

Residential Lighting Best Practices Guide

2026

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Residential Lighting Best Practices Guide 2026

Table of Contents

- 04 | Introduction**
- 06 | Meet the Experts**
- 34 | Lighting Products**

Basics

08 | Rethinking Circadian Lighting

By Sarah E. Dresher

In last year's edition of the *Residential Lighting Best Practices Guide*, I discussed turtle lighting and its importance particularly in the southeast U.S. I didn't set out to challenge one of the lighting industry's most popular narratives, but as I researched turtle-friendly lighting, a question stopped me cold: If turtles have such acute biological sensitivity to specific light wavelengths — particularly blue light that can fatally disrupt their navigation — how does light actually affect humans?

10 | Low Voltage Lighting: Passing Fad or Brighter Future?

By David Warfel

Low voltage lighting, specifically interior lighting, is not new to the marketplace but the paradigm always seems just on the edge of disappearing altogether. Recently, however, I have run into builders at both ends of the cost spectrum who are increasingly drawn to the technology. The reasons why are clear and compelling, but there are a few roadblocks that need cleared for low voltage lighting to begin replacing line voltage solutions in every home. Are we at a turning point?

14 | How to Keep Lighting Design on Track

By Lynne Stambouly (*The Light Lady*) and Bruce Clark, *Illuminated Lighting Design*

Lighting design rarely fails because of bad ideas. More often, it fails because good ideas are slowly compromised as a project moves from concept to completion. Integrators live in the middle of this reality. They translate lighting intent into systems that must coexist with architecture, millwork, HVAC, electrical, schedules, budgets, and, inevitably, human behavior. The challenge is not simply technical execution; it is managing complexity across multiple trades while protecting both performance and aesthetics. Success depends less on heroics at the end of a project and more on disciplined coordination from the beginning.

Business

16 | Lighting Takes Center Stage in the Modern Smart Home

By Mike Libman, Sales VP, Custom Integrators, DMF Lighting

The lighting category has reached a clear inflection point in the technology integration channel. What was once considered a niche add-on to AV is now a core pillar of the integrator business model, driven by advances in tunable white and digital lighting,



PHOTO COURTESY OF USA INTEGRATION.

the rapid adoption of linear solutions, the demand for cleaner electrical plans, and the way homeowners increasingly judge the quality of a home by its lighting experience. To better understand the current state of residential lighting from those leading this evolution, I spoke with three DMF Lighting dealers about how they are approaching lighting design, managing trade relationships, selling value over commodity solutions, and delivering lighting experiences that homeowners immediately recognize as premium.

22 | Going Beyond the Classroom

Light Can Help You (LCHY) has a long history of delivering quality education. They were tapped to deliver over 30 hours of content for Lightapalooza 2026, and their online webinars have reached thousands inside and outside of the U.S. They recently announced their latest educational offering, LDX. Here, LCHY's David Warfel, Mark Langston, and Jessica Doyle discuss the landscape of lighting education and their new program.

Tech

24 | Exploring the Future of Lighting and Digital Controls

Lighting is often overlooked in today's design of upscale residential or commercial spaces, seen as a utilitarian part of the building process. However, lighting and lighting perception are essential elements to successfully designing today's homes and commercial locations. Filling the visual plane and creating visual flow in a space make an enormous difference in how it feels.

28 | Lighting the Way to Wellness

By Gregory Kay, CEO, PureEdge Lighting

In an era where well-being is as valued as aesthetics, lighting design has transcended its traditional role of mere illumination. Today's designers are tasked with creating environments that nurture our natural biological rhythms. Integrating circadian-friendly lighting into our built spaces isn't just a trend, it's a holistic approach to health.

32 | Engineering Savings into Outdoor Systems

By Peter Sepesi, VP Sales, Coastal Source

Across the outdoor AV and lighting sector, conversations around cost have traditionally centered on equipment pricing or installation hours. In reality, many of the most meaningful system-level savings aren't achieved in the field at all, but rather are engineered long before anyone arrives on site.

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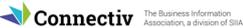
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The Lighting Phenomenon



Welcome to the third annual edition of the *Residential Lighting Best Practices Guide*. In my editorial for the first one of these, I wrote that I hoped that it would continue because lighting is a deep, fascinating, and fun field to be in. Clearly, many of you agree, as can be surmised from the success of Lightapalooza and the integrators and manufacturers that frequent it.

Back in 2024, it seemed likely it would continue, but not a certainty. I've seen plenty of trends come and go. Those "Next Big Things" that stir up the hype for a cycle or two and then dull down to a "remember-when" murmur.

But lighting is here to stay (and I am confident enough to make that statement in print, where it can easily be wagged in my face at a later date). And it remains despite the facts that it is difficult to master and that custom integrators have to work hard to insinuate themselves into the conversation.

So, what is it about the category that has so many of us hooked? Potential for one: Lighting provides opportunity for big revenue gains. Plus, it gets integrators at the design-build table early and as a partner, not a contractor. It also gives CI control over an area that they would be blamed for if problems arise down the line.

When you see the crowds at events like Lightapalooza and the CEDIA Expo Lighting Pavilion, it is easy to think that the vast majority of integrators are all-in on the category, but that is far from the truth, and there is plenty of room for growth.

When I interviewed Lightapalooza founder Tom Doherty about this year's event, I had asked him how much of the industry had found its way to lighting. "The lighting industry is growing, and custom integrators are selling more fixtures," he said. "There's really no end in sight because it's clear that the percentage of projects that custom integrators are working on that they're also providing lighting fixtures for is still very small. The more progressive folks — the ones that have been showing up for Lightapalooza and have been at it for years, invested in education, built-out demonstration showrooms, and created lighting design services — are much higher up, but even the most advanced integrators might be doing lighting for one out of five projects. So, we still have a long ramp, but it's big business and it will only get bigger."

Fortunately, there is an abundance of resources for dealers to avail themselves of to learn how to do lighting right — from shows like Lightapalooza, manufacturer training, lighting design experts such as Light Can Help You, and publications like the one you are holding (real or virtual).

This issue offers tips for those just starting off and for those who have been around the block a few times. It features lighting designers, integrators, and manufacturers who are all eager to share what they have learned to help raise the entire industry.

See you for the 2027 edition!

Anthony Savona

Content Director, *Residential Systems*



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Meet the Experts This issue's contributors.



Bruce E. Clark

Bruce E. Clark (The Lighting Sherpa) is a lighting design director at Illuminated Lighting Design and the founder of Kaleidolight Lighting Design. He bridges the worlds of residential and small commercial lighting, design, and manufacturing, helping professionals and clients realize what's possible when lighting is approached with intention.

Most recently, he added the title "lighting sensei" with the launch of the industry-first Lighting Excellence Dojo, a design-forward, hands-on lighting installation training experience.



Sarah Dresher

Sarah Dresher has focused on the residential new construction and renovation market for more than eight years. Dresher's experience and degree in electrical engineering allow her to fully grasp the importance of concealing tomorrow's technology in the home of today.

In 2022, Luxury Integrated Technologies (LIT) was started by Dresher. LIT brings design and education services to the specification community, along with their best-in-class technology solutions to contractors. Through partnerships with technology integrators and innovative manufacturers, her company helps architects, designers, and builders maintain their design intent, create an easy-to-use experience, and allow technology to disappear into the hardscapes of the everyday home.



Gregory Kay

Gregory Kay is president and founder of PureEdge Lighting. He has worked in the lighting industry for more than 30 years as an accredited lighting designer, engineer, and entrepreneur. He has received many awards for his innovative design work.



Patrick Laidlaw

Laidlaw grew up in the lighting business, working in lighting showrooms and supply houses from an early age. He is passionate about lighting and sharing how it can improve people's lives. "We know more about the human body and how it's affected by light than we ever have in the history of humankind," he says. "Proper lighting can make ALL the difference."



Michael Libman

Michael Libman is sales vice president, custom integrators, for DMF Lighting who works with custom integrators to provide lighting solutions to their clients. He believes lighting is about enhancing the elements that people love about their homes.



Peter Sepesi

Pete Sepesi is vice president of sales at Coastal Source, where he leads sales operations and drives strategic growth across the company. He oversees a team of regional account executives and independent representative partners, while also serving as a key liaison on large-scale projects — collaborating closely with dealers, architects, and clients to ensure seamless implementation of Coastal Source's outdoor audio, lighting, and power solutions.



Lynne Stambouly

Lynne Stambouly (The Light Lady) brings nearly four decades of client-facing expertise and has held virtually every role in the lighting industry, including sales, design, product procurement, and project management. She has also owned a lighting showroom, spent 10 years as a manufacturer's representative in the lighting category, and served as a national trainer for Kichler landscape lighting.

With more than 35 years in the field, Stambouly is recognized for delivering lighting designs that balance artistic vision with functional performance, grounded in installation-focused solutions that work in the real world.



David Warfel

David Warfel is founding designer of Light Can Help You with diverse lighting experience. Design credits include performances at Carnegie Hall and The Saint Louis Black Rep, architectural designs at MGM Grand and Luxor in Las Vegas, Chicago's Hyde Park Arts Center, and escape rooms for multiple Royal Caribbean cruise ships. His residential-focused company designs hundreds of homes each year across the continent. Warfel's work and writing has been featured in LD+A, Fine Homebuilding, Lighting (Australia), Designing Lighting, Technology Designer, Houzz.com, and more, and he regularly blogs at languageoflight.blog.

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Rethinking Circadian Lighting

Going beyond marketing hype to better understand and implement human-centric lighting.

By Sarah E. Dresher, CEO and Owner, Luxury Integrated Technologies

In last year's edition of the Residential Lighting Best Practices Guide, I discussed turtle lighting and its importance particularly in the southeast U.S. I didn't set out to challenge one of the lighting industry's most popular narratives, but as I researched turtle-friendly lighting, a question stopped me cold: If turtles have such acute biological sensitivity to specific light wavelengths — particularly blue light that can fatally disrupt their navigation — how does light actually affect humans?

That question sent me into the scientific literature on circadian response and melanopic sensitivity, where I

discovered a troubling gap between the marketing narratives surrounding human-centric lighting systems and the peer-reviewed biology. The elegant “sun indoors” messaging, the promises of automatic wellness through color temperature shifts, the implication that recreating daylight appearance equals circadian support — it all sounded right, but when I looked for the evidence, I found oversimplification at best and misrepresentation at worst. What started with turtles led me to a fundamental truth that our industry needs to hear: Light that looks natural is not the same as light that acts biologically.

The Problem With the “Sun Indoors” Narrative

Human-centric lighting has become one of the most compelling stories in residential design. The pitch is elegant: recreate natural daylight indoors, automate it throughout the day, and the human body will respond with better sleep, mood, and health.

It sounds right. It feels scientific, but the biology tells a more complicated — and far more interesting — story.

The human circadian system does not respond to how “daylight-like” light appears to the eye. It responds to melanopic stimulation, driven primarily by a narrow sensitivity band around ~480 nm, detected by intrinsically photosensitive retinal ganglion cells (ipRGCs).

In plain terms: Your body clock cares less about color temperature and far more about spectrum, intensity at the eye, timing, and duration.

A space can be filled with light that visually resembles noon daylight — cooler tone, high color quality — yet still fail to deliver enough circadian stimulus to meaningfully affect alertness or sleep timing. Conversely, a well-designed system can support circadian rhythms without ever feeling harsh or “clinical.”

This distinction is critical and often overlooked.

Color Temperature Is a Proxy, Not a Dose

Many human-centric lighting narratives rely on the idea that shifting correlated color temperature (CCT) throughout the day mirrors the sun and therefore supports circadian health. But CCT is descriptive, not biological. Circadian impact depends on:

- spectral power distribution (not just Kelvin),
- vertical illuminance at the eye (not horizontal task light),
- exposure timing relative to wake and sleep,
- duration of exposure,
- and interaction with daylight and screens.

Matching outdoor color temperature does not guarantee circadian effectiveness. Biology does not respond to intent — it responds to actual retinal exposure.

Humans Do Not Live Like Lighting Schedules

Another flaw in simplified circadian narratives is the assumption of predictable behavior. Real people wake at different times, work from couches, travel across time zones, stare at screens at night, nap, and override presets.

A lighting system cannot “fix” circadian disruption through automation alone. Human-centric lighting must be designed, not assumed — accounting for architecture, glazing, furniture layout, and how occupants actually use the space. To go a step further, these systems should be intelligent and predict these disruptions in schedule and adapt. This is what LIT believes defines as an intelligent system vs. a smart home.

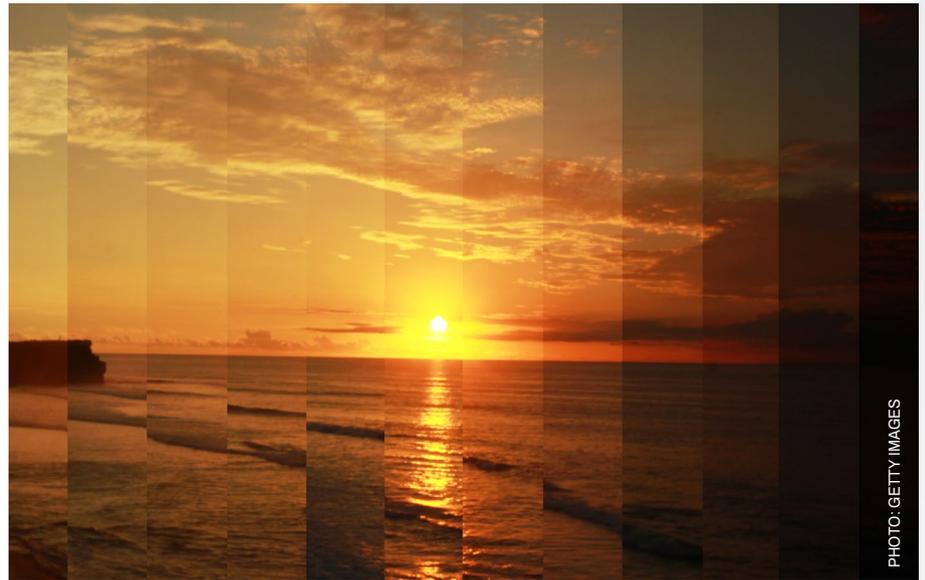


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Without this context, wellness lighting becomes a well-meaning guess.

Visual Comfort Is Part of Human Health

Circadian effectiveness is only one layer of human-centric lighting. Glare, excessive contrast, sparkle, and poor diffusion can all contribute directly to eye strain, headaches, and fatigue — issues clients feel immediately, long before circadian benefits appear.

Any system claiming to support human well-being must address optics, diffusion, and comfort, not just color temperature.

The Scientific Bottom Line

Human-centric lighting is not a product category or a preset. It is a process grounded in biology.

Real circadian-supportive lighting requires:

- intentional spectrum selection,
- adequate but comfortable intensity,
- proper timing,
- integration with daylight,
- and intelligence or adaptability to human behavior.

When these elements are replaced with poetic language — “sun-like,” “natural,” “automatic” — science gives way to storytelling.

The goal is not to recreate the sun indoors. The goal is to respect how the human body actually responds to light.

That is where real human-centric lighting begins. ■

For more information, please contact the LIT Ladies at: sales@litsoutheast.com or visit our website www.litsoutheast.com.



Low Voltage Lighting: Passing Fad or Brighter Future?

From the best custom builders to the fastest production builders, low voltage lighting is getting noticed.

By David Warfel

Low voltage lighting, specifically interior lighting, is not new to the marketplace but the paradigm always seems just on the edge of disappearing altogether. Recently, however, I have run into builders at both ends of the cost spectrum who are increasingly drawn to the technology. The reasons why are clear and compelling, but there are a few roadblocks that need cleared for low voltage lighting to begin replacing line voltage solutions in every home. Are we at a turning point?

Low voltage interior lighting is in use in nearly every home whether we know it or not. Though we still pump 120-volt (120v) alternating current (AC) throughout the house, almost all lighting utilizes LED sources that inherently sip electricity at around 3 volts or even less. Each fixture, even LED screw-in bulbs, has a device inside that lowers the voltage to avoid instantly burning up the LED. Distributing lower voltages throughout the home for lighting — typically 48 volts or less for Class 2 wiring in direct current (DC) — comes with considerable advantages.

Derek Cowburn of Lumencache shared a case study with me highlighting one key advantage of low voltage interior lighting: dramatic reduction of copper material usage. Copper is nearly ubiquitous in residential wiring, but it is also a costly material to produce. Low voltage lighting systems can reduce copper wire by over 50% by utilizing smaller wires, and that translates to less impact on the wallet and the planet. Class 2 wiring, in most areas, does not require a licensed electrician for most of the installation work. That makes it easier to solve labor shortages, save the client a few dollars, and get the projects done faster.

In every LED screw-in bulb is a tiny disposable driver that steps voltage from 120v to around 3v. Because the device is made to be small, cheap, and disposable, it is not the most efficient means of transforming power. One production builder removed all those tiny components, which are the

Photo: VistaSerenaShowhouse.com

Basics ▲

most likely reason LED fixtures and bulbs fail, and replaced them with just three easy-to-access and replace 100-watt drivers. This is a more efficient approach, saving dollars, lowering electricity usage, and making maintenance super simple when it is required (and it will be required far less often with a good system).

With so many reasons to love low voltage lighting, why does it often feel as if the industry is at a standstill? Perhaps because it mostly is.

Change in residential construction does not come quickly. Price-conscious customers demand a certain square footage per dollar spent, and that means corners must be cut. High-end customers often concentrate on beautiful marble tile while looking to save money on lighting and other items they categorize as utilities.

surprised by the number of high-performance builders who approached me afterwards to talk about low voltage solutions. This demographic of builder — think houses that are super energy-efficient, well-designed, and healthy for occupants — has already changed just about everything about the construction process from foundations to roofs, and is populated by builders wanting to build smarter. They get it and, if we provide a comprehensive solution, they will put it into their incredible projects.

At the other end of the cost spectrum, I recently heard about a certain production builder who already has 1500 homes wired up with low voltage lighting systems. While they may be concerned about the environment, this builder is likely implementing low

I recently heard about a certain production builder who already has 1500 homes wired up with low voltage lighting systems. While they may be concerned about the environment, this builder is likely implementing low voltage solutions primarily for cost savings.

Change requires learning new technologies and techniques, and that takes time and cuts into builder, integrator, and electrical contractor margins. Why bother, if the customer doesn't seem to care?

Low voltage lighting may still be in a period of rapid innovation, with exciting advances like easy tunability and intelligent controls popping into my inbox regularly. That can be fun, but it makes it next to impossible to develop unifying standards. This reality floods the markets with systems that operate at 12v, 24v, 36v, and 48v and use every kind of wire backbone imaginable. The result is a lack of plug-and-play interoperability: a light fixture from one manufacturer may be incompatible with a low voltage driver from another, even if they happen to both use Cat6 cable — and that's a long shot. We need standards to reduce the risk of installing a system from a manufacturer that later goes out of business or changes strategies. I know of at least one manufacturer taking this challenge seriously; collaboration between multiple manufacturers may be necessary to really open up the low voltage market.

Despite these challenges, low voltage lighting is making its way into contractor conversations and homes from the least expensive to the most. I mentioned a few of the benefits of low voltage lighting when speaking recently at the Fine Homebuilding Summit and was quite

voltage solutions primarily for cost savings. In other words, low voltage lighting is making inroads across the market.

You could even make the case that low voltage lighting systems are already in most of our projects. Linear LED strips, a.k.a. "tape lights," are mostly low voltage and already require remote drivers and low voltage infrastructure. Outdoors, landscape systems are often low voltage because of the inherent ease of installation and safety factor — cutting through a 120v line indoors or out can be deadly, but cutting a 24v line will just give you a buzz. And most solar panels and battery backups are low voltage, making it even more efficient to stick with low voltage lighting.

I cannot predict the future, but I can make some educated guesses. Every LED is inherently low voltage. Low voltage lighting is already in most of our homes in one aspect or another. Resilient homes are increasingly utilizing low voltage solar and battery backup. And it is just plain dumb to dig up, refine, manufacturer, ship, and install heavy copper wiring for light fixtures that can do with a lot less.

Low voltage lighting may be moving from a fad to mainstream, even if it is doing so quietly and slowly. Keep your eyes open and you may see the signs at every level of construction. ■

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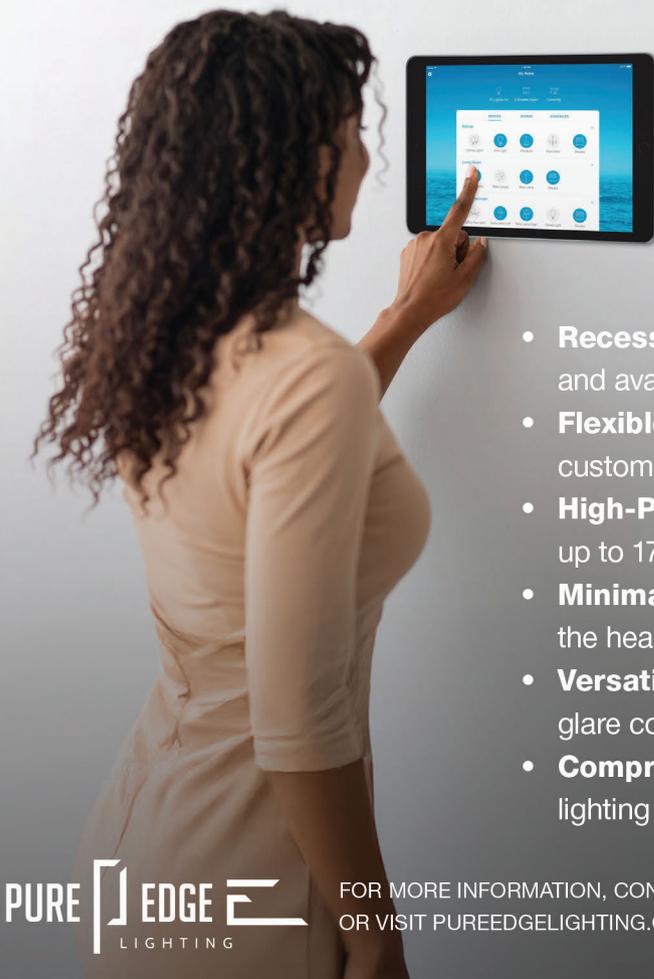
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How to Keep Lighting Design on Track

Collaboration across every trade — from concept to close-out — prevents surprises and ensures the final lighting matches the intended design.

By Lynne Stambouly (The Light Lady) and Bruce Clark, Illuminated Lighting Design

Lighting design rarely fails because of bad ideas. More often, it fails because good ideas are slowly compromised as a project moves from concept to completion. Integrators live in the middle of this reality. They translate lighting intent into systems that must coexist with architecture, millwork, HVAC, electrical, schedules, budgets, and, inevitably, human behavior.

The challenge is not simply technical execution; it is managing complexity across multiple trades while protecting both performance and aesthetics. Success depends less on heroics at the end of a project and more on disciplined coordination from the beginning.

Start with Alignment, Not Assumptions

Every project begins with optimism — and assumptions. Architects assume symmetry and spatial clarity. Interior designers assume freedom to refine finishes and aesthetic style. Builders assume budgets and schedules will rule. Electricians assume efficiency and code compliance. Owners assume they can change their minds frequently and at any stage of the home building process.

None of these assumptions is wrong, but unspoken assumptions are dangerous. That's why integrators must push for early, explicit alignment. Before drawings and blueprints begin, crucial collaboration among all stakeholders includes

confirming the lighting purpose and intent, as well as scoping boundaries and responsibilities. Who owns fixture placement? Who coordinates driver locations? Who decides when ceiling details change? Missed hand-offs at this stage are the first step down the project's "descent," a downward spiral of scheduling conflicts, rash decisions, and costly emotional pushback.

Respect the Physical Reality Above the Ceiling

Lighting lives in ceilings and millwork, but it competes for space with joists, ductwork, insulation, plumbing, and structural elements. One of the most common ways projects go sideways is by ignoring this physical reality until it is too late.

Integrators should review structural, mechanical, and plumbing plans against lighting drawings early and often. Ceiling height, pitch, plenum depth, and joist spacing all dictate what housings are possible and what optics will perform as intended. You can't stretch wire, and drywall means "done." Once ceilings close, options shrink quickly.

Downlights that look perfect on paper may glare aggressively if the ceiling pitch or aperture depth is wrong. Linear LED runs that promise seamless coves can fail due to voltage drop, driver placement, or insufficient recess depth. These numerous "conflict zones" illustrate how easily lighting intent can be undermined when spatial constraints are discovered too late.

Linear Lighting: Where Collaboration Matters Most

Linear lighting is one of the most powerful and perilous tools in modern residential design. It touches nearly every trade: designers specify it, millworkers build around it, electricians power it, and integrators make it behave.

This cross-trade complexity multiplies the variables that can derail a project: reel lengths, cutting increments, channel dimensions, lens opacity, wattage per foot, driver capacity, dimming protocol, polarity, and heat dissipation. Add millwork tolerances and finish schedules, and the margin for error narrows to almost nothing.

Therefore, integrators must insist on reviewing millwork shop drawings, not just architectural plans. A half-inch error in groove depth or a late change in cabinet material can turn a clean line of light into a shadow-casting disappointment. Proactive coordination before fabrication prevents the "Pandora's box" effect, where small oversights create cascading failures.

People Are Variables, Too

Technical challenges are only half the battle; the other half is human. The trust issues that too often exist between trades can be a major hurdle, but they're surmountable when teams understand and respect each other's communication styles, project objectives, and emotional triggers.

Integrators succeed when they listen first, then speak. Builders respond to clarity and predictability. Electricians respond to efficiency and clear documentation. Designers respond to solutions that protect the visual story. Owners respond to confidence and respect, especially when they change their minds.

When conflict arises, forcing your own way rarely works. Framing decisions around shared goals — performance, longevity, serviceability, and client satisfaction — builds trust over time. Remember: Only the client will live in the space when the job is done. That perspective helps defuse turf wars and refocus teams on outcomes, not egos.

Where Projects Go Sideways — and Why

When projects fall apart, a familiar pattern of missteps tends to emerge: Lighting is value-engineered without understanding consequences. Mechanical systems are under-designed and invade lighting zones. Driver locations are an afterthought. Decorative fixtures are selected without coordination. Revisions stack up out of sequence.

Each issue alone is manageable. Together, they create chaos: glare, shadows, visible hardware, inaccessible drivers, blown budgets, and frustrated clients. The lesson is clear: Reactive fixes cost more than proactive planning, both financially and relationally.

Strategies That Actually Work

By adopting practical "battle strategies," integrators can mitigate much of the miscommunication that happens on a lighting project. Schedule meetings with all lighting-related partners at key phases: kickoff, rough-in, and finish. Verify ceiling materials, thicknesses, colors, and pitches. Identify housing types by location and confirm adjustability needs. Check for obstructions before fixtures are locked. Coordinate furniture plans and decorative selections. Confirm product lead times and phasing so parts arrive when needed, not when it's too late.

These steps turn integrators from reactive problem-solvers into proactive collaborators; professionals who help projects survive the gauntlet intact.

At its best, lighting disappears. It supports architecture, elevates interiors, and shapes experience without calling attention to the effort behind it. Achieving that outcome requires more than technical knowledge; it requires integrators who understand the many variables — physical, procedural, and human — that influence success.

The best-laid lighting plans do not survive by accident. They survive because someone took responsibility for coordination, communication, and clarity. For integrators willing to do that work, the reward is not just better projects, but stronger partnerships and reputations that last far longer than any single install. ■



PHOTO COURTESY OF LOGIC INTEGRATION.

Lighting Takes Center Stage in the Modern Smart Home

A DMF Lighting dealer roundtable explores why lighting has become a core category for integrators and how best practices are reshaping residential design.

By Mike Libman, Sales Vice President, Custom Integrators, DMF Lighting



The lighting category has reached a clear inflection point in the technology integration channel. What was once considered a niche add-on to AV is now a core pillar of the integrator business model, driven by advances in tunable white and digital lighting, the rapid adoption of linear solutions, the demand for cleaner electrical plans, and the way homeowners increasingly judge the quality of a home by its lighting experience.

Today's integrators are no longer "the technology guys who also do lights." They are the one trade that owns lighting control, system compatibility, programming, trade coordination, and the end-user experience, the very elements that determine whether a lighting system elevates a home or becomes a long-term source of frustration. Across top-performing firms, early involvement, close collaboration with lighting designers and builders, and reliable, flexible product platforms are reshaping how lighting projects are designed and delivered.

To better understand the current state of residential lighting from those leading this evolution, I spoke with three DMF Lighting dealers about how they are approaching lighting design, managing trade relationships, selling value over commodity solutions, and delivering lighting experiences that homeowners immediately recognize as premium.

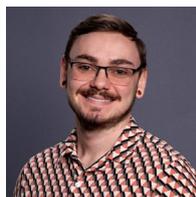
Cole Hathcock, lighting designer at Logic Integration (Lone Tree, Colorado); Ryan Guss, president of USA Integration (Phoenix, Arizona); and Tyson Rabani, CEO of Quality Audio Video (QAV) (Centennial, Colo.), share their insights. Together, their perspectives reflect a category that is maturing rapidly and why integrators who fully embrace lighting today are positioned to lead the next decade of residential technology integration.

Meet the Panel



Moderator

MIKE LIBMAN,
Sales Vice
President, Custom
Integrators,
DMF Lighting



**COLE
HATHCOCK,**
Lighting Designer,
Logic Integration



RYAN GUSS,
President,
USA Integration



TYSON RABANI,
CEO, Quality
Audio Video
(QAV)

MIKE LIBMAN: Lighting is becoming a core category for integrators. What shifted in the last few years that made lighting a must-have part of your business?

COLE HATHCOCK: Lighting stopped being just a utility and became part of the experience. As homes became more design-driven and technology-forward, lighting emerged as the bridge between aesthetics, comfort, and automation. Clients interact with lighting constantly, and once we recognized its impact on daily living, it naturally became a core offering.

RYAN GUSS: The biggest shift has been the quality of LED technology and dimming performance. We're installing high-end automation systems and control platforms, and if the lighting doesn't dim smoothly or perform consistently, it undermines the entire experience. Builders often treat lighting as a commodity, but in luxury homes, poor lighting performance is immediately noticeable. As integrators, we've

Business ▲

realized that if we want the system to function the way it should, we need to take ownership of lighting as well.

TYSON RABANI: QAV's investment in lighting began in 2016, placing us at the forefront of the CI industry's shift. We recognized early on that light is the most fundamental element of the built environment; it dictates how we perceive texture, color, and depth within a home. By fully adopting the lighting category and building a dedicated experience center, we transformed QAV from a technology firm into a comprehensive lighting design partner. Today, clients seek out QAV for a single-source provider that bridges the gap between sophisticated design and technical execution. It is, without question, our fastest-growing category by both volume and revenue.

LIBMAN: How early do you aim to get involved in a project, and what changes when lighting is engineered from day one versus added later in the build?

HATHCOCK: We aim to be involved as early as possible, ideally during initial planning. Early lighting design allows fixture placement, beam angles, trim selections, and control strategies to work together intentionally. When lighting is added later, compromises are often unavoidable due to structure, ceiling heights, or missed opportunities.

GUSS: We try to get involved as early as possible, ideally before the house even goes vertical. Early involvement allows us to design the lighting properly, review it with the client, make changes, and align the budget before construction begins. We'll often compare our lighting plans side-by-side with the architect's permit drawings to show how layered lighting reduces fixture count while dramatically improving the result. When lighting is engineered from day one, electricians can start with finalized plans, making the entire process runs smoother.

RABANI: In a recent consultation with a premier architectural firm, the takeaway was clear: "as soon as possible." There is a misconception that bringing in a lighting specialist during the early design documentation phase adds unnecessary complexity or cost. In reality, early involvement ensures that lighting is woven into the architecture rather than treated as an afterthought. When we are present from day one, we can collaborate with the design team to prevent architectural conflicts before they arise. Engineering lighting from the start is the difference between a house that is merely "lit" and a home that is beautifully "illuminated."

LIBMAN: How do you collaborate with lighting designers, builders, architects, and electricians to keep projects

aligned and avoid conflicts? What makes a partnership work smoothly?

HATHCOCK: Clear communication and defined roles are key. Successful partnerships are built on trust and early coordination. We focus on collaboration rather than ownership, respecting each trade's expertise while aligning around the design intent and project goals.

GUSS: Early collaboration is everything. We work closely with builders and architects to integrate lighting into the construction documents, rather than layering it on afterward. Partnering with DMF allows us to bring professional lighting design support to the table, which builds confidence with architects and streamlines communication. When lighting is properly specified upfront, it reduces conflict, delays, and rework later.

RABANI: Collaboration is rooted in the quality of documentation. At QAV, we are often the lighting designer, providing full documentation and 3D lighting sketches that offer an order of magnitude more clearly than traditional plans. Architects and builders appreciate this "measured" approach because it eliminates ambiguity. Regarding electrical contractors, we are seeing a significant shift. While some initially resist new technology, the more progressive firms realize that our systems allow them to execute their scope with higher precision and move to the next project faster. When the electrician "sees the light," the entire project benefits.

LIBMAN: When customers evaluate who should lead the lighting portion of a project, they often see overlapping roles. How do you communicate the unique deliverables your team provides that differentiate your approach while still aligning with the work of architects, designers, and electrical contractors?

HATHCOCK: We focus on outcomes rather than overlaps. Our deliverables include performance-based lighting layouts, control integration, and long-term usability. By showing how lighting behaves throughout the day and integrates into the home's systems, clients understand the value we bring while still respecting the roles of architects, designers, and electricians.

GUSS: It comes down to functionality and experience. We're responsible for delivering a system that performs the way it's supposed to, not just turning lights on and off, but creating a true "wow" moment when the homeowner experiences the space. By managing both the lighting and the control system, we can ensure everything works together seamlessly and delivers the experience the client expects.





RABANI: I tell clients to frame the conversation around their lifestyle: explore human centric lighting that mirrors the sun's circadian rhythm and full-spectrum lighting to honor their art collection. We differentiate ourselves by establishing a higher "technological floor" — dimming down to 0.1% and utilizing two inches or less apertures for a minimalist aesthetic. This is the "Ritz-Carlton Experience" at home, but better. Most homeowners don't yet know how to ask for these nuances, but when we are brought on early, we can eliminate archaic electrical infrastructure, save them significant capital, and deliver an extraordinary outcome that surpasses anything else in the neighborhood.

LIBMAN: **What strategies have helped you successfully sell lighting — especially to clients who may not understand the difference between commodity fixtures and premium solutions?**

HATHCOCK: Demonstration is the most effective tool. Showing beam control, glare reduction, color quality, and smooth dimming allow clients to experience the difference. We also frame lighting as a long-term investment in comfort, durability, and consistency rather than a commodity purchase.

GUSS: Lighting is very much a show-and-tell category. We physically demonstrate the difference between commodity fixtures and premium solutions, especially when it comes to warm dimming and modularity. DMF's modular system is a huge advantage — we explain that, even if the homeowner doesn't have art today, the lighting can easily adapt in the future without invasive changes. That flexibility resonates with clients.

RABANI: We focus on the sensory shift. A five-minute demonstration in our experience center is often more powerful than an hour-long presentation. We show them what we call the "Instagram filter for real life" — using full-spectrum lighting to reveal the true depth of stone, wood, and art. By demonstrating 0.1% dimming and tunable white light, we move the conversation from "fixtures" to "health and wellness." Clients experience how light can transform their physical and emotional state. It's powerful.

LIBMAN: **How are you incorporating layered lighting like ambient, task, accent, decorative, and architectural into your residential projects, and how do clients respond to it?**

PHOTO COURTESY OF USA INTEGRATION.

Business ▲

HATHCOCK: Layered lighting is foundational in our designs. Ambient lighting establishes comfort, task lighting supports function, accent lighting adds depth, and architectural lighting ties everything together. Clients may not know the terminology, but they immediately feel the difference.

GUSS: We design every project with layered lighting — ambient, task, accent, and architectural — because that’s what creates depth and comfort. Clients may not understand all the technical details, but they immediately feel the difference. Once they experience how layered lighting transforms a space, they don’t want to go back.

RABANI: Layering is where the science of lighting meets the art of living. We use 3D renderings to help clients visualize how linear accent lighting can define a space. It’s about the “unseen” details: under-cabinet lighting that eliminates shadows on a workspace, toe-kick lighting that provides a safe, ethereal glow for a midnight glass of water, or egress lighting that guides a child down the stairs. From wellness rooms and saunas to architectural light in ceilings and walls, we use these layers to ensure the home is as functional as it is beautiful.

LIBMAN: Linear lighting has exploded in popularity. How are you designing, specifying, and integrating linear solutions today, and what trends are driving homeowner demand?

HATHCOCK: Linear lighting offers precision and flexibility. We use it to define architecture, highlight materials, and create clean visual lines. Homeowners are drawn to its subtle impact and ability to enhance spaces without visual clutter.

GUSS: Linear lighting adds softness. Whether it’s toe-kick, under-cabinet, or architectural applications, it creates a gentle layer that balances direct light. It also pairs beautifully with warm dimming, adding what I often describe as a sense of elegance and warmth that wasn’t common in homes years ago.

RABANI: Linear lighting is essentially the “architectural jewelry” of the modern home. We integrate it not just for aesthetics, but for safety and atmosphere. By utilizing 3D sketching, we can show a client exactly how a recessed linear glow can highlight a textured wall or provide soft, indirect light in a gym or sauna. It is not a trend; it is a fundamental tool for creating depth and “wayfinding” within a residence. Our clients love the versatility — it’s a tool that accentuates the architecture and interior design.

LIBMAN: When it comes to lighting control, what do homeowners value most — scenes, tunability, simplicity,



automation — and how do you design systems around lifestyle?

HATHCOCK: Simplicity is the top priority. While scenes and tunability are powerful, they must be intuitive. We design control systems around lifestyle routines such as waking, entertaining, and winding down so the technology feels effortless.

GUSS: Simplicity and scenes. Homeowners want lighting that’s easy to use and easy to customize. If it’s complicated to create or adjust scenes, the value of great lighting gets lost. That’s why warm dimming works so well — it provides a natural range without overwhelming the user with complexity.

RABANI: Simplicity is the ultimate luxury. Technology only feels like a luxury when you don’t have to think about it. Automation is second; having a pantry or powder bath illuminate instinctively is a seamless convenience. We also focus on the “tactile” experience. We want our clients to interact with premium materials — glass, metal, or mechanical buttons — with satisfying haptic feedback. This is a far cry from the unlabeled plastic rocker switches that come standard with every build. We treat lighting control as an art form that serves the client’s daily rituals.

LIBMAN: What are the biggest pain points or risks in delivering lighting, and what processes or tools have helped you avoid them?



PHOTO COURTESY OF QAV

HATHCOCK: Late changes, miscommunication, and unclear expectations present the biggest risks. Clear documentation, early mockups, approval milestones, and standardized workflows help ensure alignment and reduce surprises.

GUSS: Managing electricians is often the biggest challenge. Even with detailed plans, fixtures can be installed incorrectly if details are missed. Clear communication and modular systems help mitigate that risk. DMF’s modularity allows us to correct issues quickly without tearing things apart.

RABANI: The greatest risk is “regret” — starting the process too late and trying to retrofit a sophisticated vision. To mitigate technical risk, we engineer for 99.9% uptime. We design our systems with a dedicated lighting processor to manage the illumination. By isolating lighting from the audio, video, and related environmental controls, we ensure that the most critical system in the house “just works” every single time.

LIBMAN: Why do you specify DMF Lighting, and what advantages does DMF give you in design flexibility, installation, performance, or client satisfaction?

HATHCOCK: DMF provides consistency, modularity, and performance reliability. The platform allows design flexibility without sacrificing quality, simplifies installation, and delivers excellent dimming and beam control, which leads to higher client satisfaction.

GUSS: DMF gives us flexibility, consistency, and confidence. The modular design makes future changes easy, the warm dim performance is excellent, and the fixtures are easy to service. That combination improves the homeowner experience and reduces long-term risk for us as integrators.

RABANI: DMF provides a rare combination of design flexibility and engineering reliability. They are a true partner; their representatives are in the trenches with us, walking projects and reviewing plans. Their product mix addresses the market’s aesthetic demands at a competitive price point. Furthermore, the introduction of PhaseX has been a gamechanger. It allows us to save clients significant costs on electrical infrastructure, which can then be reinvested into higher-quality DMF fixtures. It’s a win for the budget and a win for the final aesthetic.

LIBMAN: Looking ahead 3 to 5 years, how do you expect the residential lighting category to evolve within the CI channel, and what must integrators do now to stay ahead?

HATHCOCK: Lighting will continue to become a primary driver of the residential experience, with increased focus on wellness, tunability, and architectural integration. Integrators who invest now in education, design processes, and manufacturer partnerships will lead the category forward.

GUSS: Lighting will continue to become more integrated into the architectural process, and integrators will need stronger relationships with architects and designers. Control systems will be expected, but the quality of the light itself will be the differentiator. Education early in the design process is what ensures homes reach their full potential.

RABANI: The next few years will see the complete convergence of the “Design-Build” and “CI” worlds. Architects and designers are becoming increasingly accustomed to the CI professional leading the lighting narrative. The category is growing exponentially, and those of us who prioritize design-first documentation and human-centric solutions will define the future of the luxury home.

These perspectives underscore a fundamental shift in the custom integration business. Lighting is no longer a supporting element; it is a defining feature of how a home looks, feels, and functions. As these dealers illustrate, integrators who take ownership of lighting early, collaborate closely with the trades, and deliver systems that balance performance with simplicity are setting a new standard for residential design and reshaping expectations for what a truly smart home can be. ■



Going Beyond the Classroom

The team from Light Can Help You to discuss the future of lighting education and dig into their latest solution: LDX.

Light Can Help You (LCHY) has a long history of delivering quality education. They were tapped to deliver over 30 hours of content for Lightpalooza 2026, and their online webinars have reached thousands inside and outside of the U.S. They recently announced their latest educational offering, LDX. Here, LCHY's David Warfel, Mark Langston, and Jessica Doyle discuss the landscape of lighting education and their new program.

Let's start with the basics. Why is education an important topic in the lighting category?

MARK LANGSTON: Lighting is a huge category, significantly

more complicated than the shading category, so a couple of hours of training just isn't enough for anyone to gain confidence and competence.

JESSICA DOYLE: And it's not just the technical stuff like TM-30 and beam versus field angle. The relationships around lighting are different. Interior designers and architects care more about lighting than they do about sound or video, so you have to tread carefully.

DAVID WARFEL: When the TV doesn't work, people are upset. When the lighting doesn't work, they go ballistic. And rightly so — lighting is a key element of safety and function

throughout the entire home.

Those seem like good reasons to grow your skills, but sometimes the market for lighting education can feel saturated. Do you feel that is true?

WARFEL: Absolutely, and we are partly to blame given the enormous amount of education we have built over the years. But there is more all the time for one key reason: The perfect solution hasn't been reached.

DOYLE: People don't become skilled lighting designers or implementers through education — it is an apprenticeship profession. You have to go work for an accomplished lighting design company for five years or more before you are ready to go it alone.

LANGSTON: And no integrator can afford to do that, so you have a bit of a vacuum, and I think that's why so many of us are trying hard, and often failing, to close the knowledge gap.

Your business model is based off selling design services through integrators. Why have you put so much energy into education?

WARFEL: Sometimes I wonder....

DOYLE: Hah! Seriously, though, one of our teammates said, "if you're in lighting, you're in education." The knowledge gap Mark mentioned isn't just in the integration channel, it's everywhere. Almost no clients, architects, interior designers, or builders have what they need to plan and execute great lighting.

LANGSTON: Our team has been teaching lighting for more than 25 years. But it's more than just something we do. Our mission is to help people with light. Sometimes that means delivering awesome lighting designs, but often it means helping them understand light and lighting. And that's education.

Are there traditional academic programs people should consider?

WARFEL: I think there is something of value in every single educational offering out there, but the ROI can be challenging. We had one team member go through the four-year program at University of Colorado at Boulder, one of the top-ranked schools for lighting in the country, but out-of-state tuition and expenses can cost over \$200,000. They have a terrific faculty, but it would be a challenge for mid-career professionals.

DOYLE: I attended the master's degree program in lighting with the New York School of Interior Design, but I am still paying off the debt — and it took two years to complete.

LANGSTON: Parson's New School of Design is also widely regarded as a leader, and we've had staff study there, too. A lot of the existing academic programs focus heavily on commercial design, however, so those of us in the residential market can struggle to justify the costs.

You recently launched LDX, the Lighting Design Experience. How is this different from your previous offerings?

LANGSTON: Everything. [*Laughs*] At least it feels like it.

DOYLE: That's kind of true: we started from the ground up with LDX, basically asking the question: "How do we package an apprenticeship profession for a broader audience?" That meant we didn't just try to create a new curriculum or new courses or new quizzes; we set out to create an entirely new kind of experience.

WARFEL: LDX gives participants something no other education offering does: a digital desk inside our virtual office. We're not just offering generic lighting training, we're teaching how we do it and then supporting participants all year long with live chat channels, ongoing product training, peer reviews, and more. You could say that the coursework — online foundations and a 1-week residency at the ProSource 1010 Experience Center in Golden, Colorado — are just the beginning.

That sounds like a big undertaking!

LANGSTON: It's the biggest thing we've ever built for education — and David even built graduate programs for universities. We're dedicating staff to LDX; it will take the equivalent of several full-time employees to operate. So, yeah, it feels big to us.

DOYLE: We couldn't offer LDX a few years ago because we just didn't have a big enough team to really support participants in a meaningful and ongoing way.

WARFEL: It's big, but it's totally exciting! We get to do what we love and help others with light in a way that is really needed in the marketplace today.

How can people learn more about LDX?

DOYLE: Visit <https://www.idx.lighting> or email us at LDX@lightcanhelpyou.com.



Exploring the Future of Lighting and Digital Controls

Consumer awareness about the capabilities of lighting have increased while technology continues to evolve.

Lighting is often overlooked in today's design of upscale residential or commercial spaces, seen as a utilitarian part of the building process. However, lighting and lighting perception are essential elements to successfully designing today's homes and commercial locations. Filling the visual plane and creating visual flow in a space make an enormous difference in how it feels.

"We are going to look back at this era and wonder why wafer lights and 3000-degree Kelvin were so popular," says David Warfel, founding designer at Light Can Help You. "Lighting in our homes has been getting brighter but not better for the last 20 years, but the trend is thankfully beginning to turn around. Beauty is still important, but wellness, comfort, and enjoyment are new frontiers in lighting design.

"In the era of Thomas Edison, electric light was a technological marvel worthy of front-page news," continues Warfel. "Today, lighting is once again on the technology frontier, and that takes smart, dedicated professionals to manage and implement properly. That's a custom integrator — a technology professional capable of tying everything together in seamless fashion."

"It's refreshing how lighting awareness is starting to become more prevalent," explains Patrick Laidlaw, director of business development integration for AiSPIRE and WAC Group. "Going back to 2000, there was a big focus on energy awareness, so watts per square foot and the minimal amount of light we put into a space were very important. It wasn't focused on the people in the space, residentially or commercially, but more on energy conservation. Now, that is changing."



During the COVID era, when people were forced to spend more time in their homes, many realized — either directly or indirectly — how lacking their spaces were, with poor, price-conscious lighting rather than purposeful lighting.

Impact of Light on Health and Wellness

"Today in the industry, there is a significant awareness about light and health, how we live our lives, and how light affects us," says Laidlaw. Outside the integration channel, other market segments are not prepared to deploy these lighting technology changes because of the control element. "People are seeking a respite in the post-COVID era. They want that spa or resort feel — and they want to incorporate that same look and feeling into their own home. Years ago, people didn't associate poor lighting with why they didn't feel good — they just left the store or restaurant, or moved to another room in their home, or to sit/stand under a light to be able to read. Today, the general population is becoming more educated, and there is an awareness that we've never had before about how lighting can make a difference in our lives."



Photo courtesy of AiSPIRE/WAC Lighting.

Consumers are more educated, and lighting has become a pillar of wellness. Lighting has always been experiential, and people are beginning to understand why they are not comfortable in certain spaces under certain lighting conditions.

Discuss Lighting Options Directly with Clients

Why should integrators discuss lighting with clients? WAC Lighting product manager Dimauro Edwards explains, “Homeowners want the best possible lighting experience to support their lifestyle. Unfortunately, average lighting often creates issues — glare, inconsistent dimming ranges, fixtures that ‘popcorn’ on at different times, washed-out spaces, or even discomfort at certain light levels. That’s why great lighting isn’t just a product; it’s an experience that the Integrator must demonstrate.

“Great lighting incorporates thoughtful design elements such as low-glare optics to enhance comfort, refined finishes that create a quiet ceiling, and light engines tailored with the right beam angles for each application. Precision dimming helps set the mood and adapt spaces for different activities,

while tight LED binning ensures consistent color quality throughout the home. By highlighting these features during the design and sales process, integrators can show clients how lighting integrates seamlessly into control systems, creates layered effects, and supports dynamic scenes that enrich everyday living.

According to Mark Moody, product manager of controls and integration for AiSPIRE and WAC Lighting, “Integrators are already doing much of the hard work. They manage multiple categories, such as security, AV, and IT networks, and are responsible for controlling everything in the home. Based on their close relationships, Integrators can talk to clients and address many of the challenges they see at the design phase, setting expectations and milestones throughout the build process. Regarding CCT and the dynamic range of fixtures, integrators are responsible for creating complementary scenes that transition analog and digital control, as such, they have the opportunity to become the client/specifier reference for lighting and controls, their experience and intimate relationships preventing many of those traditional pitfalls.”

Technology Reshapes the Industry

Innovative technologies are reshaping the industry. “The arrival of LEDs brought significant energy savings, but too often at the cost of comfort and beauty and, we know now, wellness,” says Warfel. “Yet those same LEDs, when paired in tunable and dynamic fixtures, can now deliver light closer to sunshine and sunsets than any other source.

“There are a lot of poor-quality LEDs out there, in fixtures that introduce as much glare as useful light, but that no longer needs to be the case,” according to Warfel. “Early adopters will dive into new technologies for the fun of it, but most of us want something that just works, day after day, and delivers a measurable or noticeable benefit. Tunable light and intelligent controls may have been risky business five or ten years ago, but now the technologies are proven and field-tested. Dynamic LED lighting is providing designers with a whole new kit of tools to deliver exceptional experiences.”

“There are a myriad of studies dating back to the 1980s that prove lighting’s impact on humans,” Laidlaw agrees. But most recently, clinical studies from organizations like the LHRC (Light and Health Research Center) have confirmed and even advanced our understanding of light and health. “We have a natural circadian rhythm, and we need sleep. As much as we need light to survive, we also need darkness. Technology such as tunable white helps us feel better, evoke mood and emotion where required, and delivers a better experience with friends and family. New science proves that lighting technology works.

“Elderly care studies show that lighting designed to promote circadian entrainment reduces accidents and improves balance, sleep, and awareness. A recent survey of

Tech ▲

color found that people experienced more vigorous workouts in cool, blue light than in warm, red light, as indicated by blood and muscle stimulation. Add warm tones to relax and use cool tones to wake up and stay alert. Supportive science is more available now than it ever was, and learning more about how light affects the human body demonstrates how technology is reshaping the industry because people want to live better and feel better.”

Different Color Temps for Different Spaces

“We don’t do the same thing in every room of the house, so why should we put the same light in every room?” asks Laidlaw. “Sometimes we want warmer temps to ready for sleep and cooler and brighter temps to be awake and alert. Studies have shown that kids are more productive in school with cooler colors and brighter temps because eyes pick up the blue wavelengths and greater intensities — and tell our brains not to produce melatonin that causes you to prepare for sleep.

“There’s a shift of integrators providing function and controlling everything in a house to providing lighting tunability and bringing lighting and technology together,” continues Mr. Laidlaw. Integrators can manage the balance of natural and artificial light through shading and advanced lighting control systems. “We at the WAC Group have been in the lighting business for 40-plus years, are family-owned and operated, and have been addressing this shift through working with AiSPIRE, our integrator-only brand in this channel for five years.”

Don’t be Intimidated by New Technology

“The backbone of intelligent lighting systems needs to be strong, and I think DMX, a decades-old control protocol, is ideal for the fast response times and unrivaled creative flexibility,” says Warfel. “DMX can be intimidating at first — I remember an integrator who pushed back at us when we specified color-changing DMX-controlled strip lighting just a few years ago. Today, that same Integrator insists that all lighting on his projects be DMX-controlled. Integrators are awesome like that — mastering new technologies is something they manage continually with grace and skill.”

According to Moody, “It’s about having something that is a genuinely open platform, not proprietary. DMX has been around for 30-plus years, and we apply it as the standard suggests. AiSPIRE maintains the open network for other manufacturers who comply to coexist.”

“Our fixtures are available in multiple formats- static white sources, dim-to-warm, tunable CCT white, and full tunable color,” explains Edwards. “This flexibility allows integrators to layer light intentionally for general illumination, task lighting, ambient effects, linear applications, and both interior and

exterior environments. These sources can also be tuned to align with circadian cycles, creating dynamic spaces that adapt to the time of day and the homeowner’s activities. To ensure seamless integration, our fixtures — whether analog or digital — are designed to work with common control system protocols. This enables smooth communication across a wide range of front-end devices, including touchscreens, mobile apps, voice control, and keypad stations.”

“From a control perspective,” adds Moody, “the Integrator understands that the journey starts with design, getting inside the heads of the homeowners and what they expect to happen, whether it’s simple on/off, scene control, applying circadian rhythm, or a true human-centric approach, so it makes sense to talk lighting fixtures at the same time. Control platforms exist to simplify interfacing with the home’s lighting, with a simple button press that sets the right light intensity and color for the tasks at hand, so bringing together lighting fixtures and control creates a broader, more meaningful ecosystem.

“Configuring them can be a challenge due to the differing technology or communication capability within each product category,” says Moody. “Fortunately, the Integrator owns the technology deployment and can bring together solutions that ease setup — matching their control and automation platform with a gateway that supports their integration needs.

Streamlining Lighting and Smart Fan Control

“Integrators are in charge of every mode of technology that, today, includes outdoor spaces, controlling external shading, and landscape lighting, balancing natural and artificial light sources,” continues Moody. “Linking these shades with fan control and the home’s HVAC reduces solar gain and improves airflow for more efficient energy management. These





Photo courtesy of WAC Lighting/AiSPIRE.

applications can be complementary to the overarching design when managed consistently with the same sophisticated tools.”

Maximizing ROI with State-of-the-Art Lighting

Harnessing the technology to maximize ROI is a gradual process. “For integrators to get ROI, we recommend putting the latest technology in their showroom,” explains Laidlaw. “Demonstrate to the client the difference good lighting makes. For higher-end homes, consider a professional lighting designer. Lighting design is more than ‘blanketing a space with even, mashed-potatoes light.’ It’s putting the right light in the right spot, aiming it at the right angle, using the right beam angle, and with the right color temperature.”

Now that technology has moved into fixtures, we’re sending digital signals to fixtures and telling them what to do. Yes, digitally controlled lighting fixtures may be more expensive, but you recoup much of that cost through the controls package while upgrading your space with better lighting. For illuminating luxury homes, the client will appreciate the assistance of a professional lighting designer who plans for beautiful layers of light, creating overall scenes. Purposeful lighting is the goal, not blanketing a space with no mood or emotion.

Solving Lighting Challenges

“I have been particularly impressed with the AiSPIRE ABiCUS gateway for its ability to simplify previously complex control installations,” says Warfel. “I don’t have to guess how to mix different colors to get a specific color temperature — it’s all built in. And it can control a host of LED fixtures from just a tiny box.”

Educating Industry on Lighting Technologies

The industry needs to get up to speed on these new lighting and control technologies. “Integrators are at the center of the technology universe,” concludes Laidlaw. “We recommend they share the info with architects, interior designers, and builders to get them on board with the latest technologies. Everything is moving forward — cars, cell phones, hospitals, ideas on health and wellness, and lighting technology — yet lighting has almost regressed to how inexpensive a fixture can get. A \$5M home doesn’t look like it with \$30 disc lights purchased from a big box retailer, but a \$1M home may look like an ultra-luxe residence if the ultimate lighting experience has been implemented.” ■

For more information, visit <https://aispire.com>.

Lighting the Way to Wellness

How circadian rhythms and RGBTW lighting are revolutionizing design.

By Gregory Kay, CEO, PureEdge Lighting

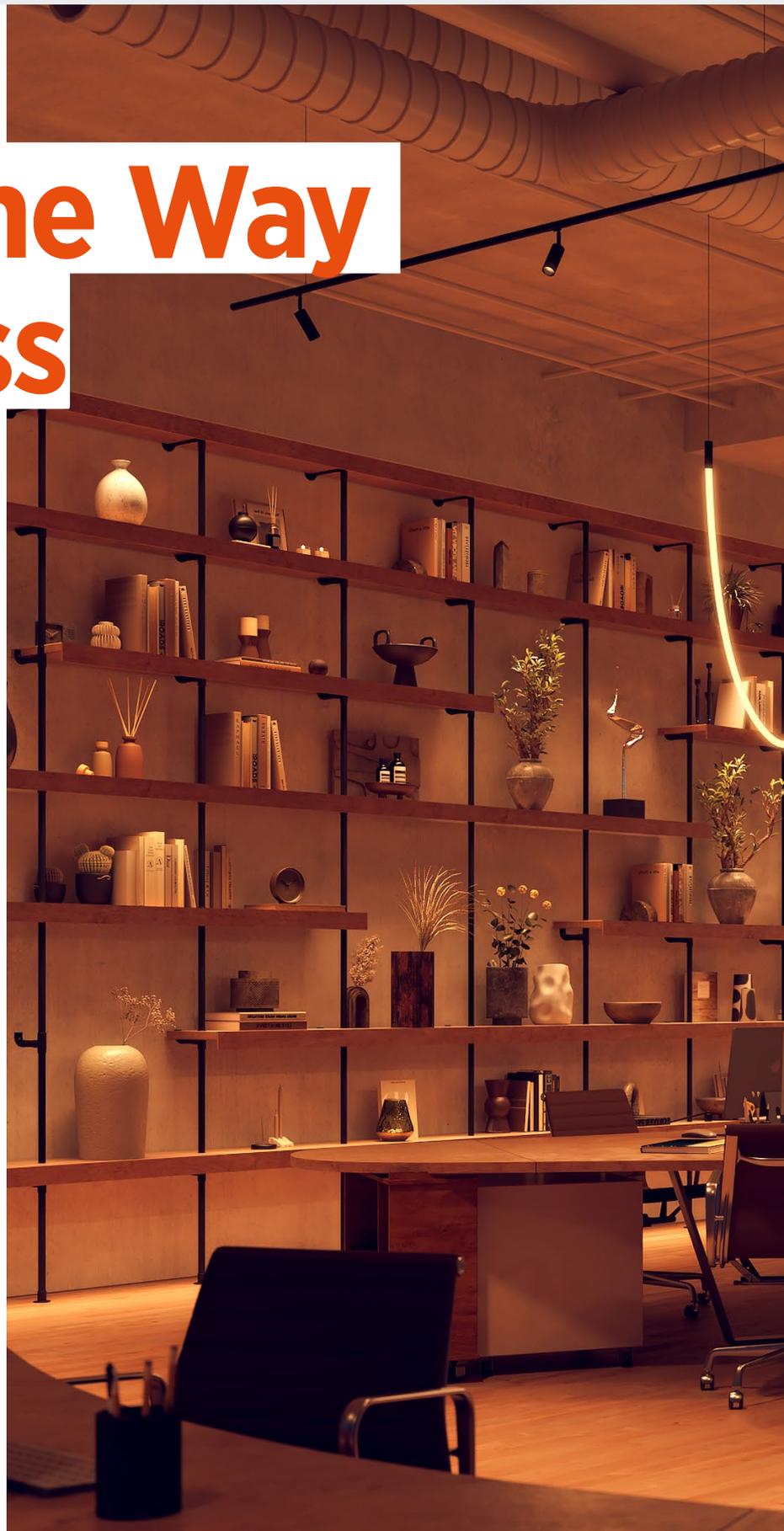
In an era where well-being is as valued as aesthetics, lighting design has transcended its traditional role of mere illumination. Today's designers are tasked with creating environments that nurture our natural biological rhythms. Integrating circadian-friendly lighting into our built spaces isn't just a trend, it's a holistic approach to health. Recent advances in lighting technologies have enabled luminaires to more closely match the natural light of the sun, enabling health and wellness benefits through LED lighting previously unavailable. By harnessing dynamic lighting that adjusts color temperature throughout the day and adopting advanced technologies like RGBTW lighting, lighting professionals are at the forefront of a wellness revolution.

Understanding Circadian Rhythms

Circadian rhythms are the body's internal clock, a 24-hour cycle that regulates sleep, hormone release, eating habits, and even mood. This system is primarily influenced by light, particularly the natural progression of daylight. The white light of the mid-day sun (5500K-6500K) encourages activity and alertness, while the warm glow of the sunset (1500K-3000K) promotes relaxation and preparation for sleep.

Research has shown that disruptions to these rhythms, whether through irregular sleep patterns or exposure to artificial light at inappropriate times, can lead to chronic health issues such as sleep disorders, metabolic problems, and even mood disturbances. For lighting designers, this means that the way we illuminate our environments has profound implications for our overall well-being.

Dynamic lighting systems offer a transformative approach by mimicking the natural progression of sunlight. Instead of static, unchanging light levels, these systems adjust brightness and color temperature in real-time, aligning indoor lighting with our circadian needs. This synchronization with nature not only supports better sleep and improved mood,





Dynamic lighting in action.
Photo courtesy of PureEdge Lighting.

Tech ▲

but can also boost productivity and cognitive function during the day. The ability to tailor the spectral output of lighting systems to specific times of day is a gamechanger in environments such as offices, schools, and healthcare facilities where the quality of light is directly linked to performance and health.

Tailoring the Light Spectrum

The key to dynamic lighting is its spectral flexibility. Traditional lighting solutions often rely on fixed-spectrum bulbs that do not change with the time of day. In contrast, circadian lighting systems are designed to modulate their spectral output, providing a range of color temperatures that emulate natural sunlight.

For designers, this approach involves a deep understanding of spectral power distributions (SPD) and the impact of different wavelengths on human physiology. By carefully selecting and programming light sources, designers can create environments that are not only visually appealing, but also biologically supportive.

Successful implementation of circadian lighting requires an integrated design approach:

- **Control Systems:** Advanced control systems such as DMX or DALI allow for granular adjustments in light intensity and color temperature throughout the day. This integration can be automated based on time or adjusted manually to suit the specific needs of a space.
- **Sensor Integration:** Incorporating sensors that monitor ambient light, occupancy, and even biometric feedback can help fine-tune the lighting environment in real time, ensuring that the system always aligns with the occupants' needs.
- **Software and Scheduling:** Customizable scheduling software enables designers to program lighting scenes that change dynamically, providing the right spectrum of light at the right time, all while ensuring energy efficiency.

RGBTW vs. RGBW

Traditionally, many LED systems have utilized RGBW configurations, comprising red, green, blue, and a dedicated white LED, to produce a wide range of colors and add a layer of neutrality with white light. While RGBW systems have served the industry well, the evolution toward RGBTW lighting represents a significant advancement in both performance and flexibility.

The "TW" in RGBTW stands for "Tunable White." Unlike a static white LED that offers a fixed color temperature, tunable white provides both cool and warm white light. This additional degree of control is critical for Circadian applications, where the quality of white light can greatly impact physiological responses.

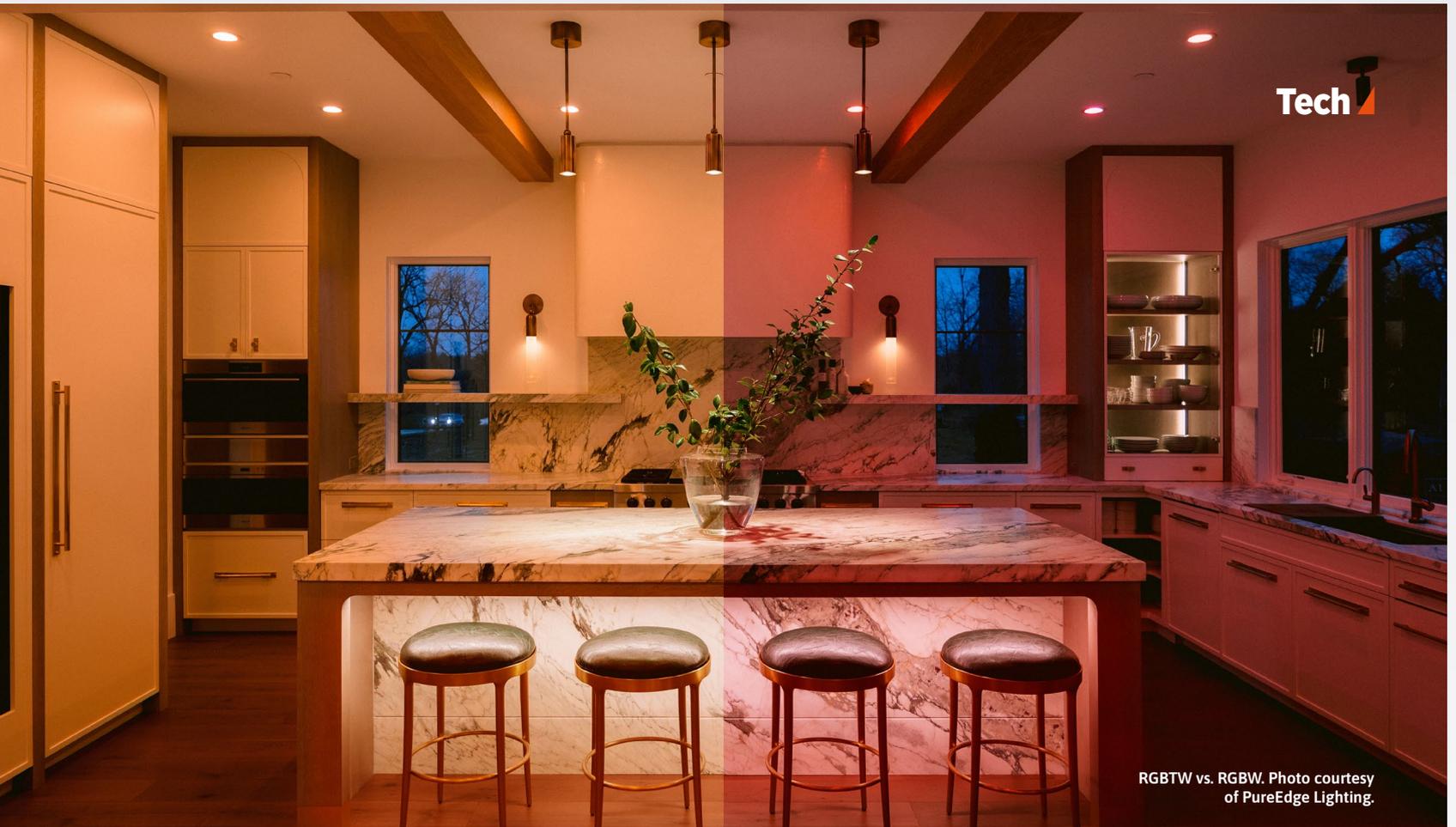
Advantages of RGBTW Lighting

1. **Enhanced Color Rendering:** With tunable white channels, RGBTW systems can produce a broader and more accurate color gamut. This means that the light not only adapts to the time of day, but also renders colors more naturally, which is particularly important in spaces where color selection is critical, such as galleries, retail, or healthcare environments.
2. **Optimized Circadian Performance:** The ability to shift the white light from a cool daylight hue to a warm evening glow makes RGBTW systems inherently more aligned with circadian principles. In the morning, cooler white light enhances alertness and productivity, while in the evening, warmer tones reduce blue light exposure, supporting the natural production of melatonin and preparing the body for rest.
3. **Increased Design Flexibility:** For lighting designers, RGBTW systems provide the versatility to create a wide range of lighting scenes without sacrificing either aesthetics or function. Whether the goal is to highlight architectural features, set a specific mood, or optimize health and performance, the tunable white channels offer unparalleled control.
4. **Energy Efficiency and Integration:** Dynamic, tunable systems can be more energy efficient because they adjust output based on actual needs rather than operating at a fixed intensity all day. This not only reduces energy consumption, but also minimizes the potential for over-illumination, which can be a source of glare and discomfort.

Technical and Aesthetic Integration

When incorporating dynamic circadian lighting into your designs, consider the following best practices:

- **Spectral Tuning:** Ensure that the lighting system can accurately reproduce the desired spectrum at each phase of the day. While manufacturers will use expensive spectrometers to calibrate the lights, inexpensive mobile apps such as LightSpectrum Pro are available for lighting designers to measure and dial in the settings for their designs.
- **User Control:** While automation is a key benefit, providing occupants with the ability to manually override or adjust lighting scenes can enhance user satisfaction and accommodate individual preferences.
- **Aesthetic Consistency:** Dynamic lighting should enhance, not detract from, the overall design concept. Work closely with architects and interior designers to ensure that the transition between different lighting scenes is seamless and aesthetically coherent.
- **Integration with Building Systems:** Modern buildings are



RGBTW vs. RGBW. Photo courtesy of PureEdge Lighting.

often equipped with smart systems that manage HVAC, security, and energy usage. Integrating circadian lighting controls with these systems can lead to a more holistic building management strategy, optimizing energy usage and improving occupant comfort.

Trends in Circadian Lighting

As the demand for healthier indoor environments grows, so does the technology behind circadian lighting. Future trends include:

- **Artificial Intelligence and Machine Learning:** Advanced algorithms can predict and adjust lighting based on user behavior, environmental sensors, and even weather patterns, ensuring that the lighting environment is always optimal.
- **Personalized Lighting Solutions:** Imagine a workspace where each employee's lighting environment is tailored to their specific circadian rhythm. Emerging technologies and medical studies are exploring the feasibility of personalized lighting, which could revolutionize how we think about indoor environments.
- **Expanded Spectrum Capabilities:** Ongoing research in LED technology may soon allow for even more nuanced control over spectral output, further refining the relationship between light and human biology.

- **Sustainability:** As energy efficiency remains a critical consideration, dynamic circadian lighting systems are likely to become even more energy-efficient, integrating renewable energy sources and smart grid technology to minimize environmental impact.

Conclusion

For lighting designers, the fusion of science and art in circadian lighting represents a profound opportunity to enhance human well-being. By dynamically adjusting lighting to mirror natural daylight and leveraging the superior capabilities of RGBTW systems, designers can create environments that not only dazzle the eye but also support health and wellness. As we move toward a future where the built environment is as attuned to our biology as it is to our aesthetics, embracing these technologies is not just an option, it's an imperative.

The next time you step into a space bathed in light that seems to change and breathe with the rhythm of the day, consider the innovation behind it. With RGBTW lighting and circadian principles at the helm, we are truly lighting the way to a healthier, more vibrant future. ■

For more information visit: https://www.pureedgelighting.com/puresmart/trucolor_rgbtw.

Engineering Savings into Outdoor Systems

Smart design delivers long-term value for outdoor AV and lighting projects.

By Peter Sepesi, VP Sales, Coastal Source

Across the outdoor AV and lighting sector, conversations around cost have traditionally centered on equipment pricing or installation hours. In reality, many of the most meaningful system-level savings aren't achieved in the field at all, but rather are engineered long before anyone arrives on site. Outdoor environments are unforgiving, labor is expensive, and homeowner expectations for reliability continue to rise. True value emerges when integrators prioritize thoughtful design, durability, and system coherence from the outset.

The biggest expense on any project is labor. Field labor — work performed on ladders, in trenches, and in unpredictable weather — is the most expensive of all. Yet projects are still frequently rushed through the design phase, leading to improvised decisions on site, unnecessary supply runs, over-purchasing of materials, and installations dictated by what's missing rather than what's planned. When design is treated as an afterthought, projects take longer, become more complex, and cost more to deliver.

Upfront Engineering

Engineering savings begins by front-loading intelligence: anticipating challenges, understanding the space, and mapping out a system that both installs cleanly and performs predictably. Cable planning offers a simple illustration. Too often, wire is purchased as if it were disposable, pulled from 500- or 1000-foot boxes without fully accounting for what the project requires. By engineering the system upfront, including modeling distances, calculating loads, and identifying efficient runs, integrators reduce waste, free up cash flow, and deliver systems that are cleaner, safer, and easier to maintain.

Thoughtful engineering is not only about reducing installation costs; it's about avoiding the far greater expenses that surface over time. Service calls, premature component failures, and homeowner frustration are all costly consequences of systems that were not designed holistically.

Outdoor AV and lighting equipment must withstand heat, cold, moisture, salt, UV exposure, and rapid temperature changes simultaneously, not sequentially. Products that perform well in isolated tests can still fail when exposed to real-world conditions. Systems engineered with components that are sealed, protected, and designed to work together in these environments consistently deliver lower lifetime costs.

Longevity therefore becomes a savings strategy. Look for components designed to last for many years or those built with serviceable internal elements that extend usable life, reduce waste, minimize service visits, and prevent repeated disruption to the property. Reliability is a core part of the luxury experience. Homeowners invest in outdoor systems so they can enjoy their spaces, not manage ongoing maintenance issues or repeated site visits. A well-engineered system is one that operates quietly, consistently, and without intervention.

System Uniformity

Another often-overlooked source of waste arises when systems are assembled from unrelated components and expected to function as a unified whole. Individually tested products do not automatically form a tested system. For decades, the AV industry has encouraged mixing brands: one manufacturer's transformer, another's wire, a third's fixture or loudspeaker, but once these components are installed together, they have not been validated as a complete system. System-level engineering is not a luxury; it is fundamental to reliability. The automotive comparison is instructive: vehicles are engineered, tested, and warrantied as complete machines. Alter one component, and performance and reliability are affected. Outdoor AV and lighting systems benefit from the same integrated approach.

Engineering savings also depends on understanding the client, not just the property. Too often, design begins before a meaningful discovery process takes place. Without clarity around whether a client prioritizes intimacy or impact,





Photo courtesy of Coastal Source.

elegance or energy, security or ambiance, designs risk missing the mark. That misalignment leads to revisions, wasted time, and erosion of trust. A strong discovery process settles most design decisions before drawings are ever produced.

Outdoor spaces also deserve the same design sensitivity as interiors. Inside the home, rooms are clearly defined by purpose; outdoor spaces are still frequently treated as a single, undifferentiated area. That approach leads to inefficient spending and underwhelming results. When outdoor areas are defined as distinct zones, such as dining, lounging, cooking, reading, or entertaining, integrators can design with intent, allocating budgets appropriately and avoiding both overbuilding and underbuilding. Clients respond far more positively to a clear, zone-based investment strategy than to a single line item for “the exterior.”

Future Needs

Looking ahead, designing for expandability is becoming one of the most effective ways to protect long-term value. Infrastructure that supports future growth, additional zones, expanded coverage, or evolving control requirements

avoids costly retrofits and safeguards the homeowner’s initial investment. Systems designed with future needs in mind foster lasting client relationships rather than one-time installations.

Ultimately, engineering savings into outdoor systems is not about cutting corners or chasing the lowest upfront cost. It’s about placing expertise where it delivers the greatest return: at the beginning. Time invested in understanding the space, planning infrastructure, selecting durable components, validating system-level performance, and engaging the client reduces costs exponentially once installation begins. The result yields fewer callbacks, more resilient systems, and homeowners who experience their outdoor environments as intended, reliably, effortlessly, and without interruption.

In a world where outdoor spaces have become true extensions of the home, places for retreat, entertainment, and architectural expression, reliability has become a form of luxury. Integrators who engineer savings at the system level, rather than the component level, are the ones best positioned to deliver that luxury every time. ■

Products ▲



DMF Lighting Artafex 1

According to DMF Lighting, the Artafex 1 is the first 1-inch architectural downlight suitable for whole-home applications. Historically limited to accent use due to compromises in output, glare, cost, and serviceability, 1-inch fixtures have never delivered true performance at scale. Artafex 1 changes that.

At the core of Artafex 1 is the industry's only 3-Stage Optic (patent pending) in a 1-inch fixture, delivering glare mitigation while maintaining optical clarity through precision glass and silicone optics. The result is up to 1000 lumens delivered without glare. A 35-degree adjustable beam is paired with a precision gear-drive tilt mechanism that enables smooth, accurate aiming and locks securely in place, even during hot aiming. Powered by DMF's PhaseX digital lighting technology, Artafex 1 delivers tunable white lighting.



Coastal Source EVO

The EVO Lighting System from Coastal Source is a premium outdoor solution that merges modern elegance with high performance. Crafted from solid brass for maximum durability, EVO is built to thrive in the harshest environments while delivering powerful illumination with minimal glare. At half the size of traditional MR16 fixtures, it offers superior lumen output and a wider beam spread — perfect for highlighting pathways, architectural details, and outdoor living areas.

Customization lies at the core of EVO. Designers can choose from an array of finishes, including Vintage Brass, Black, White, and Nickel, and personalize further with interchangeable shrouds, hats, and lenses to suit any style. Its Plug+Play technology enables quick, hassle-free installation, while integrated CREE LED modules deliver energy-efficient lighting.



AiSPIRE Quartus Collection

The AiSPIRE QUARTUS Recessed Collection is a family of luminaires that delivers four Experiences of Light in one clean, unified design below the ceiling. Choose the right combination of lumen output, beam angles (with included reflectors), and style to match the design intent. With a consistent aesthetic across all options, integrators are offered flexibility without compromising visual unity. Explore Alpine for Static White Light, Astro for Dim to Warm, Atmosphere for Natural Tunable White, and Aurora for the Full-Color Tunable Experience. QUARTUS solutions provide the flexibility and performance demanded by industry professionals.



PureEdge Lighting Trapeze 360 MIYO

Trapeze 360 MIYO (Make-It-Your-Own) Suspension is a flexible, architectural lighting system that blends form and function to create continuous, 360-degree illumination without pixelation. Its sculptural, minimal design provides a striking visual element while delivering exceptional color rendering for a clean, uninterrupted glow.

Trapeze 360 enhances interiors with its fluid, seamless flow. Choose from Static White, Warm Dim (30D), Tunable White (2K6K & 27K6), or TruColor RGBTW which is PureEdge's premier light engine with a wide spectrum from 1500K-6500K and exceptional color rendering (94+ CRI). TruColor RGBTW can be controlled with either DMX or WiZ Pro wireless controls. With flexible configuration options and precision engineering, Trapeze 360 serves as both a functional lighting solution and a design statement, making it the perfect solution for a wide range of applications.

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Learn more at CoastalSource.com/EVO.



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