Pinal County’s Low-Light Ordinance (PZ-C-003-09)
and International Dark Sky Community (IDA)
Standards: A Comparison

GCCI, Preservation/Environment

July 2022

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| IDA Guideline | **Pinal County Ordinance** | **Match Status** |
| “The Community must have some type of legal organization that is officially recognized” (IDA, 2010) | * Pinal County
* Regional Parks
* Municipalities
 | Match |
| “all the following minimum standards for permanent lighting installations: A) Full shielding of all lighting fixtures over 1000 initial lamp lumens” (IDA, 2010) | “LIGHTING ZONE 1: Pole or wall—mounted luminaires shall be Full-Cutoff luminairesonly. 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 lessthan or equal to 3,000 Kelvin.” (Rios, 2018) “LIGHTING ZONE 2: Pole or wall—mounted luminaires of less than or equal to 1800 initiallumens may be Semi-Cutoff, Cutoff, or Full-Cutoff.All other pole or wall-mountedluminaires shall be Full-Cutoff.Bollards shall be Full-Cutoff, or Iouvered with coatedlamps, or of a type where the lamp is recessed and not directly visible. “ (Rios, 2018) | Zone 1: MatchZone 2/3: ContradictsSemi-cutoff is allowed on lights over 1000 lumen. |
| “all the following minimum standards for permanent lighting installations: B) A limit on the emission of short-wavelength light through one of the following restrictions: i) The correlated color temperature (CCT)n of lamps must not exceed 3000 Kelvins; or ii) Allowed lighting must not emit more than 25% of it's total spectral power at wavelengths < 550 nanometers; or iii) The scoptic-to-phoptic (S/P) ratio of allowed lighting must not exceed 1.3” (IDA, 2010) | “LIGHTING ZONE 1: Pole or wall—mountedluminaires shall be Full-Cutoff luminairesonly. Bollards shall be Full-Cutoff, or Iouvered with coated lamps (see Section 2.195.020“Bollard, Louvered”).All light sources shall have a maintained color temperature of lessthan or equal to 3,000 Kelvin.” (Rios, 2018) | Fails to match:Does not specifically contradict, but fails to meet section ii and iii, likely to be able to match given funding for testing and passing regulation. |
| “all the following minimum standards for permanent lighting installations: C) A restriction on the total amount of unshielded lighting, such as a limit on lumens per net acre or a total site lumen allowance in unshielded fixtures (or equivalent wattages)” (IDA, 2010) | “Zone 1 … … Full-Cutoff fixtures only” (Rios, 2018) Table F | MatchA requirement for specific lumens amounts and types is provided for all Zones in table F. |
| “all the following minimum standards for permanent lighting installations: D) A policy to address over-lighting, such as lumens per net acre caps (irrespective of shielding state) or maximum illuminance specifications” (IDA, 2010) | “Zone 1… … LD=9 Lumens/FT2“ (Rios, 2018) Table F | MatchA lumens per square foot requirement will satisfy the lumens per net acre requirement. Zone 1 mentioned here, but zone 2 and 3 also have a requirement. |
| “all the following minimum standards for permanent lighting installations: E) Regulations of new installations of publicly-owned outdoor lighting: i) A provision that clearly indicates where, when, and under what circumstances new publicly owned outdoor lighting, including street lighting, is warranted and will be permitted; AND ii) A provision that requires that adaptive controls and/or curfews be employed in all future installations of public outdoor lighting” (IDA, 2010) | “L.T.E 800 Initial LumensTurn off at 10:00 PM. Or 1-hour after Close of Business” (Rios, 2018) Table F | Match2.195.030GENERAL REQUIREMENTS. Describes where, when, and under what circumstances new lighting including street lighting is warranted and will be permitted.A provision is included in table F describing curfews. |
| “all the following minimum standards for permanent lighting installations: F) Restrictions on the installation and operation of illuminated signs: i) Luminance levels for operation between sunset and sunrise shall not exceed 100 nits (100 candles per square meter) as measured under conditions of a full white display; AND ii) Sign illumination shall be extinguished completely one (1) hour after sunset, and remain off until one (1) hour before sunrise; AND iii) The luminous/illuminated surface area of an individual sign shall not exceed 200 square feet (18.6 square meters): (IDA, 2010) | “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.” (Rios, 2018) | Fails to matchThis may match when the referenced document is considered, but this document alone likely does not match unless the requirements are taken very loosely. |
| “all the following minimum standards for permanent lighting installations: G) Outdoor recreational and/or athletic field lighting may be exempted from the strict shielding and short-wavelength emission requirements above provided that all of the following conditions are met: i) Illuminating Engineering Society (IES) lighting guidelines (RP-6) are followed according to the appropriate class of play ii) Field lighting is provided exclusively for illumination of the surface of play and viewing stands, and not for any other applications iii) Illuminance levels must be adjustable based on the task (e.g. active play vs. field maintenance) iv) Off-site impacts of the lighting will be limited to the greatest practical extent possible. v) A strict curfew requirement (e.g. lights must be extinguished by 10pm/2200h or one hour after the end of play, whichever is later) is observed. vi) Timers must be installed to prevent lights being left on accidentally overnight by automatically extinguishing them” (IDA, 2010) | “J. PARK AND SPORTS LIGHTING FOR ALL PRIVATE AND PUBLIC NON-RESIDENTIAL FACILITIES. All sports, path, parking lot, and playground lighting are to be illuminated in conformancewith 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-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 at 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 shallpossess 4-sided shielding skirting. Sports lighting 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 lightingshall 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. Sports lighting 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. Sports lighting 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 way.” (Rios, 2018) | Fails to match IES guidelines are not mentioned. Adjustable illuminance levels are not required and restriction of use does not seem to match. |
| “all the following minimum standards for permanent lighting installations: H) Affects an amortization period, applicable to ALL publicly AND privately owned lighting, to end not more than ten (10) years from the effective date of the outdoor lighting policy, after which all non-conforming lighting extant at the time of enactment must be brought into compliance with the policy.” (IDA, 2010) |  | Fails to matchBecause there is no specific plan to address all these requirements there is also obviously no timeframe to make it happen. |
| “Community commitment to dark skies and quality lighting as shown by: A) City owned lighting conforming with, or committed to conforming with, the lighting policy (if the latter, a detailed plan with a timeline for completion in no more than five (5) years); AND B) Municipal support of dark skies and quality lighting as demonstrated by city publications, flyers, public service announcements, funding of lighting upgrades, etc.” (IDA, 2010) |  | Fails to matchBecause there is no plan to make this happen, there is no city move toward this or municipal support of any kind. |
| “Broad support for dark skies from a wide range of community organizations such as chambers of commerce, local electrical utilities, IDA chapters, lighting retailers, homeowners associations, and others.” (IDA, 2010) |  | Fails to matchAs above, this is not mentioned in this document and would need to be fostered upon adoption of something to generate interest and support. |
| “Community commitment to dark skies, and education as shown by the following: A) Planning and execution of at least two (2) Community dark sky awareness events per year. This may be organized through a local astronomy club, municipality, school, etc.” (IDA, 2010) |  | Fails to matchAs above, this is not yet planned. Support from different organizations would need to be fostered. Possible support from schools such as ASU clubs could be viable. |
| ”Community commitment to dark skies, and education as shown by the following: b) Inclusion of dark sky awareness documents (IDA brochures or Community-created brochures) with other Community informational documents for residents and visitors.” (IDA, 2010) |  | Fails to matchAs above, this would need to happen during a movement to become an IDSC. |
| “Community commitment to dark skies, and education as shown by the following: C) Inclusion of dark sky education in Community schools and curriculum.” (IDA, 2010) |  | Fails to matchfor the reasons stated above. |
| “Success in light pollution control as demonstrated by at least one of the following: A) Examples of a number of construction projects appropriate to the Community population and amount of new construction and renovation activity, built under the lighting policy and demonstrating its effective application B) Alternative evidence of success in light pollution control, to be discussed with the International Dark Sky Places Program Manager for compliance.” (IDA, 2010) |  | Fails to matchBecause current law does not fully meet the requirements, construction that is already underway under the law would have no reason to already be compliant with these requirements. |
| “A sky brightness measurement program must be established and maintained either by the Community or by a public or private entity (e.g. university, research center, IDA chapter, astronomy club, etc.) to follow the evolution of light pollution in the IDSC. Applicants are encouraged, but not required, to submit their measurements to the citizen science projects such as My Sky At Night (myskyatnight.com) and Globe At Night (globeatnight.org).” (IDA, 2010) |  | Fails to matchThis document does not have any information on a sky brightness measurement program. |
| “Once established, the Community must erect and maintain appropriate signage indicating the International Dark Sky Community designation along a roadway entrance, along a footpath entrance if no roadway exists, a public gathering place such as a square or common, or at a municipal government center such as a city or town hall. If approved by IDA, language as an alternative to International Dark Sky Community may appear on the signage and in Community communications regarding the IDSC status. Once the sign is erected, a photograph documenting it must be taken and sent to IDA along with a description of its location. |  | Not yet applicable, as with previous sections this would come far later. |

Annotated Bibliography

IDA. (2010). *International Dark Sky Community program guidelines*. Retrieved July 17, 2022, from https://www.darksky.org/wp-content/uploads/2018/07/IDSC-Guidelines-Jun2018.pdf

 This document outlines the requirements that the International Dark-Sky Association put forward in order to allow a community to use the IDA logo and branding to distinguish itself as a member of the International Dark Sky Community. The association is dedicated to the preservation of the night sky.

Rios, P. (2018). *Pinal County Zoning Ordinance*. Municode Library. Retrieved July 17, 2022, from https://library.municode.com/az/pinal\_county/ordinances/development\_services\_code\_and\_floodplain\_management\_?nodeId=998146

This is the municipal code for Pinal County, Arizona, as it relates to zoning. This contains all the legal requirements levied upon residents and developers in the area in order to keep the buildings in the area to a certain standard. The document can be used to show what requirements Pinal county has already met toward the International Dark Sky Community requirements.

The majority of this report was prepared by Robert Will for IDS 401 at Arizona State University under the supervision of Isabelle Rucks Petersen.