

## SECTION 408. OUTDOOR LIGHTING CODE

### A. INCORPORATION BY REFERENCE

A.R.S., Title 49, Chapter 7, Light Pollution, § 49-1101 et seq., is hereby incorporated by reference.

### B. MISSION STATEMENT

To afford every citizen of Cottonwood the flexibility to engage in the pursuit of safe, inexpensive lighting practices for the purpose of commerce and private use without being impeded upon or impeding upon other citizens desiring a more pristine night time environment free from light pollution, waste, trespass, or clutter while providing nighttime safety, security and productivity.

### C. PURPOSE AND INTENT

1. 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. Principle among these concerns are
  - a. the degradation of the nighttime visual environment by production of unsightly and dangerous glare, and
  - b. Unnecessary waste of energy and resources in the production of too much light or wasted light, and
  - c. the use or enjoyment of property which is not intended to be illuminated at night, and
  - d. the loss of the often-neglected scenic view of the heavens due to increased urban skyglow.

It is hereby recognized that these different interests, those of safety and utility and those of aesthetic appearance, need not compete. Good modern lighting practices can provide adequate light for safety and utility without excessive glare of light pollution. In nearly all cases, careful attention to questions of when and where and how much nighttime lighting is needed, will lead to better lighting practice from all viewpoints.

2. It is also recognized that the topography and atmospheric conditions in northern Arizona are uniquely suited for government, military, commercial, and private astronomical observation in the area, and that unnecessary or excessive uses of outdoor nighttime lighting have an adverse impact on astronomical observation, even at relatively distant observatories.
3. Accordingly, it is the intent of this Code to encourage lighting practices and systems which will minimize light pollution, glare, light trespass, and conserve energy while maintaining nighttime safety, utility, security and productivity.

#### D. CONFLICTING REGULATIONS

In the event of conflict between the regulations set forth in this Code and any other regulations applicable to the same area, the more stringent limitation or requirement shall govern.

#### E. APPLICABILITY, EXEMPTIONS AND PROHIBITIONS

1. The provisions of this Code are not intended to prevent the use of any design, material or method of installation or operation not specifically prescribed by this Code, provided any such alternate has been approved by the Community Development Director and that such proposed alternate:
  - a. Provides at least equivalence to the applicable specific requirements of this Code; and
  - b. Is otherwise satisfactory and complies with the intent of this Code.

#### F. DEFINITIONS

As used in this Code, unless the context clearly indicates otherwise, certain words and phrases shall mean the following:

1. *Abandonment* means the discontinuation of use for a period of six months.
2. *Adaptive Controls* means hardware and/or electronics, used in conjunction with outdoor light fixtures, intended to dynamically alter or adjust the operation of those fixtures. Examples of adaptive controls include, but are not limited to, motion/occupancy sensors, dusk-to-dawn ('astronomical') timers and photocells.
3. *Class 1 Lighting* means all outdoor lighting used for but not limited to outdoor sales or eating areas, assembly or repair areas, advertising and other signs, recreational facilities and other similar applications where color rendition is important.
4. *Class 2 Lighting* means all outdoor lighting used for but not limited to illumination for walkways, roadways, equipment yards, and parking lots where general illumination of the grounds is the primary concern.
5. *Class 3 Lighting* means any outdoor lighting used for decorative effects, including but limited to architectural illumination, flag monument lighting, and illumination of trees, bushes, etc.
6. *Community Development Director* means the Director of Community Development for the City of Cottonwood or his or her designated representative.

7. *Correlated Color Temperature (CCT)* means the temperature of a source of blackbody radiation whose spectrum best approximates the spectrum of a particular light source, expressed in units of Kelvins. Lamps with a CCT greater than 4000 K are considered “cool” sources.
8. *Development Projects* means any residential, commercial, industrial or mixed use subdivision plan or individual building development or remodeling plan which shall be submitted to the City for approval.
9. *Direct Illumination* means illumination resulting from light emitted directly from a lamp, luminaire or reflector, not light diffused through translucent signs or reflected from other surfaces such as the ground, building faces, or luminaire optics.
10. *Footcandle (abbreviated 'fc')* means a unit of illuminance or illumination, equivalent to the illumination produced by a source with luminous intensity of one candela at a distance of one foot and equal to one lumen incident per square foot (approximately 10.764 lux).
11. *Fully Shielded Fixture* means that fixtures are shielded in such a manner that light rays emitted by the fixture, either directly from the lamp or indirectly from the fixture, are projected below a horizontal plane running through the lowest point on the fixture where light is emitted.
12. *Initial Lumens* means the lumens rating of a lamp at the time of manufacture, not accounting for losses due to normal lamp aging. Initial lumens are measured by manufacturers and provided along with product packaging.
13. *Installed* means attached, or fixed in place, whether or not connected to a power source.
14. *Light Trespass* is spill light falling over property lines that illuminates adjacent grounds or buildings in an objectionable manner.
15. *Lumen* is the unit used to measure the actual amount of visible light, which is produced by a lamp as defined by the manufacturer.
16. *Initial Lumens* means the lumens rating for a brand new light bulb. Initial lumens are typically given by the manufacturer’s specifications for lamps.
17. *Luminaire* means the complete lighting assembly, less the support assembly.
18. *Lux (abbreviated 'lx')* means a unit of illuminance or illumination equal to one lumen per incident square meter (approximately 0.093 fc).

19. *Multi-class Lighting* means any outdoor lighting used for more than one purpose, when the purpose fall under the definitions for two or more lighting classes as defined for Class 1, 2, and 3 Lighting above.
20. *Motion Sensing Lighting* means a fixture designed, and properly adjusted, to illuminate an area around a residence or other building by means of switching on a lamp when motion is detected inside an area or perimeter, and switching the lamp off when the detected motion ceases.
21. *Neon Lighting* means lighting using luminous gas filled tubes often formed into text, symbols or decorative elements. Neon Lighting includes tubes with typical diameters of 10 to 20 millimeters filled with neon, argon, xenon, or other gasses and producing various colors of light. Not included are replaceable T-8 (1-inch diameter) and T-12 (1.5-inch diameter) or PL (“compact”) fluorescent tubes. Any unshielded neon lighting is limited by the unshielded lighting limits of Section G.18.
22. *Net Acreage* means the remaining ground area of a parcel after deleting all portions for proposed and existing public right-of-way and undeveloped area.
23. *Opaque* means only that the material must not transmit light from the internal illuminating source: the color of such opaque backgrounds is not restricted.
24. *Outdoor Light Fixtures* means all outdoor illuminating devices, reflective surfaces, lamps and other devices, either permanently installed or portable, which are used for illumination or advertisement. Such devices shall include, but are not limited to, search, spot and floodlights for:
  - a. buildings and structures
  - b. recreational areas
  - c. parking lot lighting
  - d. landscape and architectural lighting
  - e. billboards and other signs (advertising or other)
  - f. street lighting
  - g. product display area lighting
  - h. building overhangs and open canopies
25. *Outdoor Recreational Facility* means an are designed for active recreation, whether publicly or privately owned, including but not limited to parks, baseball diamonds, soccer and football fields, golf courses, tennis courts and swimming pools.
26. *Person* includes a corporation, company, partnership, firm association or society, as well as a natural person.

27. *Temporary Lighting* means lighting which does not conform to the provisions of this Code and which will not be used for more than one thirty (30) day period within a calendar year. Temporary lighting is intended for uses which by their nature are of limited duration; e.g. holiday decorations, civic events, or construction projects.
28. *Total Outdoor Light Output* means the maximum total amount of light measured in lumens, from all outdoor light fixtures on a property. For lamp types that vary in their output as they age (such as high pressure sodium and metal halide), the initial output, as defined by the manufacturer, is the value to be considered.
29. *Translucent* means light is transmitted from the internal illumination source.
30. *Unshielded Fixture* means a fixture that allows light to be emitted above the horizontal directly from the lamp or indirectly from the fixture or a reflector.
31. *Watt* is the unit used to measure the electrical power consumption (not the light output) of a lamp.

#### G. LIGHTING REQUIREMENTS

1. Outdoor floodlighting by flood light projection above the horizontal is prohibited except for lamps specifically exempted under sections G.11 and G.18 and properly adjusted motion sensing lighting fixtures as defined in subsection F.20.
2. All light fixtures which are required to be shielded shall be installed in such a manner that the shielding complies with the definition of fully shielded fixtures.
3. All light fixtures, except street lamps, shall be aimed or shielded so that the direct illumination shall be confined to the property boundaries of the source. Particular care is to be taken to assure that the direct illumination does not fall onto or across any public or private street or road. Motion sensing lighting fixtures shall be properly adjusted, according to the manufacturer's instructions, to turn off when detected motion ceases.
4. The correlated color temperature (CCT) of all outdoor lighting shall not exceed 3000 Kelvins.
5. Search lights, laser source lights, strobe or flashing lights, motion or illusion lights or any similar high-intensity light shall not be permitted, except in emergencies by police and fire personnel at their direction or as permitted in subsection L.1.
6. Class 1 lighting, including but not limited to, sales, service, commercial, assembly, repair, maintenance, and industrial areas, may only continue in operation until 10:00 p.m., or for as long as the area is in active use.

7. Class 2 lighting shall have no time restrictions except as specified by the Planning & Zoning Commission for new projects.
8. Class 3 lighting, except for flag pole lighting, must be extinguished after 10:00 p.m. or when the business closes, whichever is later, except the low-wattage holiday decorations may remain on all night from November 15 to January 15.
9. Multi-class lighting must conform to the time limitations of the strictest class.
10. Except as permitted in subsections G.11, G.12 and G.13, total outdoor light output, excluding streetlights used for illumination of public rights-of-way, of any commercial or industrial development project shall not exceed 100,000 initial lumens per net acre, averaged over the entire property. No more than 5,500 initial lumens per net acre may be accounted for by lamps in unshielded fixtures permitted in subsection G.18. The total light output used for illumination of residential properties shall not exceed 10,000 lumens per net acre, of which no more than 3,300 lumens per net acre may be accounted for by lamps in unshielded fixtures permitted in subsection G.18. Residential properties under one half acre shall not exceed 4,500 lumens, of which no more than 3,300 lumens per net acre may be accounted for by lamps in unshielded fixtures as permitted in subsection G.18. These lumens per net acre values are upper limits and not design goals; design goals should be the lowest levels that meet the requirements of the task.
11. Lighting, in all cases, for all outdoor athletic fields, courts, tracks or ranges shall be considered Class 1 (Color Rendition). Lighting allowed in this subsection shall be subject to approval of the Community Development Director. When the proposed lumens per acre exceeds the limits of subsection G.10, the installation shall be designed to achieve no greater than the minimum illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA). The installation shall also limit off-site spill (off the parcel containing the sports facility) to a maximum of 0.5 fc (5.4 lx) at any location on any non-residential property, and 0.05 fc (0.54 lx) at any location on any residential property, as measurable from any orientation of the measuring device. Every such lighting system design shall be certified by an Arizona registered engineer as conforming to all applicable restrictions of this Code. All events shall be scheduled so as to complete all activity by 10:00 p.m. Illumination of the playing field, court, track or range shall be permitted after 10:00 p.m. only to conclude a scheduled event that was unable to conclude before 10:00 p.m. due to unusual circumstances. Fully shielded lighting shall be required for fields designed for amateur, recreational or non-professional sports activity.
12. Lighting for Outdoor Display Lots shall be considered Class 1 (Color Rendition), and shall conform to the lumens per acre limits of subsection G.10 except as follows:

- a. All such lighting shall utilize fully shielded luminaries that are installed in a fashion that maintains the fully-shielded characteristics. When the proposed lumens per acre exceed the limits of subsection G.10 the installation shall be designed to achieve no greater than the minimum illuminance levels for the activity as recommended by the Illuminating Engineering Society of North America (IESNA). The installation shall also limit off-site spill (off the parcel containing the display lot) to a maximum of 0.5 fc (5.4 lx) at any location on any non-residential property, and 0.05 fc (0.54 lx) at any location on any residential property, as measurable from any orientation of the measuring device. Every such lighting system design shall be certified by an Arizona registered engineer as conforming to all applicable restrictions of this Code. Outdoor Display Lot lighting shall be turned off at 10:00 p.m. or within thirty minutes after closing of the business or activity, whichever is later.
  - b. Lighting allowed in this subsection shall be subject to approval of the Community Development Director.
13. Lighting for Service Stations or similar canopies shall be considered Class 1 lighting. All luminaire shall be recessed within or installed flush against the lower surface of the canopies and utilize flat glass or plastic covers such that no part of the luminaire projects below the canopy skirt. The total light output used for illuminating service station canopies, defined as the sum of under-canopy initial bare-lamp outputs in lumens, shall not exceed forty (40) initial lumens per square foot of canopy. All lighting mounted under the canopy, except internally illuminated signs, shall be included in the total. Fifty percent (50%) of the lumen output of all lamps mounted within or under a canopy, except internally illuminated signs, is included in the lumen caps in subsection G.10.
14. Lighting used for all externally illuminated signs shall conform to all restrictions of the Code, shall be fully shielded, and shall be turned off at 10:00 p.m. or when the business closes, whichever is later.
15. All site lighting not directly associated with the special uses as permitted in subsections F.20, G.11, G.12 and G.13 shall conform to all lighting standards described in this Code.
16. Outdoor internally illuminated advertising signs shall either be constructed with an opaque background and translucent letters and symbols or with a colored (not white, cream, off-white, yellow or other light color) translucent background, with either translucent or opaque letters and symbols. Opaque means only that the material must not transmit light from the internal illumination source: the color of such opaque backgrounds is not restricted by this section. Lamps used for internal illumination of such signs shall not be included in the lumens per net acre limit set in subsection G.10. All illuminated signs shall be turned off at 10:00 p.m. or when the business closes, whichever is later.

17. All outdoor neon lighting is limited by the unshielded lighting limits of Section G.18 and shall be turned off at 10:00 p.m. or when the business closes, whichever is later.
18. The requirements for lamp source and shielding of light emissions for outdoor light fixtures are as follows:

Shielding/Use Code:

A= allowed, unshielded

F= allowed, fully shielded

<u>LAMP TYPE</u>	<u>SHIELDING</u>
Class 1, 2 and 3 lighting:	
All lamp types above 1500 initial lumens	F (See Note 1)
All type below 1500 initial lumens	A (See Note 2)
All neon tube lighting	A (See Note 2)
Lamps in Motion Sensing Security Lights (F.20)	A (See G.3)

Note 1. Examples of lamp types of 1500 lumens and below (the acceptability of a particular light is decided by its lumen output, not wattage. Check manufacturer's specifications):

- a. 100 Watt Standard Incandescent and less
- b. 75 Watt Midbreak Tungsten-Halogen (quartz) and less
- c. 25 Watt T-12 Cool White Fluorescent and less
- d. 10 Watt Low Pressure Sodium and less
- e. 25 Watt white Light Emitting Diode (LED) and less

Note 2. Lights shall be shielded whenever feasible to minimize light spilled into the night sky or adjacent properties. Unshielded lights (all types) are limited to a maximum of 5,500 initial lumens per net acre (see subsection G.10). Residential parcels and Development Projects containing one net acre or less are allowed 3,300 initial lumens of unshielded light per net acre (all Classes).

## H. PARKING LOT LIGHTING STANDARDS

Lighting Standards (poles) shall be sized in such a manner that the top of any luminaire does not exceed twenty-four (24) feet above adjacent grade, unless otherwise authorized by the Community Development Director for new projects.



## I. AIRPORT LIGHTING

Airport lighting which is required for the safe and efficient movement of aircraft during flight, take-off, landing and taxiing is exempt from the provisions of this Code. Lighting used for illumination of aircraft loading, unloading, and servicing areas is exempt from the lumens per net acre limits of subsection G.10, although it must conform to all other requirements of this Code. All other outdoor lighting at airport facilities shall comply with the provisions of this Code.

## J. MUNICIPALLY-OWNED LIGHTING

1. The installation of outdoor lighting fixtures on new City owned buildings shall only be permitted when a clear public safety hazard or situation exists that can only be mitigated with the use of outdoor light and is deemed necessary by the City Manager. New lighting fixtures also may only be installed on existing buildings and infrastructure in cases where the City Manager determines that a hazardous nighttime situation exists.
2. All new lighting fixtures shall employ adaptive controls and reasonable curfews such as but not limited to motion detection sensors, timers, wireless remote monitoring and turn on/off capabilities, photo sensitive light controls, etc. Reasonable curfews shall be determined for all non-essential light (lights with no presumed impacts to public safety or security) on City infrastructure with an established time to extinguish lights when no activity is anticipated, such as the existing ordinance to extinguish all recreational facility lights by 10:00 p.m.
3. All City sponsored temporary seasonal lighting displays on City owned or controlled property shall be set on timer with a curfew of no later than 11:00 p.m.
4. In all park and recreational facilities with nighttime uses, the City shall maintain the ability to remotely extinguish lights after nighttime events. The City shall require police personnel, during routine patrols, to contact appropriate City staff to remotely extinguish lights if facility lighting is left on and facilities are not in use.
5. With the establishment of any new subdivision development where street right-of-way will be dedicated to the City, the City shall not allow the installation of street lights. In rare cases where it is determined that a street light is deemed necessary in public right-of-way for safety and/or security needs, all lighting will be fully shielded and will adhere to International Dark Sky Association (IDA) standards. Adaptive controls will be installed and curfews limiting the hours of operation of these lights will be established.

## K. TEMPORARY LIGHTING PERMITS

1. The Community Development Director may grant a permit for temporary Lighting if he or she finds all of the following:
  - a. The purpose of which the lighting is proposed is not intended to extend beyond thirty (30) days;
  - b. The proposed lighting is designed in such a manner as to minimize light as much as is feasible;
  - c. The proposed lighting will comply with the general intent of this Code;  
and
  - d. The permit will be in the public interest.
2. The Community Development Director shall rule on the application within five (5) business days from the date of submission of the request and notify the applicant in writing of his or her decision. The Community Development Director may grant one (1) renewal of the permit for an additional thirty (30) days if he or she finds that, because of an unanticipated change in circumstances, a renewal would be in the public interest. The Community Development Director is not authorized to grant more than one temporary permit and one renewal for the same property within one calendar year.

## L. NONCONFORMING USES

1. Bottom or side-mounted outdoor advertising sign lighting shall not be used.
2. All lighting that does not conform to all provisions of this Code shall be brought into compliance within a period not exceeding ten (10) years after its effective date during this time no modification or replacement shall be made to a non-conforming fixture unless the fixture thereafter conforms to the provisions of this Code, except that identical lamp replacement is allowed.
3. In the event that an outdoor lighting fixture is abandoned or is damaged to the point of requiring repairs for safe operation, the repaired or replacement fixture shall comply with the provisions of this Code.

## M. VARIANCES

Any person desiring to install an outdoor lighting fixture in violation of this Code may apply to the Board of Adjustment for a variance from the regulation in question. Such variances shall be allowed only as provided by Section 105 of the City of Cottonwood Zoning Ordinance.

## N. PERMITS AND DEVELOPMENT PLAN REVIEWS

1. All applications and or permits may be subject to review and action by the Planning & Zoning Commission at the discretion of the Community Development Director for a Design Review approval.
2. All applications, except those for single family residences, shall include the following:
  - a. A site plan indicating the proposed location of all outdoor lighting fixtures;
  - b. A description of each illuminating device, fixture, lamp, support and shield. This description may include, but is not limited to, manufacturer's catalog cuts and drawings (including sections where required), lamp types and lumen outputs; and
  - c. Such other information as the Community Development Director may determine is necessary to ensure compliance with this Code.
3. In the Community Development Director determines that the proposed lighting does not comply with this Code, the permit shall not be issued or the plan approved.