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ORDINANCE NO. PZ-C-003-09

**AN ORDINANCE OF THE BOARD OF SUPERVISORS OF PINAL COUNTY, ARIZONA,
RELATING TO ZONING AND AMENDING THE PINAL COUNTY DEVELOPMENT SERVICES
CODE, TITLE 2 (COUNTY ZONING ORDINANCE),**

WHEREAS, the Board of Supervisors on February 10, 2010, approved the codification of all Development Services ordinances, and the codification as the Pinal County Development Services Code became effective on March 13, 2010;

WHEREAS, Ordinance No. 61862, as amended, is the Pinal County Zoning Ordinance as codified in Title 2 of the Pinal County Development Services Code;

WHEREAS, the County Zoning Ordinance is in need of revision to provide uniform laws and processes for the submittal, review and approval of outdoor lighting fixtures.

**BE IT ORDAINED BY THE BOARD OF SUPERVISORS OF PINAL COUNTY,
ARIZONA:**

SECTION 1. Pinal County Zoning Ordinance, title 2 of the Pinal County Development Services Code ("PCDSC"), is amended by adding chapter 2.195, "Outdoor Lighting", to establish comprehensive provisions for the regulation of outdoor lighting within unincorporated Pinal County shall read as follows:

**Chapter 2.195
OUTDOOR LIGHTING**

Sections:

- 2.195.010 Administration
- 2.195.020 Definitions
- 2.195.030 General Requirements
- 2.195.040 Specific Uses
- 2.195.050 Equipment Substitutions or Alterations
- 2.195.060 Verification
- 2.195.070 Permanent Exemptions
- 2.195.080 Procedures for Chapter Compliance
- 2.195.090 Temporary Exemptions

2.195.010 ADMINISTRATION

A. PURPOSE.

The purpose of this Chapter is to establish comprehensive provisions for outdoor lighting within Pinal County. This document intends to achieve a balance between safety and aesthetics, to encourage designs that provide for the proper quality and quantity of nighttime illumination, while managing energy consumption, and minimizing light trespass and negative impacts on the surrounding areas and our night sky. Proper exterior lighting design creates lighting systems that are sensitive to the surrounding areas by confining the illumination as much as possible within the boundaries of the project site. It also provides appropriate quantities and uniformity of both horizontal and vertical illumination on the site while minimizing energy usage. This will involve the use of not only the appropriate fixtures and light sources, but also proper placement and operating schedules.

Pinal County recognizes the intent of the International Dark-Sky Association, the Recommended Practices and Design Guidelines put forth by the Illuminating Engineering Society of North America (IESNA), and the requirements and limitations of the International Energy Conservation Code (IECC), and has used these as guiding principles in the development of this Chapter. More information can be acquired by obtaining copies of the most recent IESNA and IECC publications.

B. APPLICABILITY.

This Chapter applies to all new and replacement lighting to be installed at all residential and non-residential facilities/sites, or the existing lighting at a facility/site that is undergoing a change in use. In the event that a lighting renovation affects more than 50% of the facility/site lighting, then the entire facility/site shall be brought into compliance with this Chapter. Single family residences, attached and detached, are subject to Sections 2.195.040.L – 2.195.090 only. In the event an attached or detached single family dwelling family is on the same parcel as a multifamily commercial or industrial use, the requirements for the multifamily commercial or industrial use shall apply.

C. CONFORMANCE WITH APPLICABLE LAW.

All outdoor illuminating devices shall be installed in conformance with the provisions of this Chapter, Pinal County Subdivision Regulations, and any Building, Zoning or Energy codes now in effect or which may hereafter be enacted, as applicable. Where any provisions of any of the Arizona Revised Statutes, Federal law, or other Pinal County ordinances or regulations conflict with the requirements of this Chapter, the most restrictive shall govern.

D. APPROVED MATERIAL AND METHODS OF INSTALLATION.

The provisions of this Chapter are not intended to prevent the use of any material or method of installation not specifically prescribed by this Chapter, provided any such alternate has been approved. The Planning Director may approve any such alternate provided he or she finds that the proposed design, material or method:

1. Provides approximate equivalence to those specific requirements of this Chapter; or
2. Is otherwise satisfactory and complies with the intent of this Chapter.

- E. As new lighting technology develops which is useful in reducing energy consumption, light pollution, and light trespass, consideration shall be given to use of state of the art technology in keeping with the intent of this Chapter.
- F. In certain sections of this Chapter a lumen requirement is followed by incandescent equivalent in parenthesis. This is for an example only. The lumen requirement shall apply

2.195.020 DEFINITIONS.

The following words, terms and phrases when used in this Chapter shall have the meanings ascribed to them below, except when the context clearly indicates a different meaning:

“ABANDONMENT” Is the discontinuation of use for a period of one year or more.

“BOLLARD, LOUVERED” is a ground-mounted luminaire that is usually 36” – 48” inches in height, is generally used for the lighting of paths and building entries, and possesses a stacked set of external angled visors/louvers that minimize direct view of the light source. In order to qualify as a louvered bollard under this Chapter, the stacked visors must be positioned/angled in such a fashion as to prevent any direct view of the light source from viewing angles of 90-degrees and above.

“AREAS, EQUESTRIAN/ROPING” is an improved area, generally fenced, of at least 30 feet in width or length within which equestrian activities involving horse riding or driving occurs that are non commercial in nature & do not include seating.

“ARENAS, EQUESTRIAN/ROPING” is commercially utilized structure or area, sometimes with tiers of seating rising around an improved area, of at least 30 feet in width or length within which equestrian activities involving horse riding or driving occurs.

“FASCIA” is the vertical element found around the perimeter of a canopy structure.

“FOOTCANDLE (FC or VFC)” is a unit of the illumination being produced on a surface, and defined as one lumen per square foot of area illuminated. Footcandle or FC is a general term for all types of illumination, while vertical footcandles (VFC) refers only to illumination being produced on a vertical surface (facade of a building) or passing over a property line (spill light/light trespass).

“GENERAL ILLUMINATION” is outdoor lighting used for, but not limited to, illumination for walkways, roadways, equipment yards, parking lots, and outdoor security where safety or security of the grounds is the primary concern.

“GLARE” is the sensation produced by a bright light source within the visual field that is sufficiently brighter than the level to which the eyes are adjusted, causing discomfort and/or loss in visual performance or visibility.

“HOUSE-SIDE SHIELD (HSS)” is a visor or louver that is internal or external to a luminaire, that physically blocks and thereby reduces the amount of illuminance being produced to the rear of the luminaire (usually toward residential properties).

"ILLUMINANCE" is the amount of light falling onto a surface area, measured in footcandles (lumens per square foot) or Lux (lumens per square meter). For conversion purposes, one Footcandle (FC) is equal to 10.76 Lux (lx).

"ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)" is the non-profit society established in 1906 whose goal is to improve the lighted environment by bringing together those with lighting knowledge and by translating that knowledge into actions that benefit the public. The IESNA is the primary source of lighting "recommended practices" in North America.

"INDIVIDUAL" Shall mean any private individual, tenant, lessee, owner or any commercial entity including but not limited to companies, partnerships, joint ventures or corporations.

"INSTALLED" The attaching or assembling in place of any luminaire.

"KELVIN" is the temperature scale utilized in illumination science to describe the hue/color of the light. A lower value such as 2,700K is associated with a "warm" colored light source such as Incandescent, while a higher value such as 4,000K is associated with a "cool" colored light source such as Metal Halide.

"LAMP, COATED" is the correct term for a light source, such as incandescent or metal halide lamps. "Coated" lamps have an outer coating that minimizes direct view of the arc tube.

"LIGHTING POWER DENSITY (LPD)" is defined as the watts of exterior lighting per square foot of area (Watts/Ft²) for the different sections of the project site (parking lot, walkways, building entries, etc.). This is the metric established by the International Energy Conservation Code (IECC), and will therefore be utilized as one of the factors for determining conformance with the IECC and this Chapter.

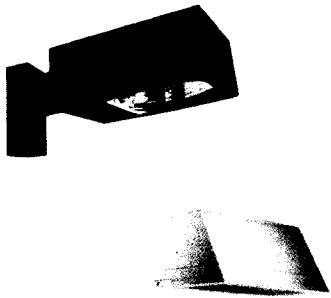
"LIGHT TRESPASS / SPILL LIGHT" is unwanted light that falls outside of the area intended to be lighted. This Chapter places limits on the amount of illumination, in Footcandles, that shall be allowed to cross a residential property line.

"LUMEN" is the unit used to measure the total amount of light that is produced by a light source / lamp. All light sources reduce in lumen output the longer that they are operated. "Initial lumens" is a term defined as the amount of light output from a lamp when it is new. "Mean lumens" is a term defined as the average lumen output of a lamp over its life, and is the lumen value utilized in the proper design of lighting systems. A lumen is a unit of standard measurement used to describe how much light is contained in a certain area. One lumen is defined as the luminous flux of light produced by a light source that emits one candela of luminous intensity over a solid angle of one steradian.

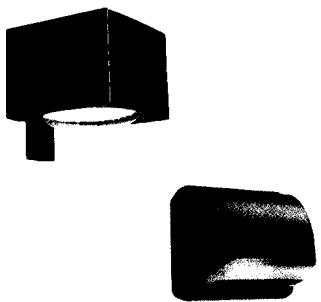
"LUMEN DENSITY (LD)" shall be defined as the initial lumens of the lamps/light-sources utilized by the exterior lighting per square foot of area (Lumens/Ft²) for the project site. This metric is another factor that will be utilized for determining compliance with this Chapter.

“LUMINAIRE” is a complete lighting unit/fixture, including the lamp, ballast, wiring, housing, reflector, lens, and any shielding.

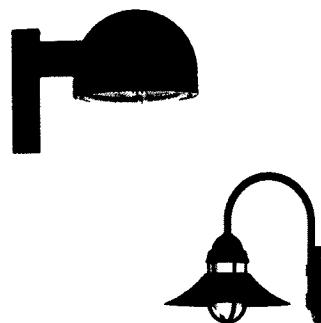
“LUMINAIRE CUTOFF” is a term established by the IESNA that is associated with four different general classifications of luminaires, each with a different amount of allowed high-angle and upward light: Non-Cutoff, Semi-Cutoff, Cutoff and Full-Cutoff. Full-Cutoff luminaires, which minimize high-angle light and allow no light above the horizontal, shall be required for most uses. Semi-Cutoff and Cutoff luminaires, which allow for up to 5% and 2.5% uplight respectively, shall be allowed for low-wattage decorative / accent lighting for some uses in lighting zones 2 – 3.



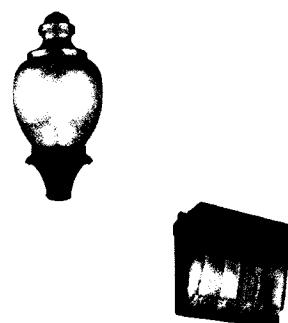
EXAMPLES OF **FULL-CUTOFF**
POLE-MOUNTED AND
BUILDING-MOUNTED LUMINAIRES.
THE LAMP IS COMPLETELY RECESSED
INTO THE LUMINAIRE, AND THE LENS
IS FLAT. NO LIGHT IS PRODUCED
ABOVE THE HORIZONTAL.



EXAMPLES OF **CUTOFF**
POLE-MOUNTED AND
BUILDING-MOUNTED LUMINAIRES.
THE LAMP IS COMPLETELY RECESSED
INTO THE LUMINAIRE, BUT THE LENS
SAGS / CURVES DOWNWARD.
UP TO 2.5% OF THE LIGHT IS
PRODUCED ABOVE THE HORIZONTAL.



EXAMPLES OF **SEMI-CUTOFF**
POLE-MOUNTED AND
BUILDING-MOUNTED LUMINAIRES.
THE LAMP VISIBLELY PROTRUDES DOWN-
WARD INTO A SAG / CURVED LENS.
UP TO 5.0% OF THE LIGHT IS
PRODUCED ABOVE THE HORIZONTAL.



EXAMPLES OF **NON-CUTOFF**
POLE-MOUNTED AND BUILDING-
MOUNTED LUMINAIRES (WHICH ARE NOT
ALLOWED UNDER THIS ORDINANCE).
THE LAMP IS SUBSTANTIALLY EXPOSED.
LITTLE OR NO ATTEMPT IS MADE TO
CONTROL THE LIGHT PRODUCED
ABOVE THE HORIZONTAL.

"LUMINAIRE, FULLY SHIELDED" is a fully shielded fixture that is 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.

"LUMINAIRE, PARTIALLY SHIELDED" is a partially shielded fixture is shielded in such a manner that the bottom edge of the shield is below the plane of the center line of the lamp reducing light above the horizontal.

"OUTDOOR LIGHTING" is any lighting not within a completely enclosed building.

"OUTDOOR LUMINAIRES / LIGHT FIXTURES" are outdoor electric illuminating devices, fixtures, lamps and other devices, search-lights, spot or flood lights, permanently installed or portable, used for illumination, emergency, security or commercial purposes. Such devices shall include, but are not limited to, lights for:

- A. parking lots;
- B. roadways;
- C. driveways;
- D. buildings and structures;
- E. recreational areas and facilities;
- F. landscaping decorative effects;
- G. billboards and signs (advertising and other);
- H. product display areas;
- I. gas station lighting; and
- J. automotive dealership lighting.

"OUTDOOR RECREATIONAL FACILITY" is an area designed for active recreation, whether publicly or privately owned, including but not limited to: parks, sports fields, sport courts, golf courses, and roping/equestrian arenas.

"RESIDENTIAL LIGHTING" refers to outdoor lighting for single or multiple household dwellings.

"SECURITY LIGHTING" Refers to luminaires that operate dusk-to-dawn in order to provide for protection of property and safety for individuals. They shall conform to all Sections of this Chapter, and shall generate less than 50% of the Lighting Power Density or Lumen Density utilized by the facility/site during normal business hours.

"SKYGLOW" is the brightening of the sky caused by outdoor lighting, atmospheric factors, and celestial factors. Excessive skyglow interferes with astronomical observations and the enjoyment of the night sky, and this Chapter includes several requirements and limitations that help to minimize skyglow.

"UP-LIGHTING" is any light source that does not have an opaque covering on top.

"USE, NON-RESIDENTIAL" is the use of land for a purpose other than single-family dwelling units or multiple household dwellings. This definition includes parks with residential zoning.

“WATT” is the unit used to measure the electrical power consumption (not the light output) of a light source / lamp.

2.195.030 GENERAL REQUIREMENTS.

A. LIGHTING ZONES

In order to be more responsive to the special needs of different portions of the County, a system of three different lighting “lighting zones” has been established based upon the current and/or planned Uses and ambient brightness of the area. Each “lighting zone” will have different development requirements and lighting restrictions.

LIGHTING ZONE 1: Low ambient light areas, found in zoning districts: CAR, CR-1, CR-1A, CR-2, CR-3, GR, GR-5, GR-10, SH and SR. Outdoor lighting in this lighting zone shall not exceed 50% of the maximum Lighting Power Density (LPD) limits established in the currently-adopted version of the International Energy Conservation Code (IECC), or a Lumen Density (LD) of 9 lumens per square foot, whichever is less.

LIGHTING ZONE 2: Medium ambient light areas, found in zoning districts CB-1, CR-4, CR-5, MHP, PM/RVP, RV and TR. Outdoor lighting in this Lighting zone shall not exceed 75% of the maximum Lighting Power Density (LPD) limits established in the currently-adopted version of the International Energy Conservation Code (IECC), or a Lumen Density (LD) of 14 lumens per square foot, whichever is less.

LIGHTING ZONE 3: High ambient light areas, found in zoning districts: CB-2, CI-1, CI-2 and CI-B. Outdoor lighting in this Lighting zone shall not exceed 100% of the maximum Lighting Power Density (LPD) limits established in the currently-adopted version of the International Energy Conservation Code (IECC), or a Lumen Density (LD) of 19 lumens per square foot, whichever is less.

NOTE: In the event that a new lighting zone-3 site, or an existing lighting zone-3 site that is undergoing a renovation (as per Section 2.195.010.B), is to be located within 150 feet of an existing lighting zone 1 site, then the lighting zone-3 site shall be considered a lighting zone-2 site for the purpose of conformance to this Chapter.

B. OPERATING HOURS.

Every project in all lighting zones shall be encouraged to reduce as much as possible the amount of outdoor lighting that operates after 10:00 PM, except as permitted in Section 2.195.040. All non-security lighting (except for the illumination of roadways and state and federal flags) shall be turned off by 10:00 PM or within 1-hour after close-of-business, whichever is later. A nighttime reduction of at least 50% in overall LD or LPD is required. All non-Full Cutoff luminaires in lighting zones 1 & 2 shall be included in the fixtures being turned off.

Non-Full-Cutoff and Non-Fully-Shielded incandescent luminaires of greater than 150-watts, and all other luminaire types of greater than 70-watts, that were installed prior to the adoption of the Chapter are considered to be Non-Conforming, and shall possess an automatic control device that turns the luminaires off between midnight and sunrise.

In addition to turning off these Non-Conforming luminaires, Multi-family housing is only required to reduce the lighting located at common areas such as clubhouses, pool areas and playgrounds.

C. LIGHT SOURCES AND FIXTURE SHIELDING.

New Mercury Vapor light sources shall not be allowed. Existing installations must be removed or replaced with a conforming light source and luminaire by no later than January 1, 2011.

Searchlights and strobe/ flashing lights are not allowed in any lighting zone without a separate permit as required in Section 2.195.090, and the duration of the allowed use may be limited by Planning staff.

Lasers, exposed neon, and other intense linear light sources are not allowed in lighting zone 1, but are allowed in lighting zones 2 - 3 and subject to approval and stipulations by Planning staff during the review process. Lasers must be aimed at-or-below the horizontal plane and terminated on an opaque surface within the site.

All site perimeter luminaires located within 50-feet of a single-family residential property line, excluding bollards or other luminaires of less than 6-feet in height, shall possess house-side-shielding (HSS) to the satisfaction of Planning Staff. All such luminaires that will also be operating after 10:00 PM shall possess external house-side-shielding.

The total amount of outdoor lighting that is not full-cutoff, including uplighting shall not exceed 5.0% of the outdoor lighting LPD or LD, whichever is less. Uplighting that is covered by solid roof or solid building overhang will not be subject to this ordinance if it is:

1. Permanently set at 90 Degrees;
2. and is pulled back from any edge of the solid roof or solid building overhang by a distance equal to the distance between the top of the uplight (X) and the distance between the outside edge of the uplight and the outside edge of the solid roof or solid building overhang (Y).

LIGHTING ZONE 1: Pole or wall-mounted luminaires shall be Full-Cutoff luminaires only. Bollards shall be Full-Cutoff, or louvered with coated lamps (see Section 2.195.020 "Bollard, Louvered"). All light sources shall have a maintained color temperature of less than or equal to 3,000 Kelvin.

Wall-mounted luminaires of greater than 800 initial lumens shall possess a bottom diffusing lens or an internal house-side-shield (HSS), to the satisfaction of Planning Staff, in order to minimize the illuminance "hot spot" on the wall. Uplighting luminaires shall not exceed 800 initial lumens each.

LIGHTING ZONE 2: Pole or wall-mounted luminaires of less than or equal to 1800 initial lumens may be Semi-Cutoff, Cutoff, or Full-Cutoff. All other pole or wall-mounted luminaires shall be Full-Cutoff. Bollards shall be Full-Cutoff, or louvered with coated lamps, or of a type where the lamp is recessed and not directly visible.

Wall-mounted full-cutoff luminaires of greater than 3,500 initial lumens shall possess a bottom diffusing lens or an internal house-side shield to the satisfaction of Planning Staff. Uplighting luminaires shall not exceed 1,200 initial lumens each.

LIGHTING ZONE 3: Pole or wall-mounted luminaires of less than or equal to 3,500 initial lumens may be Semi-Cutoff, Cutoff, or Full-Cutoff. All other pole or wall-mounted luminaires shall be Full-Cutoff. Bollards shall be Full-Cutoff, or louvered with coated lamps, or of a type where the lamp is shielded & not directly visible.

Wall-mounted fixtures of greater than 6,500 initial lumens shall possess a bottom diffusing lens or an internal house-side shield to the satisfaction of Planning Staff. Uplighting fixtures shall not exceed 1,200 initial lumens each.

D. LUMINAIRE MOUNTING HEIGHT & EQUIPMENT FINISH.

The mounting height of a luminaire is to be measured from finished grade to the fixture lens or luminous opening. The exposed portion of concrete pole bases shall be finished in a fashion other than exposed concrete (brushed finish, painted, etc.). No portion of any luminaire that is attached to a wall that is common with another property shall be allowed to protrude above the top of the wall. In lighting Lighting zones 1 and 2, bollards shall not be more than 48" in height.

LIGHTING ZONE 1: Luminaires located at or within 30 feet of a residential property line shall not exceed 8 feet in height. All others shall not exceed 15 feet in height, and the pole color shall be dark and non-reflective (such as dark bronze or black).

LIGHTING ZONE 2: Luminaires located at or within 30 feet of a residential property line shall not exceed 8 feet in height. Luminaires located greater than 30 feet and less than or equal to 150 feet from a residential property line, and not blocked from direct view by a structure, shall not exceed 15 feet in height. All others shall not exceed 25 feet. Pole color shall be dark and non-reflective (such as dark bronze or black).

LIGHTING ZONE 3: Luminaires located at or within 30 feet of a residential property line shall not exceed 8 feet in height. Luminaires located greater than 30 feet and less than or equal to 150 feet from a residential property line, and not blocked from direct view by a structure, shall not exceed 15 feet in height. All others shall not exceed 30 feet in height. Pole color shall be approved by Planning Staff.

E. PERIMETER (SPILL LIGHT) ILLUMINANCE LEVELS.

This Chapter establishes limits for the amount of Light Trespass / Spill Light that is allowed to cross a project site's property line(s) when there is a residential property line located within 150 feet of any of the project site's property line(s). These limits are based upon initial maximum vertical illuminance values along the appropriate property lines, calculated at no more than 10 foot horizontal increments, and at an elevation of 6 feet above finished grade. The calculated "observation point" shall be oriented perpendicular into the project site, and angled at 90-degrees above Nadir (perfectly horizontal). The Light Loss Factor (LLF) utilized for the calculations shall be 1.00. The following limits shall not be applied to the permanently exempted Uses, or the specific Uses in this Chapter where alternate spill light limits are expressly defined.

LIGHTING ZONE 1: The maximum initial vertical illuminance at any calculation point shall not exceed 0.30 footcandles during normal business evening hours, and 0.10

footcandles after the facility enters security-lighting-only operating mode (in compliance with Section 2.195.030.B).

LIGHTING ZONE 2: The maximum initial vertical illuminance at any calculation point shall not exceed 0.80 footcandles during normal business evening hours, and 0.30 footcandles after the facility enters security-lighting-only operating mode.

LIGHTING ZONE 3: The maximum initial vertical illuminance at any calculation point shall not exceed 1.50 footcandles during normal business evening hours, and 0.80 footcandles after the facility enters security-lighting-only operating mode.

F. LIGHTING CHAPTER MATRIX (Commercial Uses Only)

Lighting zone	Operating Hours, LPD Limit & LD Limit	Light Sources and Fixture Shielding	Mounting Height & Pole Color	Perimeter illuminance Levels	Uplighting
1 Low Ambient Light Areas	<p>Security Lighting only after 10:00 PM or 1-hour after Close of Business.</p> <p>LPD = 50% of IECC Limit</p> <p>LD = 9 Lumens/Ft²</p>	<p>Light Sources L.T.E. 3,000K Color Temperature</p> <p>Full-Cutoff fixtures only</p> <p>HSS on Perimeter Fixtures adjacent to Residential</p>	<p>8' height when L.T.E. 30' from Residential Property Line.</p> <p>15' height when G.T. 30'</p> <p>Dark and Non-Reflective Colors</p>	<p>0.30 VFC maximum Normal Business and 0.10 VFC Security Only, at a Residential Prop. Line</p>	<p>L.T.E. 800 Initial Lumens</p> <p>Turn off at 10:00 PM. or 1-hour after Close of Business</p>
2 Medium Ambient Light Areas	<p>Security Lighting only after 10:00 PM or 1-hour after Close of Business</p> <p>LPD = 75% of IECC Limit</p> <p>LD = 14 Lumens/Ft²</p>	<p>All Light Sources</p> <p>Semi-Cutoff and Cutoff fixtures when L.T.E. 1,800 Initial Lumens</p> <p>Full-Cutoff when G.T. 1,800 Initial Lumens</p> <p>HSS on Perimeter Fixtures adjacent to Residential</p>	<p>8' height when L.T.E. 30' from Residential Property Line.</p> <p>15' ht when G.T. 30'. and when L.T.E. 150'</p> <p>25' ht. when G.T. 150'</p> <p>Dark and Non-Reflective Colors.</p>	<p>0.80 VFC maximum Normal Business and 0.30 VFC Security Only, at a Residential Prop. Line</p>	<p>L.T.E. 1200 Initial Lumens</p> <p>Turn off at 10:00 PM. or 1-hour after Close of Business</p>
3 High Ambient Light Areas	<p>Security Lighting only after 10:00 PM or 1-Hour after Close of Business.</p> <p>LPD = 100% of IECC Limit</p> <p>LD = 19 Lumens/Ft²</p>	<p>All Light Sources.</p> <p>Semi-Cutoff and Cutoff fixtures when L.T.E. 3,500 Initial Lumens</p> <p>Full-Cutoff when G.T. 3,500 Initial Lumens</p> <p>HSS on Perimeter Fixtures adjacent to Residential</p> <p>External HSS adjacent to Residential after 10:00 PM.</p>	<p>15' height when L.T.E. 150' from Residential Property Line</p> <p>30' ht. when G.T. 150'</p> <p>Dark and Non-Reflective Colors.</p>	<p>1.50 VFC maximum Normal Business and 0.80 VFC Security Only, at a Residential Property Line</p>	<p>L.T.E. 1200 Initial Lumens.</p> <p>Turn off at 10:00 PM. or 1-hour after Close of Business</p>

EXPLANATION OF TERMS USED IN THE LIGHTING CHAPTER MATRIX

*** To be determined by Planning Staff.

1800, 3500 & 6500 Lumens	1,800 lumens is equivalent to the initial lumen output of a 100-watt incandescent, or a 26-watt compact fluorescent lamp. 3,500 lumens is equivalent to the initial lumen output of a 42-watt compact fluorescent, or a 50-watt metal halide lamp. 6,500 lumens is equivalent to the initial lumen output of a 70-watt high pressure sodium lamp.
G.T.	Greater than.
L.T.E.	Less than or equal to.
L.T.E. 1800	A light source that produces less than or equal to 1,800 lumens Lumens of light when the lamp is new.
Kelvin (K)	The Kelvin temperature scale is utilized to describe the color/hue of a light source.
L.T.E. 3,000K	A light source with a color temperature of less than or equal to 3,000 degrees Kelvin ("warm" color/hue light).
Light Source	A type of lamp, such as an incandescent or metal halide lamp.
H.S.S.	House-Side Shields reduce the amount of rearward illumination produced by a luminaire. Shields on pole-mounted luminaires reduce the amount of spill light/light trespass from the site, while shields on wall-mounted fixtures reduce the intense illumination "hot spots" that can be produced underneath the luminaire.
Height (Ht.)	The mounting height of a luminaire, as measured from the fixture lens to the finished grade of the parking lot. 15' HT. L.T.E. 150' means that luminaires located less than or equal to 150' from a residential property line cannot exceed 15' in mounting height.
Dark Color	The required color/finish of a light pole.
Perimeter illuminance Levels	The highest allowed initial vertical illuminance at any point around the perimeter of a site.

2.195.040 SPECIFIC USES.

A. PARKING CANOPIES.

All light fixtures shall be full-cutoff, or the fixtures shall be located and all sides of the canopy fascia extended so that no portion of the lamp or lens is visible from beyond any of the property lines. Light fixtures in multi-family housing shall be located at no less than every other parking space, and shall utilize polycarbonate lenses and tamper-proof hardware. This illumination and associated wattage shall be included in the outdoor lighting submittal, and shall not exceed an LPD of 1.08 Watts/Ft2.

B. MULTI-LEVEL PARKING STRUCTURES.

LIGHTING ZONES 1&2: Interior fixtures & roof-top fixtures shall be full-cutoff. The interior fixtures shall be attached to the ceiling or mounted no lower than the bottom of the support beams. Roof-top fixtures shall be setback a minimum of 25 feet from the perimeter, and shall not exceed 14 feet in height.

LIGHTING ZONE 3: Interior fixtures visible from any residential property shall be full-cutoff. All others may be semi-cutoff or cutoff, but shall possess diffusing lenses or shielding so the lamp is not directly visible from off-site. Roof fixtures shall be full-cutoff, set-back a min. of 25 feet from the edge, & shall not exceed 16 feet in height.

C. GAS STATIONS / CONVENIENCE STORES.

Fuel canopy luminaires shall be recessed into the canopy ceiling, with a lens that is flat and flush to the ceiling (the fixture access door can protrude below the ceiling). Metal halide canopy lighting is allowed in all lighting zones. In the event that the canopy is located within 150 feet of a property line that is zoned as residential, the canopy fascia shall be extended to a minimum depth of 12 inches below the canopy ceiling. Exposed light sources (such as neon or fluorescent) on the canopy are not allowed. Areas of fascia that are internally illuminated are not allowed in lighting zones 1 and 2. This does not include any internally or back-lighted signage, which shall continue to be regulated by the County's sign ordinance. The amount of spill light shall not exceed 2.0 times the limits in Section 2.195.030.E.

D. DRIVE-THROUGHS.

All fixtures are to be full-cutoff and either recessed into the canopy ceiling, or mounted so that the lowest portion of the fixture is higher than the bottom edge of the canopy fascia. All non-security lighting is to be turned off by 10:00 PM or within 1-hour after close of business, whichever is later.

E. BANKS / ATMs.

All fixtures for the ATM or teller areas shall be full-cutoff. The fixtures at drive-up canopies shall either be recessed into the canopy ceiling, or mounted so that the lowest portion of the fixture is higher than the bottom edge of the canopy fascia.

F. RELIGIOUS FACILITIES.

Metal Halide & other light sources with color temperatures cooler than 3000K are not allowed in Lighting zones 1 & 2, and for all facilities in Lighting zone 3 that are at or within 300 feet of a residential property line. All non-security lighting shall be turned off within 2 hours after the completion of the last service/event. Any fixtures located within 30 feet of a residential property line shall be included in those being turned off. In the

event that the parking lot is sized for peak usage (holidays, etc.), control of the lighting is to be divided into "Tiers", so that the parking lot lighting in the peak-usage areas only operates during those peak times of the year. Uplighting for the illumination of steeples or other towers for religious facilities are not subject to the provisions of this Chapter.

G. AUTOMOTIVE DEALERSHIPS.

A minimum of 50% of the outdoor illumination shall be turned off within 1-hour after the close of business. All non-Full-Cutoff fixtures shall be automatically turned off at this time. All perimeter fixtures shall possess house-side shields. Under-canopy lighting shall be full-cutoff, or the canopy fascia shall be extended on all sides so that is lower than any portion of the fixture lens. This Use is subject to all other applicable Sections in this Chapter except for the vertical footcandle (VFC) limits in Section 2.195.030.E.

H. EQUESTRIAN ARENAS.

All new luminaires mounted at a height of 40-feet or less shall be Full-Cutoff, and others mounted higher than 40-feet may be sports-style floodlights with exceptional internal and external shielding, to the satisfaction of Planning Staff. All luminaires are to be located, aimed, and/or externally shielded so that none of the light sources are directly visible at any of the property lines. All arena lighting shall be turned off when not in use, and all non-arena lighting shall be reduced at nighttime as per Section 2.195.030.B when not in use.

Lighting Zone 1: If the arena is located within 150 feet of a residential property line, then the calculated spill light at the property line facing the residential property shall not exceed 0.80 initial vertical footcandles at any point, or 2.00 initial vertical footcandles at any point along the other property lines.

Lighting Zone 2: If the arena is located within 150 feet of a residential property line, the calculated spill light shall not exceed 1.00 initial vertical footcandles (VFC) at any point, or 2.50 initial VFC at any point along the other property lines.

Lighting Zone 3: If the arena is located within 150 feet of a residential property line, the calculated spill light shall not exceed 1.50 initial vertical footcandles (VFC) at any point, or 3.00 initial VFC at any point along the other property lines.

I. FLAGPOLE LIGHTING.

Flagpole uplighting is restricted to state and federal flags, and shall be shielded so that the light source is not directly visible from any of the property lines. Uplighting in all Lighting zones shall not exceed the equivalent of two fixtures of 3,500 initial lumens each per flagpole. Flagpole lighting may operate all night, but is to be turned off at dusk if the flag is lowered.

J. PARK AND SPORTSLIGHTING FOR ALL PRIVATE AND PUBLIC NON-RESIDENTIAL FACILITIES.

All sports, path, parking lot, and playground lighting are to be illuminated in conformance with this Chapter, and the most current Recommended Practices issued by the IESNA. All sports-fields luminaires shall utilize superior shielding and aiming angles to the satisfaction of Planning staff. All sportsfield luminaires shall possess a gray painted finish, and all poles shall have a painted or "dull" galvanized finish. Sports field poles are to be set-back a minimum of 50-feet from any residential property line or right-of-way.

All sport courts shall be lighted with full-cutoff luminaires, and are to utilize "On" & "Off" user-accessible push-buttons so that the lighting does not operate unless the courts are in actual use. Automatic time-clocks or other programmable controllers are to be used, and shall turn off all non-security lighting at a time in accordance with the applicable light lighting zone, except for sports field lighting, which may stay on to as late as 11:00 PM when a formal game is in progress, except as permitted under Section 2.195.090.

All park luminaires, such as those located in Ramadas, shall be shielded and/or located so that the light source is not directly visible from beyond any of the property lines. Initial vertical illuminance (spill light) shall be calculated in conformance with Section 2.195.030.E, except that the spacing distance between the calculation points may match the spacing used for the sports lighting calculations.

Lighting Zone 1: Sports field lighting shall not exceed 80 feet in height. Path, and parking lot lighting shall not exceed 16-feet in height. Playground lighting shall not exceed 20 feet in height. Sport court lighting shall not exceed 25 feet in height, and all fixtures shall possess 4-sided shielding/ skirting. Sportslighting shall not operate after 10:30 PM. Perimeter spill light shall not exceed 0.80 footcandles at any point along an adjacent residential property line, or 1.60 footcandles at any point along any property line not adjacent to a residential property.

Lighting Zone 2: Sports field lighting shall not exceed 80 feet in height. Path, parking lot, and playground lighting shall not exceed 25 feet in height. Sport court lighting shall not exceed 30 feet in height. Sportslighting shall not operate after 10:30 PM. Perimeter spill light shall not exceed 1.20 footcandles at any point along an adjacent residential property line, or 2.40 footcandles at any point along any property line not adjacent to a residential property.

Lighting Zone 3: Sports field lighting shall not exceed 90 feet in height. Path, parking lot, and playground lighting shall not exceed 30 feet in height. Sport court lighting shall not exceed 50 feet in height. Sportslighting shall not operate after 11:00 PM. Perimeter spill light shall not exceed 1.50 footcandles at any point along an adjacent residential property line, or 3.00 footcandles at any point along any property line not adjacent to a residential property.

K. SIGNAGE LIGHTING.

This Chapter shall apply to externally-illuminated signs only. All such lighting shall comply with the lumen and LPD limits and shielding requirements established in Section 2.195.030.C.

L. SINGLE FAMILY RESIDENCES, ATTACHED AND DETACHED.

1. **Lighting Zone 1:** All fixtures, except fixtures of 1800 lumens (100 watts incandescent) or less, shall be shielded and/or located so that the light source is not directly visible from beyond any of the property lines. The mounting height of any building-mounted fixture shall not exceed 15-feet from finished grade to the center of the fixture. Spill light from adjacent properties shall not exceed 0.30 foot-candles within 8 feet of any single family residence between the hours of 10:00 PM and 6:00 AM.)

2. **LIGHTING ZONES 2 AND 3:** All fixtures of greater than 1,800 lumens shall be shielded and/or located so that the light source is not directly visible from any of the property lines. The mounting height of any building-mounted fixture shall not exceed 20-feet from finished grade to the center of the fixture. Spill light at any point on any of the property lines shall not exceed 0.80 footcandles between the hours of 10:00 PM and 6:00 AM. All non-conforming fixtures shall be turned off between the hours of 10:00 PM and 6:00 AM.
3. Motion sensor controlled fixtures that are located at least 50-feet apart (measured along the roof lines) and are less the 100 watts (1800 lumens) per lamp are exempt from the preceding sections 1 and 2.
4. **RESIDENTIAL SPORT COURTS AND EQUESTRIAN AREAS IN ALL LIGHTING ZONES.**
 - a. Existing facilities that were built prior to the adoption of this Chapter exempt from all Sections of this Chapter, except in the event that any of the existing luminaires needed to be replaced, then they shall be specified, installed, and controlled in compliance with all Sections of this Chapter. This does not include the normal maintenance of lamps or ballasts. All new luminaires must be full-cutoff, fully-shielded, or partially-shielded, to the satisfaction of Planning Staff.
 - b. All Equestrian Areas and sport court luminaires must be turned off when not in use.
 - c. New facilities shall not exceed a mounting height of 40-feet. New facilities that utilize full-cutoff or fully-shielded luminaires shall not exceed a lighting power density of 1.50 Watts/Ft². New facilities that utilize cutoff, semi-cutoff, or partially-shielded luminaires shall not exceed a lighting power density of 1.00 Watts/Ft².
 - d. All applicants shall include in their submittal a completed worksheet, which may be obtained from Planning Staff, and which will document compliance with Section D
5. Mercury Vapor light sources are not allowed, and any existing installations must be removed prior to January 1, 2011.

2.195.050 EQUIPMENT SUBSTITUTIONS OR ALTERATIONS.

The outdoor lighting equipment installed at a project site (fixtures, lamps, poles, finishes, controls, etc.) and the locations thereof shall not be substituted or altered in any way from the approved plans (except for the use of alternate manufacturers already listed in the Fixture Schedule of the approved plans) without first submitting the changes to Planning staff and receiving written approval. Failure to comply with this Chapter can result in penalty action from the County, including a decline to issue the final Certificate of Occupancy or final Certificate of Completion until the project is brought into conformance with the approved plans, to the satisfaction of Planning Staff.

2.195.060 VERIFICATION.

All outdoor lighting installations are subject to inspection/verification of the lighting equipment, LPD, LD, and illumination levels (adjusted for Light Loss Factors) by county staff or their designee, prior to the issuance of the final Certificate of Occupancy or final Certificate of Completion. Installations that are determined by Planning Staff to not be in compliance with the approved plans shall be corrected and brought into compliance with the approved plans prior to the issuance of the final Certificate of Occupancy or final Certificate of Completion. A complete set of the approved Planning submittal shall be kept at the site for the duration of the project, and the Planning Department shall be contacted for an on-site inspection of the outdoor lighting equipment prior to the installation of any luminaire that is to be mounted at a height of more than 6-feet.

2.195.070 PERMANENT EXEMPTIONS:

A. NONCONFORMING FIXTURES.

All outdoor fixtures existing and fully installed prior to the effective date of this Chapter, except for luminaires with a mercury vapor light source, may remain "nonconforming" indefinitely; provided, however, there shall be no change in use, replacement, structural alteration, or restoration of outdoor light fixtures after not being used for a period of 12 consecutive months unless it thereafter conforms to the provisions of this Chapter. This does not include the standard maintenance replacement of lamps and/or ballasts.

B. FEDERAL AND STATE FACILITIES.

Those facilities and lands owned and/or operated as protected by the U.S. Federal Government or the State of Arizona is exempted by law from all requirements of this Chapter. In addition, all federal and state detention facilities and other places for lawful confinement shall have the same exemption. Voluntary compliance with the intent of this Chapter at those facilities is encouraged.

C. PUBLIC AND PRIVATE DETENTION FACILITIES.

All detention facilities and other places for lawful confinement, whether they are public or private, shall have the same exemptions as in Section 2.195.070.B. Voluntary compliance with the intent of this Chapter at those facilities is encouraged.

D. PROJECTS THAT REQUIRE UNUSUALLY HIGH ILLUMINANCE LEVELS OR LUMINAIRE MOUNTING HEIGHT.

Projects that require unusually high illuminance levels and/or mounting height shall be exempt from this Chapter. These projects will be reviewed by County Staff on an individual basis, and subsequently submitted to the Board of Supervisors for final approval. These types of projects include, but are not limited to; professional sports stadiums, other public or private sports facilities, and high schools.

E. MOTION-SENSOR CONTROLLED LIGHTING.

Motion-sensor controlled fixtures being utilized for security or safety purposes, with a wattage of less than or equal to 100-watts (1800 lumens) per lamp, are exempt from these provisions.

F. ELECTRIC UTILITY LEASED LIGHTING.

Planning staff, at its discretion, may allow the use of electric utility leased lighting that does not exceed a mounting height of 21 feet in lighting zone 1, and 28 feet in lighting zone 2. The light sources utilized in lighting zone 1 shall not exceed a color temperature

of 3,500 degrees Kelvin. "Half-night" photocells may be utilized instead of the required 10:00 PM timed shutdown. The lighting must meet any of the relevant shielding requirements established in this Chapter.

2.195.080 PROCEDURES FOR CHAPTER COMPLIANCE:

A. APPLICATIONS.

1. Any individual applying for a compliance review number or building permit under this Chapter intending to install outdoor lighting shall, as part of said application, submit evidence that the proposed work will comply with this Section.
2. All other individuals intending to install outdoor lighting fixtures shall submit an application to the Planning Director providing evidence that the proposed work will comply with this Section.

B. CONTENTS OF APPLICATION OR SUBMISSION.

1. The applicant may obtain from Planning staff a document that lists all of the items that comprise a proper and complete outdoor lighting submittal. The submittal shall contain, but shall not necessarily be limited to, the following:
2. Plans indicating the location on the premises, and the type of illuminating devices, fixtures, lamps, supports, other devices, etc.
3. Description of the illuminating devices, fixtures, lamps, supports and other devices, etc. This description may include but is not limited to manufacturers, catalog cuts, drawings and photometrics (including sections where required).
4. The above required plans and descriptions shall be sufficiently complete to enable the Planning Director to readily determine whether compliance with the requirements of this Chapter will be secured. If such plans and descriptions cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures or lamps proposed, the applicant shall submit evidence of compliance by certified test reports as performed by a recognized lab.

C. ISSUANCE OF PERMIT.

Upon compliance with the requirements of this Chapter, the Planning Director shall issue a permit for installation of the outdoor lighting fixtures, to be installed as approved. In the event the application is part of the building application under the zoning regulations, the issuance of the building permit will be made if the applicant is in compliance with this Chapter as well as the other requirements for issuance under the zoning regulations.

D. AMENDMENT TO PERMIT.

Should the applicant desire to substitute outdoor light fixtures or lamps after a permit has been issued the applicant must submit all changes to the Planning Director for approval with adequate information to assure compliance with this Chapter.

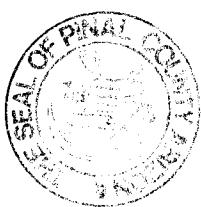
2.195.090 TEMPORARY EXEMPTIONS:

A. REQUEST FOR TEMPORARY EXEMPTIONS.

1. Any individual as defined in this Chapter may submit a written request on a form prepared by the Planning Department for a "temporary exemption" to the requirements of this Chapter. Approval for a temporary exemption is at the discretion of the Planning Director and shall be valid for thirty (30) calendar days or less, as determined by the Planning Director. Any renewal is also at the discretion of the Planning Director. The Request for Temporary Exemption shall contain minimally the following listed information:
 - a. Specific exemptions involved;
 - b. previous temporary exemptions, if any;
 - c. duration of time requested exemption;
 - d. type and use of exterior light involved;
 - e. type, wattage & initial lumens of proposed lamps
 - f. a plan with proposed luminaire locations; and
 - g. manufacturer cutsheets for proposed luminaires.
2. In addition to the above data, the Planning Director may request any additional information which would enable him or her to make a reasonable evaluation of the Request for Temporary Exemption.

SECTION 2. This ordinance shall take effect 31 days from and after the date of its adoption.

PASSED AND ADOPTED by the Board of Supervisors, Pinal County, Arizona, this
13th day of October, 2010.



A handwritten signature of Pete Rios in black ink.

PETE RIOS, Chairman of the Pinal County Board
of Supervisors

ATTEST:

A handwritten signature of Shelli Cluff in black ink.

Clerk of the Board

APPROVED AS TO FORM:
JAMES P. WALSH, PINAL COUNTY ATTORNEY

By: Seymour H. Gruber
Deputy County Attorney