown in Section 10-90.40.020, Lighting Zone Map.~~

**A. Establishment of Lighting Zones.** Two lighting zones are established, with varying development standards specific to their location within the City. Lighting zones are shown in Section 10-90.40.020, Lighting Zone Map.

**B. Lighting Zone Boundaries.** The boundaries of the lighting zones are illustrated in Section 10-90.40.020, Lighting Zone Map.

**1. Lighting Zone 1 includes all areas within the City of Flagstaff that are within 2.5 miles of the Kaj Strand telescope at the U.S. Naval Observatory.**

**2. Lighting Zone 2 includes all areas more than 2.5 miles of the Kaj Strand telescope at the U.S. Naval Observatory.**

C. **Split Parcels.** A parcel located in more than one of the described zones shall be considered to be only in the more restrictive lighting zone.

## **10-50.70.050 General Requirements – All Lighting Zones**

~~A. **Preferred Source – Low Pressure Sodium (LPS) Lamps and Narrow Spectrum Amber LEDs.** Due to their high energy efficiency, long life, and spectral characteristics, low pressure sodium (LPS) lamps are the preferred illumination source throughout the City. Their use is encouraged, when not required, for outdoor illumination whenever their use would not be detrimental to the use of the property. In all applications where LPS lighting is required or preferred, an acceptable alternative is narrow spectrum amber LEDs.~~

~~B. **Lighting Classes.**~~

**A. Lighting Classes. All lighting classes are included in the Total Outdoor Light Output for a lot or parcel.**

~~1. **Class 1 lighting is lighting used for applications where color rendition is required to preserve the effectiveness of an activity. Recognized Class 1 lighting applications include only the following. Application of Class 1 lighting standards to uses not included in this list requires a finding by the Director of the essential nature of color rendition to preserve the effectiveness of the activity.**~~

**1. Class 1 Lighting is lighting used for applications where color rendition is required to preserve the effectiveness of an activity. All Class 1 Lighting shall have a Correlated Color Temperature (CCT) of 2,700 Kelvin (K), or less. Recognized Class 1 lighting applications include only the following examples:**

a. Outdoor sales areas, including service station canopies;

~~b. **Primary customer building entry/exit areas (does not include service or emergency entry/exits);**~~

**b. Primary customer building entry/exit areas of commercial and industrial uses (does not include service or emergency entry/exits);**

c. Outdoor eating areas at restaurants;

~~d. **Outdoor assembly or repair areas where assembly or repair work occurs at night on a regularly scheduled basis;**~~

**d. Outdoor assembly or repair areas where assembly or repair work occurs at night as part of the normal business operations;**

e. Outdoor recreational field/track/arena areas; and

f. External and internal lighting for signs.

~~2. Class 2 lighting is lighting used for applications where general illumination for safety or security is the primary concern.~~

**2. Class 2 Lighting is lighting used for applications where general illumination for safety or security is the primary concern. Narrow-Spectrum Amber LEDs are required in all Class 2 lighting applications. Examples of Class 2 Lighting applications include the following:**

~~a. Examples of Class 2 lighting applications include the following:~~

~~(1) Pedestrian walkways, driveways and roadways;~~

**a. Pedestrian walkways, driveways, and roadways;**

~~(2) Parking lots;~~

**b. Parking lots;**

~~(3) Equipment yards; and~~

**c. Equipment yards; and**

~~(4) Outdoor security.~~

**d. Outdoor security.**

~~b. Low-pressure sodium (LPS) lamps or narrow-spectrum amber LEDs are required in all Class 2 lighting applications, except that up to 10 percent of all Class 2 lighting may be non-LPS lighting as noted in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards.~~

~~3. Class 3 lighting is outdoor lighting used for decorative purposes.~~

**3. Class 3 Lighting is outdoor lighting used for decorative purposes. All light sources may be used for Class 3 Lighting including technologies that allow for the color of the light to change so long as the colors change less than every two minutes. Examples of Class 3 Lighting applications include the following:**

~~a. Examples of Class 3 lighting applications include the following:~~

~~(1) Architectural illumination;~~

**a. Architectural illumination;**

~~(2) Flag and monument lighting; and~~

**b. Flag and monument lighting; and**

~~(3) Landscape lighting and the illumination of trees, shrubs, and other vegetation.~~

**c. Landscape lighting and the illumination of trees, shrubs, and other vegetation.**

~~b. Class 3 lighting fixtures shall be included in the total lumen calculations for the site. If decorative lighting is applied to the exterior wall of a building using LED lights or similar technologies that allow for the color of the light to change, only one color change every two minutes is permitted.~~

~~4. The use of solar powered light systems as a light source in all lighting classes is appropriate.~~

**CB. Total Outdoor Light Output.**

~~1. Total outdoor light output, excluding streetlights and pedestrian lighting used to illuminate public rights-of-way and any interior lighting shall not exceed the following limits averaged over the entire development (values listed are total initial lamp lumens per acre and per residence).~~

**1. The Total Outdoor Light Output shall not exceed the amounts allowed in Table 10-50.70.050.A.**

**Table 10-50.70.050.A: Maximum Total Outdoor Light Output Standards**

Land Use	Zone 1	Zone 2	Zone 3
<b>Commercial, Industrial, and Multifamily Residential (lumens per net acre)<sup>‡</sup></b>	-		
Total (Fully Shielded and Partially Shielded)	25,000	50,000	100,000
Partially Shielded only	0	5,500	5,500
Non-LPS and non-narrow spectrum amber LED	2,500	5,000	10,000
<b>Single-Family Residential (lumens per parcel inclusive of accessory structures)<sup>‡</sup></b>			-
Total (Fully Shielded and Partially Shielded)	10,000	10,000	10,000
Partially Shielded only	0	4,000	4,000

**End Note**

<sup>‡</sup>To determine the allowed lumens per net acre for all LED lamps (i.e., narrow spectrum amber LED and all other LED lamps), divide the total number of lumens permitted in each lighting zone by 1.43.

<b>Table 10-50.70.050.A</b>		
<b>Maximum Total Outdoor Light Output Standards</b>		
<b>Land Use</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>
<b>Commercial, Industrial, and Multiple-Family Development (Lumens per Net Acre)</b>		
<b>Combined Maximum for Fully and Partially Shielded Fixtures, and fixtures mounted to a building or canopy</b>	<b>17,500</b>	<b>35,000</b>
<b>Partially Shielded Fixtures maximum</b>	<b>0</b>	<b>3,850</b>
<b>Fixtures not mounted to a building or canopy<sup>1</sup> maximum</b>	<b>4,000</b>	<b>35,000</b>
<b>Single-Family and Duplex Developments, Including Accessory Structures (Lumens per Lot, or Parcel)</b>		
<b>Combined Maximum for Fully and Partially Shielded Fixtures, and fixtures not mounted to a building or canopy, excluding motion sensing Outdoor Light Fixtures<sup>2</sup></b>	<b>1,500</b>	<b>5,000</b>
<b>Partially Shielded Fixtures maximum</b>	<b>0</b>	<b>2,000</b>
<b>Motion sensing Outdoors Light Fixtures<sup>2</sup> (fully shielded) maximum</b>	<b>0</b>	<b>2,000</b>
<b>Fixtures that are not mounted to a building or canopy<sup>1</sup> maximum</b>	<b>0</b>	<b>1,500</b>
<b>End Note</b>		
<ol style="list-style-type: none"> <li><b>1. Fixtures that are not directly mounted to the side of a building or to the underside of, or within, a canopy or overhang.</b></li> <li><b>2. Motion sensing Outdoor Light Fixtures shall have an automated timer set to turn off the fixture at a time no greater than five (5) minutes after the light has been turned on.</b></li> </ol>		

2.—For determining compliance with this section, light emitted from outdoor lighting is to be included in the total outdoor light output as follows (see Figure 10-50.70.050A):

a.—Light fixtures installed as described below shall be included in the total outdoor light output by adding 100 percent of the initial lumen outputs of the lamps used:

(1)—All unshielded or partially shielded fixtures, regardless of location;

(2)—Light fixtures installed on poles (such as parking lot light fixtures);

(3)—Light fixtures installed on the side of buildings or other structures but not located as described in subsections (C)(2)(b) or (c) of this section; and

(4) Light fixtures installed within open parking garages, or under canopies, building overhangs, or roof eaves that are not fully shielded or are fully shielded but not located as described in subsections (C)(2)(b) or (c) of this section.

b. Fully shielded light fixtures installed as described below shall be included in the total outdoor light output by adding only 25 percent of the initial lumen outputs of the lamps used;

(1) Fully shielded light fixtures located within open parking garages, or located under canopies, building overhangs, or roof eaves, where all parts of the light fixture are located at least five feet but less than 10 feet from the nearest outdoor opening, canopy, or overhang edge.

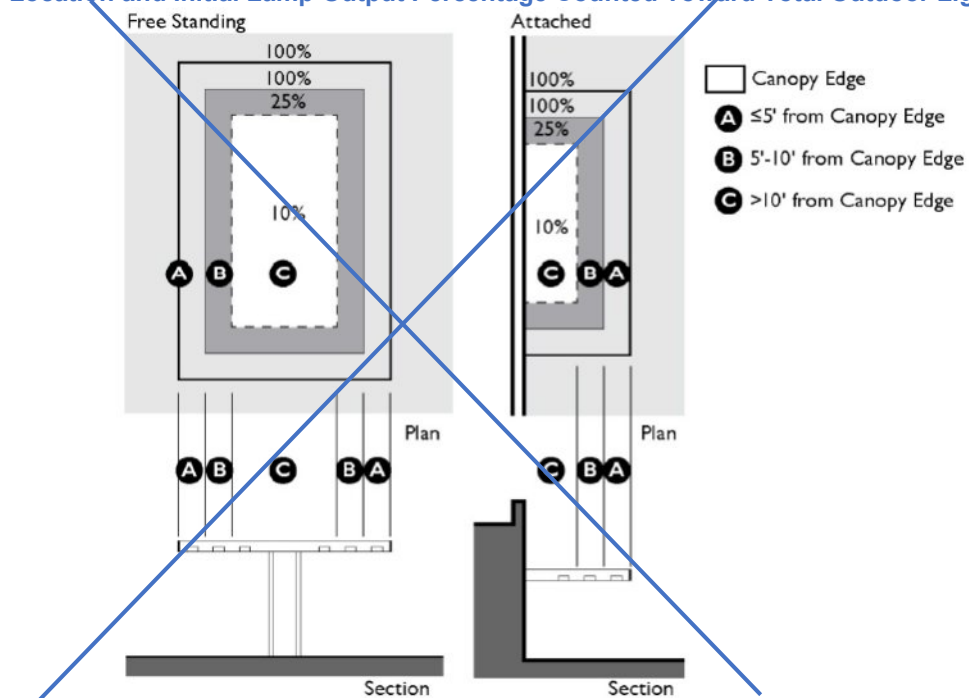
c. Fully shielded light fixtures installed as described below shall be included in the total outdoor light output by adding only 10 percent of the initial lumen outputs of the lamps used;

(1) Fully shielded light fixtures located within open parking garages, or located under canopies, building overhangs, or roof eaves, where all parts of the light fixture are located 10 feet or more from the nearest outdoor opening, canopy, or overhang edge.

Figure 10-50.70.050A

**Elevation and Section Views of a Freestanding and Attached Canopy or Overhang, Showing Fixture**

**Location and Initial Lamp Output Percentage Counted Toward Total Outdoor Light Output**



D.—**Lamp Source and Shielding.** The standards provided in Table 10-50.70.050.B, Lamp Type and Shielding Standards, shall apply:

**C. Shielding.** The standards provided in Table 10-50.70.050.B, Shielding Standards, shall apply:

Table 10-50.70.050.B: Lamp Type and Shielding Standards			
Lamp Type and Lighting Class	Zone-1	Zone-2	Zone-3
<b>Nonresidential<sup>2</sup> Outdoor Lighting</b>			
Class 1 Lighting (Color Rendition):		-	
All lamp types and outputs	FS	FS	FS
Class 2 Lighting (General Illumination):		-	-
All lamp types and outputs	FS	FS	FS
Class 3 Lighting (Decorative):		-	
All lamp types 2,500 lumens <sup>1</sup> or above per fixture	X	X	FS
All lamp types below 2,500 lumens <sup>1</sup> per fixture	FS	A <sup>3</sup>	A <sup>3</sup>
<b>Residential<sup>2</sup> Outdoor Lighting</b>			
Class 1-3 Lighting		-	
Lighting (Color Rendition):			
All lamp types 1,000 lumens <sup>1</sup> or above per fixture	FS	FS	FS
All lamp types below 1,000 lumens <sup>1</sup> per fixture	FS	A <sup>3</sup>	A <sup>3</sup>
<b>Key:</b>			

FS = Allowed; Only Fully Shield Fixtures permitted

A = Allowed; Fully Shielded Fixtures preferred, and Partially Shielded Fixtures permitted subject to the amounts listed in Table A (Maximum Total Outdoor Light Output Standards).

X = Prohibited

Table 10-50.70.050.B: Lamp Type and Shielding Standards

Lamp Type and Lighting Class	Zone-1	Zone-2	Zone-3
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**End Notes**

<sup>1</sup>Examples of lamp types of 2,500 and 1,000 lumens and below for commercial and residential applications respectively are provided in Table 10-50.70.050.C, Lamp Type and Wattage with Outputs below 2,500 and 1,000 lumens. The acceptability of a particular lamp is decided by lumen output, not wattage. The values listed are approximate, and the manufacturer's specifications for a particular lamp must be checked.

<sup>2</sup>For purposes of this subsection, residential refers to property developed primarily for residential purposes, including single-family residences, manufactured homes, duplexes, and triplexes as well as multifamily (i.e. apartment, condominium, townhome) uses. Nonresidential uses include all other uses.

<sup>3</sup>For purposes of determining total light output from a light fixture, lighting assemblies which include multiple unshielded or partially shielded fixtures or lamps on a single pole shall be considered as a single fixture (see Figure 10-50.70.050B). Partially shielded lighting is limited to the amounts listed in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards.

Table 10-50.70.050.B: Lamp Type and Shielding Standards

Lamp Type and Lighting Class

Zone-1

Zone-2

Zone-3

Table 10-50.70.050.B Shielding Standards		
Land Use and Lighting Class	Lighting Zone 1	Lighting Zone 2
<b>Commercial, Industrial, and Multiple-Family Development</b>		
<b>Class 1 Lighting</b> All Outdoor Light Fixtures	FS	FS
<b>Class 2 Lighting</b> All Outdoor Light Fixtures	FS	FS
<b>Class 3 Lighting</b>		
All Outdoor Light Fixtures with a Lumen output below 1,750 <sup>1</sup> Lumens	FS	A <sup>1</sup>
All Outdoor Light Fixtures with a Lumen output equal to and above 1,750 <sup>1</sup> Lumens	X	X
<b>Single-Family and Duplex Residential Dwelling Units</b>		
<b>Class 1-3 Lighting</b>		
All Outdoor Light Fixtures with a Lumen output below 700 <sup>1</sup> Lumens	FS	A <sup>1</sup>
All Outdoor Light Fixtures with a Lumen output equal to and above 700 <sup>1</sup> Lumens	X	X
<b>End Notes</b>		
1. For purposes of determining the Total Outdoor Light Output from an Outdoor Light Fixture, lighting assemblies which include multiple unshielded or Partially Shielded Fixtures or lamps on a single pole or assembled as a single unit shall be considered as one fixture. Refer to the Table 10-50.70.050.A.		
<b>Key</b>		
FS = Allowed; Only Fully Shielded Fixtures		
A = Allowed; Fully Shielded Fixtures preferred, and Partially Shielded Fixtures are allowed subject to the Lumen amounts listed in Table 10-50.70.050.A		
X = Outdoor Light Fixture is Prohibited		

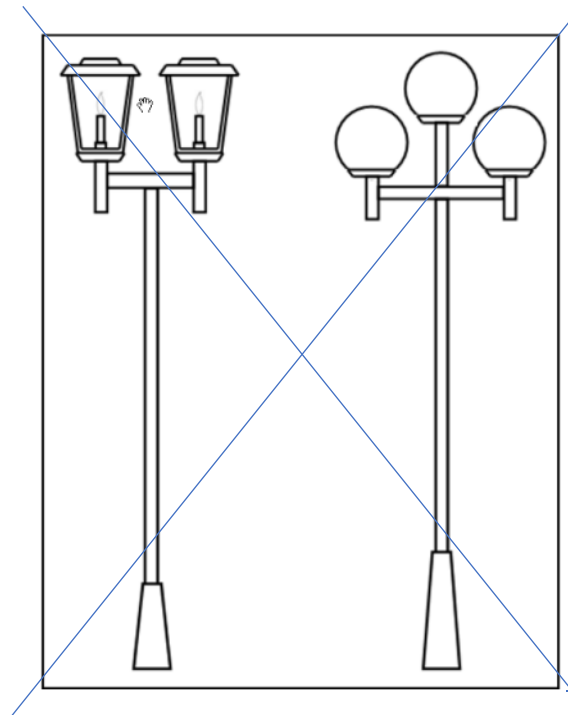
Figure 10-60-70.050B

Table 10-60.70.050.C: Lamp Type and Wattage with Outputs below 2,500 and 1,000 Lumens

Lamp Type	2,500-lm (Commercial and Industrial)	1,000-lm (Residential)
Standard incandescent and less	100-watt	60-watt
Tungsten halogen (quartz) and less	100-watt	60-watt
Fluorescent and less	25-watt	15-watt
Compact Fluorescent and less	26-watt	13-watt

No available data for High-Pressure Sodium or Metal Halide lamps

~~Light Fixture with Multiple Unshielded Fixtures or Lamps~~



~~E. **Effective Shielding.** All light fixtures that are required to be fully shielded shall be installed in such a manner that the shielding satisfies the definition of a fully shielded fixture.~~

**D. Effective Shielding. All Outdoor Light Fixtures that are required to be fully shielded shall be installed in such a manner that the shielding satisfies the definition of a Fully Shielded Light Fixture.**

F. ~~Light Trespass Standard.~~

E. Light Trespass Standard.

~~1. All light fixtures, including security lighting, shall be located, aimed and shielded so that the direct illumination from the fixture shall be confined to the property boundaries of the source.~~

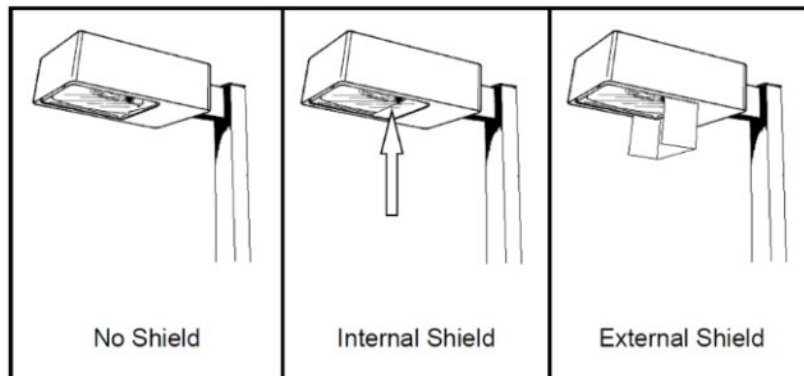
1. All Outdoor Light Fixtures, including motion sensing lighting, shall be located, aimed, and shielded so that the direct illumination from the fixture shall be confined to the property boundaries of the source.

2. Any privately or publicly owned outdoor light fixture with a lamp of initial output over 10,000 lumens located within 50 feet of any residential (including multifamily residential) property or public right-of-way shall utilize an internal or external shield, with the light fixture and shield oriented to minimize light trespass over the adjacent property or right-of-way line. If an external shield is used, its surface must be painted black to minimize reflections (Figure 10-50.70.050C).

2. Any privately or publicly owned Outdoor Light Fixture with an output over 10,000 Lumens located within 50 feet of any residential (including Multiple-Family Development) property or public right-of-way shall utilize an internal or external shield, with the Outdoor Light Fixture and shield oriented to prevent direct illumination over the adjacent property or right-of-way line. If an external shield is used, its surface must be painted black to minimize reflections (Figure 10-50.70.050.C).

Figure 10-50.70.050.C

Shielding Configurations



~~G. **Motion Sensing Light Fixtures.** Motion sensing light fixtures shall be fully shielded.~~

**F. Motion Sensing Outdoor Light Fixtures.** Motion sensing Outdoor Light Fixtures shall be fully shielded.

~~H. **Time Limits for Outdoor Lighting.** All outdoor Class 1 and Class 3 lighting, and outdoor Class 2 lighting located more than 50 feet from any building or outdoor product display or storage area shall be turned off at the times listed in Table 10-50.70.050.D, Time Limits for Outdoor Lighting, or no later than 30 minutes after the business closes, whichever is later, and remain off for the remainder of the night or until the business reopens. Decorative holiday lights are exempt in accordance with Section 10-50.70.080(D), and outdoor recreation facilities are exempt in accordance with Section 10-50.70.060(B).~~

**G. Time Limits for Outdoor Lighting.** All outdoor Class 1 and Class 3 Lighting, and outdoor Class 2 Lighting located more than 50 feet from any structure, outdoor product display, or storage area shall be turned off no later than 30 minutes after the business closes and are to remain off until the business reopens. Decorative holiday lights are exempt in accordance with Section 10-50.70.080.D, and outdoor sports facilities are subject to the time limits in Table 10-50.70.060.B.

~~Table 10-50.70.050.D: Time Limits for Outdoor Lighting~~

<del>-</del>	<del>Zone 1</del>	<del>Zone 2</del>	<del>Zone 3</del>
<del>Time limit when outdoor lights must be turned off</del>	<del>9:00 p.m.</del>	<del>11:00 p.m.</del>	<del>11:00 p.m.</del>

~~I. **Sign Illumination.** Standards for external and internal sign illumination are provided in Division 10-50.100, Sign Standards. Lighting used for the external illumination of signs is included toward the total outdoor light output standards of subsection (C) of this section.~~

**H. Sign Illumination.** Standards for external and internal sign illumination are provided in Division 10-50.100, Sign Standards. Lighting used for the external illumination of signs is included toward the Total Outdoor Light Output standards of subsection B. of this section.

~~J. **Neon Building Lighting.** Neon building lighting is included in the total outdoor light output calculations for the site. Lumens for neon lighting are calculated on a per foot basis, rather than per “fixture.” Unshielded neon lighting is not permitted.~~

**I. Neon Building Lighting.** Neon building lighting is included in the Total Outdoor Light Output calculations for the site. Lumens for neon lighting are calculated on a per foot basis, rather than per “fixture.” Unshielded neon lighting is not allowed **except for signage.**

~~K. **Multi-Class Lighting.** Multi-class lighting must either conform to the lamp-type and shielding requirements of the strictest included class as shown in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards, and Table 10-50.70.050.B, Lamp Type and Shielding Standards, or conform to the time limitations of the least restrictive included class as shown in Table 10-50.70.050.D, Time Limits for Outdoor Lighting.~~

**J. Multi-Class Lighting.** Multi-class lighting must either conform to the lamp-type and shielding requirements of the strictest included class as shown in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards, and Table 10-50.70.050.B, Shielding Standards, or **be turned off no later than 30 minutes after the business closes.**

~~L. **Internally Illuminated Architectural Elements.** Any architectural element, including walls or portions of buildings that are internally illuminated and that is not a sign or fenestration (windows or doors), shall have 100 percent of the initial lamp output of all lamps used to provide such illumination counted toward partially shielded lighting for the purposes of calculating total outdoor light output for the site and is subject to the standards of subsection (C) of this section.~~

**K. Internally Illuminated Architectural Elements.** Any architectural element, including walls or portions of buildings, **including canopy facias**, that are internally illuminated and that is not a sign or fenestration (windows or doors), shall have 100 percent of the initial lamp output of all lamps or **luminous tubes** used to provide such illumination counted toward partially shielded lighting for the purposes of calculating Total Outdoor Light Output for the site and is subject to the standards of subsection B. of this section.

~~M. **Architectural/Landscape Lighting.** Architectural lighting used to illuminate the wall of a building or landscape lighting used to illuminate trees or other landscape elements is permitted subject to the following:~~

**L. Architectural/Landscape Lighting.** Architectural lighting used to illuminate **a structure** or landscape lighting used to illuminate trees or other landscape elements is **allowed** subject to the following:

~~1. Architectural and landscape lighting that is directed downward onto a wall, tree or other landscape feature shall be included in the total outdoor light output standards provided in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards, based on whether a fully shielded or partially shielded light fixture is used; and~~

**1. Architectural and landscape lighting that is directed downward onto a structure, tree, or other landscape feature shall be included in the Total Outdoor Light Output standards provided in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards, based on whether a fully Shielded or Partially Shielded Light Fixture is used; and**

~~2. Architectural and landscape lighting that is directed upward onto a wall, tree or other landscape feature is not permitted.~~

**2. Architectural and landscape lighting that is directed upward onto a structure, tree, or other landscape feature is not allowed.**

~~N. **Emergency Lighting.** Emergency lighting that is only turned on in the event of a power failure or when an alarm is activated is permitted in all lighting zones and is excluded from the total lumen calculations for the site.~~

**M. Emergency Lighting.** Emergency lighting that is only turned on in the event of a power failure or when an alarm is activated is allowed in all lighting zones and is excluded from the Total Outdoor Light Output standards provided in Table 10-50.70.050.A, Maximum Total Outdoor Light Output Standards.

~~O. **Use of Mercury Vapor Light Fixtures.**~~

**N. Use of Mercury Vapor Outdoor Light Fixtures.** Except for outdoor lighting systems erected prior to 1950, no mercury vapor outdoor light fixtures are allowed within the City of Flagstaff.

~~1. No new mercury vapor outdoor light fixtures shall be installed after the effective date of this Zoning Code. No replacement equipment other than bulbs for mercury vapor lighting fixtures shall be sold in the State after January 1, 1991, and the use of mercury vapor light fixtures is prohibited after January 1, 2011.~~

~~2. The provisions of this section shall not apply to outdoor light systems erected prior to 1950.~~

## 10-50.70.060 Special Uses

### A. Canopies, Building Overhangs, and Roof Eave Lighting.

1. **Shielding.** All Outdoor Light Fixtures attached, mounted to, or within, a canopy, building overhang, or roof eave shall be fully shielded.
2. **Total Lumens.** The Total Lumen of each Outdoor Light Fixture shall be calculated based on the distance from the edge of the canopy, building overhang, or roof eave subject to Figure 10-50.70.060.A.

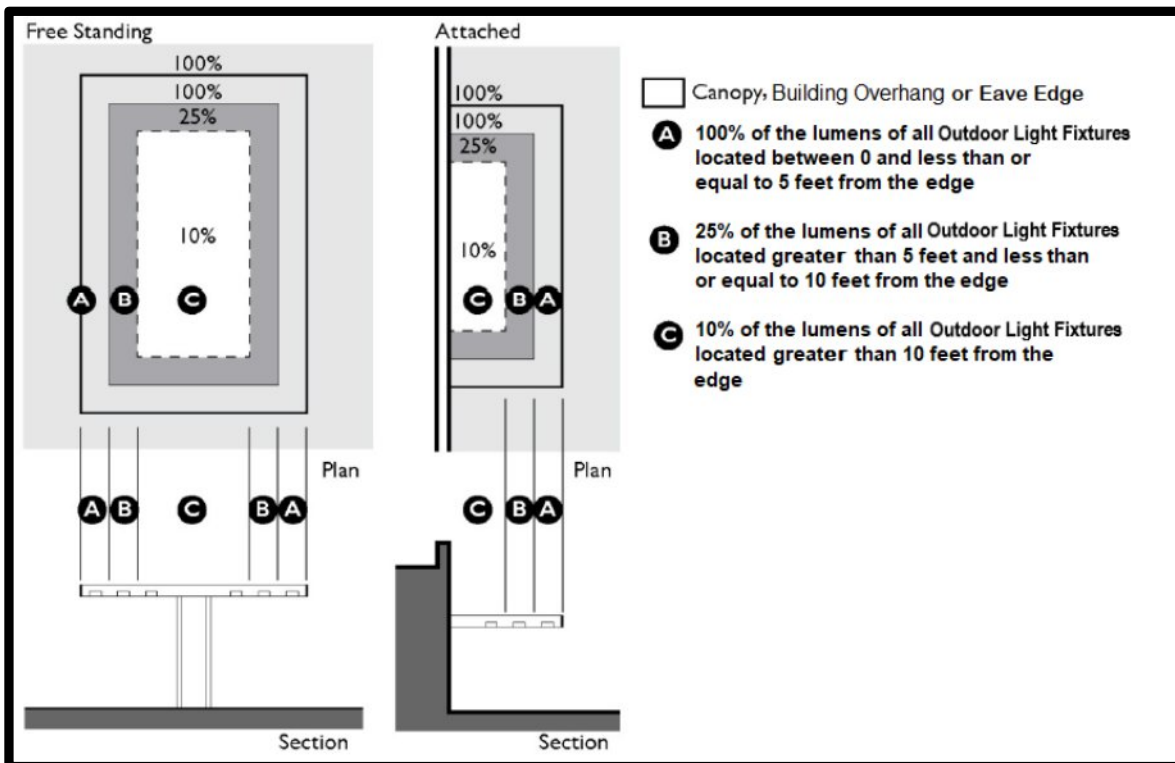


Figure 10-50.70.060.A

Plan and Section Views of a Freestanding and Attached Canopy or Overhang, Showing Fixture Location and Initial Lamp Output Percentage Counted Toward Total Outdoor Light Output

### A. ~~Service Station Canopy Lighting.~~

### B. Service Station Canopy Lighting.

1. **Lighting Class.** Lighting for service station canopies shall be considered Class 1 lighting.

~~2. **Shielding.** All light fixtures mounted on or recessed into the lower surface of service station canopies shall be fully shielded and utilize flat lenses. Such shielding must be provided by the fixture itself; shielding by surrounding structures such as canopy edges is not permitted.~~

**2. Shielding.** All **Outdoor Light Fixtures** mounted on or recessed into the lower surface of service station canopies shall be fully shielded and utilize flat lenses. Such shielding must be provided by the fixture itself; shielding by surrounding structures such as canopy edges is not **allowed**.

~~3. **Total Under-Canopy Output.** The total light output used under service station canopies, defined as the sum of all under-canopy initial lamp outputs in lumens, shall not exceed 40 lumens per square foot of canopy in Lighting Zone 2 and 3, and shall not exceed 20 lumens per square foot in Lighting Zone 1 (note: these values are not foot-candle illuminances).~~

**3. Total Under-Canopy Output.** The **Total Outdoor Light Output** used under service station canopies, defined as the sum of all under-canopy **Light Fixtures**, shall not exceed **30 Lumens** per square foot of canopy in Lighting Zone 2, and shall not exceed **15 Lumens** per square foot in Lighting Zone 1 (note: these values are not foot-candle illuminances).

~~4. All lighting mounted under the canopy, including but not limited to light fixtures mounted on or recessed into the lower surface of the canopy and any lighting within signage (but not including any lamps mounted within the pumps and used to illuminate information indicating such items as the total cost of fuel pumped and price per gallon), shall be included in the total outdoor light output for the site and is subject to the standards of Section 10-50.70.050(C).~~

**4. Total Lumens.** All lighting mounted under the canopy, including but not limited to **Outdoor Light Fixtures** mounted on or recessed into the lower surface of the canopy and any lighting within signage (but not including any lamps mounted within the pumps and used to illuminate information indicating such items as the total cost of fuel pumped and price per gallon), shall be included in the **Total Outdoor Light Output** for the site and is subject **Figure 10-50.70.060.A.2**.

#### ~~B. **Outdoor Recreation Facilities.**~~

#### **C. Outdoor Recreation Facilities.**

~~1. **Lighting Class.** Lighting for field/track/arena areas only shall be considered Class 1.~~

**1. Lighting Class.** Lighting for field/track/arena areas only shall be considered Class 1 **Lighting**.

~~2. Lumen Cap Exemption.~~

2. **Lumen Cap Requirements.**

~~a. In Lighting Zone 1, lighting for field/track/arena areas is subject to the lumens per acre limit set in Section 10-50.70.050(C);~~

**a. In Lighting Zone 1, lighting for field/track/arena areas is subject to the Maximum Total Outdoor Light Output standards set in Table 10-50.70.050.A.;**

~~b. In Lighting Zones 2 and 3, lighting for field/track/arena areas is not subject to the lumens per acre limit set in Section 10-50.70.050(C); and~~

**b. In Lighting Zone 2, lighting for field/track/arena areas is not subject to the Maximum Total Outdoor Light per acre limit set in Table 10-50.70.050.A; and**

~~c. Illumination levels for the field/track/arena shall be designed to be no higher than recommended for Class IV play, as defined by the Illuminating Engineering Society of North America publication IESNA RP-06-01.~~

**c. Illumination levels for the field/track/arena shall be designed to be no higher than recommended for Class IV play, as defined by the Illuminating Engineering Society of North America publication ANSI/IES RP-6-20, as amended.**

3. **Shielding.** Fixtures used for field/track/arena areas shall be fully shielded.

~~4. **Time Limits.** No illuminated sports facility shall be illuminated after the time limits listed in Table 10-50.70.050.D, Time Limits for Outdoor Lighting, except to conclude a scheduled recreational or sporting event in progress prior to the time limitation.~~

**4. Time Limits. Outdoor sports facilities shall not be illuminated after the time limits listed in Table 10-50.70.060.B, except to conclude a scheduled recreational or sporting event in progress prior to the time limitation.**

<b>Table 10-50.70.060.B</b>		
<b>Time Limits for Outdoor Lighting of Sports facilities</b>		
	<b>Zone 1</b>	<b>Zone 2</b>
<b>Time limit when outdoor lights shall be turned off</b>	<b>9:00 p.m.</b>	<b>11:00 p.m.</b>

5. **Certification.** Lighting systems for outdoor recreational facilities shall be designed and certified by an engineer registered in Arizona as conforming to all applicable restrictions of this code before construction commences. Further, after installation is complete, the system shall be again certified by a registered engineer to verify that the installation is consistent with the certified design.

~~C. Street Lighting.~~

**D. Street Lighting.**

~~1. Standards for street lighting installed on public rights-of-way are found in the City Engineering Standards, Title 12, Street Lighting.~~

**1. Street lighting installed on public rights-of-way shall be in accordance with Title 13, Engineering Design Standards and Specifications for New Infrastructure.**

~~2. Street lighting installed on private rights-of-way shall be included within the total outdoor light output for the development.~~

**2. Street lighting installed on private street tracts or easements shall be in accordance with Title 13, Engineering Design Standards and Specifications for New Infrastructure.**

~~D. Parking Garages.~~

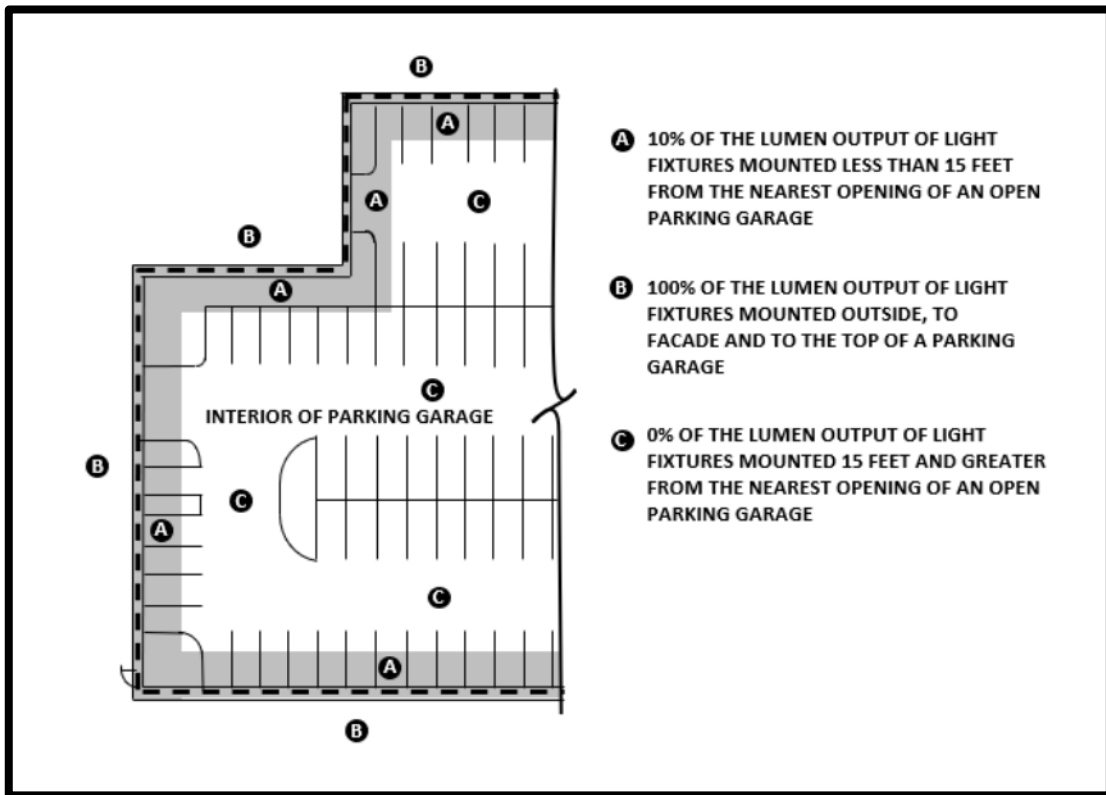
**E. Parking Garages.**

1. **Lighting Class.** Lighting installed for general illumination of parking areas within parking garages, where the parking areas are open to the outside, shall be considered Class 2.

~~2. Inclusion Toward Total Outdoor Light Output. The lumen output of light fixtures mounted 15 feet or more from the nearest opening to the outdoors and within open parking garages shall not be included~~

toward the Total Outdoor Light Output standards in Section 10-50.70.050(C). All light fixtures mounted less than 15 feet from the nearest opening to the outdoors shall comply with the total outdoor light output standards established in Section 10-50.70.050(C).

**2. Total Outdoor Light Output.** Ten percent (10%) of the Lumen output of Light Fixtures mounted less than 15 feet from the nearest opening to the outdoors of an open parking garage shall be included toward the Total Outdoor Light Output standards established in Table 10-50.70.050.A subject to Figure 10-50.70.060.C. The Lumen output of Light Fixtures mounted 15 feet or more from the nearest opening to the outdoors of an open parking garage shall not be included toward the Total Outdoor Light Output standards in Table 10-50.70.050.A subject to Figure 10-50.70.060.C.



**Figure 10-50.70.060.C**  
**Calculation of Total Lumens of the Light Fixtures Located Inside of Parking Garage**

**3. Shielding.** All light fixtures used on or within open parking garages, including those mounted to the ceilings over the parking decks, shall be fully shielded.

**E. ~~Outdoor Display Lots.~~**

**F. Outdoor Display Lots.**

~~1. **Lighting Class.** Outdoor lighting for outdoor display lots shall be considered Class 1 lighting, and shall conform to applicable lumens per net acre limits applied to the entire parcel.~~

**1. Lighting Class. Class 1 Lighting may be used to illuminate outdoor display lots, and shall be included toward the Total Outdoor Light Output standards in Table 10-50.70.050.A.**

~~2. **Lighting Time Limitations.** Outdoor display lot lighting shall conform to the hours of operation as established under Class 1 lighting standards. Any lighting on after the time limitations shall be considered Class 2 lighting and shall conform to all restrictions of this division applicable to this class.~~

**2. Lighting Time Limitations. All Class 1 outdoor display lighting shall be turned off no later than 30 minutes after the close of business. Only lighting meeting Class 2 Lighting standards may be used to illuminate an outdoor display area 30 minutes or later after the close of business.**

3. **Shielding.** All light fixtures used in outdoor display lots shall be fully shielded and be aimed so that the direct illumination shall be confined to the property boundaries of the source.

~~F. **Temporary Lighting.** Temporary lighting which does not conform to the provisions of this division may be approved by the Director subject to the approval of an outdoor lighting permit in accordance with the provisions of Section 10-20.40.100, Outdoor Lighting Permits. Temporary lighting is intended for uses which by their nature are of limited duration, including for example, holiday decorations, civic events or construction projects.~~

**G. Temporary Lighting. Temporary lighting which does not conform to the provisions of this division may be approved by the Director subject to the approval of an outdoor lighting permit in accordance with the provisions of Section 10-20.40.100, Outdoor Lighting Permits. Temporary lighting is intended for uses which by their nature are of limited duration, including for example, holiday decorations, civic events, or construction projects.**

### **10-50.70.070 Prohibited Outdoor Lighting**

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The following types of outdoor lighting are prohibited:

- A. Outdoor floodlighting by flood light projection above the horizontal plane.
- B. Search lights, flood lights, laser source lights, or any similar high intensity light, except in emergencies by police, fire or medical personnel or at their direction; or for meteorological data gathering purposes.

C. Any lighting device located on the exterior of a building or on the inside of a window which is visible beyond the boundaries of the lot or parcel with intermittent fading, flashing, blinking, rotating or strobe light illumination.

### **10-50.70.080 Exceptions**

~~A.—**Airport Lighting.** Required navigational lighting systems at airports for the safe and efficient movement of aircraft during flight, take off, landing and taxiing are exempt from the provisions of this division. Lighting used for illumination of aircraft loading, unloading, and servicing areas is exempt from the lumens per acre limits provided in Section 10-50.70.050(C), although it must conform to all other requirements of this division. All other outdoor lighting at airport facilities shall comply with the provisions of this division.~~

**A. Flagstaff Municipal Airport Lighting.** Required navigational lighting systems at public airports for the safe and efficient movement of aircraft during flight, take off, landing, and taxiing are exempt from the provisions of this division. Lighting used for illumination of aircraft loading, unloading, and servicing areas is exempt from the Lumens per acre limits provided in Table 10-50.70.050.A., although it must conform to all other requirements of this division. All other outdoor lighting at public airport facilities shall comply with the provisions of this division. This provision does not apply to private helipads or landing strips.

B. **Infrared Security Lighting.** Lights emitting infrared radiation used for remote security surveillance systems are permitted in all zones with the following restrictions:

1. Fixed lights must be fully shielded; and
2. Movable lights, such as spot lights attached to infrared sensitive cameras, must be mounted such that the lights cannot be directed higher than 20 degrees below the horizontal, measured from the center of the light beam.

C. **Emergency Lighting by Emergency Services.** Searchlights, floodlights, laser source lights, strobe or flashing lights, or any similar high intensity lights are permitted when used in emergencies by police, fire, medical, or utility personnel or at their direction.

~~D.—**Holiday Decorations.** In all lighting zones low voltage holiday decorations may be unshielded and remain on all night from November 15th to January 15th.~~

**D. Holiday Decorations.** In all lighting zones, low Lumen output traditional holiday decorations may be unshielded and remain on all night from November 15th to January 15th.

**E. Solar-Powered Lighting.** Solar-powered lights of five watts or less per fixture used in residential landscaping applications and to illuminate walkways are exempt from applicable lamp type and shielding standards and are excluded from the total lumen calculations for the site.

**F. Construction and Renovation of Municipal Facilities.** All outdoor lighting used for construction or major renovation of municipal buildings, structures and facilities is exempt from the provisions of this division.

### **10-50.70.090 Nonconforming Outdoor Lighting**

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Section [10-20.60.080](#), Nonconforming Outdoor Lighting, provides the standards and regulations for nonconforming outdoor lighting.

### **10-50.70.100 Violations and Enforcement**

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A. It shall be unlawful to install or operate an outdoor light fixture in violation of this division. Any person violating any provisions of this division shall be guilty of a misdemeanor. Each and every day during which the illegal erection, maintenance, and use continues shall be considered a separate offense.

B. The requirements of this division shall be enforced in compliance with the enforcement provisions of Division [10-20.110](#), Enforcement.

### **10-20.60.040 Residential Exemptions**

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~~An involuntarily damaged or destroyed nonconforming single-family or multifamily dwelling unit may be reconstructed or replaced with a new structure within the same footprint (including pre-existing nonconforming setbacks), height and number of dwelling units, in compliance with current Building and Fire Code requirements.~~

**An involuntarily damaged or destroyed nonconforming Single-Family or Multiple-Family Development unit may be reconstructed or replaced with a new structure within the same footprint (including pre-existing nonconforming setbacks), height and number of dwelling units, but in compliance with Title 4, Building Regulations; Title 5, Fire Code; and Division 10-50.70, Outdoor Lighting Standards.**

## 10-20.60.080 Nonconforming Outdoor Lighting

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### A. General.

1. If at the effective date of this Zoning Code, or of any extension resulting from annexation to the City, any existing outdoor lighting which is being used in a manner or for a purpose which is otherwise lawful, but does not comply with the provisions of Division [10-50.70](#), Outdoor Lighting Standards, shall be deemed legal but nonconforming, and shall be allowed to continue provided such fixtures are extinguished between the hours of midnight and sunrise by an automatic shut-off device.
2. No modification or replacement shall be made to a nonconforming outdoor light fixture unless the fixture thereafter conforms to the provisions of Division [10-50.70](#), Outdoor Lighting Standards.
3. Whenever a nonconforming use, structure or lot is abandoned for a period of 180 consecutive days and then changed to a new use according to the requirements of Section [10-20.60.030](#), Restrictions on Nonconforming Uses and Structures, then any existing outdoor lighting shall be reviewed and brought into compliance as necessary for the entire building, structure or premises.

### 10-50.100.050.C.2. Internally Illuminated Sign Standards

(2) **Lighting Zones 2 and 3.** The sign face(s) shall be either composed of illuminated text and symbols against an opaque background (as in subsection (C)(2)(a)(1) of this section), or with generally lighter text and symbols against a colored (not white, off-white, light gray, cream, or yellow) background. Text and symbols may be white, off-white, light gray, cream, or yellow. (See Figure 10-50.100.050I.)

### 10-80.20.060 Definitions, “F”

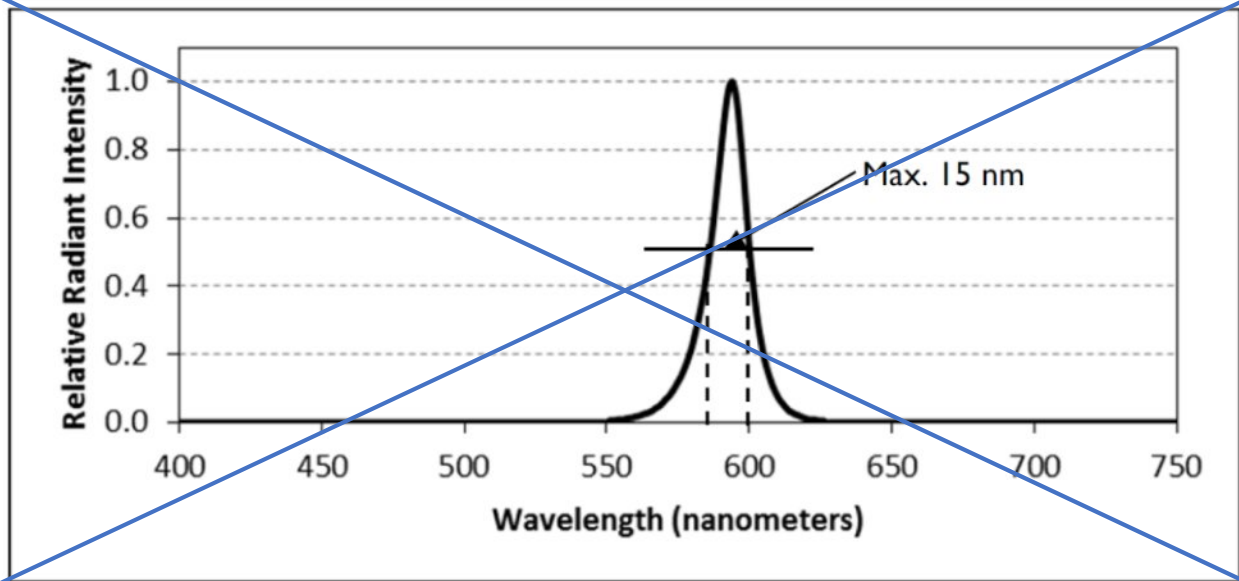
Fully Shielded Light Fixture: See “Light Fixture, Fully Shielded.”

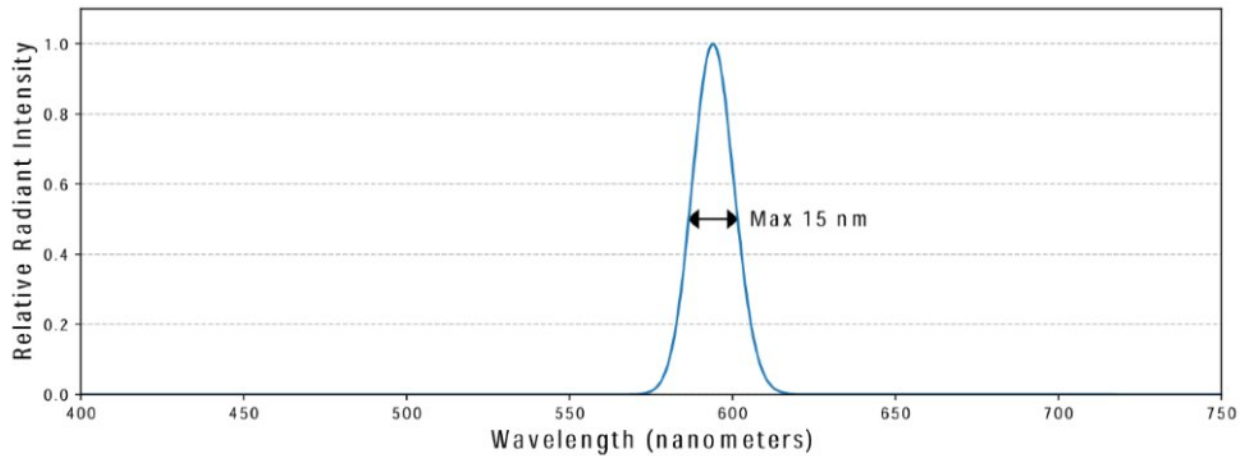
Fully Shielded Light Fixture: See “Fixture, Fully Shielded.”

### 10-80.20.120 Definitions, “L”

~~LED, Narrow-Spectrum Amber: A light-emitting diode (LED) with a spectrum similar to that shown in the graph below, and with a peak wavelength between 585 and 595 nanometers and a full width at 50 percent power no greater than 15 nanometers.~~

**LED, Narrow-Spectrum Amber: A light-emitting diode (LED) with a peak wavelength between 589 and 595 nanometers and a full width at 50 percent power no greater than 15 nanometers.**





Light Fixture: [See “Light Fixture, Outdoor.”](#)

### 10-80.20.150 Definitions, “O”

**Outdoor Light Output, Total:** The maximum total amount of light, measured in lumens, from all outdoor light fixtures. Includes all lights and luminous tubing used outdoors or in areas open to the outdoors, and lights used for external illumination of signs, but does not include lights used inside of internally illuminated signs or luminous tubing used in neon signs. For luminous tubes used outside of signage, output is calculated per linear foot of tubing rather than per lamp. For lamp types that vary in their output as they age (such as high pressure sodium, metal halide and fluorescent), the initial output, as defined by the lamp manufacturer, is the value to be considered.

**Outdoor Light Output, Total:** The maximum total amount of light, measured in Lumens, from all Outdoor Light Fixtures. Includes all outdoor lights and luminous tubing used in areas open to the outdoors, and lights used for external illumination of signs, but does not include lights used inside of internally illuminated signs, luminous tubing used in neon signs, and street and pedestrian lighting installed on public rights-of-ways or private street tracts in accordance with Title 13, Engineering Design Standards and Specifications for New Infrastructure. The total Lumens of each Outdoor Light Fixture used to calculate the Total Outdoor Light Output is:

- (1) The total initial Lumen output listed by the manufacturer of an integral solid-state LED Outdoor Light Fixture;
- (2) The initial Lumen output for all outdoor luminous tubes (e.g., neon and fluorescent tubes and rods) calculated per linear foot;
- (3) The initial Lumen output (i.e., bulb lumens) listed by the manufacturer of all replaceable Edison Socket, or other screw-in, plug in, etc., LED bulbs used in an Outdoor Light Fixture multiplied by 0.70.; and
- (4) The initial Lumen output (i.e., bulb lumens) of all other outdoor bulb light sources (i.e., non-LED) included as part of an Outdoor Light Fixture multiplied by 0.70.

## 10-90.40.020 Lighting Zone Map

