We all love to play sports. Our company specializes in sports lighting. We can light a single field for recreational use, a stadium for professional play using DMX controls, or a 5 field sports complex with smart remote controls.

Our process involves analyzing optics, pole locations, mounting heights, aiming angles, light color, CRI values, glare, uniformity, variations, and we use Little League, NCAA, and MLB standards.

We can help with permitting, wind load analysis, light calculations, and 3D model renderings of real spaces. We will be your build partner to insure your project helps your field become outstanding. On site help and training is available for smart control systems. Installation may be possible in some areas.
**Advantages of LED Lighting**

1. **Energy Savings.** There are tremendous energy savings to be made in switching to a new LED fixture. Typically the energy savings are in the 50%-75% range. A typical 1500w Metal Halide, which is the most commonly used ball field lamp, uses 1610 watts on the total draw. A typical replacement fixture ranges from 600 watts to 800 watts. Alternatively we can typically drop fixtures, using less with higher outputs.

2. **Maintenance Savings.** This is the more noticeable savings amount. Light bulbs rarely go out at the same time. Getting a lift truck on site to a playing field is expensive and is often required at least once per year. And accessing the field is sometimes extremely difficult and can result in damage to the field. Installing a LED fixture can provide years of maintenance free operation. Typical playing usage puts fixture lifetime in the 75 year range.

3. **Controlled Directional Light.** LED acts much more like a flashlight. When properly configured the light is much better at illuminating the target area and also better at not allowing light spill. This prevents excess light pollution. Shields are available to further prevent light spill. We use targeted optics that are custom configured for each project so the most light hit the target area and light spill is minimized.

4. **Color Contrast.** The color temperature of the light is important considering the color of daylight and our normal perception of light. Most softballs are yellow and baseballs are an off white with red laces. When a baseball is in flight and spinning the perception is in the red or warmer range. So both softball and baseball have more color contrast between the range of 5000k to 6500k. The color of light at 5000k is considered to be cool white. 6500k is daylight. Increasing the color contrast between light color and ball color improves high speed ball tracking and therefore improves reaction times and the speed of play.
   - Faster reaction times
   - Increased speed of play
   - More ball to bat contact
   - Greater accuracy in ball striking
   - For umpires, there is greater ball to line-surface contrast improving performance

5. **Long Lasting.** We've all hear the LED can last a very long time. The LED systems that we use typically last between 50,000 hrs, L70 to 100,000 hours L70 (TM21). This rating does not insure failure and is just merely stating the degradation factor. It is conceivable that in a cooler environment this rating would increase.
   - 3hrs/day x 365 days = 1095 hrs per year
   - Minimum of 45.6 years to 91.3 years of resulting use

**Disadvantages**

1. **Upfront cost.** This is often the biggest concern for moving to an LED system. The cost can be a burden particularly to smaller cities, leagues and clubs. Fortunately most LED systems qualify for rebates in many areas. Additionally the upfront cost can be differed with clever financing as maintenance and energy costs will exceed replacement costs.

2. **Energy savings.** While the energy savings are tremendous, it is difficult to achieve payback based on energy savings alone. This is true because baseball and softball are a limited use lighting application. Energy rebates may assist in overcoming this issue, however maintenance costs should also be factored in to any payback calculations.
Lighting Definitions & Standards

### Little League Standards

- **Standard Competition:**
  - 50/30 Infield/Outfield Footcandle Average
  - 2.0:1.0 Infield Uniformity, 2.5:1.0 Outfield Uniformity
  - Maximum rate of Change 10%

### NCAA Softball Specifications

- **Horizontal light levels:** 70 footcandles infield / 50 footcandles outfield
- **Horizontal uniformity:** 2.0:1 infield, 2.5:1 outfield
- **Grid spacing:** 20 ft x 20 ft

1. Shaded areas indicate recommended pole location.
2. Line drawn through each “A” pole location must be behind home plate to ensure lighting the portion of the ball the batter sees as it crosses home plate.
3. Consideration should be given to locating “B” poles between 1/3 and 2/3 distance of the foul-line. This positioning towards the outfield foul pole allows the ball to be lit in a more constant perpendicular illuminance as it travels from the infield to the outfield.
4. Recommend minimum field sizing is as follows: 190 feet down the lines and 200 feet minimum to the center.

### NCAA Baseball Specifications

- **Horizontal light levels:** 70 footcandles infield / 50 footcandles outfield
- **Horizontal uniformity:** 2.0:1 infield, 2.5:1 outfield
- **Grid spacing:** 30 ft x 30 ft

1. Shaded areas indicate recommended pole location.
2. Line drawn through each “A” pole location must be behind home plate to ensure lighting the portion of the ball the batter sees as it crosses home plate.
3. Consideration should be given to locating “B” poles between 1/3 and 2/3 distance of the foul-line. This positioning towards the outfield foul pole allows the ball to be lit in a more constant perpendicular illuminance as it travels from the infield to the outfield.
4. Recommend field size is 330 ft / 375 ft / 400 ft / 375 ft / 330 ft.

### EA Technologies Class Specifications

**Class I (Non Televised):** Training and Recreational Level Playing. This setup covers the vast majority of fields in the world. There isn’t spectator seating and the competition level is recreational to amateur. Recommended is 30/20 fc or 50/30 fc.

**Class II (Non Televised):** Leagues and Clubs. Spectator seating is sometime available with capacity from 0-10,000. Competition level is amateur to semi-professional. This is ideal for tournament level recreational play. Recommended is 50/30 fc or 70-50 fc.

**Class III (Non Televised):** National Games. Spectator seating is available and capacity may vary from 500-100,000+. Competition level is semi pro to professional. Recommended is 100/80 fc or 70/50 fc.

**Class IV (Televised):** National, spectator seating is always available and may vary in capacity from 1000 to 100,000+. Viewing distance can be long distances. Competition level is professional. Recommended is 125 fc, uniform infield and outfield.

**Class V (Televised):** International. These games are only featured in large stadiums and are typically part of an event, such as the World Cup. Competition level is professional. Recommended is 125 fc, uniform infield and outfield.

Top-level national and international competitions (non-televised) with requirements for spectators with potentially long viewing distances. For television events a higher level is required depending on the level of the event. Recommended is 125 fc, uniform infield and outfield.
### Lighting Standards For Softball/Baseball

<table>
<thead>
<tr>
<th>Court Type (Pole/Fixture)</th>
<th>Horizontal Foot Candles (FC)</th>
<th>Color Temperature (K)</th>
<th>Color Rendering Index (Ra)</th>
<th>Uniformity (U)</th>
<th>Coefficient Variation</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>&gt;30/20</td>
<td>&gt;5000</td>
<td>&gt;70</td>
<td>2.0-2.5</td>
<td>&lt;0.3-0.4</td>
<td>Recreational</td>
</tr>
<tr>
<td>Class 2</td>
<td>&gt;50/30</td>
<td>&gt;5000</td>
<td>&gt;70</td>
<td>2.0-2.5</td>
<td>&lt;0.3-0.4</td>
<td>Club/Competitive</td>
</tr>
<tr>
<td>Class 3</td>
<td>&gt;70/50</td>
<td>&gt;5000</td>
<td>&gt;80</td>
<td>1.5-2.0</td>
<td>&lt;0.3-0.4</td>
<td>Semi Pro/NCAA</td>
</tr>
<tr>
<td>Class 4</td>
<td>&gt;125</td>
<td>=5700</td>
<td>&gt;80</td>
<td>&lt;1.5</td>
<td>&lt;0.13-0.15</td>
<td>Professional</td>
</tr>
<tr>
<td>Class 5</td>
<td>&gt;125</td>
<td>=5700</td>
<td>&gt;80</td>
<td>&lt;1.5</td>
<td>&lt;0.13-0.15</td>
<td>Professional</td>
</tr>
</tbody>
</table>

### EA Technologies System Standards

<table>
<thead>
<tr>
<th>Field Setup</th>
<th>Horizontal Foot Candles (FC)</th>
<th>Color Temperature (K)</th>
<th>Color Rendering Index (Ra)</th>
<th>Uniformity (U)</th>
<th>Coefficient Variation</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SpecGrade 1000w</td>
<td>50.03/32.50</td>
<td>5000</td>
<td>70/80</td>
<td>2.0/2.5</td>
<td>0.18</td>
<td>Club/Competitive</td>
</tr>
<tr>
<td>SUFA A</td>
<td>50/32</td>
<td>5000</td>
<td>80/90</td>
<td>2.0/2.5</td>
<td>0.20</td>
<td>Club/Competitive</td>
</tr>
<tr>
<td>Spec Grade 1000w</td>
<td>82/54</td>
<td>5000</td>
<td>80</td>
<td>1.4/1.8</td>
<td>0.15</td>
<td>Semi Pro/NCAA</td>
</tr>
<tr>
<td>SUFA A</td>
<td>80/55</td>
<td>5700</td>
<td>90</td>
<td>1.5</td>
<td>0.15</td>
<td>Semi Pro/NCAA</td>
</tr>
<tr>
<td>SUFA A Pro</td>
<td>125</td>
<td>5700</td>
<td>90</td>
<td>1.3</td>
<td>0.15</td>
<td>Professional</td>
</tr>
</tbody>
</table>

*Other non-listed options are available such as professional single and double.*

### Lighting System Design Features

**Fixtures and Design**
- Design maximizes light inside target playing field area reducing spill
- Fixture design minimizes glare by using full cut off optics
- Light loss depreciation is more consistent resulting in longer maintained FC
- Directional light with multiple aiming and beam angle options provides increase uniformity while decreasing fixtures required.
- High lumen per watt increases efficiency and reduces energy costs
- 100,000 hour life reduces maintenance costs to zero, with a possible 91 year usability (at 3 hours per day/365 days/year)
- Instant on (no warm up period) increasing playing time, reducing energy costs and keeping game time on schedule
- No hot restrike period in the even of a power outage
- Quiet operation
- 10 year warranty
- UL and ETL Listed
- Designed and assembled in the USA

**Enclosures**
- Custom NEMA 3R Pole Mounted Enclosure for remote driver capable designs
- Vented
- Lockable (upon request)
- Durable rust resistant powder coat finish in any team color. Logo decal painting and wrapping available

**Poles**
- Design meets AASHTO LTS-5 2009, Galvanized Per ASTM A123
- Predrilled for brackets and enclosure assemblies
- 5 year warranty on poles
- Manufactured in the USA
**Poles and Placement**

We specify poles according to these guidelines:

1. Ideal setup is 6 or 8 poles.
2. Two poles should be positioned behind the vertical plane of home plate. These poles should be a minimum of 50 ft.
3. Two poles should be positioned along the 1st and 3rd base lines, distance varies depending on fence lines. These poles should be a minimum of 50 ft.
4. Two or four poles should be placed in the outfield with no poles in the middle 20° of center field to protect the batters vision. These poles should be a minimum of 50 ft.
5. Pole height is directly tied to field distance to maintain uniformity.
6. Pole arrays should be a wide as possible to minimize glare.

Minor league stadium shown where ideal placement isn’t possible and unbalanced lighting is provided. Uniformity is maintained with aiming angles and beam optics.

**Installation Factors**

Every installation is a little bit different depending on the setup, geographical location and soil density. The process of installing our lighting package is easy but should be completed by an expert with proper permits and local standards met. All poles and mounts will arrive pre-drilled for easy and quick installation. Anchor bolts and templates always pre-ship ahead of the fixtures and poles so they can be set in concrete prior to poles and fixtures arriving on site. The poles are heavy and will require heavy equipment for off loading and moving.

Detailed aiming diagrams are provided upon purchase along with aiming templates. Aiming diagrams are also useful for fixture grouping if modification for special events is required. Control systems and enclosures arrive preassembled from Denver, CO.

**Hurricane Proof Lighting**

If you live in a hurricane zone, we can prepare a custom package for you with wind load analysis to get a permit for your construction. The worst thing is to have a pole blow over with a new lighting fixture as a result of a hurricane, tropical storm or just a strong gust from a thunderstorm. And even if you don’t live in a hurricane zone, our standard powder coat will last for decades.

- Our Cat 3-4 Hurricane Package is rated to 136 mph with gusts up to 175 mph.
To Scale Realistic 3D Renderings with Calculations

To scale 3D rendering Minor League Field

Point Calculations
detailing infield & outfield
complete calculations

Heat Maps, Rec Field
30/20 fc, 2.0:1 2.5:1
**EA Tech Smart Control System Features**

Our optional Smart Control System allows any program, club or team to take their system to the next level.

- Remote Scheduling via any browser compatible device
- Fixture grouping - Detailed aiming diagrams will be provided. Groups will be setup by technician on site.
- Load monitoring - Delivers real-time power monitoring data including RMS voltage and current
- Failure alert notification
- Level control, dimming of any one fixture or a grouping of fixtures
- Custom reporting data and usage statistics
- Connects to wireless self-healing IP control network

Each system will be constructed and tested by our technical experts. On site training is provided.

System cost varies according to size and scope of field layouts. No subscription is required.

**Existing Construction Considerations**

Not all fields courts are created equal. Here are a list of questions to think about when converting just the lighting fixtures. We can build a package for your court.

1. Are your poles in good condition? Meaning will they last another 20 years?
   Rusted poles need to be removed. Many times poles rust from within much faster than the outside. Good poles usually can be reused so long as the mounting can be adapted. Strength of poles must be verified for new mounts.

2. What is the mounting height?
   If greater than 50’ then you’re in good shape. If less than 50’ you should consider changing or adding extensions. There are a lot of courts with 50’ poles. The pole placement is critical in this decision.

3. How are the existing fixtures mounted on the pole?
   Nearly every pole can be adapted to mount our high powered fixtures. Your pole may need to be welded at the top or drilled for the new fixture. Most of the time it’s simply a case of using a slip fitter which makes installation easy.

4. What is the current configuration of the poles? How many are there and what is the placement?
   The best configuration is to have a minimum of 6 poles per field.

5. What is the output of your current fixtures?
   Most existing fixtures are 1000 or 1500 watt Metal Halides. Our fixtures can be a one for one replacement for these fixtures. However we typically prefer to eliminate some fixtures reducing the size of the mounts and lowering the upfront cost. Typical energy savings are around 60%.

Once these questions are determined we can provide a lighting and mounting package for your court.

**Contact us today and we can make a plan for your field:**
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W: www.lightingstuffup.com - Recent Portfolio