



INTERNATIONAL DARK-SKY ASSOCIATION

IDA-Criteria for Community-Friendly Outdoor Sports Lighting v1.0

1. Compliance with all applicable Codes and Standards (e.g. Underwriter Laboratories, CEC, National Building Codes with Local Amendments)
2. **Target Illumination** – Measured on-field illuminance values appropriate for the application per IESNA RP-6-15 Sports and Recreational Area Lighting criteria (or equivalent CIE guidance) together with modeled initial illuminance targets. Only IES Class III & IV level and State High School Lighting Recommendation illumination levels are eligible for the Award of Excellence. To limit over-lighting, the design may vary by no more than 10% above the average target illuminance levels for each Class.
3. As the IES TM-15-11 Luminaire Classification System for Outdoor Lighting is not appropriate for sports lighting, a modified approach to controlling backlight, uplight, and glare is applied with the following metrics:
 - A. **Backlight** – Directionality and application efficiency will be addressed indirectly through two methods that quantify off-site performance, one using the design luminance and another using measured illuminance. Backlight criteria will be difficult to meet without sufficient and appropriate setback of sports fields from the properly line.
 - a. Total designed lumens not contained within the area encompassing the field perimeter and an area immediately adjacent to that area that has a 33 foot (10 meter) offset. As modeled, no more than 15% of the total lumens may be outside of this region.
 - b. Measured spill illuminance values, as measured with the light meter aimed in the direction of the brightest reading, shall not exceed criteria for the respective Environmental Zone (Table 1 below) nor shall it exceed the maximum initial spill illuminance values as modeled and specified in the design process. These measurements shall be taken a distance equal to 150' beyond the edge of the field. Measurements should be conducted with and without the facility lighting operating so that the sports facility lighting can be isolated from other natural and artificial light sources.

Table 1 – Allowable spill illuminance to control backlight

Lighting Zone		Spill Illuminance at Setback
Environmental Zone (IESNA RP-33-99)	MLO Lighting Zone (IDA Model Lighting Ordinance)	
E2 – E4	LZ1 – LZ4	≤0.20 ft-c / ≤2.0 lux

B. **Uplight** – All luminaires must be designed such as to not to emit direct light above the horizon, unless required for the activity (i.e. aerial sports) being played. In those cases, only 8% of the total (directly) applied lumens as modeled may be in this zone. For modeling purposes, a horizontal ceiling grid shall be placed 5 feet (1.5 meters) above the top of the tallest pole, extending out to 150 feet (45 meters) beyond the edge of the field to determine compliance. Installation shall not deviate from the design.

C. **Glare** – Modeled luminous intensity from any luminaire for any viewing angle at 5’ above grade level, at a distance equal to 150’ beyond the edge of the field shall not exceed 1000 candela (absolute). Luminaires shall not emit more than 250 lumens in the “Very High” glare zone, ranging from 80° to 90° above nadir. This shall be verified through a luminaire photometric report and aiming summary report and visual inspection, or through an equivalent software application and visual inspection.¹

4. **Lighting Zoning** – Community-Friendly Outdoor Sports Lighting will only be certified if located in environmental zones E2 through E4, or MLO lighting zone LZ1 through LZ4. Areas especially sensitive to lighting such as E1 or LZ0 are not appropriate for this award program.

5. **Application Efficiency** – The lighting system shall achieve a minimum Application Efficiency of 70 lumens per watt, calculated per the following formula (or the metric equivalent):

$$\frac{\text{Target area square footage} \times \text{Avg. Maintained Design ft-c}}{\text{Total System Watts}} = \text{Applied Lumens/watt}$$

“Target Area’ is defined as the total grid area for the sports field and/or sports court as defined by the IES LM-5-04 IESNA Guide for Photometric Measurements of Area and Sports Lighting Installments (or CIE equivalent guidance).

¹ When commercial meters are widely available to measure luminous intensity in the field, these criteria will be amended to also require a measurement component for glare.

6. **Controls** – Provide advanced controls and documentation for the following:
 - a. Automatic and/or remote control system via smartphone apps, or direct remote communication to the company facility responsible for handling the lighting controls, to enforce shut-off at locally established curfew time, not to be later than 11:00 PM (2300 hrs).
 - b. On-site manual and/or remote control system shall also be provided to allow for the lights to be turned on or off at will (before curfew) to assure that only active sports fields are lighted.
 - c. Provide readily accessible controls to implement uniform and variable adaptive illumination levels for different task lighting needs on field, e.g. IES class of play, competition athletics, band practice, striping, mowing, sports practice, etc. Adaptive dimming shall be possible across the range of 25% to 100% of full illumination.²
 - d. A formal policy defining the appropriate level of illumination necessary for the specific activities and curfew times must be established and enforced. A copy of the policy will be included in the application for the Award of Excellence.
7. **Color** – Luminaire Correlated Color Temperature (CCT) may not exceed 5700°K, as defined by ANSI C78.377. Luminaire CCT must be determined through empirical measurements as defined by IESNA LM-79 (or CIE equivalent) and performed by a laboratory appropriately accredited by NVLAP. Installation shall be verified by measurement across the target area.³
8. **Other Lighting** – The installed field lighting is not to be used for illuminating other area tasks. For example, if parking and concession areas lighting is desired, those areas shall be illuminated by separate luminaires and systems not associated with sports field illuminance needs. Other outdoor lighting at the site must, at a minimum, meet the lighting standards and lighting codes established by the community, and must meet the standards set forth in the IDA Model Lighting Ordinance for the relevant lighting zones and tasks.

² IDA is developing guidance for the appropriate illumination levels for non-sports activities and tasks that often occur on playing fields.

³ Some variance in the measured CCT values are permitted, following the ANSI guidance.



Exhibit B

IDA Community Friendly Outdoor Sports Lighting Lighting Performance Summary

Project: Jesuit High School Football
Location: Carmichael, CA
Curfew: 10:30pm
Submitted: 19 January 22 - 2:17 PM PST

Field: Football 1
 Field type: Football - Class III
 Environmental Zone: E2

Applicable Lighting Standard

	Standard	Measured	Result
Meets IES or HS Standard	—	Yes	PASS

Applied BUG Analysis

	Standard	Measured	Result
Total Fixture Lumens	—	5,395,955 lumens	—
Backlight: Lumens	15% or less	3.55%	PASS
Backlight: Spill	2.0 lux or less	0.02 lux	PASS
Uplight: Lumens	8% or less	7.8%	PASS
Glare: Max Candela	1000 candela or less	155 candela	PASS
Glare: 80° - 90°	250 lumens	2 lumens	PASS

Lighting Performance Result

PASS