

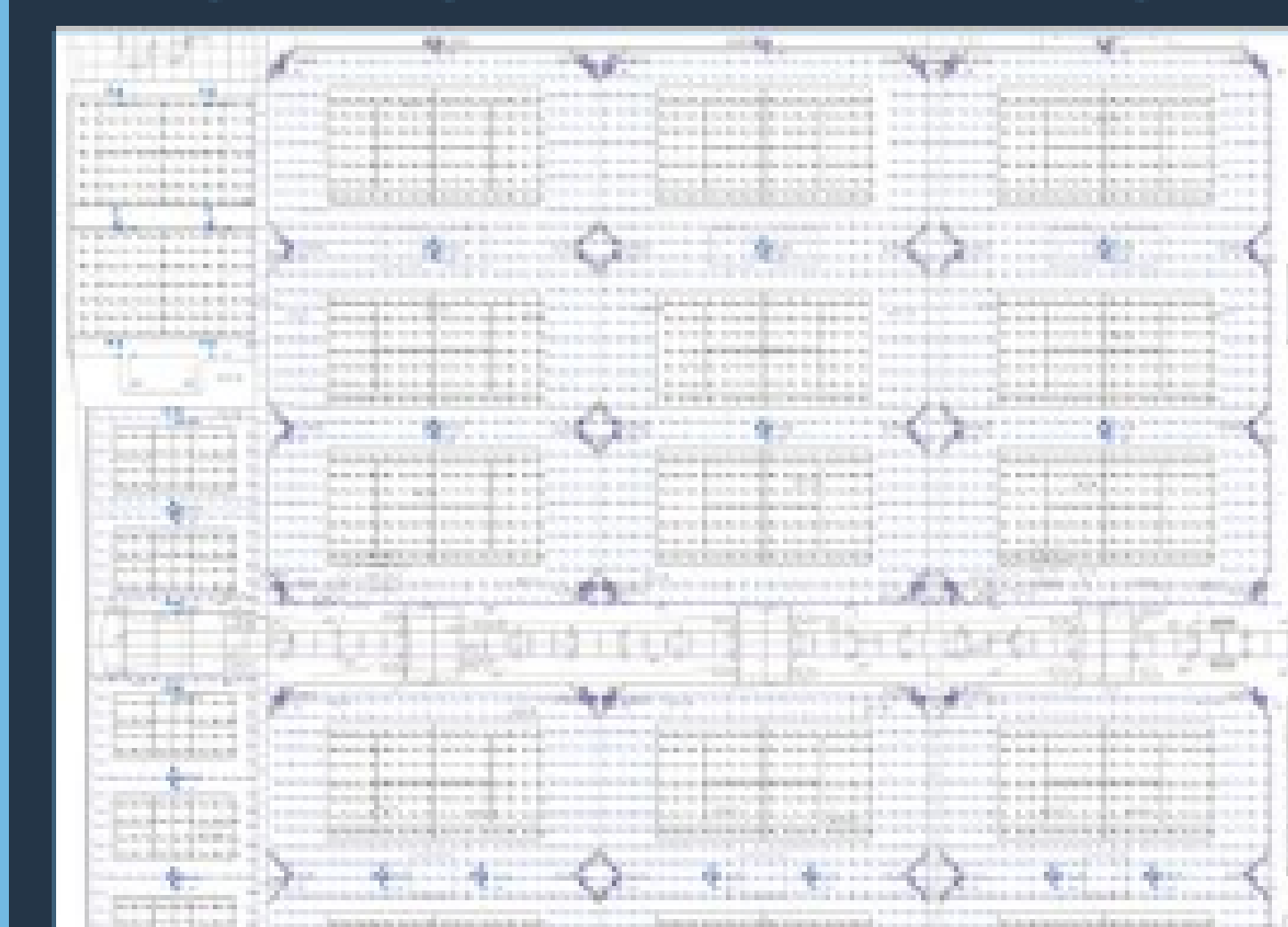


FACILITY PLANNING & ENGINEERING REFERENCE

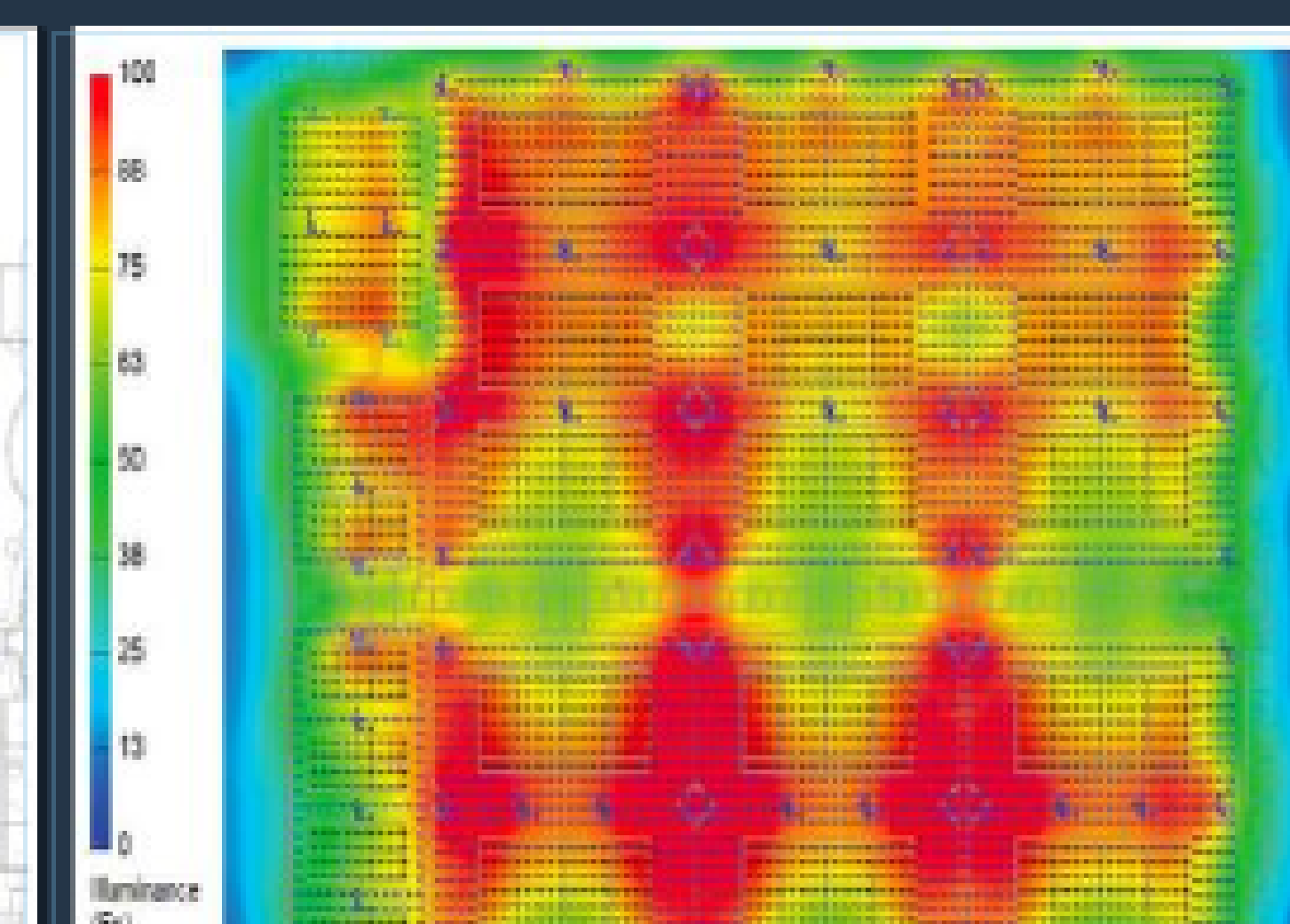
THE ULTIMATE RACQUET SPORTS FACILITY LIGHTING GUIDE

A Practical Guide to Designing, Upgrading, and Optimizing Indoor & Outdoor Pickleball, Tennis, and Padel Court Lighting - **Better Court Lighting Starts With Better Design.**

TECHNICAL REFERENCE



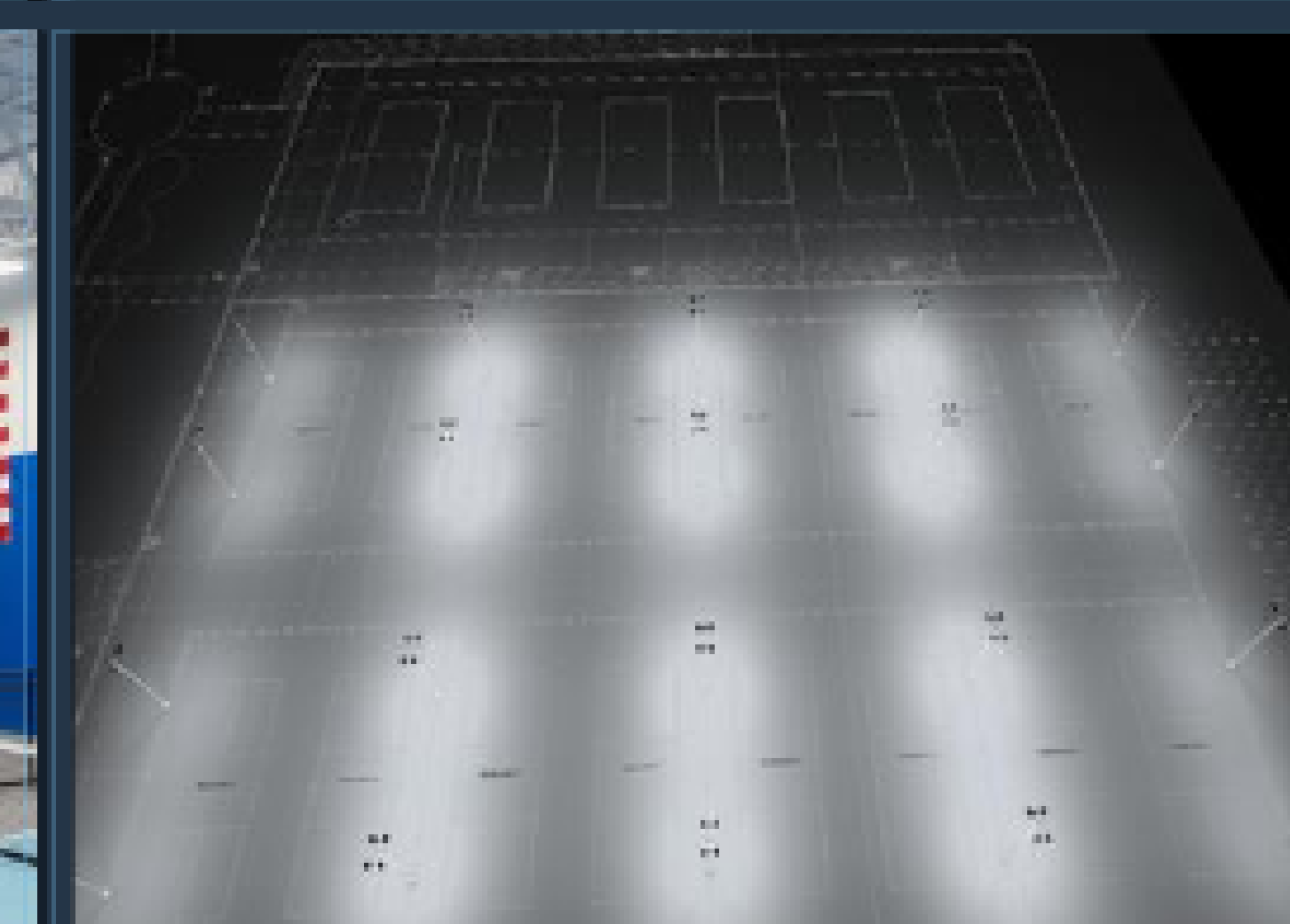
PHOTOMETRIC ANALYSIS



FALSE-COLOR ILLUMINANCE



INDOOR FACILITY



3D PHOTOMETRIC RENDER

FACILITY PLANNING HANDBOOK

Welcome

Energywise Court Solutions approaches court lighting as part of overall facility planning, not as a fixture-first purchase. Before products are compared, we help owners, architects, contractors, and operators define play level, visibility goals, budget, maintenance priorities, controls strategy, and site constraints.

This guide brings together the design principles that matter most when evaluating indoor and outdoor pickleball, tennis, and padel lighting for new construction, renovations, facility expansions, and performance upgrades.

Better Court Lighting Starts With Better Design.

A design-first process creates better visibility, stronger player comfort, and smarter long-term value.

What this guide covers

- Why lighting quality changes the player experience and the facility brand.
- The five design elements that separate strong systems from generic fixture packages.
- How indoor and outdoor court lighting differ in mounting, glare, spill, and control needs.
- What to ask for before committing to a photometric package or fixture recommendation.



INDOOR FACILITY LIGHTING

Energywise positioning

- Design-first philosophy before product selection.
- Manufacturer agnostic recommendations tailored to facility goals.
- Indoor and outdoor expertise across new construction, retrofits, and expansions.

TRUSTED ADVISOR

Energywise helps project teams compare viable solutions, align performance with budget, and move into detailed design only when the scope is clear.



OUTDOOR FACILITY LIGHTING

PLAYER EXPERIENCE AND VISIBILITY

Why Court Lighting Matters

Racquet sports are visually demanding. Players constantly shift focus from near to far, from low shots to high lobs, and from lateral movement to vertical ball tracking. When lighting is uneven or glaring, players start reacting to the lighting instead of the ball.

Great court lighting is not just about making a court bright enough. It is about creating consistent visibility that helps players track the ball clearly, move confidently, and play safely from every area of the court.

The strongest systems balance illuminance, uniformity, glare control, fixture optics, and site-specific constraints.

What players feel first

- **Ball tracking becomes less predictable when one side of the court feels darker.**
- **Glare interferes with serves, overheads, and fast exchanges.**
- **Shadows create hesitation, visual fatigue, and a lower-quality playing experience.**
- **A well-lit court improves confidence, safety, and perceived facility quality.**

Key takeaway

Lighting influences how the game is seen, judged, and enjoyed.

DESIGN FUNDAMENTALS

Five Elements of Great Court Lighting

The best court lighting systems do more than increase brightness. They coordinate performance, comfort, and site realities.

1

1 Illuminance

Target light levels should align with the level of play, the court type, and the owner's operating goals.

2

2 Uniformity

Even coverage matters as much as average foot-candles. Players should not feel dark pockets, harsh transitions, or dead zones.

3

3 Glare Control

Fixture optics, aiming, and mounting height should reduce direct view of harsh light during serves, lobs, and overheads.

4

4 Fixture Optics

Rectangular sport optics help place light where play happens instead of wasting output beyond the playable area.

5

5 Placement + Site Response

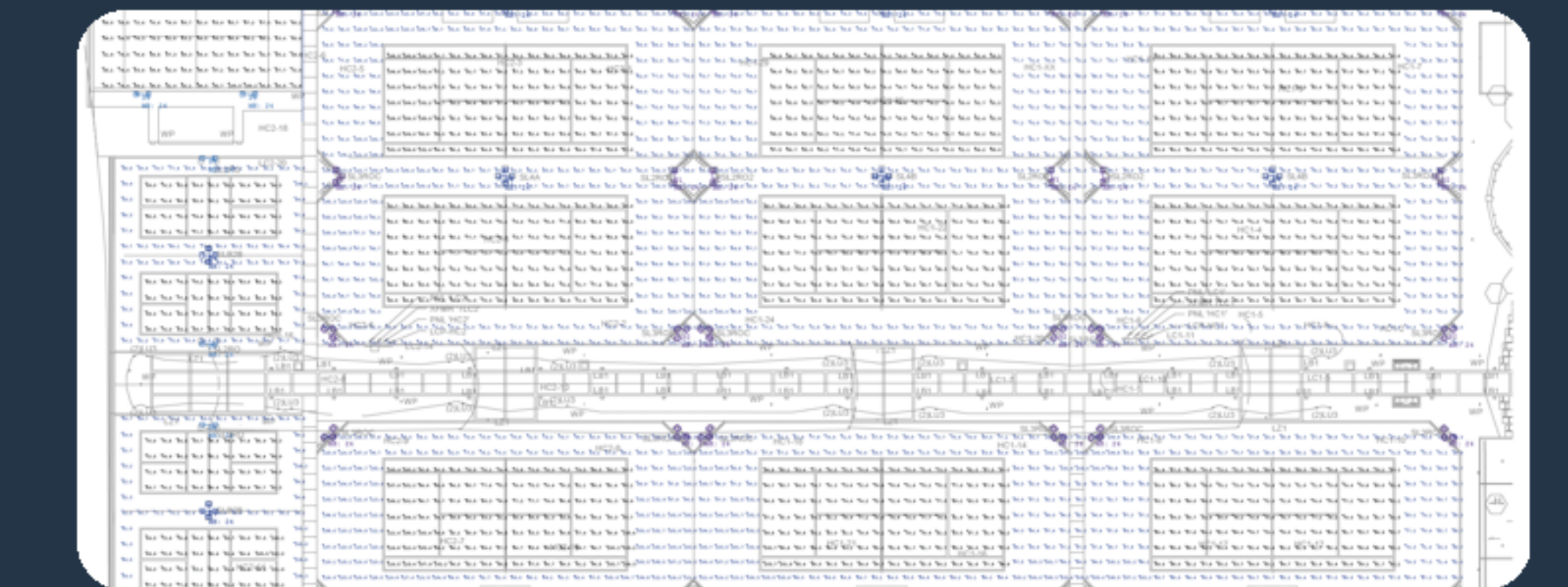
Pole positions, ceiling conditions, spill-light limits, maintenance access, and surrounding uses must be resolved before fixture packages are finalized.

Industry recommendation

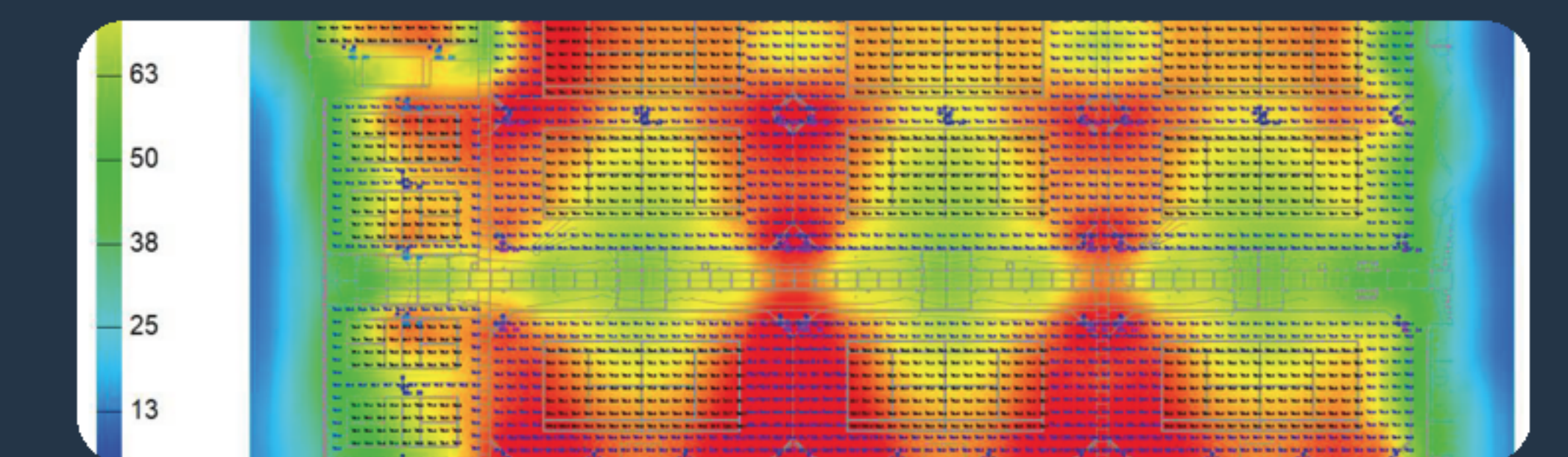
A lighting system should be designed on paper before it is built in the field. Photometric planning is one of the clearest separators between a system that merely turns on and one that truly performs.

Technical reference

Design quality becomes visible in the technical layer.



PHOTOMETRIC STUDY



FALSE-COLOR ILLUMINANCE

What every buyer should ask for

- A photometric layout and light level summary
- Uniformity ratios and glare-control strategy
- Fixture optics, mounting height, and placement logic
- Spill-light mitigation and long-term maintenance expectations

FACILITY-SPECIFIC STRATEGY

Indoor vs Outdoor Court Lighting

The design goal is the same in both settings: clear, comfortable visibility for players. The design constraints are very different.



INDOOR FACILITIES

Indoor priorities

- Ceiling height and mounting clearance must support lobs, sightlines, and fixture aiming.
- Reflections, ceiling color, and enclosure conditions affect perceived comfort and brightness.
- Lighting should align with scheduling, controls, and operating flexibility across multiple courts.
- Player comfort depends on uniform coverage without visual clutter overhead.



OUTDOOR FACILITIES

Outdoor priorities

- Pole height and location influence uniformity, glare, and the overall appearance of the site.
- Spill light, neighborhood impact, and code requirements must be accounted for early.
- Aiming and shielding should protect adjacent uses without sacrificing court visibility.
- Controls, curfews, and maintenance access are part of the design conversation, not an afterthought.

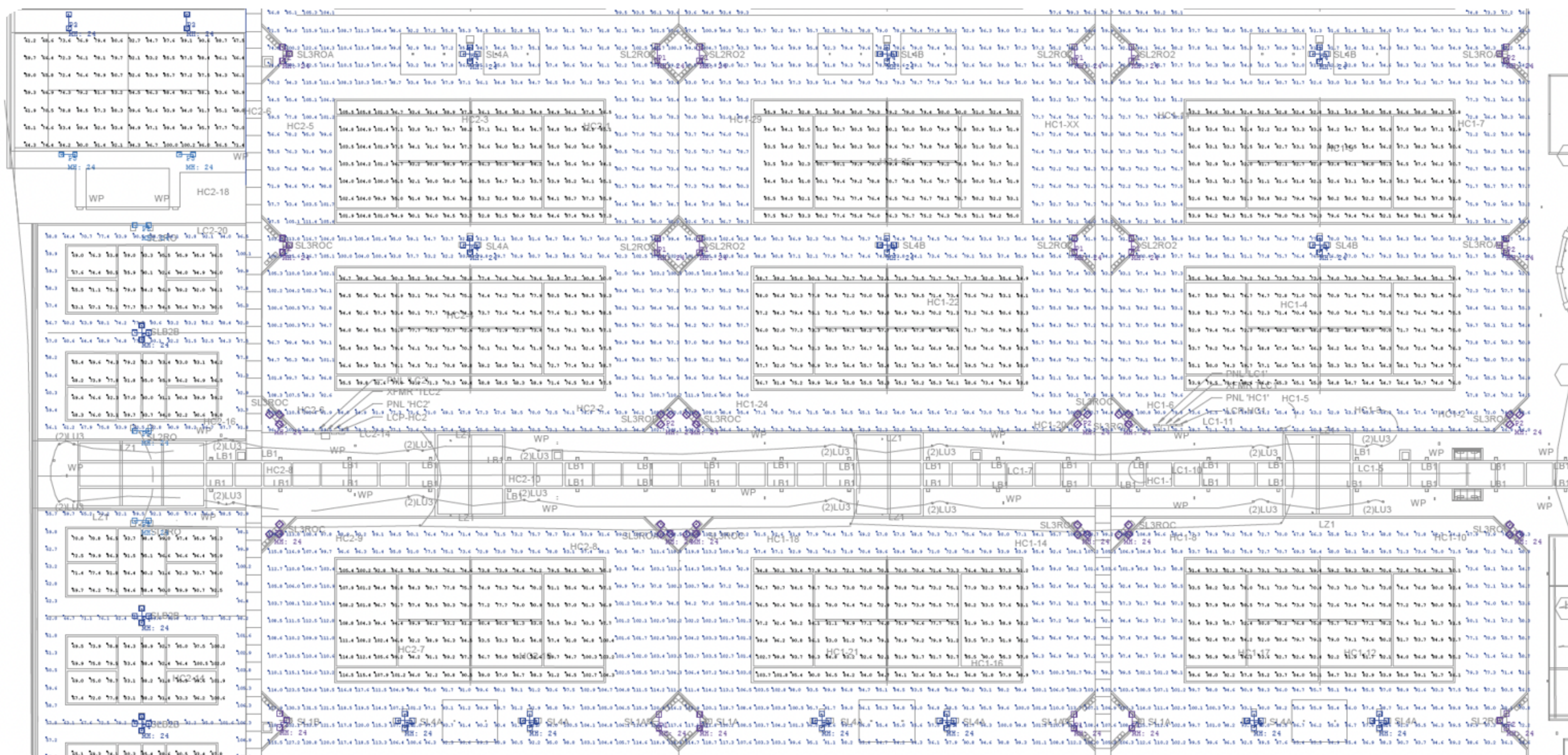
Same design standard: visibility, comfort, and playability. Different project realities: mounting, spill, code, and site context.

TECHNICAL PLANNING TOOL

Understanding Photometric Studies

A photometric study shows how a proposed lighting system is expected to perform before it is installed.

Energywise provides custom lighting design packages that include fixture selection, proposed fixture layout, photometric calculations, light level summaries, uniformity review, and coordination-ready documentation for the project team.



PHOTOMETRIC LAYOUT

A strong study helps answer three questions:

- Are the target light levels appropriate for the level of play?
- Is the distribution even enough to support comfort, visibility, and confidence?
- Do mounting height, fixture optics, and pole placement work together without creating glare or spill issues?

What a design package includes

- Fixture recommendation and fixture schedule
- Photometric calculations using selected IES files
- Average, minimum, maximum, and uniformity calculations
- Court area light level summary
- Proposed pole and fixture mounting layout
- Multiple revisions to help align design, performance, and budget

Before install
Designed on paper first

Multiple revisions
Refined around client goals

Required design criteria

- Maintained foot-candle targets and uniformity ratios
- Pole height limits and fixture shielding requirements
- Light trespass, property-line, curfew, and neighborhood restrictions
- Local code, zoning, and permitting standards from the project team

A photometric plan is most valuable when it reflects real site constraints, not generic court assumptions.

COMMON PROJECT FAILURES

The Biggest Lighting Mistakes

Most disappointing lighting projects do not fail because a fixture turns on. They fail because the system was never designed around performance.

The recurring mistakes show up before installation ever begins.

1 Chasing brightness without uniformity

A court can measure a high light level in one area and still perform poorly if the rest of the court has shadows or dark pockets.

2 Ignoring glare

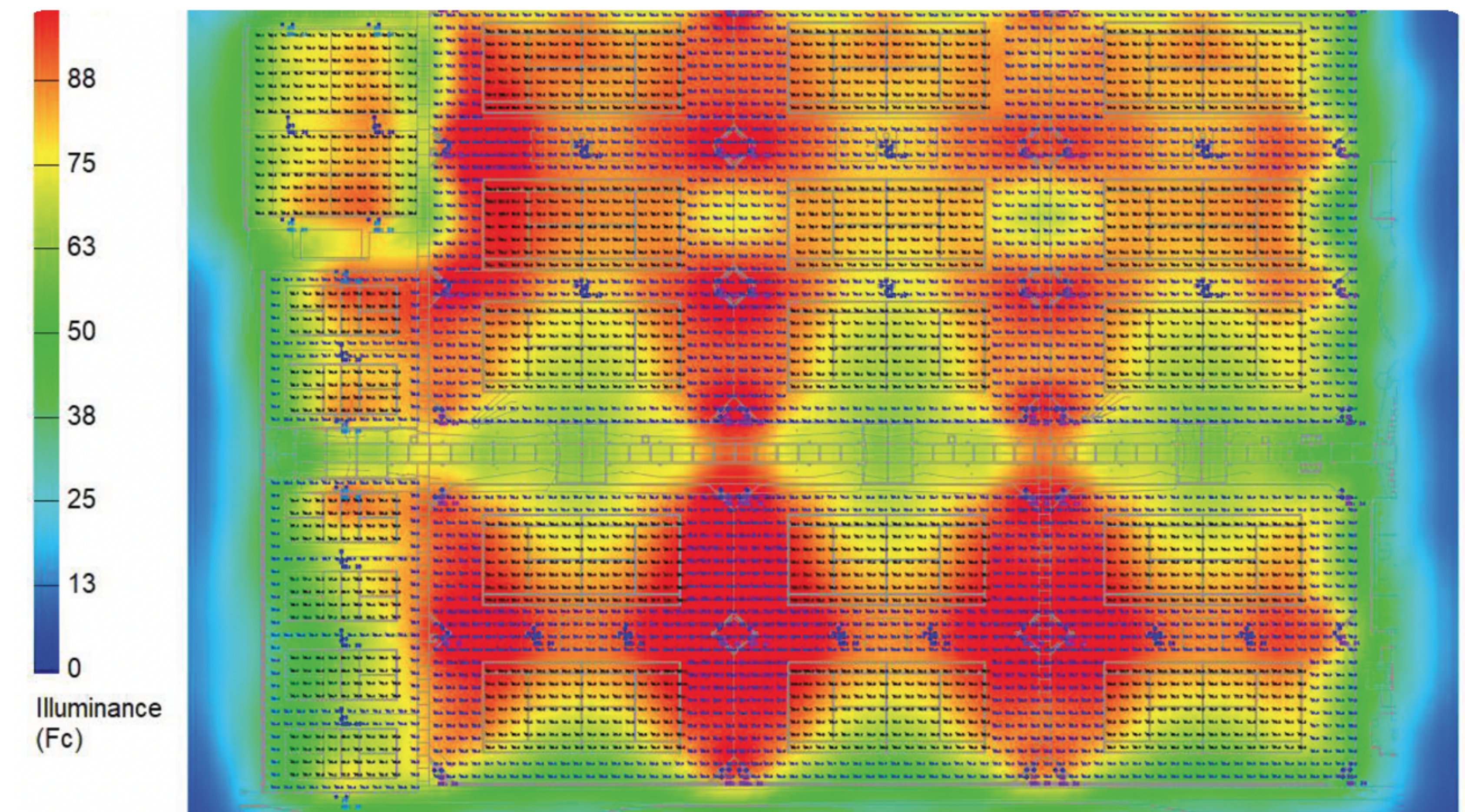
Bad fixture selection, poor aiming, or low mounting heights can put harsh light directly in the player's line of sight.

3 Using generic fixtures instead of sport-specific optics

Racquet courts are rectangular environments with specific ball paths, safety zones, and viewing angles. Optics matter.

4 Skipping a photometric plan

A lighting system should be designed on paper before it is built in the field.



FALSE-COLOR VISUALIZATION

5 Forgetting the surroundings

Outdoor projects also have to manage spill light, neighborhood impact, code compliance, and long-term maintenance access.

COLOR QUALITY AND COMFORT

Color Temperature, CRI & Visual Performance

Correlated Color Temperature, or CCT, describes the visual color appearance of the light source in Kelvin. It does not tell you how bright the court is. Instead, it describes whether the light appears warmer and softer or cooler and crisper.

For racquet courts, the right CCT helps the ball look clean and distinct against court surfacing, lines, netting, fencing, glass, and surrounding backgrounds without making the space feel harsh or overly blue.

4000K-5000K

Typical target range

70+

Common minimum CRI

80-90

Higher contrast and definition

Practical guidance

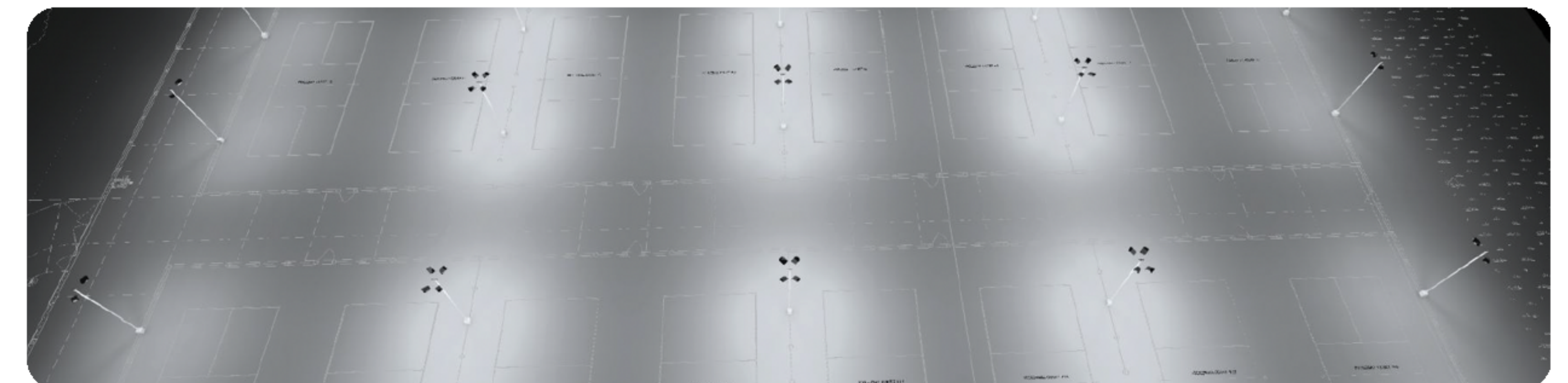
- 4000K often works well where comfort and a slightly softer appearance are priorities.
- 5000K is commonly favored for competitive or tournament-oriented settings where a crisper visual impression is desired.
- Below 4000K can feel too warm for many performance-focused installations.
- Above 5000K can start to feel harsher or bluer than needed unless the project has a specific preference.

Bottom line

CCT should always be considered alongside CRI, glare control, fixture optics, mounting height, and uniformity.



INDOOR FACILITY LIGHTING



3D VISUAL REFERENCE

Why it matters to players

- Sharper contrast makes the ball, lines, and surrounding court edges easier to read quickly.
- Balanced color quality supports faster reaction without making the environment feel sterile or harsh.
- Premium facilities usually feel better when visibility and visual comfort are solved together.

BENCHMARK REFERENCE

Lighting Guidelines by Sport

Recommended light levels vary by sport, level of play, and facility expectations. These ranges are starting points for design, not substitutes for project-specific photometrics.

Tennis

Recommended light levels

Class IV: 30 fc avg / 20 fc min
 Class III: 50 fc avg / 40 fc min
 Class II: 75 fc avg / 60 fc min
 Class I: 125 fc avg / 100 fc min

Uniformity guidance

Class IV: 2.0:1 or less
 Class III: 2.0:1 or less
 Class II: 1.7:1 or less
 Class I: 1.5:1 or less

Key supporting guidance

Recreational / Residential: 20-25 ft is common to help reduce spill. Club / Competition: 23-30 ft is common for stronger distribution. Tournament / Professional: 30-40+ ft is often used to improve coverage and uniformity.

Pickleball

Recommended light levels

Class IV Recreational: 20-30 fc
 Class III Club: 30-50 fc
 Class II Competition: 50-75 fc
 Class I Pro / Broadcast: 75-125 fc

Uniformity guidance

Max/min ratio: 2.0 or less
 Premium competitive target: around 1.7 or less

Key supporting guidance

Indoor: ceiling-mounted LED systems should be installed with a minimum clearance of 18-20 ft to avoid interference with lobs. Outdoor: 20-25 ft mounting heights are ideal for minimizing glare and supporting even coverage.

Padel

Recommended light levels

Recreational: 200-300 lux
 Club / Training: 500-750 lux
 Competition: 750+ lux

Uniformity guidance

Recreational 2.0:1
 Club / Training 1.7:1
 Competition 1.4:1

Key supporting guidance

Mounting heights are commonly about 20-26 ft above grade, with 26 ft or higher often preferred for tournament-oriented applications to improve distribution and reduce shadows on glass.

PLANNING BEFORE PRODUCTS

The Energywise Design-First Approach

Energywise starts with facility direction first, then moves into product commitment or paid design services once the scope is clear.

A collaborative, low-pressure process helps project teams shape the right mix of lighting, controls, energy strategy, acoustics, and emergency lighting.

1 Start with direction

We talk through goals, court experience, performance expectations, and early budget ranges.

Before the engagement

- Thoughtful planning support and education
- System options and budget ranges
- High-level scope direction and recommendations

2 Find the right mix

We refine priorities around lighting quality, controls, acoustics, energy use, timing, and budget.

3 Ready for detail

When the scope is clear, we move into a product commitment or paid design services.

Engagement unlocks

- Detailed layouts and photometrics
- Fixture schedules and control zoning
- Acoustic planning and emergency lighting coordination
- Specifications and execution support

4 Move with clarity

Your team receives the technical layouts, schedules, specifications, and coordination support needed for execution.

OBJECTIVE RECOMMENDATION MODEL

Why Manufacturer Agnostic Matters

Energywise does not force a single manufacturer into every project. Recommendations are based on performance goals, site realities, budget, and long-term value.

That independence matters because the right answer changes from facility to facility.

Fixture-first sales model

- Starts with a predetermined product line.
- Pushes the same fixture family across very different sites.
- Can underweight glare, mounting, controls, and maintenance tradeoffs.
- Often asks the project to fit the product instead of the product fitting the project.

Energywise design-first model

- Starts with facility goals, level of play, and user experience.
- Compares multiple viable solutions when needed.
- Balances performance, cost, controls, glare, aesthetics, and maintenance.
- Helps owners understand tradeoffs before committing to a fixture path.

Multiple options

Compared when the project benefits

National purchasing power

Helps avoid distributor markup

Custom solutions

Resolved around real constraints

Bottom line

Manufacturer agnostic guidance gives project teams room to make better decisions instead of defending a single predetermined product.

PROJECT-SPECIFIC SELECTION

There Is No Universal Best Fixture

A fixture that performs well on one site can be the wrong choice on another. The best solution depends on court count, mounting conditions, glare sensitivity, spill-light restrictions, controls strategy, maintenance access, aesthetics, and budget.

What changes the answer

Level of play

Indoor vs outdoor

Pole height limits

Ceiling restrictions

Glare tolerance

Neighborhood context

Controls and zoning

Maintenance access

Architectural goals

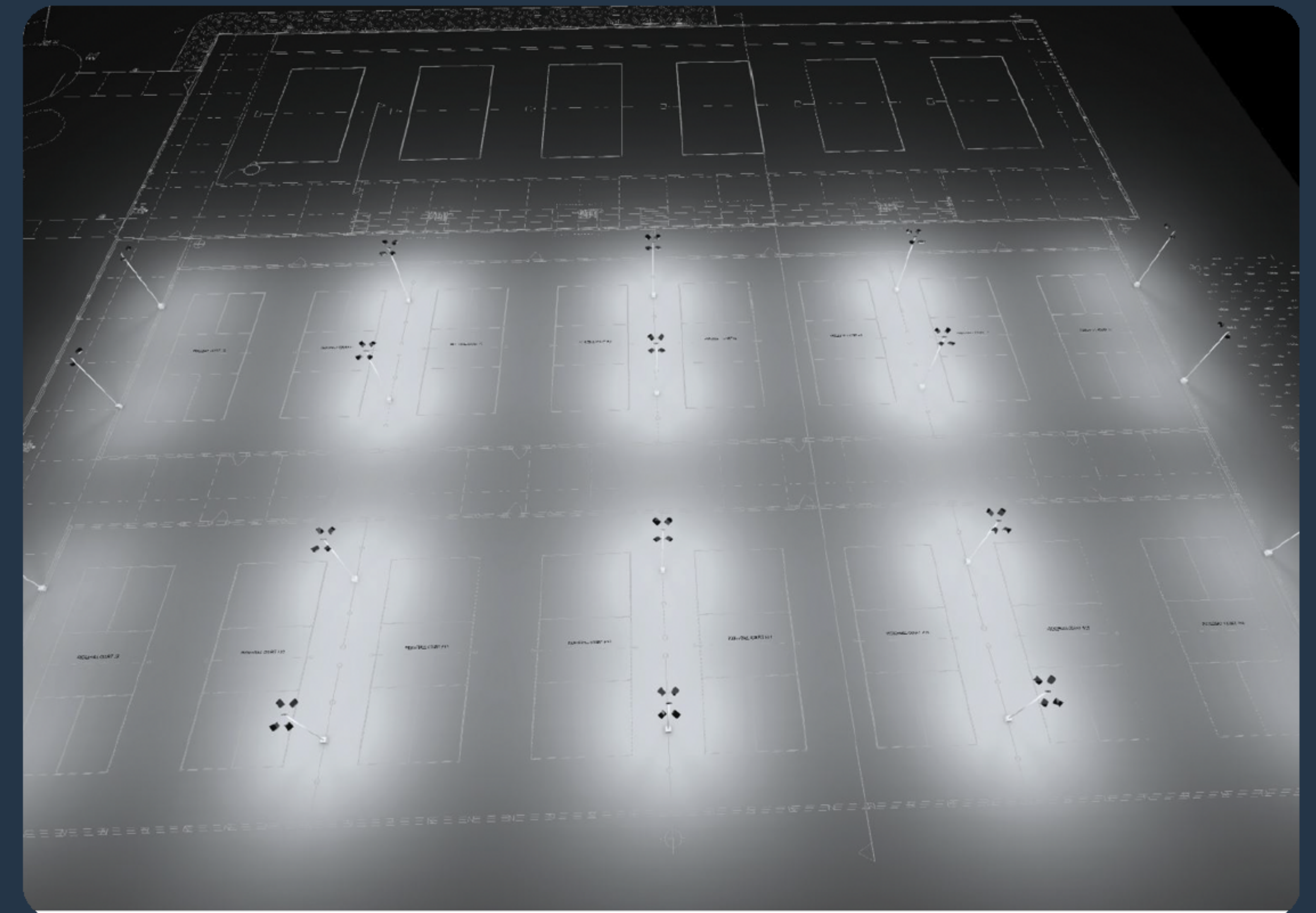
Budget range

What this means in practice

Good fixture selection is not about chasing a brand name or spec sheet headline. It is about matching optics, output, controls, and installation realities to the way the facility actually needs to perform.

Energywise recommendation method

- Define the desired outcome first.
- Review the physical and operational constraints.
- Evaluate multiple viable fixture paths when appropriate.
- Choose the option that creates the best overall fit for the project.



3D PHOTOMETRIC REFERENCE

Why universal claims are risky

- They flatten important differences between projects.
- They can lead to unnecessary glare or uneven distribution.
- They ignore site-specific code and spill-light realities.
- They often hide tradeoffs that owners deserve to see clearly.

Core message

The right fixture is the one that solves the project well, not the one that gets recommended before the project is understood.

BROADER FACILITY SUPPORT



ENERGYMANAGER / CONTROLS

PAYING THE PRICE

Timing is Everything



ENERGYEDGE AI

Beyond Lighting: The Energywise Advantage

Energywise supports court projects with more than fixture recommendations. The broader system matters too.

- **Court lighting**
 Photometric design, fixture selection, glare strategy, and layout coordination for new construction and upgrades.
- **EnergyManager**
 Energy monitoring and operational visibility that support smarter facility decisions over time.
- **Utility rebate assistance**
 Support for identifying efficiency incentives and rebate opportunities that can offset installation costs.

- **Controls**
 Scheduling, zoning, automation, and operating flexibility that make multi-court facilities easier to manage.
- **EnergyEdge AI**
 Forecasting and energy-intelligence tools that help owners see beyond the immediate lighting purchase.
- **Acoustic solutions**
 Additional support for facilities where sound control and player comfort are part of the overall planning problem.

PRE-DESIGN ALIGNMENT

Facility Planning Checklist

Use this checklist to prepare for a productive lighting conversation before fixtures are selected or drawings are finalized.

Performance goals

Clarify the level of play, desired player experience, planned operating hours, and whether the facility should prioritize tournament readiness, community use, or premium club presentation.

Controls and operations

Decide how the facility should schedule courts, zone circuits, manage curfews, reduce wasted energy, and simplify day-to-day operation.

Physical constraints

Capture court count, ceiling height or pole-height limits, adjacent uses, property lines, sightlines, maintenance access, and any mounting restrictions.

Budget and ownership

Set realistic budget ranges and define who needs to review tradeoffs across performance, appearance, maintenance, and first cost.

Project checklist

- Target level of play identified
- Indoor or outdoor constraints documented
- Desired light levels and comfort priorities discussed
- Glare concerns and sightlines reviewed
- Mounting height or pole placement limits confirmed
- Controls strategy defined
- Utility rebate opportunities considered
- Maintenance expectations discussed
- Neighborhood or spill-light issues reviewed
- Decision-makers aligned on budget and priorities



FREE COURT LIGHTING DESIGN REVIEW

Have A Project In Mind?

Let's Take A Look.

Energywise offers a free review to help facility owners, architects, contractors, and managers evaluate court lighting goals before they commit to a fixture path.

What the review can cover

- Plan review and early design guidance
- Photometric direction and light level targets
- Fixture recommendation pathways
- Budget planning and rebate review
- Controls and operating strategy

Contact Energywise Court Solutions

Scott Van Kerkhove

scottiev@energywisesolutions.com

877.225.1336

www.EnergywiseSolutions.com

Better Court Lighting Starts With Better Design.

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