

Pinal County Outdoor Lighting Ordinance Update



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Pinal County Dark Sky and Lighting Code Discussion & Review
July 31, 2025

What is the goal?



McDonald Observatory

Sources for the analysis

Five Lighting Principles for Responsible Outdoor Lighting



Responsible outdoor lighting is

1 Useful

Use light only if it is needed

All light should have a clear purpose. Consider how the use of light will impact the area, including wildlife and their habitats.



2 Targeted

Direct light so it falls only where it is needed

Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.



3 Low Level

Light should be no brighter than necessary

Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.



4 Controlled

Use light only when it is needed

Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.



5 Warm-colored

Use warmer color lights where possible

Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.

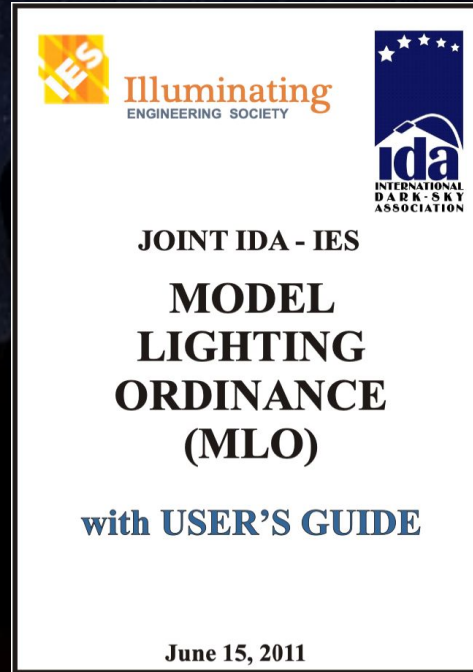
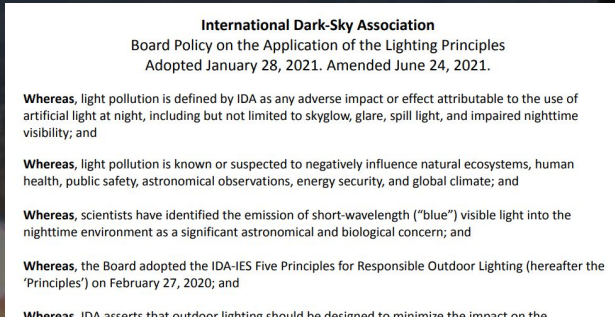


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Sources for the analysis



“Values-Centered Outdoor Lighting” (2021)

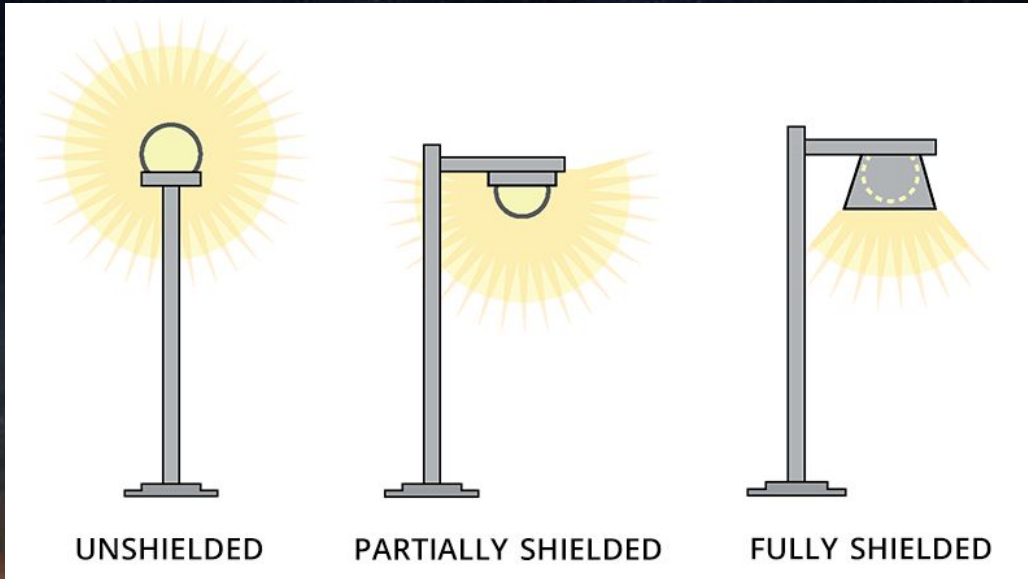


Responsible Outdoor Lighting At Night (ROLAN) “Manifesto” (2022)



Light shielding

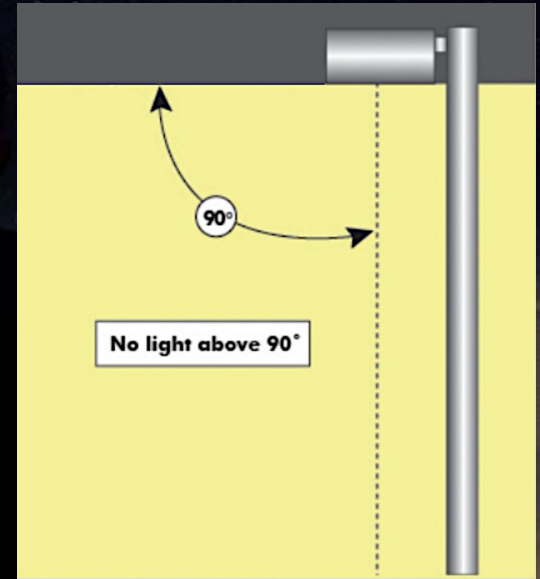
Fully shielded fixtures are best for reducing light pollution and unintended off-site impacts.



BAD

BETTER

BEST



Spectrum control

Low color-temperature ("warm") light at night is better for wildlife, people, and the night sky.

Temperature	Source
1700 K	Match flame, low pressure sodium lamps (LPS/SOX)
1850 K	Candle flame, sunset/sunrise
2400 K	Standard incandescent lamps
2550 K	Soft white incandescent lamps
2700 K	"Soft white" compact fluorescent and LED lamps
3000 K	Warm white compact fluorescent and LED lamps
3200 K	Studio lamps, photofloods, etc.
3350 K	Standard "CP" light
5000 K	Horizon daylight
5000 K	Tubular fluorescent lamps or cool white/daylight compact fluorescent lamps (CFL)
5500–6000 K	Vertical daylight, electronic flash
6200 K	Xenon short-arc lamp ^[2]
6500 K	Daylight, overcast
6500–9500 K	LCD or CRT screen
15,000–27,000 K	Clear blue poleward sky

These temperatures are merely characteristic; there may be considerable variation



Overlighting prevention

Lighting allowances scale with expected uses to prevent waste, reduce glare and limit trespass

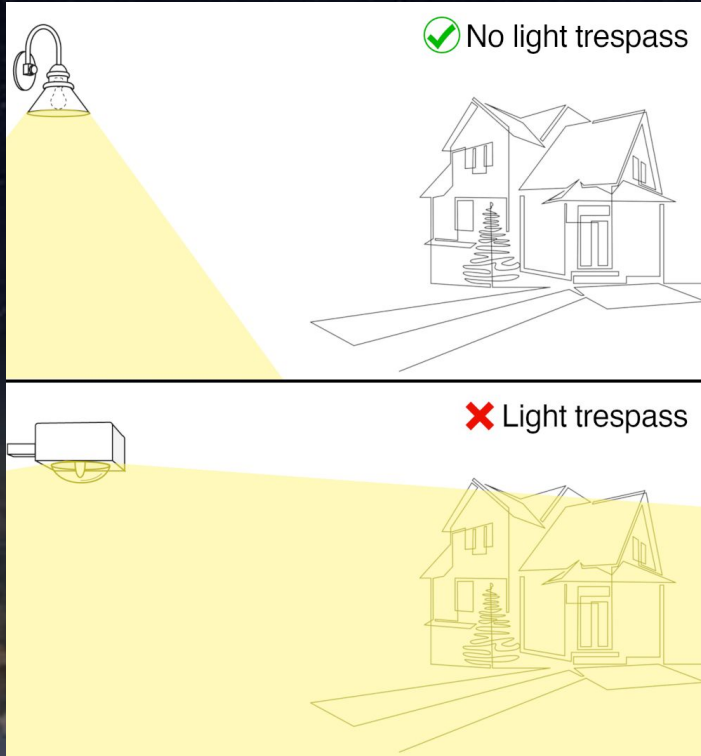


Lighting curfews

Dimming or extinguishing lights during the overnight hours saves money and electricity.



Light trespass prohibition



Reducing or eliminating the potential for trespass discourages nuisance complaints and promotes neighborly relations.

Regulation of public lighting



Municipalities should not be exempted from following their own lighting ordinances.

Amortization



Existing non-conforming lighting should be actively retrofitted or replaced on a reasonable timescale

Light shielding

Existing (2012)

General uses:

LZ1: ✓ §2.195.030(C)(6)(a)

LZ2: ✗ §2.195.030(C)(7)(a)

LL3: ✗ §2.195.030(C)(8)(a)

Special uses:

Parking canopies: ✓ §2.195.040(A)

Multilevel parking structures: LZ1 ✓

§2.195.040(B)(1); LZ2/3 ⚠ §2.195.040(B)(2)

Gas station canopies: ✓ §2.195.040(C)

Drive-throughs: ✓ §2.195.040(D)

Car dealerships: ✓ §2.195.040(G)

Equestrian arenas: ✓ §2.195.040(H)

Flagpoles: ✗ §2.195.040(I)

Outdoor sports lighting: ⚠ §2.195.040(J)

Park lighting: ⚠ §2.195.040(J)(2)

Proposed (2025)

General uses:

LZ0: ✓ §2.195.040(A)(1)

“Single-family residences, attached and detached” in LZ0 and LZ1: ✓

§2.195.030(C)(6)(a)

LZ2: ✗ (unchanged)

LL3: ✗ (unchanged)

Special uses:

(unchanged)

Recommendation

A single shielding standard for all zones not to exceed 1000 initial lamp lumens, with permissible exceptions. The threshold can be lowered as desired.

Spectrum control

Existing (2012)

✓ §2.195.030(C)(6)(a). LZ1: *"All light sources shall have a maintained color temperature of less than or equal to 3,000 degrees Kelvin."*

✗ There is no corresponding limit in LZ2 or LZ3.

Specific applications:

- Religious facilities: *"Metal halide and other light sources with color temperatures cooler than 3,000 Kelvin are not allowed in lighting zones 1 and 2, and for all facilities in lighting zone 3 that are at or within 300 feet of a residential property line."*

Proposed (2025)

✓ LZ0 is added in subsection A(1): *"All light sources shall have a maintained color temperature of less than or equal to 2,500 degrees Kelvin."*

✓ LZ1: §2.195.040(B)(1) 3000K

✗ LZ2: **no limit specified.**

✗ LZ3: **no limit specified.**

Recommendation

A single CCT standard for all zones not to exceed 3000K. The threshold can be lowered as desired, e.g., as in the proposed figure for LZ0.

Overlighting prevention: total

Existing (2012)

⚠ §2.195.030(A): Allowances are made for installed lumens as a percentage of IECC maximum lighting power densities (LPDs), or lumens per square foot limits, whichever is less.

Proposed (2025)

⚠ §2.195.030(A): Allowances are as in the 2012 version, adding a new LZ0 with 25% of allowed maximum LPD or 4 lm/SF, whichever is less.

Recommendation

Set lumen density limits by Lighting Zone

LZ0: 9,000 lumens per acre

LZ1: 20,000 lumens per acre

LZ2: 50,000 lumens per acre

LZ3: 120,000 lumens per acre

Overlighting prevention: unshielded

Existing (2012)

✓ §2.195.030(C)(5)

Proposed (2025)

✓ (unchanged)

Recommendation

No change.

Lighting curfews

Existing (2012)

⚠ e.g., §2.195.030(B). The current code language is ambiguous: lighting *"shall be turned off"*, but also *"a nighttime reduction of at least 50 percent in overall LD or LPD is required"*.

Proposed (2025)

⚠ Largely unchanged.

Recommendation

Removing the existing ambiguity by stating clearly whether lighting must be completely extinguished or merely dimmed.

Light trespass prohibition

Existing (2012)

⚠️ §2.195.030(E) appears to limit the trespass prohibition only to situations in which “there is a residential property line located within 150 feet of any of the project site's property line”. There are also some application-specific provisions (e.g., equestrian arenas, outdoor sports lighting)

Proposed (2025)

⚠️ Largely unchanged.

Recommendation

Make the trespass standard uniform within (or across) Lighting Zones through suitable/appropriate language.

Regulation of public lighting

Existing (2012)

✗ Not addressed.

Proposed (2025)

✗ Not addressed.

Recommendation

Add suitable language.

Amortization

Existing (2012)

⚠ Renovations of >50% of site lighting triggers compliance, §2.195.010(B). Also, §2.195.070(A) grants a permanent exemption until compliance is triggered. However, there is no sunset date for exemptions.

Proposed (2025)

⚠ Unchanged.

Recommendation

Make a clearer statement applying to all outdoor lighting subject to the jurisdiction of this code that non-conforming installations existing as of the effective date must be brought into full compliance within ten years of that date.

IDSC-specific provisions

Existing (2012)

Restrictions on illuminated signs: ⚠️
Outdoor sports lighting: ⚠️

Proposed (2025)

Restrictions on illuminated signs: ⚠️
Outdoor sports lighting: ⚠️

Recommendation

**Follow DarkSky International
policy requirements for
International Dark Sky
Communities.**



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