

Outdoor Lighting  
Zoning Code Text Amend to the Flagstaff Zoning Code.

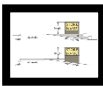
Notice: Until this amendment is adopted by the City Council, nothing in the draft is final. The provision of this draft may all be changed before the final version based on the feedback received by the public, boards and commissions, City Council and staff. A legal review of this document has not yet been completed.

**HOW TO READ THIS DOCUMENT**


Unless otherwise stated, provisions that are being deleted are shown in bold red strikethrough text, like this: ~~Provisions that are being deleted are shown with a bold red strikethroughs text.~~

Provisions that are being added are shown in bold blue text, like this: **Provisions that are being added are shown in bold blue text.**

Graphics/Figures that are being deleted are indicated with an "X" over the graphic/figure.

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Section 1. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-20.60 Nonconforming Provisions, Section 10-20.60.040 Residential Exemptions, as follows:

- A. 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~~ **Building, Fire, and Outdoor Lighting** Code requirements.

Section 2. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-20.60 Nonconforming Provisions, Section 10-20.60.080 Nonconforming Outdoor Lighting, as follows:

**10-20.60.080 Nonconforming Outdoor Lighting**

- A. **General. In addition to provisions Division 10-20.60, the use of non-conforming outdoor lighting on a development site shall comply with the following:**
  - 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~~ in accordance with **Table 10-50.70.130.B.1.** by an automatic shut-off device.

2. No **addition**, modification or replacement shall be made to a nonconforming outdoor **light fixture luminaire** unless the **fixture luminaire** 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 with Division 10-50.70 as necessary for the entire building, structure or premises.~~

Section 3. Amend Title 10 FLAGSTAFF ZONING CODE, to repeal Division 10-50.70: Outdoor Lighting Standards all sections therein, adopt Division 10-50.70: Outdoor Lighting Standards and all sections herein, as follows:

### **Division 10-50.70: Outdoor Lighting Standards**

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

- A. Purpose.** This Division is to help assure that dark skies remain a resource to be enjoyed by the Flagstaff community and its visitors, to provide safe and efficient outdoor lighting regulations, minimize light pollution and light trespass across property lines, maintain an environment that the City's astronomical industry depends upon, to reduce energy consumption, and the potential disruption to nocturnal ecosystems.

#### **10-50.70.020 Compliance with Code and Permit Requirements.**

- A.** A property owner shall obtain an Outdoor Lighting Permit prior to the installation of an outdoor luminaire. All outdoor luminaires shall be installed in conformance with the provisions of this Division and Title 4, Building Regulations, of the City Code.

#### **10-50.70.030 Outdoor Lighting Exemptions.**

- A. Exemptions.** The following uses of outdoor lighting are exempt from the provisions of this Division:

1. *Airport Lighting.*
  - a. Luminaires used in navigational lighting systems at airports (Arizona Revised Statutes (A.R.S.) §49-1105, as amended).
  - b. Luminaires used for the safe and efficient movement, loading, unloading, and servicing of aircraft.
2. *Emergency Lighting.*
  - a. Luminaires provided in accordance with the Building and Fire Codes that only illuminate for emergency purposes.
  - b. Searchlights, floodlights, laser source lights, strobe or flashing lights, or any similar lights used in emergency situations by police, fire, medical, military, or utility personnel, or at their direction.

3. *Fenestrations*. Illumination that exits through a fenestration (windows, doors, etc.) from luminaires within a structure, except for parking garages.
4. *Internally Illuminated Signs*. Luminaires that are internal to a sign that illuminate a sign face, graphic, or letters.
5. *Public Street Rights-of-Way and Private Street Tracts*. Street lights used to illuminate public street rights-of-way and private street tracts (excluding driveways) that are installed and operated in accordance with the City's street light requirements of Title 13 of the City Code.
6. *Seasonal Light Decorations*. Low voltage seasonal light decorations used between October 15<sup>th</sup> to January 15<sup>th</sup> of the following year.
7. *Solar-Powered Luminaires*. Luminaires that operate on a total of five watts, or less, to illuminate landscaping plants or walkways.

#### **10-50.70.040 Prohibitions.**

- A. Mercury Vapor Luminaires.** In accordance with A.R.S. §49-1104, as amended, the sale and installation of mercury vapor outdoor luminaires or illumination sources, including the replacement of equipment and mercury vapor lamps, is prohibited within the City of Flagstaff. The provisions of this subsection shall not apply to outdoor light systems erected prior to 1950.
- B. Architectural and Landscape Illumination.** A luminaire with the illumination directed greater than 45 degrees, measured from the center of the light beam perpendicular to the ground (greater than 45 degrees Nadir), or upwards onto a structure or plant is prohibited.
- C. Outdoor Floodlight Luminaires.** Partially-shielded luminaires with the illumination aimed or projected at an angle greater than 45 degrees, measured from the center of the light beam perpendicular to the ground (greater than 45 degrees Nadir), are prohibited.
- D. Search, Flood, Laser, or Any Similar High Intensity Discharge Luminaires.** The use of these luminaires is prohibited, except when used for meteorological data gathering, and for emergency purposes indicated in Section 10-50.70.030.A.2.
- E. Fading, Flashing, Blinking, Rotating, or Strobe Luminaires.** The use of these luminaires located on the exterior of a building, or on the inside of a window that is visible beyond the property line of a development site, is prohibited.
- F. Outdoor Unshielded Luminaires.** Unshielded luminaires are prohibited, except when used for a purpose indicated in Section 10-50.70.030.
- G. Prohibited Lenses.** The use of a clear prismatic diffuser lens is prohibited.

#### **10-50.70.050 Outdoor Illumination for New Developments, Major and Minor Additions or Modifications to an Existing Development, and Changes of Use.**

- A. Illumination of New Structures and New Development Sites.** The provisions of this Division shall apply.
- B. Major Additions or Modifications to a Structure or a Development Site, Including Changes of Use, after August 5, 1999.** The provisions of this Division shall apply to:
  1. A single or cumulative total increase equal to, or greater than, 25% of the:
    - a. Existing: dwelling units, gross floor area, seating capacity, or parking spaces;
    - b. Required parking spaces; or
    - c. Lumens that are allowed on the development site in accordance with Section 10-50.70.090.
  2. A single or cumulative replacement equal to, or greater than, 25% of the total number of:

- a. Outdoor lamps with a non-conforming illumination source.; or
- b. Non-conforming luminaires.

**C. Minor Additions or Modifications to Existing Buildings and Development Sites, including Changes of Use, after August 5, 1999.**

- 1. Additions and modifications not described in subsection B., above, are minor.
- 2. All new or replaced outdoor luminaires installed on a building or development site shall comply with the requirements of this Division.
- 3. The total lumens of all exterior luminaires, new and existing, on a development site shall not exceed the amount allowed in Section 10-50.70.090, or the non-conforming amount currently on the development site, whichever is greater. The lumens used on a development site shall be calculated in accordance with Section 10-50.70.080.

**10-50.70.060 Establishment of Lighting Zones**

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

**10-50.70.070 Allowed Illumination Sources.**

**A. All Development Sites, Including Common Areas, and Excluding an Attached or Detached Single-Family Dwelling Unit, and a Duplex Dwelling Units, on an Individual Lot or Parcel.**

- 1. A minimum of 90% of a development site's allowed outdoor lumens shall be from a narrow spectrum amber light emitting diode (NSALED) illumination source or an equivalent approved by the Director, unless another light source is allowed as a Special Use, Section 10-50.70.100.
- 2. A maximum of 10% of a development site's allowed outdoor lumens may be from an illumination source that has a Correlated Color Temperature (CCT) of 3,000 degrees kelvin (k), unless a greater amount is allowed as a Special Use, Section 10-50.70.100.

**B. Attached or Detached Single-Family Dwelling Unit, and a Duplex Dwelling Units on An Individual Lot or Parcel.** The illumination source of the exterior luminaires on these sites shall use an illumination source with a Correlated Color Temperature (CCT) of:

- a. 2,700 kelvin (k), or less, in lighting zone one, and
- b. 3,000 k in, or less, in lighting zones two and three.

**10-50.70.080 Computation of the Total Outdoor Lumens Allowed on a Development Site.**

**A. Total Outdoor Lumens Used on a Development Site.**

- 1. A luminaire's lumen output shall be used to calculate the total outdoor lumens used on a development site.
- 2. The total outdoor lumens used on a development site shall be equal to the total lumens for each luminaire source type multiplied by the lumen multiplier identified in Table 10-50.70.080.A.1., and added the resultants together.

<b>Table 10-50.70.080.A.1.</b>	
<b>Luminaire Source Lumens Multiplier</b>	
Luminaire Source Type	Lumen Multiplier <sup>1</sup>
Integrated Solid-State LED Luminaires (ISSLED)	100%
Replaceable LED Lamps (RLED)	85%
All Other Lamp Types (AOLT)	70%
<b>End Notes:</b>	
1. The Total Initial Lumens (TIL) of each luminaire source type shall be calculated before applying the Lumens Multiplier.	

- a. When using more than one illumination source, the total lumens used on a development site is calculated as follows:

$((\text{TIL ISSLED} \times 100\%) + (\text{TIL RLEDL} \times 85\%) + (\text{TIL AOLT} \times 70\%)) = \text{Total Lumens Used on the Development Site.}$

TIL ISSLED = Total initial lumens of integrated solid-state LED luminaires

TIL RLED = Total initial lumens of replaceable LED lamps

TIL AOLT = Total initial lumens of all other lamp types

Example:

The total initial lumens on a development site includes:

100,000 = TIL ISSLED lumens

10,000 = TIL RLED lumens

10,000 = TIL AOLT initial lumens

$((100,000 \times 100\%) + (10,000 \times 85\%) + (10,000 \times 70\%)) = 115,500 \text{ Total Lumens Used on the Development Site.}$

**10-50.70.090 Maximum Allowed Outdoor Lumens.**

**A. All Development Sites, Including Common Areas, and Excluding an Attached or Detached Single-Family Dwelling Unit, and a Duplex Development, on an Individual Lot or Parcel.**

1. The total allowed outdoor lumens on a development site shall be the site's total development site area multiplied by the amount indicated in Table 10-50.70.090.A. for the site's corresponding lighting zone.

<b>Table 10-50.70.090.A:</b>			
<b>Total Allowed Outdoor Lumens per Acre</b>			
<b>Standard</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>

Total Lumens Per Acre	17,500	35,000	70,000
Allowed Lumens on Lots Less Than One Acre	7,000	10,000	15,000

2. Alternative outdoor illumination on development sites less than one acre may approved in accordance with Sections 10-50.70.140. and 10-50.70.150.

**B. Attached or Detached Single-Family Dwelling Unit, and a Duplex Development, on an Individual Lot or Parcel.** The total allowed lumens on an individual lot or parcel shall not exceed the amount indicated in Table 10-50.70.090.B. for the site’s corresponding lighting zone.

<b>Table 10-50.70.090.B.</b>			
<b>Attached or Detached Single-Family Dwelling Unit, and a Duplex Dwelling Units, on an Individual Lot or Parcel, Total Allowed Outdoor Lumens on</b>			
<b>Standard</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
Single-Family Development – Attached Dwelling Unit on an Individual Lot or Parcel	5,500	5,500	5,500
Single-Family Development – Detached Dwelling Unit on an Individual Lot or Parcel	7,000	7,000	7,000
Residential Duplex Development on an Individual Lot or Parcel	11,000	11,000	11,000

**C. Maximum Allowed Outdoor Partially-Shielded Luminaire Lumens.** In accordance with the site’s lighting zone designation, the maximum outdoor partially-shielded lumens on a development site shall not exceed the amount specified in Table 10-50.70.090.C.

<b>Table 10-50.70.090.C.</b>			
<b>Maximum Allowed Outdoor Partially-Shielded Lumens on Development Site</b>			
<b>Standard</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
Commercial, Industrial, and Multiple-Family Residential on an Individual Lot or Parcel	0	10% of the total allowed lumens pursuant to Section 10-50.70.090.A.	5% of the total allowed lumens pursuant to Section 10-50.70.090.A.
Single-Family Development – Attached Dwelling Unit on an Individual Lot or Parcel	0	2,100 lumens <sup>1</sup>	2,100 lumens <sup>1</sup>
Single-Family Development – Detached Dwelling Unit on an Individual Lot or Parcel	0	2,800 lumens <sup>1</sup>	2,800 lumens <sup>1</sup>
Residential Duplex Development on an Individual Lot or Parcel	0	4,200 lumens <sup>1</sup>	4,200 lumens <sup>1</sup>
<b>Notes:</b>			
1. A luminaire that emit more than 1000 lumens shall be fully shielded.			

**Example:**

A Single-Family Development – Detached Dwelling Unit on an individual lot or parcel is allowed a total of 7,000 lumens (pursuant to Table 10-50.70.090.B.). Of the 7,000 lumens allowed, a maximum of 2,800 lumens (pursuant to Table 10-50.70.090.C.) may be emitted from a partially-shielded luminaire. Therefore, the remaining 4,200 lumens that are allowed may only be emitted from a fully-shielded luminaire.

**D. Split Parcels.** The total allowed lumens on a parcel located in more than one of the lighting zones shall be equal to the area of the development site located in each zone, multiplied by the corresponding lighting zone lumen allowance, and added together.

**10-50.70.100 Outdoor Illumination of Special Uses.**

**A. General Requirements for All Special Uses.**

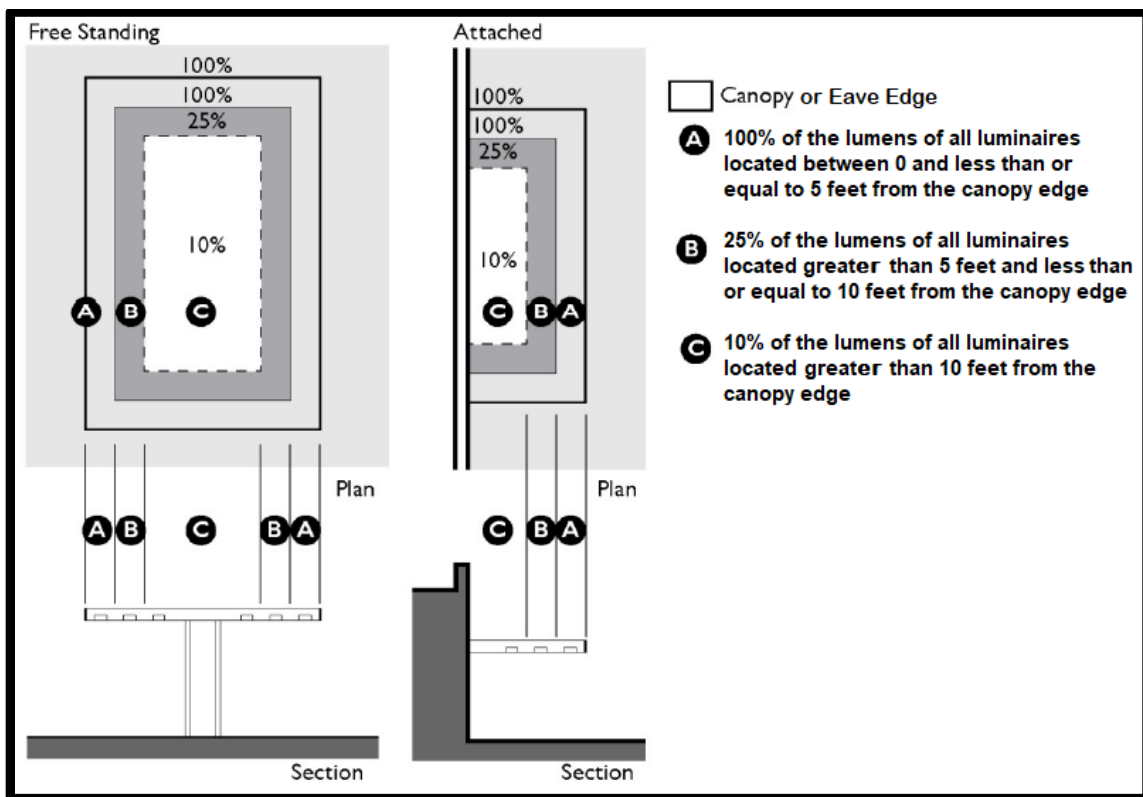
1. *Computation of Lumens.* The lumens of all luminaires of a Special Use shall be included in a development site’s total lumens, unless a different amount is specified in subsection B, below.
2. *Luminaire Shielding.* All luminaires of a Special Use shall be fully-shielded unless a different shielding requirement is allowed in subsection B, below.
3. *Illumination Source Correlated Color Temperature (CCT).* The illumination source of a luminaire for a Special Use, except for outdoor sports and recreational areas, shall have a CCT of:
  - a. 2,700 kelvin (k), or less, in lighting zone one, and
  - b. 3,000 k in, or less, in lighting zones two and three.

**B. Specific Requirements for Special Uses**

1. *Architectural Elements, Flags, Monuments, Plants, and Other Structures.*
  - a. The lumens produced by the luminaire(s) that is/are internal to a structure, and used to illuminate the structure’s external surface, shall be counted as partially-shielded lumens.
  - b. The use of exterior luminaires that change illumination colors is allowed. There shall be a minimum of two minutes between each color change.
  - c. External luminaires used to illuminate the surface of an architectural element, flag, monument, landscape plant, or other structure, shall conform with the requirements of Table 10-50.70.100.B.1.c.

<b>Table 10-50.70.100.B.1.c.</b>			
<b>Luminaire Shielding Requirements for Special Uses Indicated in Section 10-50.70.100.B.1.</b>			
<b>Luminaire lumens</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
All luminaires with an output greater than, or equal to, 2,500 total lumens <sup>1</sup>	Prohibited	Fully-Shielded	Fully-Shielded
All luminaires with an output less than 2,500 total lumens <sup>1</sup>	Fully-Shielded	Fully-Shielded or Partially-Shielded	Fully-Shielded or Partially-Shielded
<b>Notes:</b>			
1. For the purposes of determining the total lumens of a luminaire assembly, see Figure 10-50.70.110.A.			

2. *ATMs and Bank Deposit Drop Boxes, Meant to be Accessed by a Pedestrian.* Luminaires located 15 feet, or less, from the nearest edge of an ATM or bank deposit drop box may utilize an illumination source other than NSALED.
3. *Canopies and Eaves.*
  - a. The outside fascia of a canopy or eave shall not be illuminated.
  - b. Luminaires shall not be mounted to the outside fascia of a canopy or eave.
  - c. A luminaire shall be mounted to the underside of a canopy or eave so that it is completely recessed into the canopy or eave. The luminaire shall contain a flat lens that is translucent and flush with the bottom surface (ceiling) of the canopy or eave.
  - d. The lumens emitted by a luminaire mounted to the bottom surface (ceiling) of an opaque eave or canopy added to the total lumens used on a development site shall be calculated based on the luminaire's location in accordance with Figure 10-50.70.100.B.3.d.



**Figure 10-50.70.100.B.3.d.**

**Calculations of the Total Lumens for Luminaires Under an Opaque Canopy and Eave**

- e. **Maximum Lumens Used Under an Opaque Canopy or Eave:**
  - (1) Lighting Zone 1: 15 lumens per square foot of canopy area.
  - (2) Lighting Zones 2 and 3: 30 lumens per square foot of canopy area.
4. *Infrared Outdoor Security luminaires.*
  - a. Partially shielded luminaires with movable spot lights attached to infrared surveillance cameras shall have integral limitations to prevent the spot lights from being directed less than, or equal



to, 80 degrees, measured from the center of the light beam perpendicular to the ground (less than, or equal to 80 degrees Nadir).

5. *Motion Sensor Outdoor Security Luminaires.*

- a. A luminaire with a total output of 900 lumens, or less, in Lighting Zone 1, and 1,600 lumens, or less, in Lighting Zones 2 and 3, are exempt from a development site's total lumens, provided that the luminaire operate for a maximum of fifteen minutes from activation, and the luminaire is turned off by an automatic shut-off device.

- (1) A maximum of one luminaire that complies with the standards of 5.a., above, may be exempted from the allowed lumens on a single-family development (attached or detached), or duplex residential on an individual lot or parcel.

- b. The luminaire(s) shall be partially-shielded, and the illumination shall be directed less than, or equal to, 45 degrees, measured from the center of the light beam perpendicular to the ground (less than, or equal to 45 degrees Nadir).

6. *Outdoor Areas for Display, Eating and Drinking, and Sales.*

- a. The illumination of outdoor areas for display, eating and drinking, or sales shall be substantially confined to the area indicated on the plan approved by the Planning Department.

- b. An outdoor eating and drinking patio that is equal to, or less than, 500 square feet, and is located on a development site that is less than an acre, is allowed the following lumens in addition to the allowance specified in Table 10-50.70.090.A:

- (1) Lighting Zone 1: 5 lumens per square foot.

- (2) Lighting Zones 2 and 3: 10 lumens per square foot.

- c. String luminaires that are used to illuminate an outdoor eating and drinking area in:

- (1) Lighting Zone 1 shall be fully-shielded; and

- (2) Lighting Zones 2 and 3 shall be fully- or partially-shielded.

7. *Outdoor Loading Docks, Repair and Service Uses.* Where work occurs at night on a regularly scheduled basis, the illumination for these uses shall be confined to the area indicated on the plan approved by the Planning Department.

8. *Outdoor Sports and Recreational Areas.*

- a. Lighting Zone 1: Outdoor lumens used to illuminate the delineated sports and recreational areas shall be added to the development site's total lumens.

- b. Lighting Zones 2 and 3: Outdoor lumens used to illuminate the delineated sports and recreational areas are exempt from a development site's total lumens.

- c. The exterior illumination system shall be designed with illumination levels no greater than the recommendations specified for Class IV play in accordance with the recommended practices published by the Illuminating Engineering Society of North America, IES RP6-15 – Sports and Recreational Area Lighting, as amended; and

- d. The exterior illumination system shall be designed by an engineer registered in the State of Arizona. The registered engineer shall certify that the light system is designed in accordance with the requirements of this Division. Upon installation of the light system, a registered engineer shall verify that the installation is consistent with the design approved by Director.

9. *Parking Garages.*

- a. Lumens of a luminaire used to illuminate the interior of a parking garage that are to be included in the total lumens used on a development site shall be calculated based on the luminaire's

location in relation to an opening in a garage's façade in accordance with Figure 10-50.70.100.B.9.a.

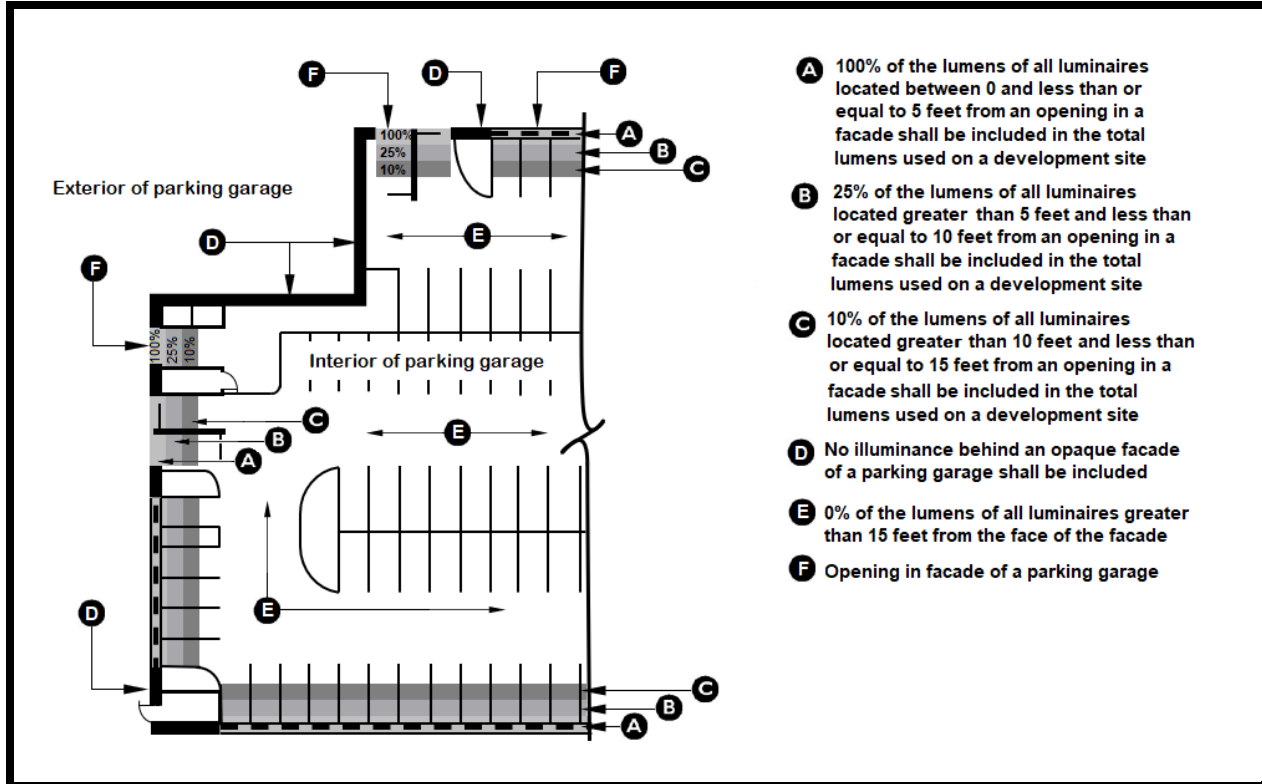


Figure 10-50.70.100.B.9.a.

### Calculation of Total Lumens of the Luminaires Located Inside of Parking Garage

- b. One hundred percent of all lumens of all luminaires mounted to illuminate any floor or ramp of a parking garage that its surface is exposed directly to the sky above shall be included in the development site's total lumens.
- c. The luminaire(s) used to illuminate any floor or ramp of a parking garage that its surface is exposed directly to the sky above shall have a narrow-spectrum amber LED light source
- d. The all luminaires on a floor or ramp that has openings that are unobstructed to the outdoors shall be fully-shielded.

#### 10. Pedestrian Entries/Exits for Travel Accommodations.

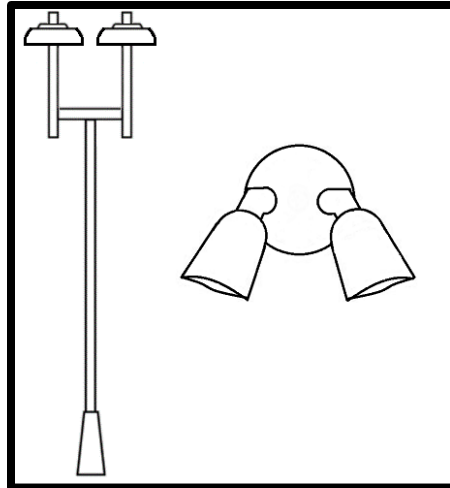
- a. When this Special Use provision is utilized:
  - (1) The luminaire shall be located five feet, or less, from the center of the primary pedestrian entry/exit doorway that provides direct access from an outdoor hallway or breezeway; and
  - (2) Each luminaire shall have a maximum total lumen output of 600 lumens in Lighting Zone 1, or 1,200 lumens in Lighting Zones 2 and 3.
- b. A luminaire for a patio or balcony entry/exit doorway is not included as a Special Use.

11. *Signs, External Illumination.* The maximum lumens used to illuminate each sign face shall conform to the amount indicated in Table 10-50.70.140.A.4. for the property's designated lighting zone. The lumens of all luminaires used shall be included in a development site's total lumens.
12. *Other Special Uses.* These Director may allow other Special Uses where it is found that color rendition is essential to the use or activity.

**10-50.70.110 Luminaire Shielding Requirements.**

- A. General Requirements.** A luminaire's illumination source shall be shielded so that it is not visible from offsite. In addition, the standards of Table 10-50.70.110.A., subsection B, below, shall apply.

<b>Table 10-50.70.110.A.:</b>			
<b>Luminaire Shielding Requirements by Lighting Zone</b>			
<b>Non-residential and Mixed-Use Development Sites</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
All luminaires with an output less than 1,000 lumens <sup>1</sup>	FS	FS/PS	FS/PS
All luminaires with an output greater than, or equal to, 1,000 lumens <sup>1</sup>	FS	FS	FS
<b>Residential Only Development Sites</b>			
All luminaires with an output less than 1,000 lumens <sup>1</sup>	FS	FS/PS	FS/PS
All luminaires with an output greater than, or equal to, 1,000 lumens <sup>1</sup>	FS	FS	FS
<b>Key:</b>			
FS = Only Fully-Shielded luminaires are allowed			
FS/PS = Fully-Shielded and Partially-Shielded luminaires allowed.			
<b>Notes:</b>			
1. For purposes of determining the lumens emitted from a luminaire assembly (See Figure 10-50.70.110.A.) that includes multiple luminaires on a single pole, chandler, column or similar structure, the sum of the lumens emitted of each luminaire shall be added together, and considered as a single luminaire.			



**Figure 10-50.70.110.A.**

**Light Fixture Assembly with Multiple Luminaires**

**B. Shielding and Backlight, Uplight, and Glare (BUG) Rating .**

1. Outdoor luminaires within 40 feet of residential development site, excluding a mixed-use development, or the right-of-way, shall be fully shielded, have a Luminaire Classification System (LCS) BUG rating with B = 1, or less, and oriented with the back of the fixture toward the right-of-way and any nearest residential development site.
2. Any light fixture mounted to a pole or building wall within five feet of a required building setback or landscape buffer area that is adjacent to a residential development site, excluding a mixed-use development site, shall be fully shielded and have an LCS BUG rating of B = 0, and G = 1 or less.
3. The surface of any shield attached to the exterior of the luminaire shall have a finish that is flat black or dark bronze.

**10-50.70.120 Light Trespass Standards**

**A. Luminaire Aim.** All outdoor luminaires shall be aimed so that the direct illumination from the luminaire is substantially confined to the development site on which it is mounted.

**B. Maximum Light Trespass.**

1. The maximum vertical illuminance at six feet above a property line between a development site that contains a residential use and a development site of any other use shall not exceed 0.1 foot-candles.
2. The maximum vertical illuminance at six feet above a property line between any development site containing any use, other than a residential use, shall not exceed 0.3 foot-candles.
3. The maximum vertical illuminance at six feet above a property line between a development site and the public right-of-way or private street tract shall not exceed 0.1 foot-candles.
4. The light trespass vertical illuminance foot-candle reading shall be measured perpendicular to the ground and toward the interior of the property from which the light source originates.
5. The light source used on a residential lot or parcel shall not be visible from an adjacent residential lot or parcel.

**10-50.70.130 Additional Requirements.**

**A. Freestanding and Pole Mounted Luminaires in Lighting Zone 1.** A maximum of 50% of the total allowed lumens on a development site may be emitted from a freestanding or pole mounted luminaire (i.e. a luminaire that is not directly mounted to side of a building, or the underside of a building eave, overhang, or opaque canopy).

**B. Outdoor Lighting Curfews.**

1. All luminaires with an illumination source other than NSALEd, or an approved equivalent, shall be turned off by an automatic shut-off device at the times indicated in Table 10-50.70.130.B.1., or no later than one hour after the business closes, whichever is later, except for outdoor sports and recreational areas.

<b>Table 10-50.70.130.B.1.</b>			
<b>Outdoor Lighting Curfews</b>			
<b>Standard</b>	<b>Lighting Zone1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
Time when outdoor luminaires shall be turned off	9:00 p.m.	11:00 p.m.	11:00 p.m.

2. All luminaires used to illuminate outdoor sports and recreational areas shall be turned off no later than one hour after the end of the facility use, or no later than the time indicated in Table 10-50.70.130.B.1., whichever is earlier.
3. All luminaires with an NSALEd illumination source, or an approved equivalent, located more 50 feet from a building shall be turned off by an automatic shut-off device at the times indicated in Table 10-50.70.130.B.1., or no later than one hour after the business closes, whichever is later.

**C. Parking Lots and Drive Aisles.**

1. *Exceptions.* The replacement of existing luminaires with NSALEd luminaires in a parking lot that contains fewer than 100 spaces is exempt from the requirements of Table 10-50.70.130.C.1. if additional lumens are not being added.
2. *Requirements.* In accordance with the site’s lighting zone designation, the maximum horizontal maintained average foot-candles across the surface of parking lots and drive aisles shall not exceed the foot candle amount specified in Table 10-50.70.130.C.1

<b>Table 10-50.70.130.C.1.</b>			
<b>Maximum Horizontal Maintained Average Foot-Candles</b>			
<b>Standard</b>	<b>Lighting Zone1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
Parking Lots and Drive Aisles	1-foot candle <sup>1</sup>	1.5-foot candles <sup>1</sup>	2-foot candles <sup>1</sup>
<b>Notes:</b>			
1. The maintained average foot-candle calculations shall be based on the light loss factors indicated in Section 10-50.70.140.B.1.a.			

**D. Pole Colors.** All light poles shall have flat black or dark bronze finish.

**E. Luminaires Adjacent to Residential Development Sites.** Any light fixture mounted to a pole or building wall within five feet of a required building setback or landscape buffer area shall not exceed a height greater than 12 feet measured from the ground below the luminaire to the bottom of the luminaire.

**10-50.70.140 Outdoor Illumination for Development Sites Less than One Acre.**

**A. Exceptions.** This section shall not apply to common areas, attached and detached single-family, and duplex residential development on individual development site.

**B. Alternative Outdoor Illumination Methodology.** On development sites less than one acre, the property owner is allowed the total lumens specified in Table 10-50.70.90.A., or the Director may approve an outdoor lighting design that complies with the following:

1. The maintained average foot-candle quotient across the surface of a parking lot and drive aisles shall not exceed the amount for the property’s lighting zone indicated in Table 10-50.70.130.C.1.;
  - a. The Light Loss Factors (LLF) used to calculate the maintained foot-candle quotients for a luminaire source(s) shall comply with the following:
    - (1) Luminaires with integrated solid-state LEDs: 0.90.
    - (2) Luminaires with replaceable LED lamps: 0.85.
    - (3) Luminaires with all other lamp types: 0.70.
2. The ratio between the average maintained foot-candle quotient to the maximum foot-candle across the surface of a parking lot, excluding drives from the street the parking lot, shall be equal to, or less than, 1:4;
3. The ratio between minimum foot-candle to the maximum foot-candle across the surface of a parking lot, excluding drives from the street the parking lot, shall be equal to, or less than, 1:15;
4. The total lumens used to illuminate the ground within 10 feet of any pedestrian entry/exit shall not exceed the amount indicated in Table 10-50.70.140.B.4. for the property’s lighting zone. The specified distance shall be measured horizontally from the center of the pedestrian entry/exit to the luminaire;

<b>Table 10-50.70.140.A.4.</b>			
<b>Alternative Allowed Lumens by Lighting Zone</b>			
<b>Standard</b>	<b>Lighting Zone 1</b>	<b>Lighting Zone 2</b>	<b>Lighting Zone 3</b>
Primary/public pedestrian entries/exits	1000 lumens per entry	2000 lumens per entry	3000 lumens per entry
All other pedestrian entries/exits	500 lumens per entry	1000 lumens per entry	2000 lumens per entry
Signs, external illumination	900 lumens per sign face	1600 lumens per sign face	1600 lumens per sign face

4. All luminaires shall be fully-shielded; and
5. The illumination source of the luminaire(s) used to illuminate the primary/public pedestrian entry/exit shall have a CCT of 3,000 k, or less.

**10-50.70.150 Fuel Stations on Development Sites Less than One Acre.**

- A. Alternative Outdoor Illumination Methodology.** On development sites less than one acre, the property owner is allowed the total lumens specified in Table 10-50.70.80.A., or the Director may approve an outdoor lighting design that complies with the following:
1. The average maintained foot-candle across the surface of a parking lot and drive aisles shall comply with Section 10-50.70.140. The luminaires used to calculate the maintained average foot-candle quotient may exclude the luminaires mounted to underside of the opaque canopy.
  2. The average maintained foot-candle directly below an opaque canopy used to cover the fuel dispensing equipment and vehicle spaces abutting the equipment shall not exceed:
    - a. Lighting Zone 1: 10 foot-candles.
    - b. Lighting Zones 2 and 3: 20 foot-candles.
  3. The Light Loss Factors (LLF) used to calculate the maintained average foot-candle quotients on the surface of the ground under the opaque canopy shall conform with Section 10-50.70.140.B.1.a., above.
  4. The luminaire mounted to the underside (ceiling) of the opaque canopy shall conform with the requirements of Section 10-50.70.100.B.3.a through Section 10-50.70.100.B.3.c.

**10-50.70.160 Temporary Lighting.**

- A.** Temporary lighting that does not conform with the provisions of this Division may be approved accordance with Section 10-20.40.100.

**10-50.70.170 Nonconforming Outdoor Lighting.**

- A.** See Section 10-20.60.080 regarding the standards and regulations for nonconforming outdoor lighting.

Section 4. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.030 Definitions “C”, to delete the terms: “Class 1 Lighting”, “Class 1 Lighting”, and “Class 1 Lighting”, and add the terms “Common Area” as follows:

**Section 10-80.20.030 Definitions “C”**

~~Class 1 Lighting: See “Lighting, Class 1.”~~

~~Class 2 Lighting: See “Lighting, Class 2.”~~

~~Class 3 Lighting: See “Lighting, Class 3.”~~

Section 5. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.180 Definitions “R”, to add the term “Residential Common Area”, as follows:

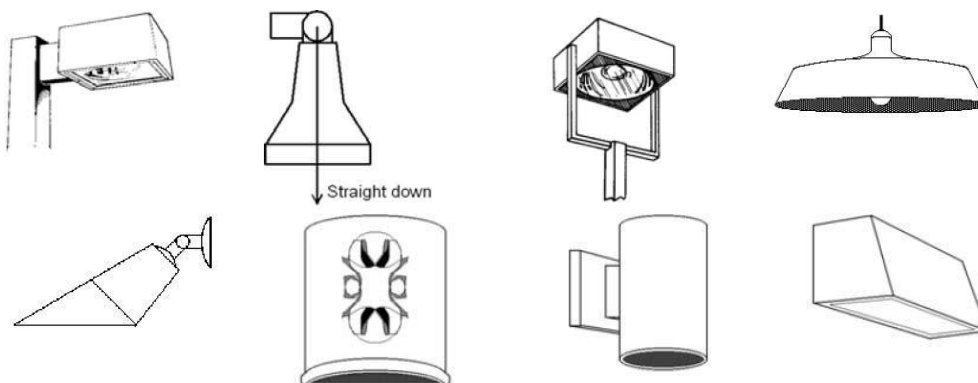
**Common Area:** is an improved or unimproved area of real property that includes a community/common facility, open space area, parking, recreational area, and a structure, that is intended for the use of all property owners, tenants, and their invited guests within a development site.

Section 6. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.060 Definitions “F”, “Fixture”, “Fixture, Fully Shielded”, “Fixture, Partially Shielded”, and “Fixture, Unshielded”, and relocate the terms to Section 10-80.20.120 Definitions, “L” in alphabetical order, as follows:

### Section 10-80.20.060 Definitions “F”

~~Fixture: See “Light Fixture, Outdoor.”~~

~~Fixture, Fully Shielded Luminaire, Fully-Shielded:~~ A light fixture is a luminaire or luminous tube constructed and mounted such that all light emitted ~~by the fixture or tube, either directly from the lamp, tube, or a diffusing element, or indirectly by reflection or refraction~~ from any part of the ~~light fixture, luminaire~~ is projected below the astronomical horizontal (90 degrees Nadir). The construction of the luminaire shall not include any feature that allows the luminaire to be angled or to project light above the horizon, and is manufactured as fully-shielded. If the ~~lamp or tube light source~~, any reflective surface, or lens ~~cover~~ (clear or prismatic) is visible when viewed from above or directly from the side, ~~from any angle around the fixture or tube~~, the ~~fixture luminaire~~ or tube is not ~~fully-shielded~~ fully-shielded. Examples of ~~fully-shielded~~ fully-shielded light ~~fixture luminaire~~ include, but are not limited to, those illustrated below (Note: to be ~~fully-shielded~~ fully-shielded these ~~fixture luminaires~~ must be closed on top ~~and sides~~, and mounted such that the bottom opening is horizontal):

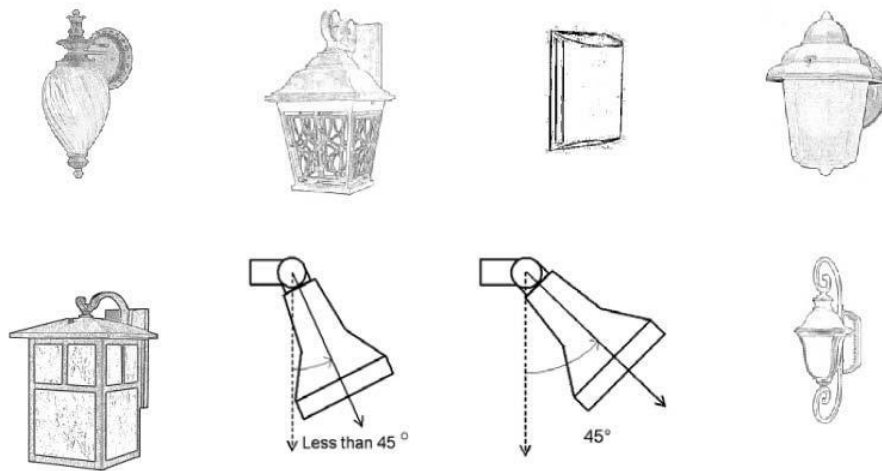


Examples of ~~fully-shielded light fixtures~~ Fully-Shielded Luminaires.

~~Fixture, Partially Shielded Luminaire, Partially-Shielded:~~ A ~~light fixture luminaire~~ constructed and mounted such that most light emitted by the ~~fixture luminaire~~, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the ~~fixture luminaire~~, is projected below the astronomical horizontal (90 degrees Nadir). Light emitted at or above the

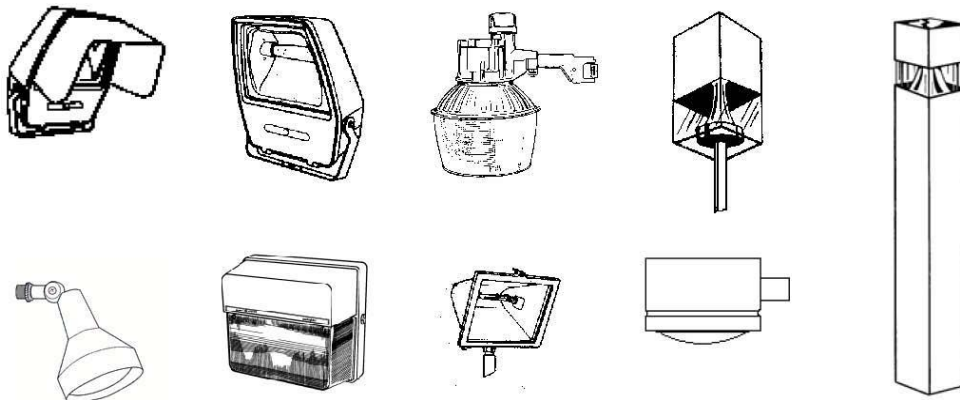


**astronomical** horizontal direction (sideways or upwards) arises only from incidental decorative **elements** elements, or colored glass or plastic that is **or** strongly colored or diffusing materials **such as** with a translucency equal to, or less than, “honey” **-or-colored-glass-or-plastic**. **Fixture A luminaire** using **spot-or spot**, flood lamps or LEDs are considered partially shielded if the lamps are aimed no higher than 45 degrees above straight down (half-way between straight down and straight to the side (**90 degrees Nadir**)). Examples of partially shielded **fixture luminaire** include, but are not limited to, those illustrated below:



Examples of **partially-shielded light fixtures** **Partially-Shielded Luminaires**.

**Fixture Luminaire**, Unshielded: A **light fixture luminaire** that is not **fully-shielded fully-shielded** or partially shielded. Examples of **fixture luminaires** that are unshielded include, but are not limited to, those illustrated below (Note: even though the lamp in these **fixture luminaires** is shielded from direct view when viewed from the side or above, reflective surfaces and/or lens covers are directly visible from the side):

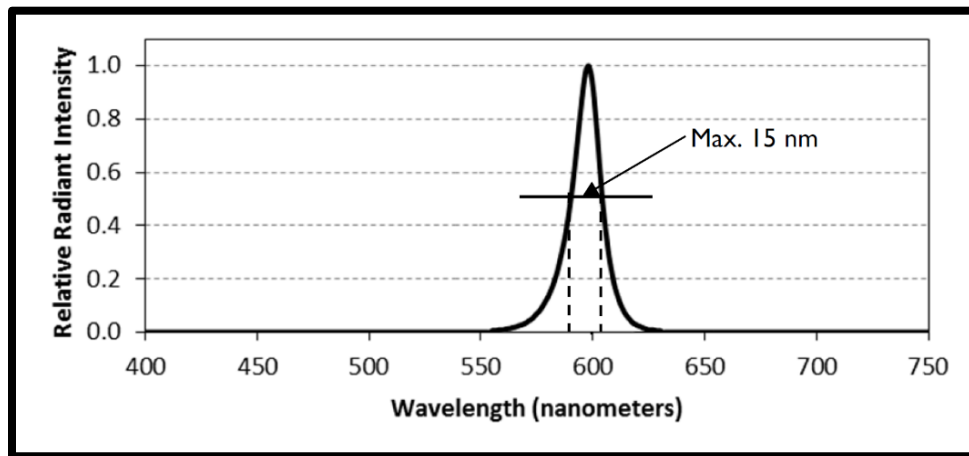
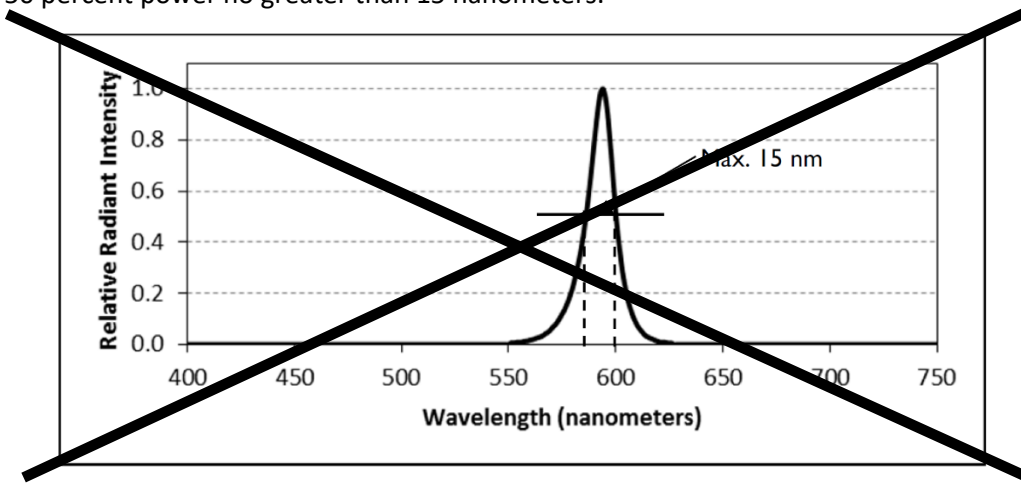


Examples of **unshielded light fixture** **Unshielded Luminaires**.

Section 7. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.120 Definitions, “L”, “LED, Narrow-Spectrum Amber”; to delete the terms “Lighting, Class 1”, “Lighting, Class 2”, “Lighting, Class 3”, “Light Fixture, Outdoor”, to modify “Luminaire”; and, to add the terms “Light Emitting Diode”, “Light Source” and “Luminaire, Integrated solid-state LED” in alphabetical order, as follows:

**Section 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~~ **590 and 600** nanometers and a full width at 50 percent power no greater than 15 nanometers.



**Representative Narrow-Spectrum Amber LED Spectrum**

~~Lighting, Class 1: All outdoor lighting used for applications where color rendition is required to preserve the effectiveness of an activity.~~

~~Lighting, Class 2: All outdoor lighting used for applications where general illumination for safety or security is the primary concern.~~

~~Lighting, Class 3: Any outdoor lighting used for decorative purposes.~~

~~Light Fixture, Outdoor : A complete lighting assembly (including the lamp, housing, reflectors, lenses, and shields), less the support assembly (pole or mounting bracket); a light fixture. Includes luminous tubes, lamps or similar devices, permanently installed or portable, used for illumination, decoration, or advertisement. Such devices shall include, but are not limited to, lights used for:~~

- ~~1. Parking lot or parking garage lighting;~~
- ~~2. Roadway and driveway lighting;~~
- ~~3. Pedestrian or walkway lighting;~~
- ~~4. Entryway lighting;~~
- ~~5. Buildings and structures;~~
- ~~6. Recreational areas;~~
- ~~7. Landscape lighting;~~
- ~~8. Billboards and other signs (advertising or other);~~
- ~~9. Product display area lighting;~~
- ~~10. Building or structure decoration; and~~
- ~~11. Building overhangs and open canopies.~~

Light Emitting Diode (LED): Is an electronic semiconductor device that emits light (“electromagnetic radiation”) when an electrical current is applied.

Light Source: is the filament of a lamp, LED, laser, and similar sources that emits light (“electromagnetic radiation”) as determined by the Zoning Administrator.

Luminaire: ~~See “Light Fixture, Outdoor.”~~ a complete lighting unit (including the lamp(s) or LEDs, housing, reflector(s), lense(s), and shield(s) used for illumination, decoration, or advertisement.

Luminaire, Integrated Solid-State LED: is a luminaire with solid-state LED illumination sources that are integrated into the construction of the luminaire, and are not intended to be removable.

Section 8. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.150 Definitions, “O”, to delete the term “Outdoor Light Output, Total”, as follows:

~~Outdoor Light Output, Total: The maximum total amount of light, measured in lumens, from all outdoor light fixture. 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.~~

Section 9. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.160 Definitions “P”, to delete the term “Partially Shielded Light Fixture”, as follows:

~~Partially Shielded Light Fixture: See “Fixture, Partially Shielded.”~~

Section 10. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.190 Definitions “S”, “Sign, Cabinet”, as follows:

**Sign, Cabinet:** A sign with its text and/or logo symbols and artwork on a translucent face panel that is mounted within a metal frame or cabinet that contains ~~the lighting fixtures which~~ **a luminaire that illuminate illuminates** the sign face from behind.

Section 11. Amend Title 10 FLAGSTAFF ZONING CODE, Division 10-80.20: Definition of Specialized Terms, Phrases, and Building Functions, Section 10-80.20.210 Definitions “U”, to delete “Unshielded Light Fixture”, as follows:

~~Unshielded Light Fixture: See “Fixture, Unshielded.”~~