

LED SPORTS LIGHTING BUYERS GUIDE



CALCULATOR GROUP LLC

info@sportsvenuecalculator.com

sportsvenuecalculator.com

EDITORIAL



Welcome to our comprehensive guide that covers the key considerations of cost, design, requirements, and funding throughout the different phases of LED sports lighting installation projects. Whether you're working with stadiums, sports fields, sports courts, gymnasiums, natatoriums, or indoor arenas across a range of sports, this guide is your ultimate resource.

In this buyer's guide, you will discover a wealth of invaluable insights and practical knowledge that will empower you to make informed decisions when it comes to LED sports lighting. This guide is designed to be your trusted companion as you embark on a transformative journey to optimize your facility's lighting system.

By embracing cutting-edge LED sports lighting technology, you open up a world of possibilities to enhance player performance and elevate the overall spectator experience. Imagine your athletes benefiting from well-lit playing fields that provide exceptional visibility, allowing them to perform at their peak potential. With improved lighting

uniformity across the entire playing area, shadows are minimized, ensuring fair play and reducing the risk of accidents. This optimal lighting environment contributes to a safer and more enjoyable sporting experience for both participants and spectators.

The benefits of LED sports lighting extend beyond performance and experience enhancement. They also offer remarkable energy efficiency, enabling substantial cost savings in the long run. LED lights consume significantly less energy compared to traditional lighting technologies, resulting in reduced electricity bills and a reduced carbon footprint. By embracing energy-efficient solutions, you demonstrate your commitment to sustainability and responsible resource management.

As you delve into the depths of this guide, you will gain a comprehensive understanding of the considerations involved in designing, installing, and retrofitting LED sports lighting systems. This guide equips you with essential tools and knowledge to make informed decisions at every stage of the process. From conducting in-depth cost research and ROI analysis to navigating diverse funding options and ensuring compliance with regulations, as well as selecting reputable suppliers, you'll have the resources you need to make sound and well-informed choices.

Antti Rydman
Head of Marketing



**COST OF A NEW LED SPORTS
LIGHTING INSTALLATION**



**DESIGN CONSIDERATIONS FOR
LED SPORTS LIGHTING**

TABLE OF CONTENTS

3 Editorial

6 6 Essential Steps for Installing LED Sports Lighting

9 LED Sports Lighting Systems Explained

10 Benefits of LED sports lighting

11 Fixtures

22 Control systems

23 Cost

23 Cost of a new LED sports lighting installation

25 Cost of an LED retrofit project

31 Design

31 Establish the use case

32 Standards and requirements

33 Lighting quality and uniformity

34 Recommended features

34 Sport-Specific Design Considerations

35 Football field lighting design

40 Baseball / Softball field lighting design

46 Soccer field lighting design

50 Tennis court lighting design

55 Pickleball court lighting design

59 Gymnasium lighting design

62 Basketball court lighting design

67 Volleyball court lighting design

71 Badminton court lighting design



CONVERTING A METAL HALIDE SPORTS LIGHTING SYSTEM TO LED



GRANTS & FUNDING

- 75 Horse arena lighting design
- 78 Natatorium / Indoor swimming pool lighting design
- 81 Ice hockey rink lighting design

- 84 Converting a metal halide sports lighting system to LED**
 - 85 Upgrading to LED stadium lighting as part of a larger project
 - 85 Auditing the existing lighting system
 - 86 How to convert a metal halide sports lighting system to LED
 - 87 What does the LED sports lights retrofitting process look like?
 - 88 Why you should convert your existing metal halide sports lighters to LED technology
 - 88 Metal halide to LED conversion chart for sports lighters
 - 90 400-watt metal halide to LED conversion
 - 92 1000-watt metal halide to LED conversion
 - 93 1500-2000-watt metal halide to LED conversion

- 95 Grants & Funding**
 - 102 Financing options and pricing models for LED sports lighting systems
 - 103 Federal government incentives for LED sports lighting: 179 D Tax Deduction
 - 104 State government incentives
 - 104 Local government incentives
 - 105 Grassroots Programs and Foundations
 - 107 USTA grants for tennis facility development

- 109 Choosing the right company for the job**
 - 111 Different companies for different use cases
 - 112 Preparations for the supplier selection phase
 - 114 Checklist for Choosing Your Partner
 - 116 Showcase of LED sports lighting installations
 - 118 Business directory



Picture: GameDay Lighting

FROM BLUEPRINT TO BRILLIANCE: 6 ESSENTIAL STEPS FOR INSTALLING LED SPORTS LIGHTING

Constructing a sports facility and installing an LED sports lighting system is an exhilarating yet intricate endeavor. To navigate this complex process successfully, it's crucial to understand the various steps involved.

1. PLANNING

Much of the work that goes into determining the lighting requirements will have been completed when planning the field itself. The same considerations of sport, competitive level, and available space will shape what you need for the lighting system.

Once you have that information in hand and

know the necessary illumination level, lighting system engineers can start developing options for providing that amount of light. They will balance things like the strength of individual lamps with the number of lamps per pole and the number of poles on the field. That, in turn, will affect the height of the poles and the tuning of each fixture on each pole.

They will also consider the electricity usage, and how much electricity the facility is capable of supplying to each pole. This is where finances and engineering begin to overlap: how much electricity will each arrangement need, how much can the facility deliver to each pole and how much will the costs of each option vary upfront and over time?

The delivery of a sports field lighting system can take anywhere between 1 and 12 weeks to deliver. A new installation can take the full

12 weeks if cabling and earthwork need to be done before putting up the light poles and installing the LED luminaires. On the other hand, if you are only replacing a few lighting fixtures, your project can be finished inside one week. Therefore, it is worth estimating beforehand how much time each step in the project takes and setting a clear schedule for the project. Typically schools or sports clubs install or replace their lighting systems during the off-season in order to have everything up and running before the new season starts in the fall.

2. FUNDING & BUDGETING

Adequate funding plays a critical role in LED sports lighting installation projects. The research conducted during the planning phase helps in securing funding from various sources such as governments, sponsorships, grants, and private investors. Two options for raising

funds are self-funding or outsourcing the task to professionals specializing in financing for sports facility projects. Careful consideration should be given to the financial aspects, ensuring a realistic budget is set to cover the costs associated with the LED sports lighting system.

3. DEVELOPMENT

Once funding and budgeting are in place, the project moves into the development phase. This stage involves creating detailed blueprints, selecting materials and contractors, and establishing a comprehensive project timeline and budget. It also requires conducting extensive research, including feasibility studies, market opportunity reports, and environmental impact assessments.

A well-designed lighting layout strategically arranges and positions lighting fixtures to ensure optimal light distribution. Factors such as facility size, shape, sports activities, and desired lighting levels are considered. Working with experienced lighting designers maximizes visibility, minimizes shadows and glare, and enhances the overall visual experience.

A photometric study measures and analyzes light distribution, intensity, and uniformity in a sports facility. Using advanced software and equipment, lighting experts simulate real-world conditions. The study generates a report that identifies areas for adjustment to achieve desired lighting levels and uniformity, allowing fine-tuning of the lighting design.

Both lighting design/layout and photometric study are integral to the development phase, enabling a customized lighting solution. By investing in these aspects, sports facilities benefit from top-notch illumination that enhances performance, safety, and overall experience.

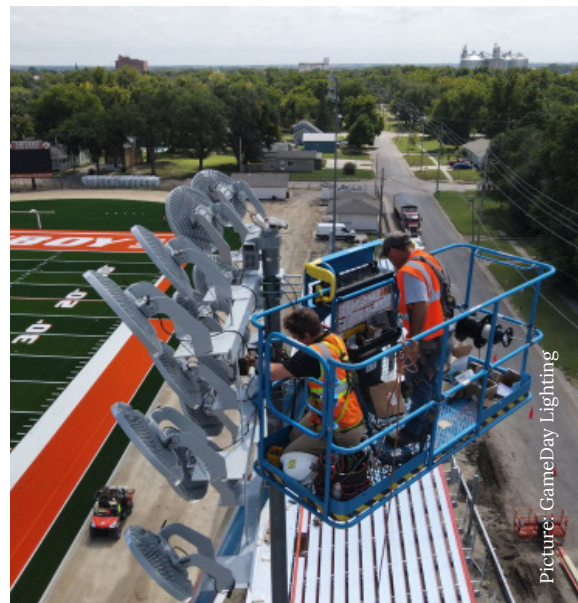
4. PROCUREMENT & BIDDING

Procuring the necessary materials and services is a critical step in the installation process. Careful attention to detail and thorough calculations are required to ensure that all the components are sourced efficiently and within the allocated budget. Collaborating with a

project manager who specializes in procurement can significantly simplify this complex process. They can guide the evaluation of bids, ensuring accuracy, competitiveness, and favorable deals.

5. INSTALLATION

With the designs finalized, bidding completed, and materials on-site, the installation phase commences. This stage brings the sports facility to life. The project manager takes charge, overseeing the installation process to ensure that tasks are completed on time, within budget, and according to specifications. Installation costs typically encompass material expenses, labor costs, and equipment requirements. The duration of the construction phase varies depending on the complexity of the facility, ranging from several weeks to over a year. Regular inspections and quality checks during construction help maintain the highest standards of workmanship.



6. OPERATIONS, MAINTENANCE, AND IMPROVEMENT

Completion of the installation phase is not the end of the journey. Establishing an effective operations and maintenance plan is vital to ensure the long-term functionality and success of the sports facility. This plan encompasses staffing requirements, regular maintenance schedules, equipment in-

spection, energy efficiency initiatives, and strategies for ongoing improvements. Collaborating with professional sports lighting companies can facilitate the development of a comprehensive plan tailored to the specific needs and budget of the sports facility.



Picture: Sportsbeams Lighting, Inc.

LED SPORTS LIGHTING SYSTEMS EXPLAINED

For a long time, sports fields around the country have been equipped with a metal halide lighting system. They offer a very bright output and are potent enough to provide uniform and high-quality illumination for a large athletic field. Despite the fact that metal halide lighting systems are still the most common solution for sports fields, there is a new kid on the block, who is quickly replacing metal halides as the go-to choice when it comes to illuminating sports fields.

I'm of course talking about LED sports field lighting. LED technology offers an even better quality of light (flicker-free, glare control, no warm-up time) while it can also save you up to 75% in energy consumption. Additionally, LED sports lighting requires essentially zero maintenance (no need to replace bulbs) and it has a much longer lifespan (approx. 50,000-100,000 hours) compared to metal halides (approx. 5,000-15,000 hours). Taking into consideration the fact that LEDs are fully electric and do not use any toxic materials, they have a vastly reduced impact on the environment.

IMPORTANT DIFFERENCES IN THE SPORTS LIGHTING SYSTEM CONFIGURATION

- **Technology** – LED sports lighting systems do not rely on lamps that use gas which makes them a greener option compared to metal halides. LED systems also do not need a ballast, instead, they use a driver to control the electric current between the power supply and the light fixtures. This can reduce your workload when it comes to the wiring of the system.
- **Fixtures** – the higher energy efficiency and better quality of light of LED sports lighters mean you will need fewer fixtures compared to metal halide systems. Another point for LEDs.
- **Lighting poles** – LED fixtures weigh less than metal halide luminaires which means you can possibly choose lighting poles that are made of lighter and more economical material.
- **Control** – LED technology allows for advanced lighting controls that help you easily adjust the lighting levels on the field using a mobile phone or a laptop. You can also program schedules for the lights, dim parts of the field when necessary and run light shows during the breaks.

BENEFITS OF LED SPORTS LIGHTING

1. **LED floodlights do not dazzle** For spectators, it is annoying to be blinded by the floodlights. For players, it can affect their performance and be extremely dangerous if they can't follow the ball's trajectory accurately. Glare-free LED lights create a trouble-free sports experience for everyone involved.
2. **Light does not flicker** A flickering light can also impair vision, or even be mistaken for a ball moving at high speed in the air against a darker background.
3. **Correct illumination of the diamond** Depending on the game, the requirements of the lighting system for the baseball diamond may vary. The higher class the game, the more lux (foot candles) are usually required. Therefore, it's better to over-plan than under-plan. But be careful! The lux number should not be much higher than is actually needed, because this will result in additional costs for the floodlight system. Avoid light pollution!

4. **An optimally adjusted LED floodlight system is “light efficient”:** it provides all the light the field needs without wasting any light. In other words, the light is adjusted precisely so that only the desired playing areas of the sports facility are illuminated, and not adjacent areas. This also prevents residents or motorists from being distracted or annoyed by a hazy glow around the stadium.

FIXTURES

Lighting a sports facility is one of the most essential parts of creating a safe, enjoyable environment for players and spectators alike. And in today's market, there's no shortage of options for LED sports lighting fixtures. LED lighting has become popular for many sports applications thanks to its high energy efficiency, long lifespan, and robust durability. But with so many LED fixtures on the market, how do you know which is right for your facility?

To help you make an informed decision, we've compiled a LED sports lighting buyer's guide. With our expert advice, tips, and insights, you can confidently select the perfect LED lighting system for your sports facility.

In case you are wondering how much it would cost you to install LED sports lighting fixtures for your sports facility, you can expect the total cost to range somewhere between \$25,000 and \$420,000, depending on various factors like the size of your sports facility, the competition level and the quality of the LED sports lighting fixtures.

Use our LED sports lighting cost calculator to get a customized cost estimate for your lighting project.

WHAT ARE LED SPORTS LIGHTING FIXTURES?

Before starting your search for the right products, a basic understanding of how LED sports lighting fixtures work is helpful.

LED light fixtures use light-emitting diodes as their light source. LEDs offer several unique benefits, including low energy consumption, long life expectancy (typically between 50,000 and 100,000 hours), and robust dura-

bility in various environmental conditions.

In the past, sports facilities and commercial buildings have used metal halide, high-pressure sodium, and fluorescent lamps as their primary light sources. However, LED lights have become popular due to their higher efficiency, a better quality of illumination, and lower wattage requirements (which is why

they are often used for sports lighting fixtures).

Beyond their budgetary benefits, LED lights perform better in terms of visibility for athletes and fans. The light is more evenly spread across courts, fields, and the stands, making spotting the ball and players easier. Another

positive aspect of LEDs is that they require no warm-up time and the lights do not flicker. Additionally, LED lighting emits a low amount of glare on the field, improving player visibility without causing discomfort for spectators. The result is a modern facility for your athletes – especially when installed by a trusted sports lighting professional.

APPLICATIONS OF LED SPORTS LIGHTING FIXTURES

Another major benefit of LED technology for sports lighting is versatility. Any sport, event, and size facility can benefit from LED light-

ing, whether a large stadium or small basketball court.

OUTDOOR LED SPORTS LIGHTING FIXTURES

If you're hosting outdoor sporting events such as football, soccer, tennis, or drag racing, outdoor LED lights are a great option to illuminate your facility. Outdoor LEDs come in various shapes and sizes depending on the

specific requirements of your field or court. For example, floodlights can provide broad coverage over large fields, while spotlights focus light more accurately on particular areas.



LED STADIUM LIGHTING FIXTURES

LED stadium lighting fixtures are designed to provide an excellent fan experience in the stands and via TV broadcast, and a safe playing environment for players on large sports fields with thousands of spectators in the audience. These high-powered LED fixtures

offer the highest level of brightness, uniformity, and color rendering due to strict requirements from the governing bodies of different sports. Stadium lighting fixtures are usually mounted on the ceiling, roof or trusses high above the playing surface.

FEATURES AND SPECS

- Competition level: Collegiate & Professional
- Baseball, Softball, Football, Soccer, etc.
- Lumen output: 84,000 – 168,000
- Lumens per watt: 120 – 150
- Wattage: 600w – 1500w
- Metal halide equivalent: 1500w – 2000w
- Lifespan (hours): up to 176,000
- Light pole height: 40' – 200' on the ceiling, roof or trusses high above the playing surface.



LED SPORTS FIELD LIGHTING FIXTURES

LED sports field lighting fixtures are powerful LED fixtures that are widely used at sports fields and ballparks used by youth sports leagues, recreational players, and high schools. They offer high-quality, uniform il-

lumination for the playing field, minimizing glare and shadows. Typically these fixtures are mounted on top of light poles, but sometimes surrounding structures can be also used for mounting.

FEATURES AND SPECS

- Competition level: High school, Recreational
- Baseball, Softball, Football, Soccer, etc.
- Lumen output: 28,000 – 70,000
- Lumens per watt: 120 – 150
- Wattage: 400w – 900w
- Metal halide equivalent: 1000w-1500w
- Lifespan (hours): up to 176,000
- Light pole height: 40' – 60'



Picture: Shinetoo Lighting USA LLC

LED SPORTS COURT LIGHTING FIXTURES

LED sports court lighting fixtures are specifically designed for outdoor sports courts for different sports like tennis, pickleball, padel tennis, basketball, etc. These fixtures are energy-efficient sports lighters that are mounted on top of light poles. They provide top-quality, uniform illumination with relatively low wattage. The long lifespan and zero maintenance make them an ideal solution for most sports facilities.

FEATURES AND SPECS

- Competition level: Recreational – College/pro
- Tennis, Pickleball, Basketball, Multi-sport, etc.
- Lumen output: 12,000 – 180,000
- Lumens per watt: 120 – 150
- Wattage: 100w – 400w
- Metal halide equivalent: 250w – 1000w
- Lifespan (hours): up to 176,000
- Light pole height: 20' – 30'

INDOOR LED SPORTS LIGHTING FIXTURES

For indoor events, LED lighting fixtures are especially beneficial. Most traditional lights don't provide enough light for indoor play, resulting in poor visibility and a dangerous playing environment.

LEDs offer superior illumination allowing players to see the court or field for badminton, ice hockey, volleyball, and basketball.

LED INDOOR ARENA LIGHTING FIXTURES

LED indoor arena lighting fixtures are designed for indoor sports arenas. The fixtures are usually mounted or hung from the ceiling to illuminate the sports court below from an ideal angle. Indoor arena LED fixtures are relatively high-powered because these types of

sports facilities usually accommodate lots of spectators and the games played on the court are highly competitive. Due to the high lighting requirements, these fixtures offer high brightness, great color rendering, and excellent uniformity of light.

FEATURES AND SPECS

- Competition level: Collegiate, Professional
- Basketball, Ice hockey, Horse arena, etc.
- Lumen output: 12,000 – 180,000
- Lumens per watt: 120 – 150
- Wattage: 400w – 600w
- Metal halide equivalent: 1500w – 2000w
- Lifespan (hours): up to 176,000





LED GYMNASIUM LIGHTING FIXTURES

Similar to indoor arena lights, LED gymnasium lighting fixtures are designed to light up indoor sports facilities. Gymnasiums are usually smaller and the level of competition is lower than at large indoor arenas, which low-

er the requirements for the lighting fixtures. Gymnasium LED light fixtures have less wattage, lower output, and lower color rendering performance.

FEATURES AND SPECS

- Competition level: U12, Middle / High school
- School gymnasiums, Commercial sports halls
- Lumen output: 12,000 – 180,000
- Lumens per watt: 120 – 150
- Wattage: 200w – 400w
- Metal halide equivalent: 1000w
- Lifespan (hours): up to 176,000

HOW MUCH DO LED SPORTS LIGHTING FIXTURES COST?

The purchasing cost of LED sports light fixtures is an important factor that influences the total cost of a sports lighting installation project. The price of sports lighters differs between brands and, like with most technical devices, the quality of the components and the country of origin largely determines the final price. Additionally, the bigger the total area that needs to be lit, the more wattage

you will need per light fixture to reach the required illumination requirements. Higher wattage/potency unfortunately comes with a bigger price tag.

To give you an idea of the pricing, you can refer to the price ranges below per type/application of the fixtures:

- LED stadium lighting fixture price: \$600 – \$3000
- LED sports field lighting fixture price \$500 – \$2000
- LED sports court lighting fixture price: \$200 – \$1500
- LED indoor arena lighting fixture price: \$300 – \$1500
- LED gymnasium lighting fixture price: \$200 – \$1000

Remember that the purchase price of the light fixtures is only one part of the total cost of the sports lighting installation project. Use our LED sports lighting cost calculator to get

a customized cost estimate for your new installation or LED retrofit project.

HOW MANY FIXTURES WILL I NEED?

That's often the first question facility managers and athletic directors ask. Unfortunately, answering it requires asking a handful of questions that should come first.

Determining the appropriate number of light fixtures for a sports field or court involves considering various factors. The size and dimensions of the playing area play a crucial role in determining the coverage and intensity of the lighting required. Larger fields may necessitate more fixtures to ensure uniform illumination across the entire surface. Addi-

tionally, the level of competition held at the facility is taken into account. Professional stadiums or high-profile collegiate venues often require higher light levels to meet broadcast standards and provide optimal visibility for athletes and spectators.

The number of spectators in the stands is another important consideration. Larger seating capacities may require additional fixtures to ensure adequate illumination in the spectator areas. Furthermore, if games are broadcast on television, specific lighting require-

ments must be met to ensure optimal camera coverage and image quality.

The potency and efficacy of the lighting fixtures themselves also factor into the equation. Advanced LED lighting technology offers high lumen output and energy efficiency, allowing for greater flexibility in determining

the number of fixtures needed. By assessing these various factors and leveraging the expertise of lighting professionals, sports facility owners and operators can arrive at an optimal configuration that balances performance, energy efficiency, and the unique requirements of their specific sports facility.

MOUNTING OPTIONS

Depending on the shape, size, and location of your stadium or sports field, there are different ways to mount LED lighting fixtures.

Walls/ceilings of surrounding structures:

If your sports field is located near a building or a structure (elementary school, middle school), you can use the walls to mount

your LED lighting fixtures on. This will save you time and money because you don't have to install light poles/masts.





High masts or lighting poles: This mounting option is ideal for smaller stadiums or sports fields (high schools, communal sports fields) that have a relatively small capacity for spectators and are not very tall structures. Installing masts or poles will allow you to install the lighting fixtures at an optimal height to provide high-quality illumination for the field below. When planning your layout, it's crucial to ensure you have enough space around the field or court. The beam angle needs enough space to maximize coverage and create a soft, even light. In general, you should be looking for a 12 – 60 degree angle for your lights. The height of the lights should be considered as well. Although there is no “perfect” height, you can expect 25 – 250 ft, depending on the sport.

Trusses: Modern sports stadiums are built with the spectator experience in mind, and usually, the playing field is very close to the stands, which leaves very little or no space for lighting poles. Luckily, large college or professional stadiums are normally high-capacity, tall buildings that sometimes even have roofs on top of the sports field that can be opened and closed depending on the needs of the event. Usually, there are frames, structures, and trusses high-up, on the walls and the roof of the stadium that can be used for mounting stadium lighting fixtures. Thanks to the height of the stadium, this mounting option offers a great beam angle for LED fixtures.

SPORTS LIGHT POLE DESIGN

Sports stadiums on different levels of competition use light poles to mount the LED stadium light fixtures around the perimeter of the sports field.

Stadium light poles are exposed to the elements and they have to resist all kinds of weather. They are also required to carry numerous light

fixtures, which is why the poles are made of strong and sturdy materials like steel, aluminum, or composite materials.

The height of the stadium light poles varies normally somewhere between 40 feet and 100 feet depending on the size of the stadium, the playing surface size, and the level of competition.

There are different types of stadium light poles available to choose from. The most common types are:

- **Fixed stadium light poles** – these light poles are commonly used at smaller stadiums where lighting requirements are not very high and do not change between events. These light poles are fairly easy to install and are not very expensive, but have limited functionality as they cannot be readjusted after initial installation.
- **Hinged light poles** – these light poles can be used either stand-alone or to complement fixed light poles where necessary. They allow more flexibility and can be angled or rotated when needed. This flexibility improves the uniformity of illumination on the field.
- **Retractable light poles** – these light poles are telescopic and they can be raised or lowered depending on the needs of the sporting event taking place to adjust the height of the lighting fixtures.
- **Mobile/portable light poles** – these light poles are not fixed to the ground and can be moved around the stadium and placed where more lighting output is needed. These light poles are usually purchased to complement other types of light poles.

Sports facility	Height
Football field lighting pole height	30 - 60 feet
Soccer lighting pole height	30 - 75 feet
Baseball lighting pole height	30 - 60 feet
Softball lighting pole height	30 - 50 feet
Lacrosse lighting pole height	30 - 60 feet
Field hockey lighting pole height	30 - 75 feet
Tennis court lighting pole height	20 - 30 feet
Pickleball court lighting pole height	20 - 30 feet

CONTROL SYSTEMS

Wireless control systems are an advanced solution for operating LED sports lighting systems, offering a range of features and benefits. All quality LED sports lighting brands equip their lighting systems with a modern, wireless control system. These systems provide the convenience of remote access and management, allowing users to control the lights wirelessly from their smartphones, tablets, or through dedicated software. Features of wireless control systems for LED sports lighting include:

- **On/Off Control:** Turn lights on or off remotely, providing convenient control and energy savings.
- **Dimming:** Adjust light intensity to create the desired ambiance or accommodate different activities.
- **Color Changing:** Change the color of LED lights for dynamic lighting effects or themed events.
- **Scheduling:** Set specific time schedules for lighting operations, ensuring lights are automatically turned on or off at designated times.
- **Motion Sensing:** Activate lights based on motion detection, optimizing energy efficiency and ensuring safety in unoccupied areas.
- **Remote Monitoring:** Monitor lighting performance, energy consumption, and maintenance needs remotely.
- **Energy Management:** Optimize energy usage by monitoring and controlling lighting levels based on demand or occupancy.



COST

COST OF A NEW LED SPORTS LIGHTING INSTALLATION

The cost of installing LED sports lighting is influenced by several factors. The size of the field or court plays a crucial role, as larger areas require more lighting fixtures to achieve optimal illumination. The level of competition is another consideration, as higher-level facilities often necessitate more advanced lighting systems to meet specific lighting requirements. The quality and performance of the lighting fixtures and infrastructure also impact the overall cost. It's important to ac-

count for geographical differences as well, as local regulations and potential weather-related challenges can affect the installation process and associated expenses.

Due to the various influencing factors, it is difficult to pinpoint an exact price tag for sports lighting installations, but you can refer to the indicative price ranges below depending on the sports facility type:

- Stadium & Sports field lighting installation cost: \$120,000 – \$880,000
- Indoor arena or gymnasium lighting installation cost: \$19,000 to \$252,000
- Outdoor sport court lighting installation cost: \$17,000 and \$233,000

Get a customized cost breakdown for your lighting installation project by using our LED sports lighting cost calculator.

WHAT INFLUENCES THE INSTALLATION COST OF STADIUM LIGHTING SYSTEMS?

The overall cost typically includes three main components: the cost of materials, the cost of labor, and the cost of equipment. By breaking down these different cost factors, we aim

to provide you with a comprehensive understanding of the total project cost involved in installing a sports lighting system.

THE TYPE OF SPORTS LIGHTING SYSTEM YOU CHOOSE TO INSTALL

Historically, sports stadiums and athletic fields have used metal halide lighting systems. Due to the slow rate of change, these systems are still probably the most common systems in the U.S. However, thanks to innovations in lighting technology, the fastest-growing lighting solution currently for stadiums is LED stadium lighting. In terms of costs, you can expect a higher upfront cost for LED vs. Metal Halide, thanks to LED's energy efficiency (50-75%), much longer lifespan (up to 100,000 hours), and basically zero maintenance requirements, you can expect your investment to be paid back very quickly.

Existing lighting infrastructure

If existing flood light poles can be used, a cost saving is possible. However, in this case, a photometric study around the lighting system is recommended. This takes into account the size of the playing field and the locations of the poles, and uses this data to create the optimum lighting concept for the sports facility.

Site preparation

Proper ground preparation is essential when installing sports field lighting systems to ensure a secure foundation for the light poles. Conducting a soil survey helps assess the soil conditions, and if necessary, excavation and installation of gravel and compacting are carried out to create a stable base. This thorough

preparation ensures the stability and safety of the lighting system, providing optimal lighting levels for sports facilities in terms of safety, aesthetics, and playability.

Wiring

Another potentially significant part of site preparation is the electricity infrastructure. You'll need a way to get the juice to the lights. Depending on what is already in place, powering up a new lighting system may entail installing the conduits, junction boxes and the like.

Light pole cost

Next are the light poles themselves. Modern light poles are either metal, concrete or a combination of the two. Wood poles should never enter the conversation. We bring them up only to ensure that if your contractor offers them, you can give them a firm "No." The cost of the poles will vary based on the material and size (height, weight and diameter), with the size determined in part by weather conditions in your area.

Light fixtures

Then there are the lamps themselves. The price of the lamps depends on their output, the quality of the light they produce (yep, light comes in different qualities), the reflector systems and, of course, the number of lamps.

Level of competition

Lighting requirements for a professional stadium, where games that are broadcast on television take place, are higher than for a playing field at a school or a training field. The stronger the light needs to be, the more LED luminaires you'll need, and consequently the higher the price tag will be.

Size of the field or court to be lit

In addition to the different lighting requirements depending on the level of competition, the requirements also differ according to the type of sport. Even if all the above requirements are the same, the cost of LED lighting will be different for two different sport fields, mostly due to the difference in size and dimensions of different sports fields and courts. The larger the total area to be lit, the higher the total cost of the lighting installation project.

COST OF AN LED RETROFIT PROJECT

The cost to retrofit LED fixtures to an existing HID or metal halide sports lighting system ranges somewhere between \$15,000 and \$588,000. This includes the cost of purchasing the new LED lamps and the cost of installing them in the existing lighting fixtures (labor). Costs vary depending on the size of the sports field or court, geographical location, the sports lighting supplier, the average maintained brightness requirement and level of competition of the sports facility.

The exact cost is hard to estimate because ev-

ery ballpark lighting system is different. It is essential to have a professional sports lighting company audit your existing lighting system to understand what the best way to convert your sports field lights to LED is.

We explain the different methods of upgrading an HID or metal halide lighting system to LED in this article. If you are in a hurry and just want to get a customized cost estimate for retrofitting LEDs to your sports facility lighting system, use our LED retrofit cost calculator.

LED sports lighting retrofit cost per sports facility type:

- Stadium & Sports field lighting installation cost: \$122,000 – \$588,000
- Indoor arena or gymnasium lighting installation cost: \$19,000 to \$252,000
- Outdoor sport court lighting installation cost: \$15,000 and \$45,000

Price range estimates are based on average prices taking into account the following factors:

- Competition level (recreational, high school, college, pro)
- Brightness requirements (30 fc, 50 fc, 100 fc)
- LED conversion method (lighting fixture replacement vs retrofit)
- Geographical differences (labor costs)
- Product quality



WHAT INFLUENCES THE COST OF A LED SPORTS LIGHTING RETROFIT?

Due to many moving parts it is hard to pinpoint the exact price tag for converting your sports lighting system to LED. Having said that, certain cost factors always remain con-

stant. In the below list we present the most important factors in any LED sports lighting upgrade project:

- **Competition level** - The higher the level of play, the higher the cost. This is mainly due to more stringent lighting requirements. A professional or college level sporting event will need to ensure top quality spectator experience in the stands and on TV.
- **Average maintained brightness level**
 - Recreational: 30 fc / 300 lux
 - High School: 50 fc / 500 lux
 - College / Pro: 100 fc / 1000 lux
- **Size of the area to be lit** - a single tennis court will need less light than a tennis court complex with six full-sized courts.
- **Method of LED retrofit** - will you be changing the whole lighting system or only the fixtures?
- **Quality of the LED fixtures** - Like with everything in this life, better quality products tend to cost more.
- **Geographical location** - Sports lighting installation labor costs vary greatly across the country
- **Supplier pricing differences** - Pricing varies between suppliers and even between countries. Keep your eyes open for good deals!

Metal halide wattage	LED replacement	Energy savings
500w	60 - 125w	50 - 75%
750w	200 - 400w	50 - 75%
1000w	250 - 500w	50 - 75%
1500w	400 - 750w	50 - 75%
2000w	500 - 1000w	50 - 75%

LED RETROFIT VS LIGHTING SYSTEM REPLACEMENT COST

The technical respects of an LED retrofit are important to comprehend when the project is being scoped out, but for many, the very first order of business is to determine how large a check will need to be written to accommodate it.

By virtue of what a retrofit is, it is the least expensive to implement. However, ancillary costs can arise, such as rewiring of a ballast, maintenance related to the new setup, and LED lamp and driver charges. However, some facilities may elect to worry about the periphery fees at a later date and go with the choice that is most cost-friendly in the near term.

Replacing the entire HID lighting system with a new LED system is a more invasive project than a simple LED retrofit. This obviously means that it takes more time and is,

therefore, more expensive as a result. The higher cost may come with many benefits which is why we recommend you to discuss internally within the project team what the goals of the project are and how much budget you have in the short and long term for sports lighting installations.

A lighting specialist will inspect your light poles, lamp mounts, fixtures and electrical infrastructure to determine how much can be adapted for an LED system. If any of the components are particularly old or worn-down, the cost of a retrofit may be quite close to the cost of an entirely new lighting system. There are also some features of system control that may not be available with a retrofit, and you'll need to decide how important those features are and if they would be worth the additional cost of replacing your old light fixtures with new LED luminaires.

HOW MUCH DOES AN LED SPORTS LIGHTING SYSTEM COST TO OPERATE?

In your budget planning, you should consider future energy and maintenance costs in addition to the purchase and installation of the flood lighting system. Although the initial cost is slightly higher, LED lights are the most economical and environmentally friendly option in the long run.

Unlike halogen floodlights, the light output produced by LEDs degrades very slowly. Often, the lifespan of LED stadium lighting systems ranges from 80,000 to 100,000 hours. This significantly reduces the maintenance costs of operating the sports facility because fewer bulbs or fixtures need to be replaced.



An LED floodlight consumes significantly less electricity than lighting with metal halide lamps. For example, LED lamps require about 35,000 watts to generate 300 to 400 lux. With halogen, about 70,000 watts are required. Depending on the number of hours the sports facility is used, this can save several thousand dollars a month.

Modern LED sports lighting systems for sports venues are, in many cases, computer controlled. For example, floodlights can be turned on automatically at fixed times. This saves on personnel costs. In many cases, modern lighting systems can now be

controlled via a smartphone app. This allows access by different people as well as very easy and uncomplicated use of the lighting.

With an LED floodlight system, you can also rent out your sports field to other groups and clubs for training or games in the evening hours. You should consider both the electricity costs and the wear and tear of the illuminants when calculating the rental costs, but balance that against the revenue you can generate from those rentals.

It's also advisable to install additional technology that may be required, such as surveillance cameras or loudspeakers on the poles, at the same time as the floodlight installation. This reduces the total installation costs for the sports field lighting infrastructure.

Am I actually saving money by installing LED lights?

Yes. Hands down. Even though we're talking about one cost after another here, yes, a new LED lighting system truly is an investment in a sports facility.

LED lights last longer than conventional halide lamps, reducing the replacement and maintenance costs. They are more energy efficient, both in the number of watts they consume per lumen and in their ability to focus the light towards the field of play. LED systems "lose" far less light than halide lamps. LED systems also satisfy much more easily and economically all the considerations of glare, light uniformity, suitability for broadcasts and quality.

HOW TO SAVE MONEY ON SPORTS LIGHTING PROJECTS

At first, choosing the right lights for your sports venue might seem complicated. But don't worry.

navigate the available options. You'll more easily find the solution that fits your sports facility best.

Once you have a firm grasp of your sports lighting needs, it becomes much easier to

Here are a few general tips on how to save money on LED sports lighting projects:

- 1. Choose LED when installing a new lighting system.** We'll be honest. The upfront costs of installing LEDs at your sports field may be a bit higher than other options. However, the long-term cost benefits of LEDs will provide your organization with a tremendous return on investment.
- 2. Hire a professional light designer.** It's not an easy task to illuminate a stadium. Hundreds of powerful floodlights, all pointing in different directions? Things can get complicated very quickly.

By bringing in an expert versed in the intricacies of sportfield lighting, you won't waste money on lights you don't need.

Your expert will ensure you have the right amount of light for your venue by running a photometric study. With tools like DIALux or Relux, the designer can pinpoint the number of fixtures and wattage you need to provide uniform lighting across the entire playing field. Every player will feel like they're in the big leagues!

- 3. Keep existing infrastructure – if you can.** Don't reinvent the wheel. If you have existing fixtures, look into upgrading them before tearing them down. Any equipment you can keep – wiring, poles, fixtures – will be a massive advantage for your budget.

Best case scenario? You can keep everything and upgrade to LED lights!

- 4. Use shorter poles to reduce light loss.** Light weakens the further it carries through the air. Think about your flashlight. The beam of light is much brighter when aimed at your hand than pointed into the distance.

By reducing the distance your light needs to travel, you can purchase less powerful amps. They are cheaper to buy and less costly to run.

Pro tip: Always consult an expert before purchasing your poles. The last thing you want is to have to re-order after finding out they're too short.

5. Make a case for discounted pricing.

Don't be afraid to shop around. When planning your purchases, make a shortlist of vendors and compare quotes. Especially when lighting a large field, you'll be buying many fixtures. Most suppliers will offer a discount when you reach a certain threshold. Every dollar counts – so ask!

6. Search for energy grants, rebates and incentives When you purchase or upgrade your sports venue lighting to LEDs, you choose a more sustainable solution.

The Federal Government incentivizes this decision by offering rebates and tax deductions. Take a look at Section 179D in the Federal Tax Code. This reduction pays \$.60 per square foot for a qualified building that reduces its energy usage by 25%. Read more in our sports facility grants & funding section.

Be sure to ask your accountant or tax advisor to research Section 179D.

And suppose you're lucky enough to qualify. In that case, you'll need to bring in a Professional Engineer to sign off on the necessary documentation to maximize your rebate.



Picture: Sportsbeams Lighting, Inc.



Picture: Shinetoo Lighting USA LLC

DESIGN

ESTABLISH THE USE CASE

The first step in creating a stellar lighting design for a sports facility is to understand how the space will be used. What kind of events will be held there? Are there any specific requirements that need to be met?

Who are the main users of your facility?

Will your facility be used for high school athletes, college athletes, or community recreation? The requirements for each will be different. The types of users will dictate the complexity of your solution.

In addition to who, you need to consider what will be taking place in your facility. Will it be used for football games, soccer matches, track meets, or a combination of all three? What competition level will you be hosting? The types of sports you are hosting will play a big role in determining the appropriate lighting solution.

How many spectators will your facility hold?

This can be a tricky one to understand, but a general rule of thumb is the more spectators the more lights you need. Having adequate lighting isn't just for enjoyment, it's also important for safety.

Will games be broadcast on TV?

If you plan to host televised events, you'll need to meet specific requirements for broadcast. It's best to consult with an expert lighting installer who has experience with this to ensure your design will meet the necessary standards.



Picture: GameDay Lighting

STANDARDS AND REQUIREMENTS

Wondering how much illuminance you need for your sports facility? The short answer is it depends. We know you want answers so you

can start planning, but every sports field or court is different. You will need to take into consideration factors such as:

- The shape of the playing field
- The total area that needs to be lit
- The competition level of the players
- The capacity of the stadium
- Requirements for TV broadcast

The IES (Illuminating Engineering Society) is the gold standard for reference when it comes to sports lighting. They classify sports

fields and courts into four classes based on spectator capacity:

- Class 1: Arenas with spectator capacity over 5,000
- Class 2: Arenas with spectator capacity up to 5,000
- Class 3: Arenas with some provision for spectators
- Class 4: Arenas with no provision for spectators

Competition level	Class I	Class II	Class III	Class IV
Illuminance	100 fc. / 1,000 lux	50 fc. / 500 lux.	30 fc. / 300 lux.	20 fc. / 200 lux.
Professional				
Collegiate				
Semi-professional				
Sports clubs				
Amateur league				
High school				
Training				
Elementary school				

Sports facilities also need to consult municipal regulations and their insurance policy for any additional standards. Local governments will often impose requirements that focus on participant safety (especially for public schools) and community impact. More and

more towns and cities are taking a hard line against light pollution. Those regulations may require you to use certain lamps and make fixture modifications to ensure that the light you generate doesn't make its way into the sky or surrounding houses or businesses.

LIGHTING QUALITY AND UNIFORMITY

Two of the most important and specific considerations in sports lighting are uniformity and line of sight. We're not lighting a stage, someplace where all the eyes are looking. At a sports venue, yes, if there are fans, they will all be looking at the field. But the players are looking in every direction at any given moment. If they lose sight of the ball looking into a dark spot on the field or looking up into the glare of a light, their performance will be compromised and their safety at risk.

Lux levels are how bright the lights are at field level: what do the players see and experience. Light classes refer to uniformity and color satu-

ration, often with reference to natural sunlight.

The lux levels and lighting classes really come into play with more competitive levels of play. Middle schools, community sports fields and recreational or practice fields may not need to consider these factors as much.

However, any field that falls under the jurisdiction of a governing body will probably have to be built (and lit) to the minimum requirements of the governing body. Those requirements will be based on player performance and safety, fan experience and video broadcast / streaming specs.

RECOMMENDED FEATURES

Dimming

This will give you the flexibility to adjust the light level based on the time of day or night. For example, you can dim the lights during practice to save energy, but turn them up for game time.

Glare control

Minimize the amount of light that shines di-

rectly into spectators' eyes. This is crucial for protecting their vision and ensuring they can see the game clearly.

Lighting Management System

This is a software solution that gives you complete control over your lighting system. You can schedule, dim, monitor energy usage, and more -- all from a central platform.

SPORT-SPECIFIC DESIGN CONSIDERATIONS

While it might be easy to assume that all sports played outdoors would require a similar lighting setup, this is actually not the case. For example, NFL football stadiums require 2,500 lux(a metric related to lumen), while college football requires 1,500, and high school football requires 500. Stadiums use LED floodlights, which can be arranged in a row, or situated throughout the venue as needed to accommodate the sport. Beam angle, light pole height are other considerations to take into account, especially if the event is being televised.

Recommended lighting levels for soccer are similar to that of American football. However, extra attention should be paid to the corners of the field with regards to lighting. Corner kicks are prevalent in the sport, and often provide an offensive team with its best chance to score. As a result, lighting fixtures

and beam angles need to take this into consideration.

Baseball/softball fields have different characteristics than football, both as a sport, and on the field itself. Rather than the rectangular shape of a football field, the baseball playing surface is shaped like a diamond. Additionally, the baseball itself is much smaller than a football, and is thrown and hit at players at a much higher speed. As a result, the illumination of the field, and in particular, the infield, needs to be sufficient for faster reaction time by the players. The recommendation is that an average of 50 horizontal footcandles(another brightness metric used in the U.S) be shined on the infield, while 30 horizontal footcandles be shined on the outfield.

Here's a brief comparison of sports field sizes to give you an idea:

- Baseball diamond: 105,000 – 120,000 square feet
- Soccer field: 69,300 – 86,400 square feet
- Football field: 57,600 square feet
- Softball field: 32,000 square feet



FOOTBALL FIELD LIGHTING DESIGN

Metal halide lighting has been the king of football field lighting systems for many decades. Their high output and excellent quality of light made them the better choice compared to other alternatives, for example, halogen-based technology. Metal halide systems are still the most common solution for a high school or college football field in the U.S. However, there has been another lighting tech revolution brewing for the last decade or so. The latest innovation in the sports lighting field is LED technology which is fully electric and does not use toxic materials/gasses that are needed to light up metal halide systems and other legacy solutions.

LED lighting systems are getting more and more popular and nowadays athletic direc-

tors and sports facility managers consider LEDs as the first choice when considering installing a new lighting system or retrofitting an old metal halide system with LEDs.

LED lighting systems are more expensive to purchase and install, but the investment pays itself back in a matter of years. Considering, LED lighting systems last 5 times longer and consume up to 75% less energy, they are a no-brainer for most sports fields around the country.

The quality of light that LEDs produce is also superior to metal halide lighting systems. LEDs require no warm-up time, they do not flicker and they offer great glare control.

FIELD DIMENSIONS

The gridiron never changes. From Pop Warner to the NFL, a football field is a football field. Admittedly, it can be a bit ridiculous sometimes to see little kids scurrying around

a field 100 yards long and 53.5 yards wide, but they grow into it!

The only real differences in football fields

across levels are the locations of the hash-marks. As you move up from high school to college to pro football, the hash marks move towards the center of the field. But other than that, it's always the same 100 x 53.5 yards, plus the 10-yard end zones with the goal posts

centered behind them.

Unless, of course, you go north of the border to Canada, where they have two 50-yard lines and put the goalposts ON the goal line! What a world we live in!

LAYOUT

Since football fields are all the same size, the main design consideration for the number of light poles you'll need is how bright the field needs to be. You can provide minimum levels of uniform light coverage for a recreational or high school field with four light poles. High school fields that attract large crowds or host games that are broadcast on TV or streaming may opt for six poles, as most colleges do. Well-resourced colleges or universities, then, will have eight poles plus any other fixtures on the field itself.

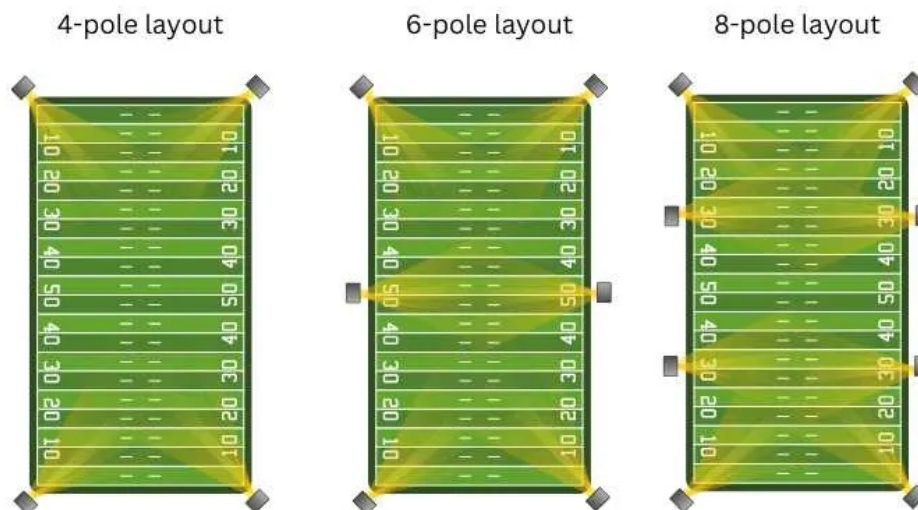
Football fields have an equal number of poles on each side of the field to eliminate shadows. With four poles, there will be two at or near the end zones. If you increase to six poles, the additional poles will line up with the 50-yard line. And with eight poles, most football

fields will place one at each end zone and one around each 30-yard line.

For lighting quality and safety reasons, flood-light poles are positioned always 50, 75, or 100 feet outside of the playing field. Therefore, it is essential to check beforehand if the football ground has the required space around the playing field to set back the light poles as.

When it comes to the height of the light poles, there is no one size fits all number to give. Since football lights are designed to illuminate a large sports field the lamps have to be installed high.

For a high school field, the correct height might be around 50-70 feet, and for a college or professional football field as high as 250 feet above the playing surface.



STANDARDS & REQUIREMENTS

The lighting requirements for a football field largely hinge on the level of competition played at the sports facility. This is due to the fact that, as previously mentioned, all foot-

ball fields adhere to standardized dimensions. Consequently, higher levels of competition necessitate greater lumen output. Consult the table below for further details.

Lighting levels for football fields

Competition level	Class I	Class II	Class III	Class IV
Illuminance	100 fc. / 1,000 lux	50 fc. / 500 lux.	30 fc. / 300 lux.	20 fc. / 200 lux.
Professional				
Collegiate				
Semi-professional				
Sports clubs				
Amateur league				
High school				
Training				
Elementary school				

FIXTURES

Generally speaking football fields and stadia tend to use LED lighting fixtures with an output of around 500W-1500W.

LED lights are the best for Friday nights and any other day of the week. LEDs have all the qualities that players, coaches, administrators, and broadcasters insist upon for player safety and performance, cost efficiency, and fan experience.

We'll get more into those benefits below and in the other articles in this section. But as a

quick run down, LED lights cost less to operate than conventional halide or halogen lamps.

They produce very little glare, which helps the players see the ball and each other at the speed of play: a wide receiver won't lose the ball in the lights while running a route, which means he has a better chance of a completion and of having the awareness to avoid a tackle.

The low glare also looks better on camera and minimizes light pollution, which will be im-



portant to the administrators and community stakeholders.

Finally (well, for now), LED lights are very easy to control. The coach or team manager can turn on just the lights they need for night practices throughout the week, turn on

some more lights for the JV game on Thursday night and then blast the full panel for the weekend games.

Recommendations for converting metal halide light fixtures to LED football field lighting fixtures

- A 400-watt LED football field light fixture replaces a 1000-watt metal halide sports lighter.
- A 600-watt LED football field light fixture replaces a 1500-watt metal halide sports lighter.
- A 1000-watt LED football field light fixture replaces a 2000-watt metal halide sports lighter.

HOW MANY LED LIGHT FIXTURES DO I NEED FOR MY FOOTBALL FIELD?

Estimating the number of LED fixtures your football field needs feels complicated, but in the end, it comes down to three things: 1) the total area that needs to be lit, 2) the efficacy of the LED fixtures, and, 3) the level of competition at your facility.

- Size of the football field: 57,600 square feet
- LED baseball field light fixture efficiency: 140 lumens per watt
- Footcandles needed:
 - High school: 30 fc.
 - College/Pro: 100 fc.
- Total lumens needed:
 - High school: 1,728,000 lumens
 - College/Pro: 5,760,000 lumens
- Total wattage needed:
 - High school: approx. 12,000 watts
 - College/Pro: approx. 40,000 watts
- Number of gym lighting fixtures needed:
 - High school: 20 x 600w LED fixtures
 - College/Pro: 40 x 1000w / 20 x 2000w LED fixtures

SUMMING UP

A standard-sized football field requires a total of 1,152,000 – 5,760,000 lumen output (recreational –professional level). Assuming your LED light fixtures can produce 150 lumens per watt, you'll need approx. 8,000w – 40,000w to light up the stadium. Football stadiums use LED light fixtures of around 600w – 1200w, so to reach the required wattage and to ensure uniform illumination across the field, you'll need 8 x 1000w fixtures mounted on 4 poles (recreational) or 32 x 1200w light fixtures mounted on 8 poles (professional).



BASEBALL / SOFTBALL FIELD LIGHTING DESIGN

FIELD DIMENSIONS

The shape and size of the baseball field can have a big impact on your lighting system design and layout. To ensure the safety of the players and provide an optimal viewing experience for the fans in the stands, the lighting system has to be designed and installed according to the dimensions of the field.

- Overall area of the field: The bigger the baseball diamond, the higher the lighting poles must be, the more lighting fixtures you will need, and the more potency/output per luminaire is required.
- Distance to the home run fence and from the foul lines to the field: The longer the distance from the home base to the fence, the more lighting output is needed. You will have to consider whether to install 4, 6, or even 8 lighting poles to reach the lighting levels and uniformity needed for your facility. Additionally, the closer your foul lines are to the field, the further away you will have to place the lighting poles.

BASEBALL FIELD SIZES PER COMPETITION LEVEL:

- College/pro: 120,000 square feet
- High school: 105,000 square feet
- Little league: 40,000 square feet
- Softball: 32,000 square feet

LAYOUT

Baseball diamonds that only need four light poles place two on either side of home plate, and one just outside of and slightly behind the foul poles. As the diamond expands at the high school, college and minor league levels, those latter two poles are brought towards home plate and are just past the plane of first base and third base. Then, two additional poles are placed behind the right-center field and left-center field.

For diamonds that need maximal lighting due to their size and competitive requirements, two more lights are added in the outfield, just inside the foul poles. That brings the total to four light poles around the perimeter of the outfield, and four staking out the infield.

These arrangements ensure uniform lighting plus player-friendly sightlines. When the batter has his eyes locked on the pitcher's de-

livery, the outfield lights are far enough away and high enough that he won't be looking into a face-full of light. And the infield lights are outside of his field of view, behind him and to the sides. Similarly, the lights closest to the outfielders are behind them. When they look up into the night sky for a pop fly, they won't have the lamps or hazy glare interfering with their ability to spot the ball.

The size of the diamond affects the height of the light poles as well as their number. Little League and rec diamonds will have 40-50' poles, while professional ballparks will need 100-180' poles. At the higher levels of play, the players' sightlines (how high the batters will hit the ball affects where the fielders will be looking), the size of seating area and the amount of illumination required by the league and broadcasters all go into determining how tall the poles should be.

HOW MANY BASEBALL FIELD LIGHTING POLES DO I NEED?

The number of light poles around a baseball diamond comes down to the size of the field and the amount of light needed for games at that level. A Little League diamond has less space and lower lighting demands, so

four light poles are sufficient. High schools, colleges, and the lower rungs of the minor leagues can make do with six poles; while the big leagues and their farm teams need eight or more.

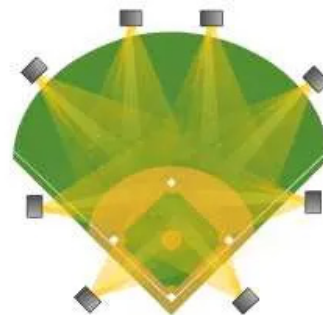
4-pole layout



6-pole layout



8-pole layout



STANDARDS & REQUIREMENTS

As we mentioned earlier, higher levels of play have higher lighting requirements. Professional baseball diamonds need a uniform 1,000 lux at any point on the field: that is, 1,000 lumen per square meter. This requirement gradually reduces down to 200 lux for training facilities and elementary schools.

LIGHTING LEVELS FOR BASEBALL FIELDS

Competition level	Class I	Class II	Class III	Class IV
Illuminance	100 fc. / 1,000 lux	50 fc. / 500 lux.	30 fc. / 300 lux.	20 fc. / 200 lux.
Professional				
Collegiate				
Semi-professional				
Sports clubs				
Amateur league				
High school				
Training				
Elementary school				

LIGHTING LEVELS FOR THE INFIELDF / OUTFIELD

The infield and outfield of a baseball field have differing lighting requirements due to the nature of the game. The infield, home to the diamond and the hub of action, typically needs brighter and more consistent illumination to allow players to accurately see and react to the ball during pitching, batting, and base running.

Meanwhile, the outfield, which is generally larger and sees less frequent play, may require less intense lighting. However, the illumination must still enable outfielders to effectively track and catch fly balls. The design of the lighting setup, therefore, needs to consider these different requirements to ensure both optimal visibility and player safety.

Lighting class	Area of the field	Foot candles	Lux
Class I	Infield	150	1500
	Outfield	100	1000
Class II	Infield	100	1000
	Outfield	70	700
Class III	Infield	50	500
	Outfield	30	300
Class IV	Infield	30	300
	Outfield	20	200

LITTLE LEAGUE BASEBALL FIELD LIGHTING REQUIREMENTS

Area of field	Avg. constant lighting levels	Uniformity	Maximum rate of change
Infield	50 fc. / 500 lux.	2:1	10% per 10 feet
Outfield	30 fc. / 300 lux.	2.5:1	10% per 10 feet



FIXTURES

LED baseball field lighting fixtures may be costlier upfront compared to metal halide fixtures, but they are worth every penny in the long run. Firstly, LED fixtures can save you up to 75% in utility bills and energy consumption. Secondly, you will not have to deal with replacing bulbs and you can expect your LED luminaires to last at least up to 50,000 hours (vs. 10,000 hours for metal halide lamps).

LED lighting fixtures are sometimes referred to as LED floodlights, LED high mast lights, or

LED stadium lights. They all mean the same thing in the end. The only thing that changes is the potency of the fixtures. Depending on the size of your baseball field and the level of competition, LED floodlight wattage ranges between 400 and 1500 watts.

If your baseball diamond already has a metal halide lighting system installed and you are planning to upgrade it to LED, you can follow these recommendations for conversion:

- A 400-watt LED baseball field light fixture replaces a 1000-watt metal halide sports lighter.
- A 600-watt LED baseball field light fixture replaces a 1500-watt metal halide sports lighter.
- A 1000-watt LED baseball field light fixture replaces a 2000-watt metal halide sports lighter.

HOW MANY BASEBALL FIELD LIGHTING FIXTURES DO I NEED?

The number of LED baseball lighting fixtures needed to illuminate your baseball diamond depends on the size and the competition level of the facility. The bigger the total area that needs to be lit, the more lighting output and wattage are needed to reach the required

lighting levels.

A full-sized, collegiate or professional level baseball field size is 120,000 square feet, whereas a high school baseball field is a little bit smaller (105,000 square feet).

- LED baseball field light fixture lumens per watt: 140
- Footcandles needed:
 - High school: 30 fc.
 - College/Pro: 100 fc.
- Total lumens needed:
 - High school: 3,150,000 lumens
 - College/Pro: 12,000,000 lumens
- Total wattage needed:
 - High school: approx. 22,500 watts
 - College/Pro: approx. 85,700 watts
- Number of gym lighting fixtures needed:
 - High school: 23 x 1000w LED fixtures
 - College/Pro: 43 x 2000w LED fixtures

HOW MANY BASEBALL FIELD LIGHTING POLES DO I NEED?

The number of light poles around a baseball diamond comes down to the size of the field and the amount of light needed for games at that level. A Little League diamond has less space and lower lighting demands, so

four light poles are sufficient. High schools, colleges, and the lower rungs of the minor leagues can make do with six poles; while the big leagues and their farm teams need eight or more.

SUMMING UP

Your softball or little league diamond requires 640,000 – 800,000 lumens and 4,300w – 5,300w to reach the required lighting level. You will probably only need four light poles,

with each carrying two 600w LED light fixtures.

When you climb up the competitive ladder, the lighting requirements become more strict.

- High school level: 3,150,000 lumens and 21,000 watts
- College level: 6,000,000 lumens and 40,000 watts

Your average high school baseball diamond will probably need six light poles with four 1,000w sports lighters on each. A college di-

amond, on the other hand, will require an eight-pole arrangement, with four 1,200w sports lighters on each pole.



SOCCKER FIELD LIGHTING DESIGN

FIELD DIMENSIONS

The smallest soccer players start out on the smallest soccer fields. Pitches for U6s can be as small as 45' x 90'. The fields grow in parallel with the players until high school, when soccer fields reach the 80 yards x 120 yards dimensions seen in the pro ranks.

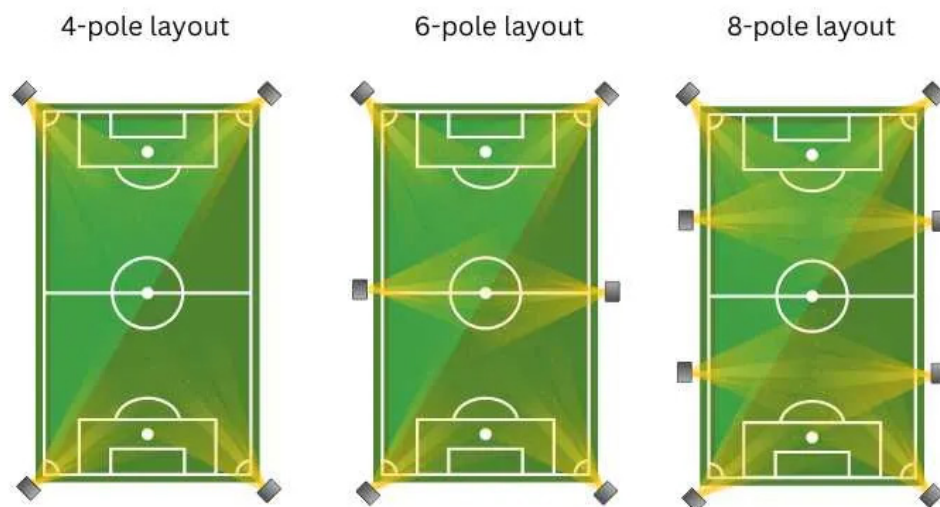
The dimensions of the field are the first major inputs into lighting design. U6 pitches can't have dark spots any more than FIFA-sanctioned pro pitches can. Larger fields or larger complexes comprised of several smaller fields arranged one after the other will need to have more, brighter lights than smaller fields simply to illuminate the additional area.

LAYOUT

The dimensions of the soccer field (total area) and the level of competition are the two main factors that determine the number of lighting poles needed to light up your soccer pitch. A FIFA regulation-size soccer field is 210-240 feet wide and 330-360 feet long, with a total area of 69,300 – 86,400 square feet. A high school soccer field of this size can probably get by with 4 poles, whereas a collegiate-level

soccer pitch would most likely opt for 6 poles.

Professional-level MLS stadiums have to provide an excellent viewing experience for large-capacity crowds and TV audiences, which is why the lighting requirements shoot up. Soccer fields on this level tend to install 8 or more lighting poles to ensure optimal quality and uniformity of light.



STANDARDS & REQUIREMENTS

Soccer's governing bodies have established lighting classes for different levels of the game. Professional soccer fields need to be at a Class I level (1,000 lux). College and semi-pro teams may need either Class I or Class II

lighting (500 lux). Going down into the youth and grassroots levels, and training grounds, Class III (300 lux) and IV (200 lux) lights are appropriate, respectively.

LIGHTING LEVELS FOR BASEBALL FIELDS

Competition level	Class I	Class II	Class III	Class IV
Illuminance	100 fc. / 1,000 lux	50 fc. / 500 lux.	30 fc. / 300 lux.	20 fc. / 200 lux.
Professional				
Collegiate				
Semi-professional				
Sports clubs				
Amateur league				
High school				
Training				
Elementary school				



FIXTURES

At every level of play, any new lighting system is going to feature LED lights. LED soccer field light fixtures provide uniform, glare-free light over a longer lifespan than conventional halide lamps. LEDs use less energy and require less maintenance, reducing both the day-to-day cost of use and the long-term operating expenses. Get a better handle on the superiority of LED lights with this article. The brightness of a light is measured in lumens, and your electricity bill depends on how many watts you use. So we can think about “lumens per watt” as a back-of-the-

napkin way of sketching out how much money you can save by installing LED sports lighting.

Looking at the chart below, we can see that for any amount of lumens (that is, any level of brightness over a given area), an LED lamp consumes about a quarter of the power that a halide lamp needs to produce that light level. If we’re paying by the watt, that’s a 75% savings. And since we’re paying for tens of thousands of watts over tens of thousands of square feet, we’re talking serious amounts of money!

LED SOCCER FIELD LIGHT FIXTURE CONVERSION TABLE

Metal halide wattage	HPS wattage	LED replacement	Avg. lumen output
1500w	1000w	400 - 600w	110,000 - 140,000
2000w	1500w	500 - 1000w	240,000 - 270,000
4000 - 7000w	3000w	1500 - 2000w	400,000 - 520,000

SUMMING UP

FIFA regulation-size soccer pitch dimensions have some flexibility when it comes to the dimensions. Usually, they measure 210'-240' in width and 330'-360' in length. The total area size, therefore, ranges somewhere between 69,300 and 86,400 square feet.

Recreational level:

- Lumens: 1,386,000-1,728,000
- Wattage: 10,000w – 12,000w Light poles: four-pole layout
- Light fixtures: 4 or 5 x 600w fixtures on each pole

High school level:

- Lumens: 2,079,000-2,592,000
- Wattage: 14,000w – 17,000w Light poles: six-pole layout
- Light fixtures: 4 or 5 x 600w fixtures on each pole

College level:

- Lumens: 3,465,000-4,320,000
- Wattage: 23,000w – 29,000w Light poles: eight-pole layout
- Light fixtures: 3 or 4 x 1,000w fixtures on each pole



Picture: Shinetoo Lighting USA LLC

TENNIS COURT LIGHTING DESIGN

COURT DIMENSIONS

A standard tennis court, as defined by the International Tennis Federation (ITF), measures 78 feet in length and 27 feet in width for singles matches. For doubles matches, the width expands to 36 feet to accommodate the additional players. The total area of a singles court

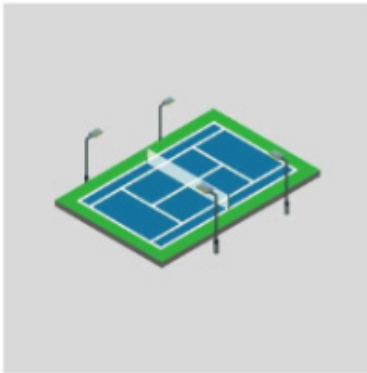
therefore equates to 2,106 square feet, and for a doubles court, it increases to 2,808 square feet. The total size of the court is intrinsically linked to its lighting needs, given that illumination levels are determined based on the number of foot candles per square foot.

LAYOUT

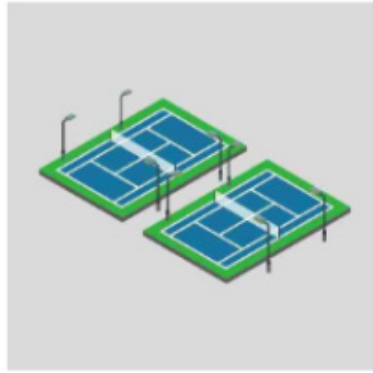
OUTDOOR TENNIS COURTS LIGHT ARRANGEMENT

The lighting poles found in outdoor tennis courts usually have a height of between 6 to 8 meters. This height can vary depending on environmental factors. The lamps should be positioned on both sides of the net, and they should be 6 meters high. They should also offer the same amount of illumination.

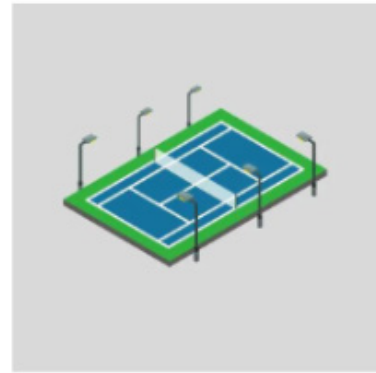
- Four Corner Arrangement: The light poles should be positioned at the four corners of the field.
- Two-Sided Arrangement: The light poles are positioned on both sides of the field.
- Mixed Arrangement: This setting involves the combination of the two-sided arrangement and four-cornered arrangement



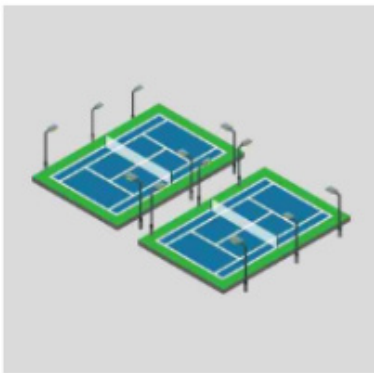
Single tennis court LED lighting layout with 4 poles



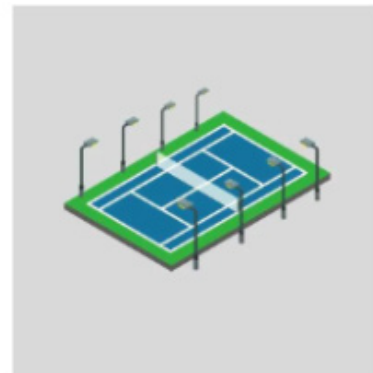
Two tennis court LED lighting layout with 4 poles



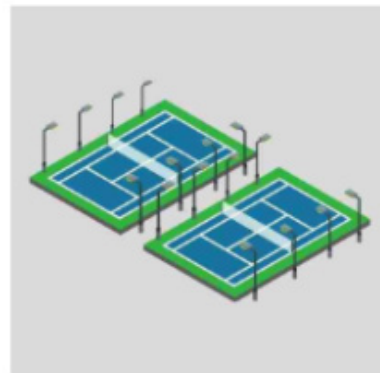
Single tennis court LED lighting layout with 6 poles



Two tennis court LED lighting layout with 6 poles



Single tennis court LED lighting layout with 8 poles



Two tennis court LED lighting layout with 8 poles

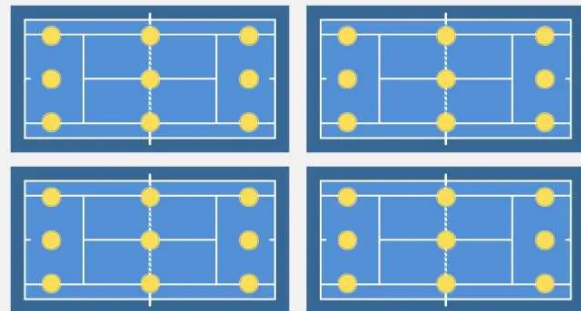
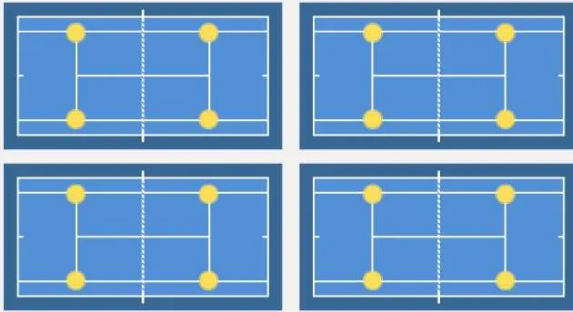
INDOOR TENNIS COURT LIGHT ARRANGEMENT

Top Arrangement: The lamps are positioned above the field and the light beam is placed perpendicularly to the court's plane.

Two-Sided Arrangement: The lamps are installed on the two sides of the court and the

light beam isn't positioned perpendicularly.

Mixed Arrangement: This involves the combination of the two-sided arrangement and top arrangement.



STANDARDS & REQUIREMENTS

Inadequate court lighting reduces the enjoyment of the game and may affect the precision of ball striking. To avoid this, glare-free, uniform illumination of the entire court is essential. The lighting class of the new fixtures

is part of the quality of the illumination. This, in turn, depends on the requirements you have set for the facility. If you host or wish to host high-level players or events, the lighting will need to be at a comparable level.

LIGHTING CLASSES FOR TENNIS COURT LIGHTING:

According to the United States Tennis Association (USTA) and Illuminating Engineering Society (IES), the right level of lighting for a

tennis court depends on the level of competition. These levels are split into four broad categories:

Outdoor Tennis Court Lighting Levels

- Class I: Professional level: min. 125 foot candles / 1250 lux
- Class II: College and medium level: min. 50 foot candles / 500 lux
- Class III: High school and private clubs: min. 30 foot candles / 30 lux
- Class IV: Recreational: min. 20 foot candles / 200 lux

Indoor Tennis Court Lighting Levels

- Class I: Professional level: min. 125 foot candles / 1250 lux
- Class II: College and medium level: min. 75 foot candles / 750 lux
- Class III: High school and private clubs: min. 50 foot candles / 500 lux
- Class IV: Recreational: min. 30 foot candles / 300 lux

For amateur and normal training use, class 3 luminaires are quite sufficient. But if professional or high-level collegiate players are using the courts, situations that might be

broadcast or streamed, Class 1 lighting becomes a requirement. And, of course, if your players and events are in between those levels, lighting Class 2 is suitable.

FIXTURES

LED floodlights are the best and most common types of fixtures used to light up tennis courts. They provide a broad and uniform light beam that is ideal for lighting up large outdoor areas.

Best LED fixtures for indoor tennis courts

Indoor tennis courts are typically lit up with LED high bay light fixtures. They can be fairly easily mounted on the ceiling and they offer a more focused beam of light to cover the courts below. Just be mindful that the indoor arena must have a ceiling height of at least around 20 feet.



HOW TO CONVERT METAL HALIDE FIXTURES TO LED TENNIS COURT LIGHTS?

If you are operating a tennis facility and want to replace your existing metal halides with LED tennis court light fixtures, you should understand how to convert the wattage between LED and metal halide lights. Here's a brief summary:

- 100W – 200W LED tennis court light fixture replaces a 250W – 400W metal halide fixture
- 200W – 400W LED tennis court light fixture replaces a 400W metal halide fixture
- 400W – 500W LED tennis court light fixture replaces a 1000W metal halide fixture
- 600W – 1000W LED tennis court light fixture replaces a 1500W metal halide fixture
- 1000W – 1200W LED tennis court light fixture replaces a 2000W metal halide fixture

If you are planning to replace your existing metal halide lights with LED tennis court light fixtures, try our tennis court lighting cost calculator to get a customized cost estimate for your project.



Picture: GameDay Lighting

PICKLEBALL COURT LIGHTING DESIGN

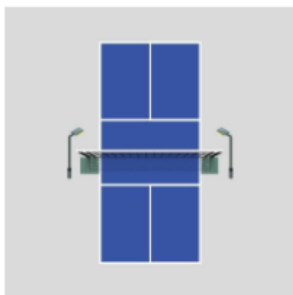
LAYOUT

One of the key factors affecting the price of the installation of an LED lighting system for a pickleball facility is the area that needs to be lit up. Pickleball courts have standard dimensions (20' x 44'), but some sports complexes need more than one court to satisfy the demands of their customers.

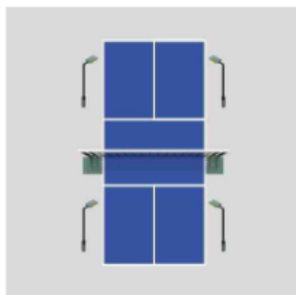
Another important factor determining the final price is the number of lighting poles and lighting fixtures is required. As explained al-

ready above the amount of brightness depends mainly on the level of competition: a pickleball court for professional level play needs a lot more luminance than a pickleball court for a municipal park.

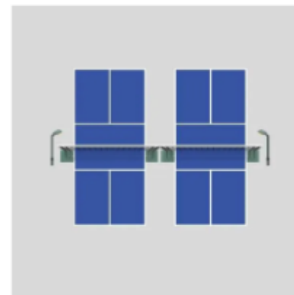
Below you can find the most common pickleball court layouts for comparison. You can click on them to find out more detailed information about each setup and visualize different design options for the courts.



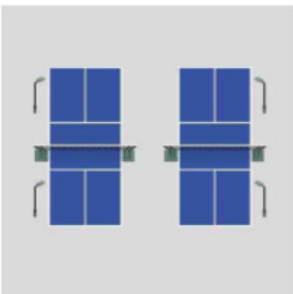
Single pickleball court
LED lighting layout with
2 poles



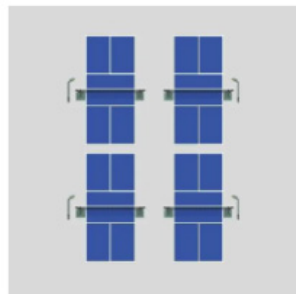
Single pickleball court
LED lighting layout with
4 poles



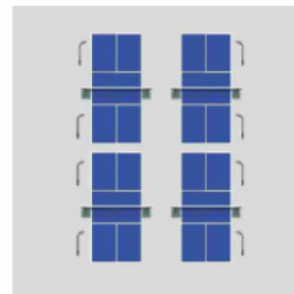
Two pickleball court
LED lighting layout with
2 poles



Two pickleball court
LED lighting layout with
4 poles



Four pickleball court
LED lighting layout with
4 poles



Four pickleball court
LED lighting layout with
8 poles

STANDARDS & REQUIREMENTS

One of the main factors in pickleball court lighting is the layout of your venue. According to regulations, you'll need between 70,000 – 100,000 lux (or 400w – 800w) to light your court correctly. If you have multiple courts, the area you need to cover will be more sig-

nificant than a single court setup. With every court, more light is required, which will increase your overall cost.

There are two methods for lighting your court:

1 – HORIZONTAL ILLUMINANCE

These lights are placed around the players and playing surface to give a transparent backdrop. Whether or not you are televising your games, you need to pay careful attention to the lumens level for your horizontal illumi-

nance. Non-televised games require an illuminance level of between 100 lux and 750 lux. This lumens level keeps players and spectators alike safe.

Competition level	Professional / Collegiate	Sports Club / High School	Recreational / Training
Avg. maintained foot candles	75 fc. / 750 lux	50 fc. / 500 lux.	30 fc. / 300 lux.
Min. maintained foot candles	60 fc. / 600 lux.	40 fc. / 400 lux.	20 fc. / 200 lux.
Uniformity ratio	1.7	2.0	2.0

2 – VERTICAL ILLUMINANCE

Vertical illuminance is the type of light that most people think about when they think about sports venue lighting. Fixtures are placed atop poles or stanchions; light is directed downward to illuminate the playing surface evenly.

Competition level	Professional / Collegiate	Sports Club / High School	Recreational / Training
Avg. maintained foot candles	50 fc. / 500 lux.	30 fc. / 300 lux.	20 fc. / 200 lux.
Uniformity	1.7	2.0	2.0

While the specific number of fixtures you need is unique to your scenario, there are a couple of best practices to follow:

Get your light as high over the court as possible.

The height allows even distribution of light across the surface. It helps visibility for all players and reduces glare, which can be a problem on outdoor courts. No matter where you decide to mount your light, make sure it's

Two-sided court lighting

If possible, light your courts from both sides. Two-sided lighting eliminates shadows and allows each player to see the entire playing surface. A pickleball court lighting system aims to maintain high visibility for players on each side. Lighting from both sides achieves this with even distribution throughout.

FIXTURES

LED (Light Emitting Diodes) light fixtures are 100% electric luminaires that do not use gas or other toxic materials. LED lighting fixtures are commonly used both for outdoor and indoor pickleball courts. The technology is the same, but the application is slightly different:

Outdoor pickleball court LED lighting fixtures – also known as LED floodlights are

mounted using tall light poles around the perimeter of the court. They have a broad beam angle which is ideal for illuminating large outdoor areas, like pickleball courts.

Indoor pickleball court LED lighting fixtures – Indoor LED lighting fixtures are hung directly on the ceiling. The most common type of indoor LED pickleball lighter is the

high bay or UFO lighting fixture. This fixture is ideal for gymnasiums or sports halls with high ceilings. They provide a more focused light beam compared to outdoor floodlights.

In case you already have an existing metal halide lighting system at your pickleball court and want to upgrade it to LED technology, you can follow the following metal halide to LED conversion recommendations:

- 100W – 200W LED pickleball court light fixture replaces a 250W –400W metal halide fixture
- 200W – 400W LED pickleball court light fixture replaces a 400W metal halide fixture
- 400W – 500W LED pickleball court light fixture replaces a 1000W metal halide fixture
- 600W – 1000W LED pickleball court light fixture replaces a 1500W-2000W metal halide fixture

HOW MANY LED LIGHT FIXTURES DO I NEED FOR MY PICKLEBALL COURT?

As mentioned earlier, installing LED lights instead of metal halides will help you reduce the number of fixtures that need to be installed. Fewer light fixtures mean a significant reduction in the total cost of your lighting project.

To evaluate how many light fixtures you will need, you will need to take into consideration the total area that needs to be lit, the efficacy of the light fixtures, and the competition level of your facility.

- LED Lighting fixture efficacy: 130 lumens per watt (LPW)
- Dimensions of the pickleball court: 20' x 44'
- Total area to be lit (4 courts): approx. 880 sq ft x 4 = 3,520 square feet
- Lumen output needed (footcandles x square feet)
 - recreational: 105,600
 - professional: 264,000
- Total wattage needed (lumens: LPW 130)
 - recreational: approx. 800w
 - professional: approx. 2000w
- For a recreational pickleball facility, you will need 8 x 100-watt LED lighters.
- For a professional pickleball facility, you will need 16 x 150-watt LED lighters.





GYMNASIUM LIGHTING DESIGN

DIMENSIONS

Gymnasiums and indoor sports halls come in many shapes and sizes. Ideally, you should be able to clarify the total area (square feet) that needs to be lit, the height of the ceiling, and the competition level of your users. It goes without saying that the bigger the sports facility is, the more lighting output is required. The height of the ceiling determines which

type of LED gym lighting fixtures you should install. On the other hand, lighting requirements become stricter the higher up the competition ladder you climb. In case your gymnasium or sports hall also hosts a fitness center/weight room with a lower ceiling, we would recommend going for linear suspension LED gym lights or low-bay LED lights.

LAYOUT

Standard-sized school gyms with high ceilings (min. 25 feet) used for team sports like basketball, volleyball, or indoor soccer typically use high-bay LED lighting fixtures. These luminaires are hung from the ceiling and they are arranged in three or four rows of eight or

six lighting fixtures on each row (8 x 3 or 6 x 4). Normally 150 to 200 watts per luminaire is sufficient to reach the required lighting level for your gymnasium. However, be sure to check with a professional lighting contractor for the optimal setup.

STANDARDS & REQUIREMENTS

The Illuminating Engineering Society of North America (IES) has established lighting recommendations for different sports fields and facilities including gymnasiums. Lighting levels are typically measured in footcandles in the

US (amount of lumens at a distance of one foot from the playing surface). The recommended illuminance level depends on the competition level of the sports facility. See lighting level recommendations in the table below.

Recommended lighting levels	Foot candles / Lux	Sports facility capacity
Class I: Pro / Collegiate	100 fc. / 1,000 lux.	> 5000 spectators
Class II: Collegiate / High school	75 fc. / 750 lux.	Up to 5000 spectators
Class III: High school	50 fc. / 500 lux.	Some spectators
Class IV: Elementary	30 fc. / 300 lux.	No spectators

FIXTURES

When choosing your gymnasium LED light fixtures, you should consult an experienced sports lighting installer/supplier. But before you do, you must have at least a basic understanding of the different lighting fixture types that are used in gymnasiums and sports halls in the US.

High-bay gym ceiling light fixtures

These UFO-shaped LED lighting fixtures are mounted on the ceiling of the gymnasium. These fixtures are an excellent choice for gymnasiums that have high ceilings. The high-bay fixtures provide uniform illumination with a broad beam angle for the whole gymnasium floor and they can be even focused on specific parts of the floor if you want to highlight some areas over others.

High-bay gymnasium LED lighting fixtures typically have somewhere between 200W and 600W of wattage which is normally enough

to light up an indoor sports hall regardless of its size.

LED strip and low-bay gym ceiling light fixtures

In case your gymnasium or sports hall has a weight room or a fitness center with a fairly low ceiling that needs to be illuminated, you may want to consider LED strip fixtures. They can be mounted on the ceiling and walls to provide more subtle illumination. Another option for gyms with a low ceiling is the low-bay LED lighting fixture, which has a more focused beam angle compared to the high-bay fixture. Therefore, they can be used at gyms with lower ceilings.

In the end, to choose the most suitable solution, you will need to consider who will be using your gymnasium (competition level), the size of your gymnasium floor, and the height of the ceiling.



HOW CAN LED GYMNASIUM LIGHTING FIXTURES REPLACE METAL HALIDE FIXTURES?

- 100W – 200W LED gym fixture replaces a 600W metal halide fixture
- 200W – 400W LED gym fixture replaces a 1000W metal halide fixture
- 400W – 600W LED gym fixture replaces a 1500W metal halide fixture
- +600W LED gym fixture replaces a 2000W metal halide fixture

If you are planning to replace your existing metal halide gymnasium lighting fixture with LEDs, try our gymnasium lighting cost calculator to get a customized cost estimate for your project.

HOW MANY FIXTURES DO I NEED?

The number of LED gym lighting fixtures required to light up your school gym depends on the size, and shape of the gym, as well as, the competition level of the facility.

A standard-sized school gymnasium usually hosts a full-sized basketball court of 94' x 50' which adds up to 4,700 square feet. Here's a simplified calculation to find out how many light fixtures you will need.

- LED gym light fixture lumens per watt: 140
- Footcandles needed:
 - Elementary school gym: 30 fc.
 - High school gym: 50 fc.
- Total lumens needed:
 - Elementary school gym: 141,000
 - High school gym: 235,000
- Total wattage needed:
 - Elementary school gym: 1,000
 - High school gym: approx. 1,700
- Number of gym lighting fixtures needed:
 - Elementary school gym: 10 x 100w high-bay fixtures
 - High school gym: 12 x high-bay 150w fixtures



BASKETBALL COURT LIGHTING DESIGN

DIMENSIONS

The dimensions and size of a basketball court play a significant role in the lighting design. The size of the court directly affects the distance between the lighting fixtures and the playing surface, as well as the number and placement of fixtures needed to achieve proper illumination.

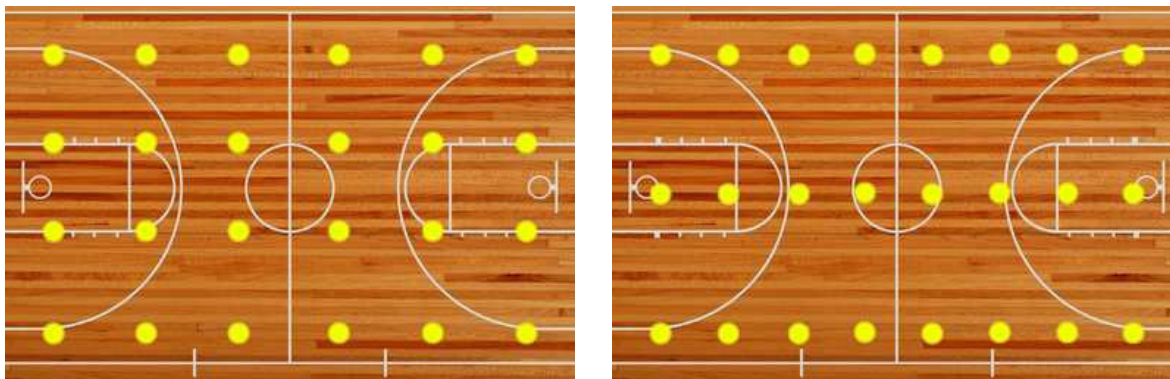
The height of the ceiling or roof structure also influences the lighting design. A higher ceiling may require fixtures with higher lumen output to adequately illuminate the playing area. Additionally, the type of lighting fixture used, such as flood lights or high bay lights,

may vary depending on the height and design of the ceiling.

The dimensions of the basketball court, including its length, width, and height, affect the distribution of light. Uniform light levels and minimal shadows are essential to ensure fair play and safety for the players. By carefully considering the court dimensions, lighting designers can determine the optimal positioning and angles of the fixtures to achieve consistent lighting across the entire playing surface.

LAYOUT

INDOOR BASKETBALL COURT LIGHTING LAYOUT

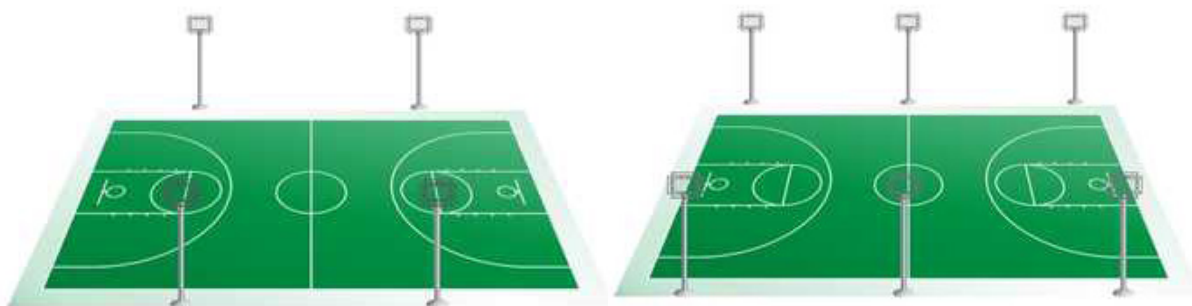


- Type of lighting fixtures:
 - High-bay LED lighting fixtures hung from the ceiling
- Recommended ceiling/lighting fixture height:
 - 23 feet from the floor
- Wattage:
 - Recreational / High school: 100-200 watts per fixture
 - College/Pro: 150-400 watts per fixture
- How many fixtures do I need?
 - The number of LED light fixtures you'll need for your basketball court ultimately comes down to three things: the total area that needs to be lit, the competition level of the players, and the efficacy of the light fixtures. A full-sized basketball court measures 94' x 50' which adds up to 4,700 square feet. Here's an example of how to evaluate the number of fixtures needed:
- Light fixture efficacy: 140 lumens per watt
- Footcandles needed:
 - Recreational: 20 fc.
 - High school level: 30 fc.
 - Collegiate level: 75 fc.
- Total lumens needed:
 - Recreational: 94,000
 - High school level: 141,000
 - Collegiate level: 352,500
- Total wattage needed:
 - Recreational: 700w
 - High school level: 1,000w
 - Collegiate level: 2,500w
- Number of LED basketball court lighting fixtures needed:
 - Recreational: 8 x 100w LED fixtures
 - High school level: 10 x 100w LED fixtures
 - Collegiate level: 18 x 150w LED fixtures



OUTDOOR BASKETBALL COURT LIGHTING LAYOUT & ARRANGEMENT

- Type of lighting fixtures: LED lighting fixtures mounted on lighting poles
- Basketball lighting pole height recommendation: 23 feet
- Number of lighting poles: either 4 or 6
- Wattage: 150-400 watts per fixture
- Number of lighting fixtures: 4 or 6



STANDARDS & REQUIREMENTS

INDOOR BASKETBALL COURT LIGHTING REQUIREMENTS

Lighting requirements and standards for basketball courts vary between associations and competition levels. Illumination level is mea-

sured normally in lux (metric system) or foot-candles (imperial).

The international basketball federation (FIBA) has established three classes for lighting levels to be used for games:

- Class I: 150 footcandles: International basketball games and televised events
- Class II: 50-75 footcandles: National and regional basketball games
- Class III: 20-30 footcandles: Recreational and training level

The NCAA, on the other hand, states that for standard intercollegiate play, the required lighting level is 80 footcandles. In the next section, you can find the recommended lighting levels, standards, and requirements for indoor and outdoor basketball courts on training, recreational, high school, and college levels.

The required illuminance level for an indoor basketball court depends on the competition

level of the main users of the court. As a rule of thumb the higher the competition level the more output and uniformity of lighting are required to ensure the safety of the players and the viewing experience of the spectators and TV audience. Typically the temperature of the light remains the same on every level (neutral white light). The color rendering index (CRI) also has to be higher on the professional level, mainly due to TV broadcast requirements.

Competition level	Illuminance	Uniformity	Temperature	CRI
International competition	100 - 200 fc.	Min. 0.7	4000K	80
Pro / Collegiate	75 fc.	Min. 0.7	4000K	80
High school	30 fc.	Min. 0.7	4000K	60
Training / recreation	20 fc.	Min. 0.5	4000K	60

OUTDOOR BASKETBALL COURT LIGHTING REQUIREMENTS

The required illuminance level for an outdoor basketball court is lower than for indoor courts. Again, the required footcandle level depends on the level of competition.

Competition level	Illuminance	Uniformity	Temperature	CRI
Pro / Collegiate	50 fc.	Min. 0.7	4000K	80
High school	20 fc.	Min. 0.6	4000K	60
Training / recreation	10 fc.	Min. 0.5	4000K	60

FIXTURES

INDOOR BASKETBALL COURT LIGHT FIXTURES

Any knowledgeable sports lighting supplier will be able to provide you with the most suitable basketball court light fixtures. However, it is still important for you to understand the different types and options so that you can be sure about making the right choice.

High-bay (UFO) light fixture for basketball courts

High-bay light fixtures are probably the most common type of LED luminaires used at indoor basketball courts. They are hung from the ceiling approx. 20-30 feet high to ensure an ideal uniformity of light on the court.

These fixtures can be also used to highlight specific areas of the court where most of the action happens.

High-bay linear light fixtures

Similar to the UFO high-bay light fixtures, the linear LED luminaires are mounted on the ceiling. Compared to the ufo fixtures, the linear LEDs have a wider beam angle which provides uniform illumination for your court, as long as enough lumen output is guaranteed, but it cannot be focused on specific spots on the court, the way a ufo high-bay light fixture can.

OUTDOOR BASKETBALL COURT LIGHT FIXTURES

LED floodlights are the go-to choice for outdoor basketball courts due to their energy efficiency, long lifespan, and superior light quality. These sports lighters are designed to provide uniform, bright illumination across the court, minimizing shadows and glare. They are often mounted on poles that are strategically positioned to offer the best

lighting conditions. The LED lights can be adjusted for angle and height to ensure optimal visibility for both players and spectators. Advanced LED lighting systems may also come with features like remote control, dimming capabilities, and smart technology integration for a more customized lighting experience.



VOLLEYBALL COURT LIGHTING DESIGN

DIMENSIONS

The standard size for a regulation volleyball court is 29 feet 6 inches wide by 59 feet long. This is a total area of 1,743 square feet. But your facility may be larger or smaller depending on how many courts you have and how much space you need for spectators.

In addition to the playing surface, you'll need

to account for a safe zone as well. For a fast-paced sport like volleyball, a safe zone of at least 30 – 50 feet on all sides is recommended. This will help you accommodate spectators and benches on the sides. But remember, every foot you add will require more lighting fixtures and increase the cost of your LED sports lighting system.

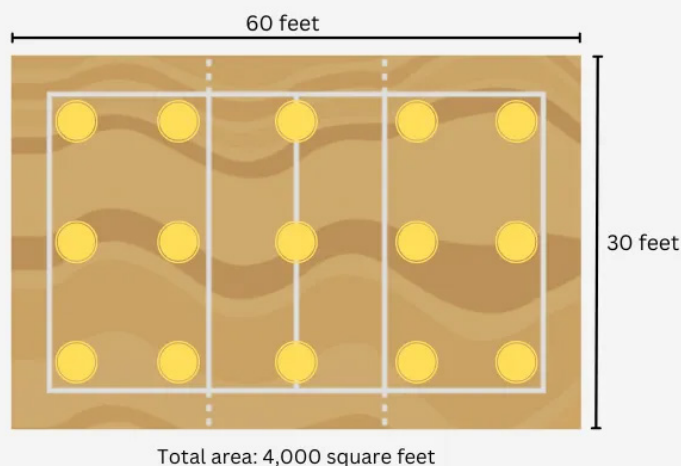
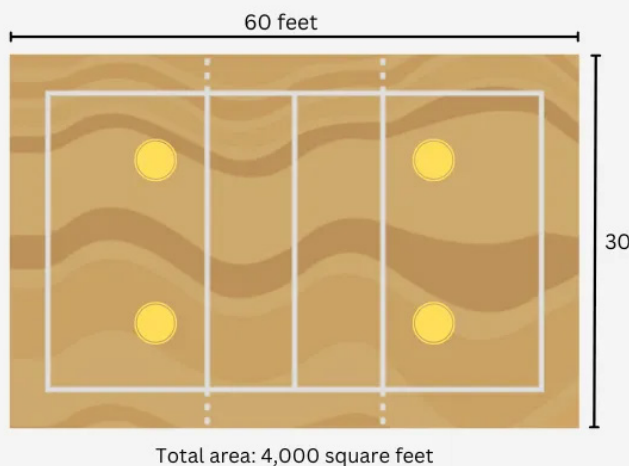
LAYOUT

In an indoor volleyball court, the light fixtures are strategically arranged in the ceiling to provide optimal lighting conditions for players. The arrangement aims to ensure even illumination across the entire court surface, allowing players to see the ball clearly and react swiftly.

The fixtures are typically placed in a grid pattern, evenly spaced across the ceiling. The exact layout depends on factors such as the

court dimensions, ceiling height, and the type of lighting fixtures used. The goal is to minimize shadows and maintain consistent lighting levels throughout the playing area.

For larger volleyball courts, additional fixtures may be positioned near the net and sideline areas to ensure adequate illumination in those specific zones. This helps players track the ball's trajectory accurately and enhances their performance.



STANDARDS & REQUIREMENTS

Recreational facilities only need around 20-30 footcandles, while local professional competitors need 30-50 footcandles or more. If you're planning on hosting televised matches or international competitions you may need 1000-2000 footcandles of evenly distributed light throughout your court and facility.

No matter the level of play, you need uniform light levels across the court. If you're in doubt, it's best to consult a professional who can help you find an appropriate lighting solution for your specific requirements. A pro can help you choose the right lights, the right color temperature, and the correct lumens for your space.

Competition level	Illuminance	Uniformity	Temperature	CRI
Class I: International competition	100 - 200 fc.	Min. 0.7	5000K	min.80
Class II: Regional competition / high schools	50 - 75 fc.	Min. 0.6	4000-5000K	min.65
Class III: Training / recreation	20 - 30 fc.	Min. 0.5	4000-5000K	min.65

FIXTURES

As explained already in the previous chapter, LED sports lighting fixtures are the best option for your volleyball court lighting. There are different types of light fixtures to choose from and sometimes several types are used to complement each other. The main types are:

- LED High-bay (UFO) lighting fixtures – These fixtures are the most common type found at volleyball courts because they provide uniform and quality illumination with a focused beam angle for the court below. They are mounted on the ceiling and are the perfect solution for a volleyball facility with a high ceiling.
- LED floodlights – These luminaires are often used to light up volleyball facilities with a low ceiling as their beam angle is broader and the light is distributed over a larger area. These fixtures are also mounted on the ceiling using posts, beams, or trusses.

Sometimes strip or linear LED fixtures are used to complement the primary light source lighting experience.

to avoid shadows in areas that are more difficult to light and to provide a more ambient

Upgrading a metal halide lighting system to LED technology

- Thanks to the improved energy efficiency of LED fixtures compared to metal halides, your facility can save a lot of money on utility bills. When choosing your LED volleyball court light fixtures, take into consideration the wattage difference between LED and metal halide. Here are some recommendations to follow:
-
- 60W – 100W LED volleyball court fixture replaces a 250W metal halide fixture
- 100W – 200W LED volleyball court fixture replaces a 400W metal halide fixture
- 300W – 400W LED volleyball court fixture replaces a 1000W metal halide fixture
- 400W – 500W LED volleyball court fixture replaces a 1500W metal halide fixture
- 600W LED volleyball court fixture replaces a 2000W metal halide fixture
-

Try our volleyball court lighting cost calculator to get a customized cost estimate for your project.

HOW MANY LIGHTING FIXTURES DO YOU NEED?

To calculate the number of LED lighting fixtures to properly light up your volleyball court, you will need to understand the total area that needs to be lit and the competition level of the users of the court.

Here's a simple calculation to give you an idea of how many LED lighters you would need for a standard-sized volleyball court including the free zone around the court.

- LED Lighting fixture efficiency: 130 lumens per watt (LPW)
- Dimensions of the gymnasium/sports hall: 94' x 50'
- Area of a volleyball court (including free zone): approx. 4,000 square feet
- Lumen output needed (footcandles x square feet): 80,000 – 400,000 (recreational-pro)
- Total wattage needed (lumens / LPW 130)
 - recreational: approx. 600w
 - professional: approx. 3,000w
- For a recreational volleyball gym, you will need at least: 4 x 150w LED sports lighters
- For a professional volleyball gym, you will need at least: 15 x 200w LED sports lighters



BADMINTON COURT LIGHTING DESIGN

DIMENSIONS

The dimensions and size of an indoor badminton court have a significant impact on the lighting design. The lighting fixtures need to be strategically positioned to ensure even and adequate illumination across the entire court. The court's length, width, and height determine the number and placement of fixtures required to achieve the recommended lighting levels. The lighting design should minimize shadows and glare, allowing players to have clear

visibility of the shuttlecock and the court boundaries.

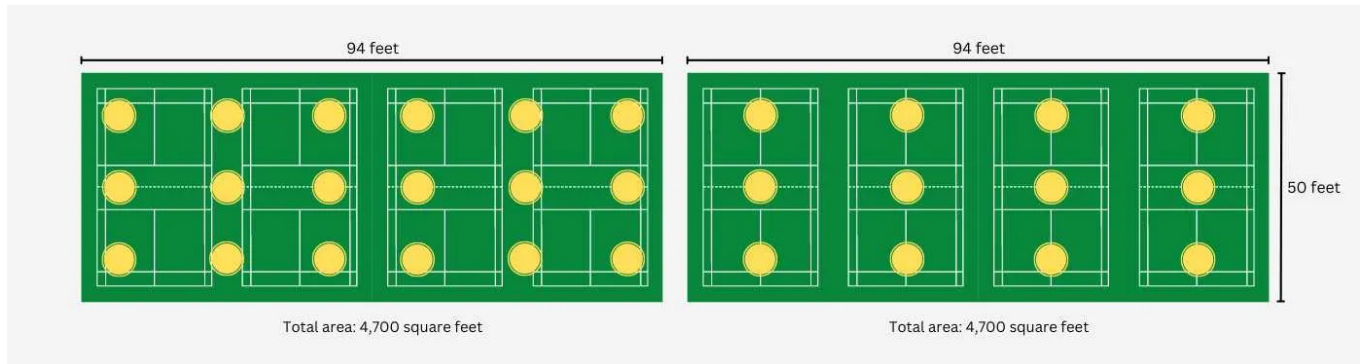
Additionally, the ceiling height and reflective surfaces in the court affect the lighting distribution and the potential for light reflections or hotspots. By considering the specific dimensions and size of the indoor badminton court, a well-designed lighting system can enhance visibility, player performance, and overall playing experience.

LAYOUT

The light fixtures are typically arranged in a grid pattern on the ceiling. The fixtures are evenly spaced and strategically positioned to provide uniform illumination across the court. The exact arrangement depends on

factors such as the size of the court, the ceiling height, and the type of lighting fixtures used.

Typically, the fixtures are placed in rows par-



allel to the longer sides of the court, creating a symmetrical layout. The distance between each row and the spacing between individual fixtures within a row are carefully calculated to achieve optimal lighting distribution. The aim is to minimize shadows and eliminate dark spots on the court surface, ensuring

clear visibility for players.

In some cases, additional fixtures may be placed near the net area to ensure sufficient illumination in that specific zone. This helps players clearly see the shuttlecock and react quickly to its movement.

STANDARDS & REQUIREMENTS

Badminton competition and lighting is broken into three classes. Each class has different light levels, uniformity, and glare control requirements.

Class 3 is for recreational play, Class 2 is for regional competitions, and Class 1 is for international competitions. For HD TV broadcast, the requirements are a lot higher and you may need to provide up to 200 foot candles / 2,000 lux to ensure optimal viewing experience. Different classes will have different lighting re-

quirements and costs associated with them. Light uniformity should also be taken into account. Poorly lit courts can cause distracting glare or shadows, negatively impacting players' performance and safety.

Color Temperature is another important factor when choosing lighting for your badminton court. Higher color temperatures (5000K+) are typically used in sports venues because of their bright, white light and high-lumen output.

Lighting class	Illuminance	Uniformity	CRI
Class I: Professional	100 - 200 fc.	Min. 0.7	min.80
Class II: Regional competition / high schools	50 - 75 fc.	Min. 0.6	min.65
Class III: Training / recreation	20 - 30 fc.	Min. 0.5	min.65

FIXTURES

There are many types of badminton court lighting fixture types to choose from. Each type has its own characteristics and you should always consult a professional sports lighting company to help you choose the right one. In the end the profile of users and the

shape and size of your sports hall or gymnasium determine the best solution.

These are the main types of lighting fixtures for badminton courts:

1. **LED High Bay (UFO) lighting fixtures** – as the name insinuates, these luminaires are pretty much shaped like a UFO that are mounted on the ceiling. They are a very common lighting solution at badminton courts or gymnasiums that have high ceilings. They offer a high brightness level and uniform illumination for the whole court.
2. **LED flood lights** – These fixtures are similar to High Bay lights, in the sense that they are mounted also on the ceiling. However, they offer a broader light beam which makes them suitable for sports halls with a lower ceiling also.

Other types of LED lighting fixtures may be used to supplement the illumination provided by high bays or floodlights. For example, strip or linear LED lights can be installed along the sides of the court or in areas that are harder to illuminate using high bays or floodlights.

In case you have an existing metal halide lighting system that you want to upgrade to LED technology, you should take into consideration that the new LED light fixtures require a lot less wattage. Here are some recommendations:

- 60W – 100W LED badminton court light fixture replaces a 250W metal halide fixture
- 100W – 200W LED badminton court light fixture replaces a 400W metal halide fixture
- 300W – 400W LED badminton court light fixture replaces a 1000W metal halide fixture
- 400W – 500W LED badminton court light fixture replaces a 1500W metal halide fixture
- 600W LED badminton court light fixture replaces a 2000W metal halide fixture

Try our badminton court lighting cost calculator to get a customized cost estimate for your project.

HOW MANY FIXTURES DO I NEED?

The number of LED lighting fixtures you will need to light up your badminton court or gymnasium depends on the number of courts (total area to be lit) and the competition level.

Here's a simple calculation to give you an idea of how many LED lighters you would need for a gymnasium/sports hall that hosts four standard-sized badminton courts (recreational vs pro):

- LED Lighting fixture efficiency: 130 lumens per watt (LPW)
- Dimensions of the gymnasium/sports hall: 94' x 50'
- Area of a badminton court (sq ft): approx. 4,700 square feet
- Lumen output needed (footcandles x square feet): 141,000 – 470,000 (recreational-pro)
- Total wattage needed (lumens / LPW 130)
- recreational: approx. 1,100w
- professional: approx. 3,600w
- For a recreational gymnasium/sports hall with 4 badminton courts, you will need at least: 12 x 100w LED sports lighters
- For a professional gymnasium/sports hall with 4 badminton courts, you will need at least: 18 x 200w LED sports lighters



HORSE ARENA LIGHTING DESIGN

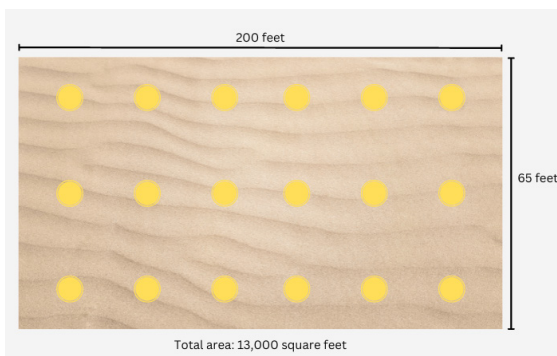
DIMENSIONS

The size of your horse arena is an important factor that will affect the lighting design. Generally speaking, larger arenas require more lights and need higher wattage to be properly illuminated.

The standard size for a competition horse arena is 65 by 200 feet (20m by 60m) or around 13,000 square feet. Ensuring full coverage of your facility requires intensive measurements and mathematical calculations. It's best to work with an experienced lighting designer or electrician to plan your lighting layout.

LAYOUT

In an indoor horse arena, ceiling-mounted light fixtures are commonly used to provide efficient and effective lighting. These fixtures are strategically arranged across the ceiling to ensure optimal illumination throughout the arena.



Ceiling-mounted fixtures offer several advantages in indoor horse arenas. Firstly, they maximize the available space, allowing for unobstructed movement and activities within the arena. Additionally, by positioning the fixtures overhead, they minimize shadows and provide consistent lighting across the entire arena floor.

The number and placement of ceiling-mounted fixtures depend on the size and layout of the arena, as well as the desired lighting levels. It is important to ensure that the fixtures are evenly distributed to achieve uniform lighting throughout the arena.

STANDARDS & REQUIREMENTS

Understanding what you will use your horse arena for – both now and in the future – is crucial to designing your lighting solution. If you think you might want to host competition-level events, it's best to future-proof your design. Here are some of the standards and requirements for different levels of com-

petition/training.

Generally, the luminance for outdoor training areas can accept 200-300 lux, although this depends on the arena's size. Here are some general guidelines for other common equestrian events:

- Hunter/jumper training – 30-40 foot candles
- Dressage – 50 foot candles
- Competitive performance – 70 foot candles

Additionally, the positioning of lighting fixtures is important to consider. At a competition level, you'll need your lights placed evenly across the arena – on each side of the railings and in a line down the center. Competition arenas should have uniform lighting so that all arena areas are equally lit.

Uniformity of lighting simply means that light across the horse arena is evenly distributed and dark spots and shadows that may reduce the viewing experience and safety in the arena, are removed. Normally, for non-televised events, a uniformity level of 0.6 is maintained, whereas, for televised events, you will need at least 0.7.

Competition level	Illuminance	Uniformity	Glare	CRI
Class I: Top level competition	70 fc.	0.7	Max. 50	Min. 60
Class II: Dressage / competition	50 fc.	0.6	Max. 50	Min. 60
Class III: Hunter / Jumper training	30 - 40 fc.	0.6	Max. 50	Min. 60
Class IV: Recreation	20 - 30 fc.	0.5	Max. 50	Min. 20

For television broadcasts, the requirements get a bit more tricky than just being bright enough. Color temperature and quality are important factors to consider. Be sure to bring this up with your lighting partner so that you can design a solution that meets all require-

ments. Here, the color rendering index (CRI) is an essential metric that ensures colors are rendered as naturally and accurately as possible. The higher the competition, the higher the CRI requirement.

FIXTURES

When choosing your horse arena lighting fixtures, you should always consult a professional sports lighting company. The decision-making process comprises roughly three questions:

- What is the competition level of your horse arena?
- How high is the ceiling in your arena?
- What is the total area that needs to be lit up?

Once you have clarified those three points, you can choose from three different types of horse arena lighting fixtures:

- LED Floodlights – These lighting fixtures are popular because they provide broad and even illumination for a large horse arena. Equestrian arenas that host competitive events typically go for LED floodlights to ensure proper safety and visibility for the riders, horses, and spectators.
- LED High-bay lighting fixtures are typically used in horse arenas that have a high ceiling. They can be mounted on the ceiling to provide uniform illumination for the arena below. High-bay fixtures can also be used to focus on a specific part of the arena if needed.
- LED Strip lights can be used in horse arenas that have a low ceiling, where high-bay fixtures or floodlights would not be a good fit. Strip light fixtures produce less light so they are suitable for training facilities for example

How can LED horse arena light fixtures replace metal halide fixtures?

Thanks to the high energy efficiency of LED lighting fixtures, the wattage per fixture can be as low as 60W and up to 300W. If you are planning to retrofit LEDs to your existing metal halide lighting system, check out this brief guide for LED to metal halide fixture conversion:

- 60W – 100W LED fixture replaces a 250W metal halide fixture
- 100W – 300W LED fixture replaces a 1000W metal halide fixture



NATATORIUM / INDOOR SWIMMING POOL LIGHTING DESIGN

DIMENSIONS

It's important to understand how your natatorium's size impacts the design of your lighting system design. The larger the facility, the more lights you'll need to account for in your planning. If you are still in the planning phases for new construction on your swimming facil-

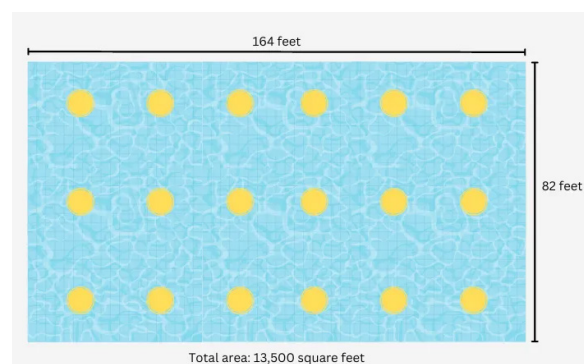
ity, paying close attention to the size of the natatorium can help you better plan for lighting costs. The number of lights needed for an arena with multiple 50-meter Olympic-sized swimming pools is very different from the needs of a single 8-lane pool.

LAYOUT

In natatoriums or indoor swimming pools, the lighting design plays a crucial role in creating a safe and visually appealing environment. Light fixtures are strategically arranged to ensure adequate illumination while considering the unique challenges posed by the pool area.

Ceiling-mounted fixtures are commonly used in natatoriums due to their versatility and ability to provide uniform lighting coverage. These fixtures are installed on the ceiling and positioned to evenly dis-

tribute light throughout the pool area. By mounting the fixtures overhead, shadows and glares are minimized, enhancing visibility for swimmers and spectators.



The number and placement of ceiling-mounted fixtures depend on the size and layout of the pool area, as well as the desired lighting levels. It is important to consider factors such

as the pool's depth, water surface reflection, and the presence of surrounding areas such as seating areas, walkways, and changing rooms.

STANDARDS & REQUIREMENTS

Once you understand who will frequent your facility, you must consider the specific requirements. If you're creating a lighting system for a private or public school (or even a training center), you can get away with around 30 – 50 footcandles for your space.

However, if you're planning to host an Olympic-level competition (or even broadcast on television), you'll need at least 120 foot candles to properly light your natatorium. Here's a full breakdown of the most common tiers.

Lighting class	Pool / deck	Temperature	CRI
Class I: Professional	Min. 75 / 50 fc.	5700K	Min. 80
Class II: Collegiate	Min. 50 / 20 fc.	5700K	Min. 80
Class III: Intermediate competition	Min. 30 / 10 fc.	5700K	Min. 80
Class IV: Recreational	Min. 30 / 10 fc.	4000K	Min. 70

Lighting uniformity is also important in a natatorium setting and something you should consider before making any final decisions. The lights should be spread evenly across the entire space to ensure optimum visibility for swimmers.

In addition to coverage, the color tempera-

ture of your pool's lights plays an important role in visibility. It's crucial to consult a professional before making any decisions on the types of lights you install. Color rendering index (CRI) refers to how naturally and accurately colors are rendered. CRI is important for televised swimming events for optimal TV viewing experience.

FIXTURES

When installing lighting in natatoriums or indoor swimming pools it is important to know that there are LED lighting fixtures designed specifically for this purpose. The reason is that lighting fixtures used in aquatic facilities

need to be highly resistant to humidity, moisture, and certain chemicals that are found in natatoriums. A solid indication of natatorium-rated light fixtures is an IP65 or IP67 rating which means the fixtures are water-re-

sistant and keep dust out as well. In addition, luminaires in indoor swimming pool facilities are required to be shatter-proof due to the fact that people tend to walk around barefoot in and around the pool. Lighting fixtures for natatoriums also have to be chained to avoid

accidents like luminaires falling in the pool.

Natatorium lighting fixtures come in many forms. Here are the most common ones found in swimming pool facilities in the US:

- High-bay (UFO) LED lighting fixtures are mounted on the ceiling and they provide uniform, quality illumination for the whole swimming pool and spectator area. They can also highlight certain areas of the natatorium if necessary.
- Wall-mounted LED fixtures may be mounted on the walls to further enhance the lighting experience in the natatorium and/or to highlight certain parts of the swimming hall.
- LED recessed light fixtures may be installed in addition to hallways or areas around the swimming pool to complement the high-bay fixtures if needed.

HOW TO REPLACE EXISTING METAL HALIDE FIXTURES WITH LED NATATORIUM LIGHTING FIXTURES?

Depending on the size and level of competition of your indoor swimming pool facility, the correct wattage for your LED natatorium light fixtures may range from as low as 60W

to 500W at the top end of the scale.

Here's a brief explanation of how to convert metal halides to LEDs:

- 60W – 100W LED natatorium light fixture replaces a 250W metal halide fixture
- 100W – 200W LED natatorium light fixture replaces a 400W metal halide fixture
- 250W–500W LED natatorium light fixture replaces a 1000W metal halide fixture

If you are planning to replace your existing metal halide natatorium lighting fixture with LEDs, try our natatorium lighting cost calculator to get a customized cost estimate for your project.



ICE HOCKEY RINK LIGHTING DESIGN

DIMENSIONS

The size and dimensions of an indoor swimming pool or natatorium have a significant impact on the lighting design. The number and placement of fixtures are determined by the pool area's size to achieve uniform and adequate illumination. Pool depth and surrounding areas also influence the lighting layout.

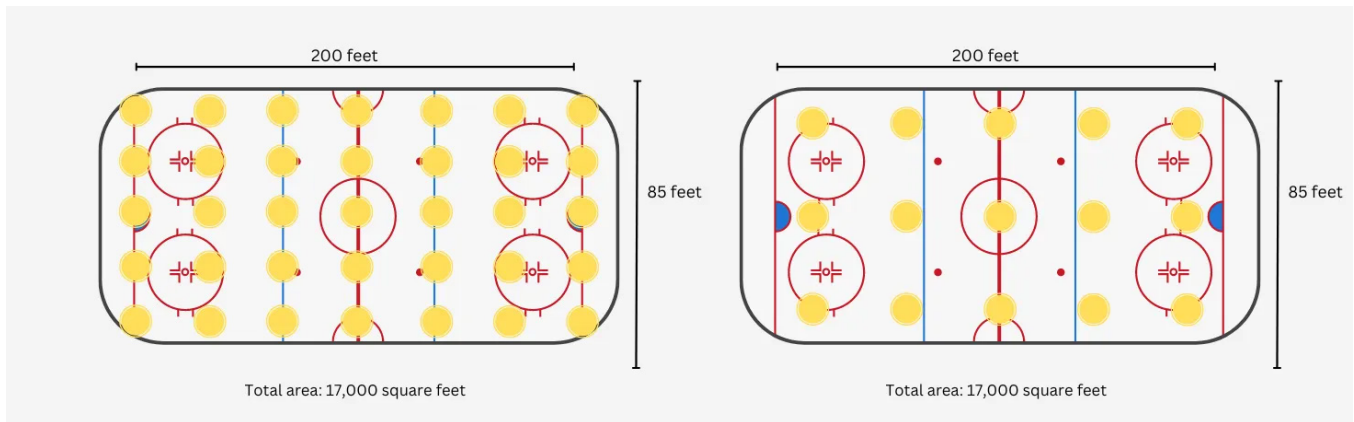
Waterproof and corrosion-resistant fixtures are crucial for safety in the pool environment. The goal is to provide consistent, glare-free lighting throughout the pool area while adhering to regulations and creating a visually appealing space.

LAYOUT

For indoor rinks, you need to pay attention to how close your lights are to the rink's surface. Ice is a highly-reflective material; if your lights are too close, you risk creating glare. Additionally, if you are mounting your lights on the ceiling, the lumen level can decrease if your cord is very long. Many facility owners choose to hang their lights rather than mount them directly to the ceiling.

In ice hockey rinks, the light fixtures are typically arranged in the ceiling to ensure opti-

mal visibility and uniform illumination on the playing surface. The fixtures are strategically placed to minimize shadows and glare that could affect players' performance and spectator experience. They are positioned in a grid-like pattern along the length and width of the rink, typically parallel to the sidelines and centerline. The fixtures are often suspended at a specific height to provide consistent lighting levels across the ice surface. Additionally, specialized optics and reflectors may be used to control the direction and distribu-



tion of light, further enhancing visibility and reducing unwanted glare. The arrangement of the light fixtures in the ceiling is designed to meet the lighting requirements and standards for ice hockey games, creating a well-lit environment for players and spectators alike.

Be sure to consult with a lighting professional to devise the best layout for your lights. Your rink's size and shape may differ from other rinks, and you'll need to create a custom plan for yours.

STANDARDS & REQUIREMENTS

Amateur training facilities can skate by with only 30 to 50 footcandles. However, professional-level play, or televised competition, needs somewhere between 100-200 footcandles.

In addition to the level of lumens, you'll need to consider the placement of your lighting fixtures, the distance between them, and their angles. You'll want to ensure there are no hotspots or shadows on the ice and that all areas of the rink are evenly lit. Lighting uniformity is crucial to success.



Lighting class	Illuminance	Uniformity	Temperature	CRI
Class I: Professional	100 - 200 fc.	Min. 0.7	Min. 5000K	Min. 80
Class II: Amateur & high schools	50 - 75 fc.	Min. 0.6	4000 - 5000K	Min. 65
Class III: Training & recreational	20 - 30 fc.	Min. 0.5	4000 - 5000K	Min. 65

FIXTURES

You have two options for lighting, for your hockey rink:

- HID – High-Intensity Discharge lighting is an older technology. The most common HID light fixtures are metal halide. Cheap upfront investment but has a shorter lifespan and longevity.
- LED – LED lights provide better performance and long-term savings. They also last longer (typically over 100,000 hours) and require much less maintenance than HID fixtures. The initial investment may be higher, but the long-term cost savings are worth it.
- LED High-Bay (UFO) light fixtures are the most common type of LED lights used in hockey rinks and skating arenas. They are mounted on the ceiling and they provide ideal, uniform light for the hockey rink below. These lighting fixtures can also be focused on specific parts of the hockey rink when necessary. High-bay light fixtures for hockey rinks consume up to 75% less energy compared to metal halide fixtures, and their wattage can be as low as 100-200 watts per fixture.

REPLACING METAL HALIDE FIXTURES WITH LED HOCKEY RINK LIGHT FIXTURES

The wattage of LED hockey rink light fixtures ranges from 60W to 600W depending on the size of your hockey facility and the competition level of the players. Here's a quick guide to converting metal halides to LEDs at your hockey rink.

- 60W – 100W LED hockey rink light fixture replaces a 250W metal halide fixture
- 100W – 200W LED hockey rink light fixture replaces a 400W metal halide fixture
- 300W – 400W LED hockey rink light fixture replaces a 1000W metal halide fixture
- 400W – 500W LED hockey rink light fixture replaces a 1500W metal halide fixture
- 600W LED hockey rink light fixture replaces a 2000W metal halide fixture

If you are planning to replace your existing metal halide hockey rink lighting fixtures with LEDs, try our hockey rink lighting cost calculator to get a customized cost estimate for your project.



CONVERTING A METAL HALIDE SPORTS LIGHTING SYSTEM TO LED

In the past few years, sports lighting technology has made incredible strides. For decades, the go-to choice for sports facilities of every level, sport, and size opted for metal halide. Metal halide systems were used for their power output and cost. However, with the advent and advancement of LED technology, sports facilities – especially ones that host a full-sized football, soccer, or baseball field – now have an even bigger incentive for a metal halide to LED conversion.

Many sports facilities are now choosing LED sports lighting solutions as the replacement for their outdated metal halide fixtures. LED lighting provides an energy efficiency factor, as well as a reduction in maintenance cost and improved lumen performance. But

if you're thinking you need to replace your entire lighting system – don't worry. Many facilities are opting for a 1000 or 1500-watt metal halide to LED retrofit. For most, it's an efficient process, but there are a few crucial considerations. In this article, we'll discuss what you need to know to set your conversion project up for success.

If you are in a hurry and just want to know how much it would cost to convert your metal halide sports lighting system to LED, try our sports lighting retrofit cost calculator to get a customized cost breakdown.

UPGRADING TO LED STADIUM LIGHTING AS PART OF A LARGER PROJECT

LED stadium lighting systems are usually upgraded or modernized as part of a broader construction project, either building a new field or renovating an existing one. Renovations will extend the lifespan of the playing surface, so it makes sense to do the same for the surrounding infrastructure. Clubs will also want to get the most out of their investment in the field, and a new lighting system will ensure they have maximum up-time at the desired levels of competition every day.

Costs accumulate quickly during these projects, and the focus is usually on the playing surface itself. However, having the right lighting systems can significantly improve the player and spectator experience, leading to increased attendance, membership and facility up-time. Moreover, using LED lights reduces the costs of electricity, maintenance and fixture replacement over the life of the system. Within a few years, these savings cover the higher up-front costs of LED's.

Planners should consider not just the costs of construction and installation, but the impact the new facility will have on revenues and expenses over the projected life of the

new infrastructure. Taking that view brightly illuminates the value of LED over conventional lighting systems.

Sports facility operators must determine in advance which sports will be playing on the newly-lit field.

Additionally, they need to know what the target competitive level is for their facility, as that, too, will drive the design and product selection of the lighting. These considerations should enter the planning at an early phase. Lighting vendors and designers should be part of the conversations around the project to offer their experience and expertise.

The high investment costs of LED stadium lighting are offset by lower operating costs compared to a conventional metal halide system.

Whether and when an LED sports lighting system is worthwhile for the club should be discussed with the relevant experts and planners and, above all, decided on the basis of a full cost calculation.

AUDITING THE EXISTING LIGHTING SYSTEM

Before you can purchase or install your new LED sports lighting kit, you need to conduct a thorough audit of your existing system. Un-

derstanding what you will need before setting your budget and timeline helps you avoid unnecessary expenses.



First, you need to know what kinds of lights can be replaced with LEDs. While most metal halide solutions are suitable for replacement, you want to make sure each individual component can be converted. Working with a trusted sports lighting professional can help you decipher the details and determine which components can be replaced. Next, you'll need to determine if your wiring needs to be replaced, or if you need to have a ballast bypass. Ballast bypassing involves the removal of the existing ballast and wiring in order to power LED bulbs directly from the

line voltage.

The condition of your existing lighting poles needs to be inspected before proceeding. If the structural integrity is compromised, you'll need to replace them.

At first glance, the auditing process might seem simple. However, it's a critical step and should be conducted by a professional. Any mistakes or overlooked needs can mean major headaches later in the project -- and can even render your installation a failure.

HOW TO CONVERT A METAL HALIDE SPORTS LIGHTING SYSTEM TO LED

Once you've established that your metal halide lighting system can be converted to LED, it's time to get to work. Let's take a look at a bit of the metal halide to LED conversion process so you can better understand what to expect.

In most cases, your sports lighting pro will remove your old metal halide fixtures and replace them with new LEDs. They will use

the existing poles, structures, and even the wiring. A retrofit saves organizations a lot of money in labor costs, as it takes less time and fewer resources to install than a full lighting system replacement.

To make the process even easier, there are many high-quality LED retrofit kits on the market. These kits are designed to maximize efficiency and give you everything you need

for a seamless installation. In many cases, the retrofit kits include LED drivers, brackets, and mounting hardware.

When you're working with a professional installer, be sure to ask about all of your options. Having a trusted partner walk you and your team through the process can make all the difference.

WHAT DOES THE LED SPORTS LIGHTS RETROFITTING PROCESS LOOK LIKE?

Once your lighting designer or contractor determines how much of your existing system can be preserved, they'll present you with solutions for retrofitting new LED fixtures or replacing all or some of the old lighting system. If you opt for a LED retrofit, the first stage of the work is switching off the lighting system. Secondly, the old HID lighting fixtures are removed and the new LED fixtures are mounted in their place with equivalent or improved brightness. In the third step the process typically entails bypassing the ballast by rewiring, so that electricity is supplied directly to the LED luminaires. Oftentimes the electrical system is also upgraded to support variable control and improve the communication

Please note that even if you're able to convert your existing system to LEDs, it may not be the best option. Although the upfront cost savings are attractive, it gives you less control over the light output and quality of your end product. If you want to experience all the benefits of LED technology, you will want to go with a full replacement solution.

system so you can control the lights remotely. The most advanced LED lights even communicate with the facility, providing regular status reports via Wi-Fi so you can monitor usage patterns and the health of your system. Once the new LED fixtures have been retrofitted, the last step is making it ready for gameday. The installers will position and calibrate the lights to ensure uniform illumination across the field. They will also program the main operating patterns to give you ease of control. While the system will always be fully flexible and under your control, coaches and facility staff will appreciate being able to select "practice," "game" or "community event" from the control panel.



Picture: Shinetoo Lighting USA LLC

WHY YOU SHOULD CONVERT YOUR EXISTING METAL HALIDE SPORTS LIGHTERS TO LED TECHNOLOGY

If it isn't clear already, LEDs far outpace the performance of outdated metal halide sports lighting. Here are a few of the main reasons your athletics facility should consider making the switch:

- More Energy Efficient - 75% less energy used with LEDs
- Improved Lighting Quality - A better experience for athletes and spectators
- Longer Life Span - Up to 100,000 running hours compared to 15,000 for metal halide
- Reduced Maintenance Costs - A significant reduction in labor

You'll want to add up all of the savings you'll receive from these four factors and divide them by the lifespan hours.

LED sports lighting is more energy efficient than traditional metal halide lighting, so you'll save hundreds of dollars on your monthly energy bills. The improved quality of light will

make it easier for athletes to perform better and stay safe on the field. LEDs also have a much longer life span, so you won't have to worry about having to replace the fixtures as often. And because LEDs require much less maintenance, you can save money on labor costs by cutting back on your service calls.

METAL HALIDE TO LED CONVERSION CHART FOR SPORTS LIGHTERS

Because of their high-efficiency output, you need much less power when converting to LEDs. In fact, when compared to a 1000 – 1500-watt metal halide lamp, your LEDs will need between 50 – 75% less energy. The long-term cost savings are incredible and they're one of the main reasons why so many

sports organizations are making the switch.

Take a look at the metal halide to LED conversion chart below to see what would be the appropriate wattage for your 1000 or 1500-watt LED replacement fixtures.

Metal halide wattage	Illuminance	Energy savings
400w	150w	62,5%
750w	250w	67%
1000w	300w	70%
1500w	450w	70%
2000w	600w	70%

When you're selecting an LED sports light to replace a metal halide lamp, you need to consider several factors:

- Lumens (total output)
- Color temperature (warmth or coolness in color)
- Beam angle

As you are shopping for your new lights, it's important to consider the size of your space and the type of lighting you need. If you're trying to light a football field, your beam angle should be wide enough to spread the illumination evenly across the entire space. If you're working with a smaller, more contained area, like a tennis court, then you can use narrower beam angles that will concentrate the light only where it's needed.

There are many options available, but finding the right one takes a bit of research and guidance. An experienced sports lighting pro will help you select the perfect LED light for your application, taking into account both your budget and lighting needs.

400-WATT METAL HALIDE TO LED CONVERSION

400-watt metal halide sports lighters can typically be found at smaller sports courts such as tennis courts, pickleball courts, badminton courts, or volleyball courts.

The amount of light needed to light up your court depends on the court size and the lighting level requirement (footcandles) for your competition level (class 1 = 75fc, class 2 = 50fc, class 3 = 20fc):

How many lumens are needed to light up your court?

- Tennis court: $2106 \text{ sq ft} \times 20/50/75 \text{ fc} = 42,120 / 105,300 / 157,950 \text{ lumens}$
- Pickleball court: $880 \text{ sq ft} \times 20/50/75 \text{ fc} = 17,600 / 44,000 / 66,000 \text{ lumens}$
- Badminton court: $880 \text{ sq ft} \times 20/50/100 \text{ fc} = 17,600 / 44,000 / 88,000 \text{ lumens}$
- Volleyball court: $1,743 \text{ sq ft} \times 20/50/75 \text{ fc} = 34,860 / 87,150 / 130,725 \text{ lumens}$

What kind of LED fixtures can replace existing 400-watt metal halide fixtures?

LED sports lighting fixtures can put out 130 lumens per watt on average (this number keeps rising fast though):

- **Tennis court:**
 - Class I:
 - Total lumens needed: 157,950
 - Wattage needed: 1215w (130 LPW)
 - 6 x 200w - 250w LED fixtures
 - Class II:
 - Total lumens needed: 105,300
 - Wattage needed: 810w (130 LPW)
 - 4 x 200w - 250w LED fixtures
 - Class III:
 - Total lumens needed: 42,120
 - Wattage needed: 324w (130 LPW)
 - 4 x 100w - 150w LED fixtures
- **Pickleball court:**
 - Class I:
 - Total lumens needed: 66,000
 - Wattage needed: 508w (130 LPW)
 - 4 x 200w LED fixtures
 - Class II:

- Total lumens needed: 44,000
 - Wattage needed: 338w (130 LPW)
 - 4 x 150w LED fixtures
- Class III:
 - Total lumens needed: 17,600
 - Wattage needed: 135w (130 LPW)
 - 2 x 100w LED fixtures
- **Badminton court:**
 - Class I:
 - Total lumens needed: 88,000
 - Wattage needed: 677w
 - 4 x 200w LED fixtures
 - Class II:
 - Total lumens needed: 44,000
 - Wattage needed: 338w
 - 2 x 200w LED fixtures
 - Class III:
 - Total lumens needed: 17,600
 - Wattage needed: 135w
 - 2 x 100w LED fixtures
- **Volleyball court:**
 - Class I:
 - Total lumens needed: 130,725
 - Wattage needed: 1005w
 - 4 x 250w LED fixtures
 - Class II:
 - Total lumens: 87,150
 - Wattage needed: 670w
 - 4 x 200w LED fixtures
 - Class III:
 - Total lumens needed: 34,860
 - Wattage needed: 268w
 - 2 x 150w LED fixtures



Picture: Sportsbrams Lighting, Inc.

1000-WATT METAL HALIDE TO LED CONVERSION

1000-watt metal halide lamps are very common at high school or college gymnasiums and basketball courts. The total area of a basketball court is around 4520 square feet, which is considerably larger than the smaller courts we discussed above. The larger total area requires more potent lighting fixtures.

The total output depends, again, on the competition level of the main users of the court. For recreational use 20 foot candles are enough (class III), for high school gyms that accommodate up to 5,000 spectators a minimum of 50 footcandles is needed (class II). At college and professional levels that have to take TV broadcasting into consideration, at least 75 foot candles are required (class I).

— **Class I:**

- Total lumens needed: 339,000
- Wattage needed: 2607w
- 6 x 450w LED fixtures (130 lumens per watt, LPW)

— **Class II:**

- Total lumens needed: 226,000
- Wattage needed: 1738w
- 6 x 300w LED fixtures (130 LPW)

— **Class III:**

- Total lumens needed: 90,400
- Wattage needed: 695w
- 4 x 200w LED fixtures (130 LPW)

1500-2000-WATT METAL HALIDE TO LED CONVERSION

1500 - 2000-watt sports lighters are used almost exclusively at stadiums, sports fields, and large sports arenas. Considering you can save around 50-75% in utility bills, converting your sports field lighting from metal halide to LED is a no-brainer. See below the conversion calculations for your typical recreation, high school, or college sports fields/stadiums.

The amount of light needed to light up your ballpark depends on the court size and the lighting level requirement (footcandles) for your competition level (class 1 = 75fc, class 2 = 50fc, class 3= 20fc).

— Baseball field

- Class I - college/professional
 - 120,000 sq ft x 75fc = 9,000,000 lumens
 - Wattage needed (130 LPW): 69,000 watts
 - 69 x 1000w LED fixtures
- Class II: - high school
 - 105,000 sq ft x 50fc = 5,250,000 lumens
 - Wattage needed (130 LPW): 40,000 watts
 - 80 x 500w OR 40 x 1000w LED fixtures
- Class III: - recreational
 - 105,000 sq ft x 20fc = 2,100,000 lumens
 - Wattage needed (130 LPW): 16,000 watts
 - 32 x 500w OR 16 x 1000w LED fixtures

— Football field

- Class I - college/professional
 - 57,600 sq ft x 75fc = 4,320,000 lumens
 - Wattage needed (130 LPW): 33,000 watts
 - 33 x 1000w LED fixtures
- Class II:
 - 57,600 sq ft x 50 fc = 2,880,000 lumens
 - Wattage needed (130 LPW): 22,000 watts
 - 44 x 500w OR 22 x 1000w LED fixtures)
- Class III:
 - 57,600 sq ft x 20 fc = 1,152,000 lumens
 - Wattage needed (130 LPW): 9,000 watts
 - 18 x 500w LED fixtures

— Soccer field

- Class I:
 - 81,000 sq ft x 75 fc = 6,075,000 lumens
 - Wattage needed (130 LPW): 47,000 watts
 - 47 x 1000w LED fixtures
- Class II:
 - 81,000 sq ft x 50 fc = 4,050,000 lumens
 - Wattage needed (130 LPW): 31,000 watts
 - 62 x 500w OR 31 x 1000w LED fixtures
- Class III:
 - 81,000 sq ft x 20 fc = 1,620,000 lumens
 - Wattage needed (130 LPW): 12,500 watts
 - 25 x 500w OR 13 x 1000w LED fixtures



Picture: GeoSport Lighting Systems, LLC

GRANTS & FUNDING

One of the most popular upgrades for athletic organizations and facilities is the installation of new, high-efficiency sports lighting. New LED lights can reduce energy costs and lower their carbon footprints and create a safe and inviting space for athletes and spectators alike.

But planning the budget for a new LED lighting installation or retrofit at a school or for a business can be tough. No matter the economic climate, there are always competing priorities for funding, and finding the right grant program can be daunting.

Fortunately, there are many lighting grants available from the government to help mitigate the costs for schools and commercial sports facilities. We will walk you through some of your options so you have a better idea of what's available.

Pro tip: Before you start applying for grants, you might want to get a clear understanding of the total costs of your sports lighting project. This is where our sports lighting cost calculator comes in! In a matter of minutes, you will receive a customized cost breakdown in your inbox. Give it a try!

OFFICE OF STATE AND COMMUNITY ENERGY PROGRAMS

In January 2022, The Office of State and Community Energy Programs was established to manage nearly \$6 billion of funding for infrastructure improvements all around the country. Because sustainability is a priority for the office, a portion of this funding can be used for sports lighting projects.

This means there is a significant amount of money available for schools and commercial sports facilities looking to install new LED lighting. But because the application process

can be complicated, we recommend working with an expert lighting installation company. They will ensure you meet deadlines and help you navigate the application process.

The same holds true for all of the options on our list. A trusted partner can make finding funding efficient and stress-free so you can focus on what's important—creating a safe, sustainable space for your athletes and fans.

GRANTS FOR SCHOOLS

1. GRANTS FOR ENERGY IMPROVEMENTS AT PUBLIC SCHOOL FACILITIES

For schools looking to install new sports lighting, there is a new program with \$500 million available for the task. The U.S. Department of Energy announced the availability of funds for improving the sustainability of K-12 schools – including upgrades to sports facilities and lighting.

Who and what is eligible?

To take advantage of this funding you must be working on behalf of a school or non-profit organization here in the United States. Your team can apply for funding for installation, retrofitting, lighting controls, and the overall improvement of your system.

When should you apply?

The application process for these grants will open by the end of 2022 and funding will be given out until the \$500 million is expended.

2. ENERGY EFFICIENCY MATERIALS PILOT PROGRAM

For non-profit endeavors, the Department of Energy offers the Energy Efficiency Materials Pilot Program. The amount of money earmarked for this venture is a little less than the academic-centered program above. However, with \$50 million available, there are still opportunities to receive some level of funding.

What is the purpose of this program?

The goal of this initiative is to bring advanced, energy-saving materials to the marketplace. This can include everything from new insulation to sports lighting systems and controls.

When should I apply?

Requirements for the application process are due to be released by the end of 2022. The process itself is expected to begin in Q1 of 2023.



3. ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANT PROGRAM

Next on our list is another large-scale program designed to help local governments, state governments and tribes cut down on fossil fuel usage. This is an excellent opportunity for public schools and commercial sports. What's the purpose of this program?

The goal of the Energy Efficiency and Conservation Block Grant Program is to help these entities create and implement programs that will reduce fossil fuel emissions and conserve energy. To access these funds, there is a competitive grant process.

When should I apply?

The requirements and rules for the application process are available now. Applications will be examined beginning in Q4 of 2023.

4. OTHER GRANT AND FUNDING OPPORTUNITIES FOR SCHOOLS AND NONPROFIT ORGANIZATIONS

[DSIRE Clean Energy](#)
[Energy Grants for Schools](#)
[Local Government Commission](#)
[Rural Energy for America Program](#)
[Grants.Gov](#)
[Energy.gov](#)

GRANTS FOR BUSINESSES

If you're a business owner in the commercial sports industry, you're in luck. Although many of these programs are centered on the public and non-profit sectors, there are plenty of funds available for private entities.

1. ENERGY EFFICIENCY REVOLVING LOAN FUND CAPITALIZATION GRANT PROGRAM

The first such program on our list boasts \$250 million in available funds, specifically earmarked for state-level lending. To access funding, commercial sports facilities will apply to their local government to secure loans for their LED lighting projects. The funds are available for commercial energy audits, upgrades, and retrofits.

How to apply

The request for information is available online through The Department of Energy.

When should I apply?

The application process is set to open in Q4 of 2023.

Still, the costs are real and may seem prohibitive at the start of the planning process. Fortunately, many public and private entities recognize the value of modern lighting systems at sports facilities, from rec fields to professional stadiums. As a result, they offer grants, rebates, and tax credits that help reduce or soften the costs of installing an LED lighting system.

Our baseball field lighting cost calculator is the best starting point to start investigating the total cost of the LED lighting project. Once you get the cost estimate you can study the incentives explained in this article to find out ways to reduce the overall costs.

Lighting system installations or upgrades are significant investments for a sports facility. In terms of cost and importance, they are comparable to the playing surface itself. Because they can add so much to the facility – expanded hours, improved player experience and safety, enhanced fan experience, better social and community relations, access to video streaming and broadcasting – they should be viewed as investments, not expenses.

GRANTS FOR RECREATIONAL AND COMMUNITY FACILITIES

FEDERAL PROGRAMS

UPARR PROGRAM

UPARR stands for Urban Parks and Recreation Recovery. Cities, primarily economically disadvantaged communities, can receive financial grants and technical assistance for needed recreational facility rehabilitation.

LAND AND WATER CONSERVATION FUND

States and local governments receive grants for the purchase and development of recreation facilities, which include parks and athletic fields.

HUD – COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM (CDBG STATE)

Under the State CDBG Program, states award grants to smaller units of general local government that develop and provide services to the most vulnerable in our communities. Grant funds can be used for various purposes including the construction or rehabilitation of public and recreational facilities and improvements.

USDA – COMMUNITY FACILITIES DIRECT LOAN & GRANT PROGRAM

This program from the US department of agriculture provides affordable funding (grants and loans) to develop essential community facilities – including sports and recreational facilities – in rural areas (no more than 20,000 residents).

EPA BROWN / GREENFIELD PROGRAM

Grants are awarded here for projects to transform brownfields for community use, including athletic fields.

NPS – OUTDOOR RECREATION LEGACY PARTNERSHIP PROGRAM

Financed through the Land and Water Conservation Fund, ORLP is a nationally competitive program targeting grant assistance to help underserved urban communities with little access to publicly available, outdoor recreation. Funds can be used for the acquisition and/or development of outdoor recreation spaces – including field and court sports for example.

PRIVATE PROGRAMS

Grant programs from professional sports leagues and associations

MLB / MLBPA – YOUTH DEVELOPMENT FOUNDATION GRANT: BASEBALL TOMORROW FUND

The MLB – MLBPA Youth Development Foundation awards grants to youth baseball and softball programs involved in the operation of youth baseball and/or softball facilities. Funds may be used for field installation / renovation or sports field lighting for example.

NFL YOUTH FOOTBALL GRANT

Provides the opportunity to all NFL clubs to give back to their communities by applying for a grant that can be used for the installation or rehabilitation of playgrounds, gymnasiums and interactive fitness technology among other things.

NFL PLAY 60 INITIATIVE GRANT

Provides the opportunity to all NFL clubs to give back to their communities by applying for a grant that can be used for the installation or rehabilitation of playgrounds, gymnasiums and interactive fitness technology among other things.

US SOCCER FOUNDATION – SAFE PLACES TO PLAY PROGRAM

Focuses on transforming underutilized areas in underserved communities into state-of-the-art mini soccer pitches to play the beautiful game.

NFL YOUTH FOOTBALL GRANT

Provides the opportunity to all NFL clubs to give back to their communities by applying for a grant that can be used for the installation or rehabilitation of playgrounds, gymnasiums and interactive fitness technology among other things.

USA TRACK & FIELD FOUNDATION GRANT PROGRAM

Provides additional competitive opportunities for children and to enhance the experience for all participants. Preference is given to clubs that are based in low-income areas. Funding for track surfacing and renovation is not always available, so please keep an eye on this page from time to time to see what the situation is.

US TENNIS ASSOCIATION FACILITY FUNDING

The USTA offers competitive grant applications to facilities in three different categories: 1) basic facility improvements, 2) tennis court resurfacing and 3) new court installation.



GRANT PROGRAMS FROM PRIVATE BUSINESSES AND CORPORATIONS

DICK'S SPORTING GOODS – SPORTS MATTER FOUNDATION GRANT

Their mission is to inspire and enable high-poverty youth to participate in sports. This private grant program accepts applications from non-profit organizations and public schools for sports and recreational facility development. Maximum grant amount is set to \$25,000.

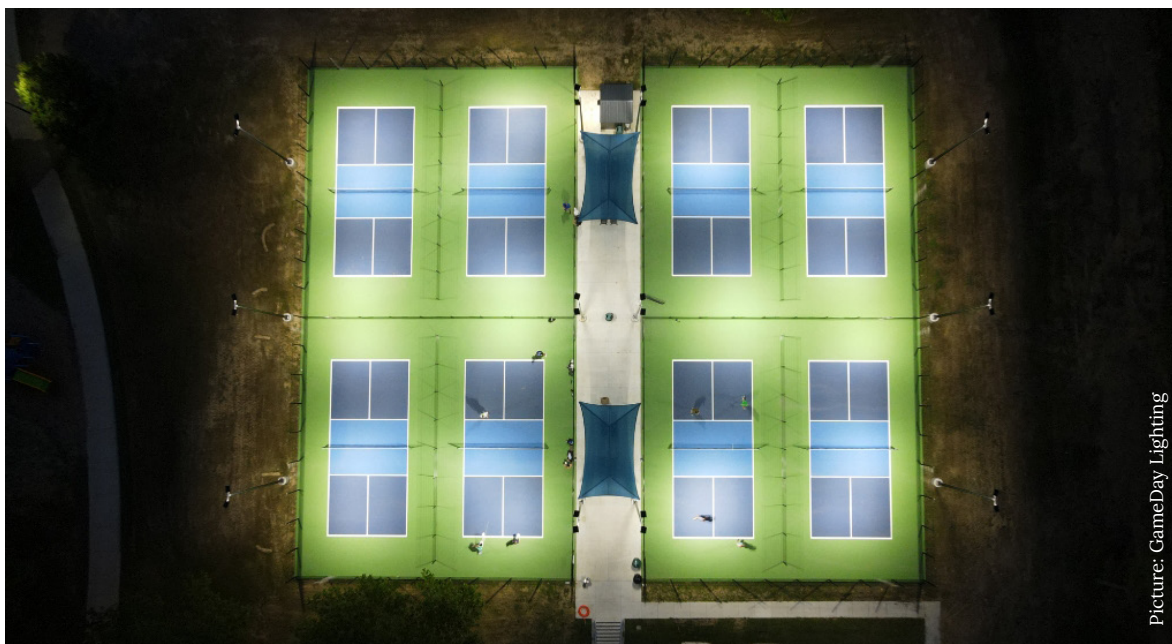
FOOT LOCKER FOUNDATION COMMUNITY EMPOWERMENT PROGRAM

Grants for non-profit organizations to support capital improvement projects that enhance the impact of youth programming. These grants will range from \$25,000 to \$100,000 over one year.

Applicants from underserved communities must be from one of the following cities: Atlanta, Baltimore, Chicago, Dallas, Detroit, Houston, Los Angeles, Miami, New York City, Oakland, Philadelphia or San Francisco.

ESPN REPLAY PROGRAM

The purpose of the ESPN RePlay Program is to repurpose vacant or underutilized spaces and rehabilitate recreational facilities in low to moderate income neighborhoods. Applicants from the following areas are eligible to apply: Newark NJ, Flint, MI, Milwaukee, WI and Cincinnati, OH.



Picture: GameDay Lighting

FINANCING OPTIONS AND PRICING MODELS FOR LED SPORTS LIGHTING SYSTEMS

Sports facilities have different ways of pricing and financing a new LED sports lighting system. Obviously, within any one of the three options we'll introduce here are an almost unlimited number of variations and details that your finance team and lawyers will work out with the vendor. But understanding the main models will give you a good going-in idea of what might work best.

The first is to simply buy the lighting system outright as a capital expenditure. Of the three options, this will feel the most painful upfront. You'll make a down payment (probably in the vicinity of 50%), and there might be a few milestone-based installments along the way. But once you turn on the lights for the first time, you'll send over the final payment and they are all yours.

Buying the system will have the highest short-term costs, but the overall cost of acquiring

the system will be less because there will not be financing fees. However, the operational costs could start to add up here. Because you own the system outright, you'll be solely responsible for maintenance and repairs. Depending on what your staff is able to handle in-house, the maintenance contracts you sign with vendors and your insurance policies, the operational costs over the life of the system may balance out the lower costs of acquisition.

The second option is a long-term financing plan, which could take the form of a lease. If you have less money at the beginning of the project, or high costs elsewhere in the organization and the lighting system upgrade can't wait, you may find it a worthwhile trade-off to pay interest on a loan over the course of years. Or, you may forego ownership entirely and lease the system. Your facilities and lawyers, then, will need to figure out who actually

owns what (e.g., will you own the poles but the vendor owns the lighting fixtures themselves? Or will you only own the ground the poles go into?) and determine liability and responsibility from there.

The third option will sound familiar from a lot of other companies, products and services, but maybe not for major facility upgrades: a subscription-model, or Lighting-as-a-Service (LaaS).

With LaaS, you'll make a monthly payment and you'll never own anything. But you also won't be responsible for anything other than using the lights whenever you need them.

LaaS providers handle everything from installation to regular maintenance. Need the lamps realigned before opening day or after

a heavy storm? Call the provider. Fuse blow out? They're on it. Ready for a system upgrade as you approach the end of the subscription term? Not much different than upgrading your smartphone.

Of course, that level of service and the lack of any upfront cost means that the monthly subscription fee will be pretty high compared to how you may be amortizing the first two payment options. But when you start factoring in the reduced maintenance costs – parts and labor – over 8-10 years and the lack of disposal or upgrade costs at the end of that term, the differences start to level out. Plus, your accountants and investors may or may not be excited to hear that LaaS, because it's a monthly subscription for something you'll never own, is an operational cost and not a capital expense.

FEDERAL GOVERNMENT INCENTIVES FOR LED SPORTS LIGHTING: 179 D TAX DEDUCTION

LED lighting systems are energy efficient compared to earlier technologies. Given their emphasis on sustainability, the federal government has tax incentives for buildings that upgrade to LED lights.

The Section 179D deduction kicks in \$.60 per square foot for a qualified building that reduces its energy usage by 25%. Obviously, there are a lot of details that go into that: Are you a qualified building? 25% measured.... how? Per square foot of.... what space? Do your Energy Star or LEED certifications count for anything?

Accountants and tax lawyers live for those sorts of things, so as you're planning things out, make sure they explore the Section 179D deduction to see if it applies to you.

You'll also need a certified professional engineer (PE) to sign off on a lot of the technical documentation that verifies your compliance. The vendors who install your lighting system will either have a PE on staff or be able to recommend one who can handle this sort of thing, but it's another item to have on your checklist ahead of time.

STATE GOVERNMENT INCENTIVES

States are doing much the same thing as the federal government when it comes to incentivising energy efficiency and sustainability. Depending on what state you're in, there may be rebates or tax credits for reducing your overall energy expenditure via an LED lighting upgrade.

Programs vary from state to state, so be sure to be aware of what factors your state finds

most important in order to make an accurate projection of your costs.

Here are a few good sources to get you started:

LOCAL GOVERNMENT INCENTIVES

At the local level, municipal governments tend to work through the electric companies to offer energy efficiency incentives. Rebates are the most common form of local incentives. These generally take two forms, known as prescriptive and performance rebates.

Prescriptive rebates may be offered for any building or company that upgrades its equipment to hit certain energy efficiency standards. For example, if a building switches all off its lighting fixtures to LEDs or has some on-site power generation capacity like solar panels, the electric company might give them a fixed amount per lighting fixture or megawatt of solar capacity. These programs help reduce the cost of the upgrade by front-loading the payment (or credit) to the facility.

Performance rebates are based on the building's actual reduction in energy usage after the upgrade. A utility company might provide a rebate for any building that reduces their energy expenditure compared to the previ-

ous year, perhaps linking the amount of the rebate to the magnitude of the reduction. Or, the company can set a target for the building to meet based on its square footage or some local or industry standard, and then rebate a fixed amount for every month they hit that target.

Another way facilities can receive special benefits from utility companies is by offering to reduce their consumption during periods of peak demand. This helps lower the overall load on the power grid. LED lighting, given its higher efficiency and greater flexibility, lets facilities keep the lights on longer while still operating at less than 100%. That may be enough to put your sports facility in the power company's good graces.



GRASSROOTS PROGRAMS AND FOUNDATIONS

A new lighting system around a football field or baseball diamond means more kids can play those sports for more hours each week. That's great for the young players and great for the sports. People tend to be fans of the sports they played when they were young, and the pro leagues are going to need players in 15-20 years. To help their communities and their sports, Major League Baseball and the

National Football League both offer grants for lighting system upgrades through their respective foundations.

Here are a few things to know about how the MLB Youth Development Foundation and NFL Grassroots Programs support organizations that are fundraising for lighting system upgrades.

1. MAJOR LEAGUE BASEBALL YOUTH DEVELOPMENT FOUNDATION GRANTS

Here are a few things to know before you apply for a Youth Development Foundation grant to help pay for new lights at your diamond.

First, these lighting grants help cover the cost – they won't cover the whole thing. In past years, the average grant was about \$40,000, which can be about 15% of the cost of buying and installing a new lighting system.

Moreover, the Foundation will only award grants to programs that already have the

majority of their funding in place. They'll help you finish the job, not get started. Or, in baseball terms, you need to have runners in scoring position before they'll step up to the plate.

Second, since these grants are from the Youth Development Foundation, groups applying for them must focus on athletes under age 20. The Foundation will prioritize organizations that bring baseball to underserved communities, minorities, and girls. These grants are

not for college summer leagues or single-A teams, for example.

Finally, the organization needs to be, well, organized. Very well organized. MLB Youth Development Foundation wants to send their money where they can be sure it will build

the sport for the future. They are looking for leagues, teams or facilities with a record of innovative community programming; stable management; financial sustainability; and programs that go “beyond baseball,” to help young athletes in all aspects of their lives.

2. NFL FOUNDATION GRASSROOTS PROGRAMS

To help build the sport and improve the communities where NFL teams play, the NFL Foundation Grassroots Programs offers two grants to improve community football facilities. The General Field Support grant is for capital projects other than the field surface, which includes facility lighting.

Here are the main things to know about applying for a General Field Support grant for a new lighting system:

The maximum amount of a General Field Support grant is \$50,000, so while this will help a lot with the installation of a new lighting system, you'll need other revenue sources.

Organizations must meet several conditions to be eligible. These are some of the big ones:

- they must be a registered 501(c)3 non-profit or middle or high school with at least one full-time staff member
- they must serve a low- to moderate-income area in an NFL Target Market
- have been in existence for at least 3 years, with a demonstrated record in development real estate or parks.

While not required, the NFL is particularly looking for groups that:

- will use the money to upgrade poor or underutilized facilities
- actively use the facility they intend to upgrade
- have other grants or revenue lined up in the amount of the grant requested
- have active community partners such as the YMCA, local parks and recreations departments, and USA Football
- have a plan for the continuing maintenance and improvement of the facility and are aligned with USA Football's Football Development Model.

Installing new lights around a football field or baseball diamond is a costly undertaking, one that may seem out of reach for many communities and grassroots teams. Pro leagues like the NFL and MLB, along with many community organizations, offer lighting grants and other forms of support for organizations that want to keep kids on the field.

Check out their websites for more details, and take a look at our other articles on fundraising resources to find some options that are right for you.

USTA GRANTS FOR TENNIS FACILITY DEVELOPMENT

In the United States, the premier organization for tennis – USTA – has a few different ways to help schools and facilities with their court construction/re-furbishment projects.

US TENNIS ASSOCIATION GRANTS AND FUNDING ASSISTANCE

The United States Tennis Association, or USTA, is very transparent about the several different methods they have for aiding schools or facilities on a grassroots level. The organization's grant funding process has been halted due to budget cuts and the pandemic, but their contributions historically have been generous.

For example, charter schools that are non-profits or LEA(Local Education Agencies) can be eligible for grants in the range of \$5,000 to \$100,000 from the USTA for tennis-related construction. The USTA requires that charter school courts also remain open to the general public as well so that the benefit of the project can extend to the community as a whole.

Additionally, depending on the type of work needed, the USTA can provide partially or fully subsidized assistance for a project. For example, if an existing facility needs basic improvements, such as fixing a court's backboards, fencing, or windscreens, the association can contribute up to 50% of the bill(or a maximum of \$5,000). The USTA will actually in some cases cover the full cost of painting permanent 36' and 60' tennis lines, at a maximum threshold of \$5,000 as well.

The organization is also present to help rebuild courts from scratch. New construction

or an intensive existing facility reconstruction of 36', 60' and 78' foot courts can be subsidized with a maximum of \$100,000 from the USTA. This falls in line with the guidelines they have for their other types of work, which top out at contributing no more than 50% of the total cost. If the facility wants to build or completely renovate 12 or more courts, the \$100,000 maximum contribution will kick in.

The process starts with the project submitting their need for financial assistance to the USTA. Within a few days, the project is contacted to have a discussion about the scope of work needed. The association will also review the job to make sure it complies with player safety, and construction standards, among other factors. USTA National will review the grant, request input from its local representatives who surveyed the project and respond within a month. Shortly after that time frame, funding is announced and released as the work is being done.



OTHER US TENNIS ASSOCIATION SERVICES

In addition to donating money to schools and facilities for construction purposes, the USTA also provides additional valuable services relating to court construction. Professional consultants from the USTA staff can provide guidance on budget forecasting, business plan review, and highlight operational needs for a project. They can also help assess issues including but not limited to playing surface wear and tear, lighting, construction cost-saving methods, and drainage plans. Consultations can even include digital infrastructure upgrades, such as creating programs to help keep track of financial transactions, manage court bookings, and to

promote the facility with e-mail marketing to potential consumers.

The best thing about the consultative services is that they are free to the project, whereas alternative advice may cost an exorbitant amount of money. The estimated value for two technical reviews of a project is \$3,275 as it relates to advocacy/programming with technical services. An artistic rendering-focused consultation by a USTA professional has an approximately \$10,000 value, for a review of 12 or more courts in a complex. These would seem to be worthwhile options for projects that are on a strict budget.

ALTERNATIVE TENNIS GRANTS AND FUNDING OPTIONS

Even though it would make sense to go straight to the tennis experts in the USTA to receive grants and advice on how to optimize a project, there is another option to consider as well. The Land and Water Conservation Fund(LWCF) is another organization that has become a resource for funding outdoor projects, including, but not limited to the construction of tennis courts.

All 50 states can receive money from the LWCF if they are up to date with their Statewide Comprehensive Outdoor Recreation Plan(SCORP). Each state has different rules when it comes to applying for a grant, but the two main types offered are the Traditional/Formula State grant and the Competitive State grant. Once states receive money from the LWCF, they look to disburse that funding based on the types of initiatives they have communicated in their SCORP. If a project's scope and goal match up

well with the state's reasoning to receive that funding, it stands a better chance of being awarded financial assistance.

In order for a project to start the application process, they must contact their LWSF state representative. Entities that are eligible to apply for assistance are cities, towns, countries, Native American tribes, regional park authorities, and state agencies.

Calculate the costs of your Tennis Court or Lighting installation project at an early stage

Before you apply for tennis court construction or LED sports lighting grants it is a good idea to get an idea of how much your project will cost overall. In fact, this is an essential piece of information as with some grants the project will have to match the grant or financial support offered.



CHOOSING THE RIGHT COMPANY FOR THE JOB

To better choose between sports lighting companies for your project, it's easy to think of breaking them into four distinctive categories.

1 – SPORTS LIGHTING MANUFACTURING AND DESIGN COMPANIES

Manufacturing companies will handle the design, engineering, and production of your lighting fixtures and equipment. They will not, however, be responsible for the installation process.

The company you purchase your fixtures from will have a preferred installation partner

in many cases. Working with the recommended contractor may help streamline the process and ensure that your warranty is valid.

However, you're not obligated to use their recommended installer. You can choose any contractor you want, as long as they're qualified to work with your selected fixtures.

2 – SPORTS LIGHTING DISTRIBUTION AND CONTRACTOR COMPANIES

Distributors and contractors represent one or several sports lighting brands in a specific geographical area. They consult customers, design the lighting solution to meet customers' needs, install the new lighting system and

take care of support and maintenance also. Sometimes, contractors may use outside installation companies to handle the actual installation of the lighting system.

3 – SPORTS LIGHTING INSTALLATION COMPANIES

Installation companies will come to your facility and install the lighting system you've purchased from a manufacturer. In some cases, they may be able to help you select the right fixtures for your project.

However, their primary responsibility is the installation process.

If you are on a tight budget, you could poten-

tially purchase your equipment overseas and hire a local company. Foreign-made fixtures are often cheaper than domestic products.

However, it's important to remember that you'll be responsible for the shipping costs and any import tariffs that may apply. Additionally, you may have a more difficult time getting a warranty or customer support for foreign-made products.

4 – FULL IN-HOUSE SPORTS LIGHTING COMPANIES

The last type is a one-stop shop for the design, manufacture, installation, and maintenance of your new LEDs. These sports lighting companies will often be able to offer a comprehensive solution, including designing and engineering a system specific to your need. They can then manufacture your fixtures and manage the installation from start to finish.

These companies can be found in both the United States and abroad. Often, companies outside the US will use local partners for the installation. We recommend finding a partner that will handle the entire supply chain of

the project. That means a company that both manufactures and installs in-house.

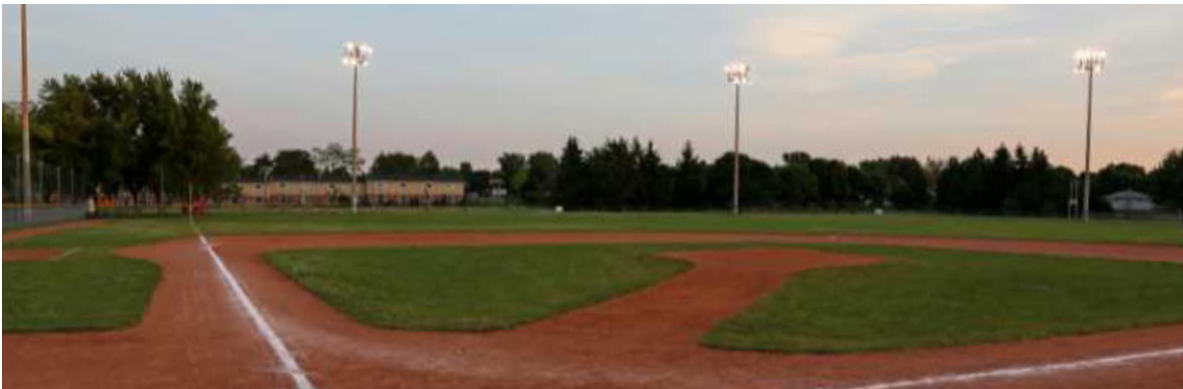
This will save you time and money in the long run, as you won't have to manage multiple contractors. It will also help ensure a seamless installation process and a single point of contact for any issues.

Now that you understand the different types of sports lighting companies, it's time to evaluate your options. Here are the key factors you should consider when making your decision.

DIFFERENT COMPANIES FOR DIFFERENT USE CASES

There are several types of companies that fall under the umbrella term of sports lighting companies. It's important to keep in mind the area of expertise of the companies you talk with to be able to make the most educated decision on the sports lighting partner for your project. Some companies specialize and focus on a different application of sports lighting than others. Here's a brief overview:

- 1. Stadium Lighting Companies** – These companies focus on designing and installing sports lighting systems at large stadiums, (professional leagues and colleges/universities). They use very high-powered, top-of-the-line LED lighting fixtures to ensure they meet the high lighting requirements of these sports facilities.
- 2. Sports Field Lighting Companies** – These companies specialize in providing lighting systems to large outdoor sports and athletic fields (college / high school fields and recreational ballparks). They use high-powered LED lighting equipment that can distribute light uniformly across the whole field of play.
- 3. Arena Lighting Companies** – These companies work across all levels of competition providing top-quality indoor sports lighting solutions (indoor basketball/hockey arenas, gymnasiums, etc.) They understand the ins and outs of indoor sports lighting design and know how to illuminate indoor sports venues the right way while also boosting the fan experience in the stands.
- 4. Sports Court Lighting Companies** – These companies are experts in installing LED sports lighting systems for different kinds of sports courts (tennis, pickleball, outdoor multi-sport courts), that require less wattage but oftentimes are located in residential areas, where light spill can be an issue.



PREPARATIONS FOR THE SUPPLIER SELECTION PHASE

Before you start contacting sports lighting companies for installation, there are a few things you should do to prepare:

1 – OBTAIN THE REQUIRED PERMITS AND OTHER PAPERWORK

If you're new to the LED sports lighting world, you may want to consult an outside expert. Partnering with an experienced project manager will give you access to the knowledge and resources necessary to ensure your project goes smoothly.

They'll work with your internal team and stakeholders, local and state governments, and any other involved parties to make sure you have the permits and approvals needed before any work can begin.

2 – UNDERSTAND THE OVERALL COSTS INVOLVED

To begin purchasing and installation, you need to understand the costs associated with the project. This includes the cost of the fixtures and equipment and the cost of labor, permits, inspections, and other incidentals that may be required.

Having a clear budget identified early will help you and your project manager select the

most appropriate manufacturer and installation partner possible.

Need help understanding the costs of installing or retrofitting LEDs? We've built an easy-to-use cost calculator. Just input your information, and you'll receive a comprehensive estimate for your project.

3 – DETERMINE IF YOUR PROJECT IS ECONOMICALLY FEASIBLE

We'll be honest, the price tag for new LEDs can be significant. However, the long-term energy and maintenance savings often make LED projects economically feasible, even for smaller facilities.

To determine if your project is a good investment, you need to calculate the return on investment (ROI). This will help you understand how quickly the project will pay for itself through energy savings.

4 – SECURE FUNDING FOR YOUR PROJECT

Before talking to sports lighting companies, you'll need to have the funding for your project secured. This may come from various sources, including private investment, government grants, or utility incentives.

Your project manager can help you identify and apply for any relevant incentive programs that could help offset the cost of your project. In some cases, these programs can cover up to 100% of the costs.

There are plenty of resources available to help schools and communities secure funding for their sports lighting projects. See a full breakdown of your options here, and choose the right combination of the financing for your project.

Once you've checked these four items off your to-do list, it's time to search for the right sports lighting company or contractor. Read on to find out how to find a partner who can deliver your new LED sports lighting system quickly, safely, and within budget!



CHECKLIST FOR CHOOSING YOUR PARTNER

1. **Do they have experience?** You want a company that has previously installed sports lighting. Do they have a portfolio of projects? If so, ask to see it.
2. **How is the quality of their products?** If you're choosing a company that manufactures, ask about the longevity of their fixtures.
3. **What is their warranty?** What is the period you have for fixing mistakes or problems for both product and service?
4. **What is customer service like?** Do they have someone you can talk to during installation if there are issues? How about after installation? Communication is vital throughout the lifespan of a lighting project. Find out who to ask to talk to before starting.
5. **What are the project management capabilities?** Some projects will be more complex than others. If you have a larger, more involved installation, you'll want to ensure the company can handle it.
6. **Run a background check or ask for referrals.** You'll be working with this company for months, or even years. You want to make sure they're reputable and have a good track record.

- 7. How much will it cost?** This is always a key consideration. Get quotes from multiple sports lighting companies before making your decision. Before choosing, we usually recommend getting quotes or talking with at least three potential candidates. To get some perspective on the costs, you can use our sports lighting cost calculator to get a customized cost estimate for your project.
- 8. How soon can they start?** Be sure to ask about their project timeline and if they can accommodate your schedule.
- 9. Do they have any industry certifications or awards?** Look for companies that their peers have recognized. This can be a good indicator of quality.
- 10. Do they have insurance?** Make sure the company is insured in case of any accidents during installation. You want to minimize your liability for any potential accidents.

Deciding on the right partner is a critical decision. Be sure to do your research and ask plenty of questions before making your choice. With the right expert, you can be confident that your new LED installation or ret-

rofit project will be a success. To kick things off, try our sports lighting calculator to get a solid understanding of the costs related to installing or retrofitting LED lighting for sports fields and courts.



SHOWCASE OF LED SPORTS LIGHTING INSTALLATIONS

SPORTSBEAMS PROVIDES UNMATCHED STADIUM LIGHTING EXPERIENCE AT AUS- TIN FC'S Q2 STADIUM

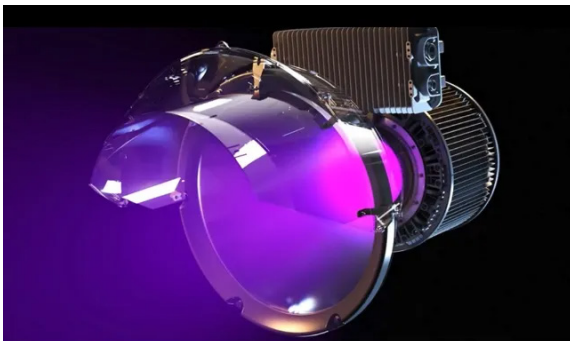
In 2020, Austin FC selected Sportsbeams Lighting as the supplier of the state-of-the-art LED sports lighting system for their brand-new Q2 Stadium. When the stadium opened in the summer of 2021, the new facility was the first new-construction stadium in the world to use RGBW LED lighting fixtures to light up the whole venue.

The groundbreaking Chromabeams LED fixtures are able to achieve more than 2 mil-

lion colors and can instantly adjust between red, green, blue, and white all in the same fixture. The lights can be controlled with a flick of a button and can run pre-programmed light shows that will boost the fan experience like no other stadium lighting system available on the market.

Features of the Chromabeams LED fixtures include:

- Full aluminum die-cast body
- Single-optic tempered glass lens
- Three levels of active and passive cooling
- Lumen output: +91,000
- Wattage: 350W or 900W
- CRI: 70 – 90



For more information about Sportsbeams Lighting systems and projects: sportsbeams.com



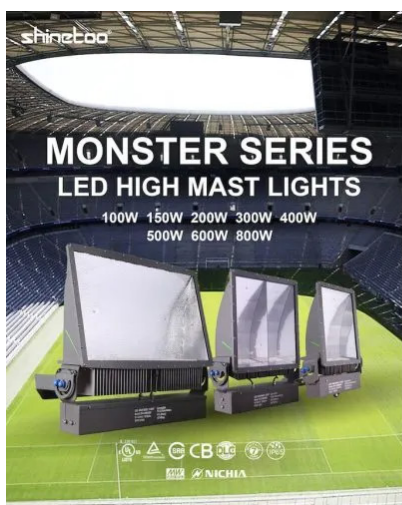
MORAGA COUNTRY CLUB, CA, NOW BOASTS ADVANCED LED TENNIS LIGHTING INSTALLED BY SHINETOO LIGHTING

Shineto Lighting USA announced the completion of their major tennis court lighting project at the Moraga Country Club in California.

The Moraga Country club is a prestigious, private country club that offers 12 standard-sized tennis courts for tennis enthusiasts of all age groups. The club also hosts competitive tennis events and offers private tennis lessons and programs for all skill levels.

Shineto Lighting designed and installed their proprietary LED High Mast Lighting System for all the courts at the tennis facility. These LED light fixtures use patented indirect reflectors that provide uniform and high quality illumination across the tennis court. The patented technology minimizes glare on the court and significantly reduces light spill.

Learn more about LED tennis court lighting solutions at: shine2sportslighting.com.



• HIGHLIGHTS



• WIDE RANGE APPLICATION



BUSINESS DIRECTORY

GEOSPORT LIGHTING



Geo Sport Lighting offers a full in-house design and build for all of your sports lighting needs including design, assembly and "turn-key" installation of LED stadium lighting systems for all levels of play.

geosportlighting.com
info@geosportlighting.com

(877)-730-4762
7080 St. Gabriel Ave., Suite B
St. Gabriel, LA 70776

SPORTSBEAMS LIGHTING



Sportsbeams light up sports facilities around the world with patented technologies that are setting new standards in the field of LED lighting. Sportsbeams lighters are the only single glass optic LED fixtures in the industry and the only ones that can do full RGB and tunable sports white (RGB+W) all in one fixture.

sportsbeams.com
sales@sportsbeams.com

(888)-905-6680
6 Indian Meadows #510
Round Rock, TX 78665

SHINETOO LIGHTING



Premier Chicagoland lighting company, specializing in cutting-edge indoor/outdoor sports lighting solutions. Quality, efficiency, and customized services for unique client needs.

www.shine2sportslighting.com
sales@shine2sportslighting.com

(224)567-8070
708 Armstrong Dr.,
Buffalo Grove, IL 60089

GAMEDAY LIGHTING

GameDay Lighting has been able to establish itself in a highly competitive market by offering value and industry knowledge our competitors can't match combined with a solutions-oriented approach to projects. Our passion for athletics motivates us to be the best in delivering professional LED lighting solutions for fields, stadiums, and athletic facilities of all sizes.



www.gamedaylighting.com
sales@gameday.lighting

1-913-444-6195
2930 Terrace Street
Kansas City MO 64108

EPHESUS SPORTS LIGHTING

From design to installation and through gameday, Ephesus innovation enables venues of all sizes to create a sports lighting experience that exceeds the expectations of players, fans and communities for years to come.



cooperlighting.com
info@cooperlighting.com

(770) 486-4800
1121 Highway 74 S
Peachtree City, GA, 30269

IMPACT SPORT LIGHTING

We are a business of lighting professionals with a passion for sports and family entertainment with over 50 combined years of experience in energy-efficient lighting design, manufacturing, installation, and world-class business service and acumen.



www.impactsportlighting.com
sales@impactsportlighting.com

1-224-467-2281
P.O. Box 1842 Crystal Lake, 60039

ECOLITE

EcoLite International, LLC is the leading manufacturer of LED sports lighting globally, having completed over 1000 sports lighting and high mast projects in the last 12 years. The EcoSport fixtures feature the Industry's best power supply & chipset, along with EcoSport patented optics, ensuring superior lighting distribution with fewer fixtures compared to competitors.



www.ecoliteled.com

Info@ecoliteled.com

7910 Wrenwood Blvd Suite B,
Baton Rouge, LA 70809

United States

Phone: 844-LED-SWAP / 844-533-7927



CALCULATOR GROUP LLC
info@sportsvenuecalculator.com
sportsvenuecalculator.com

IMPRINT

Publisher

CALCULATOR GROUP LLC
30 N GOULD ST STE R Sheridan, WY 82801
(470) 284-1076
info@sportsvenuecalculator.com
www.sportsvenuecalculator.com

Editorial

Antti Rydman
Head of Marketing
Sports Venue Calculator
Calculator Group LLC
Email: antti@sportsvenuecalculator.com
Phone: (307) 218-3095

Advertising Sales / Partnerships

Tommi Harju
Head of Partnerships
Sports Venue Calculator
Calculator Group LLC
E: tommy@sportsvenuecalculator.com
M: (470) 284-1076

Layout

Lukas Duemer
design@lukas-duemer.de

Copyright © CALCULATOR GROUP LLC

All contents (texts, photos, etc.) of LED SPORTS LIGHTING BUYERS GUIDE are protected by copyright. Reprinting, also in extracts, only with written permission. Calculator Group LLC does not take over any guarantee for the correctness, completeness and topicality of contents nor does Calculator Group LLC carry out compensation. Misprints and incorrect information cannot be completely excluded. Calculator Group LLC cannot accept any legal responsibility or liability in any form for incorrect information and any consequences arising therefrom. The responsibility for advertisement content lies entirely with the respective authors of the advertisement.