

Definitions Our regulations are expressed in lumens/sf

1 foot candle is 1 lumen per square foot

1 lux= 1 lumen per square meter

0.0929 lumen per square ft = 1 lux

1 lumen per square foot =10.75 lux

The Illuminating Engineering Society of North America (IES) has announced publication of IES RP-6-15 — "Sports and Recreational Area Lighting." The comprehensive Recommended Practice document is focused on lighting specifications for participants and spectators in sports and includes guidelines for a broad variety of activities ranging from croquet to football.

FACILITY	CLASS			
	I	II	III	IV
Professional	X			
College	X	X		
Semi-Professional	X	X		
Sports Clubs	X	X	X	
Amateur Leagues		X	X	X
High School		X	X	X
Training Facilities			X	X
Elementary School				X
Recreational Event				X
Social Event				X
Class I: Facilities with spectator capacity over 5,000 Class II: Facilities with spectator capacity under 5,000 Class III: Facilities with some provision for spectators Class IV: Facilities with limited or no provision for spectators				

Table 2: Class of Play

We would be considered a class 4 facility. There are many standards and there is a lot of variability in the minimum average lighting requirements.

Height of lighting

Generally vertical aiming angles of lights should be a minimum of 21° from horizontal if you divide the width of the soccer field in ½ you get about 150 ft

The NCAA guidelines for tennis call for a 25-degree angle for cutoff type luminaires and 30 degrees for floodlights

The Tangent $21^\circ = 0.38$ so to illuminate something 150 ft wide at a 21 degree angle the pole needs to be 58 ft high Given that there is no perfect overlap between sides, 60 ft tall lights are a practical height and will be slightly under the 21 ° minimum

Our current maximum allowed is 35 ft. This works on a surface that is a maximum of 92 ft in width In other words 35 ft works fine for pickleball, basketball and tennis courts. Because on a pickleball court a ball can be lofted high in the air, the recommendation is for a 25-30 ° minimum angle. In other words our current regulations Max height works for pickleball courts.

Level of Lighting

Based on this (minimum standards or youth sports Recommendations vary a lot depending on the guide you use for lighting. But generally they provide for minimum average of 30 (FC) 1 FC Is the equivalent of 1 lumen/sf

Soccer fields 30-50 foot candles average with a maximum uniformity of 2.0 variability at 50 fc and 2.5 at 30 fc

It is also important to not that it is common to design the systems assuming 20% decrease in lighting levels over the life of the system, such that initial readings are higher than the minimum

So if we adopted the minimum standards we would be looking for a field with a average lighting level of 30 lumens/ sf with the brightest parts of the field being 50 lumens per square feet and the darkest parts of the playing field being 20 lumens/ square feet

For the Pickleball courts, light levels should be 30 or greater. Guidelines from USA pickleball are average illuminance of 30 lumens/sf, uniformity ratio of 0.7 or better, color temperature between 4000 and 5000 °Kelvin

Older players benefit from lighting that is between 50 and 70 lumens/sf

Our current regulations call for a maximum of 12 lumens/square foot.

Example of even field lighting with a 6 pole design



Example of a 4 pole design showing more variable lighting levels



This is an example of the 4 pole design and which light illuminates what part of the field

