

Human-Centric Lighting

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INTRODUCTION

How Enlightened Facility Design Can Elevate Your Building Environment and Foster Occupant Wellness

It's no secret that light is essential to all aspects of day-to-day life. The type and quality of the light in your environment, however, can also play a key role in overall health and productivity. Today, humans are spending more time indoors than ever before, with the average American **spending approximately 90% of their time inside**.¹ Gone are the days when outdated florescent lighting would be enough to satisfy building tenants. Intuitive, human-centric lighting can benefit a multitude of industries, such as fulfillment centers, manufacturing and industrial facilities, hospitals, office spaces, and schools. Ensuring that your facility lighting is conducive to a comfortable, dynamic work environment will be a key factor in achieving benefits like maximizing productivity, attracting new talent, and prioritizing occupant health.





PRODUCTIVITY

For Maximized Tenant Performance and Energy, Human-Centric is the Answer

Similar to how a room that is too hot or too cold can impact occupant productivity, your facility's lighting setup can make or break tenant moods and energy levels throughout the day. Poor building lighting is no small issue. According to a study conducted by the American Society of Interior Design, **68% of employees complain about the lighting** situation in their offices.² Lighting that flickers or is too dim or bright, however slight, can become a distraction to occupants and result in a decline in productivity over time.

Circadian lighting, a form of human-centric lighting, features intensity, color, and stimulus tuning to shift lighting hues throughout the day. A study on employee health in work environments found a **12% increase in task performance** when respondents worked under circadian lighting, with a majority of respondents also feeling happier and more energized.³ Even a slight increase in

productivity following a lighting upgrade could have a substantial impact on budget for businesses. A recent study found that even a mere 2% increase in productivity is the **"equivalent of an additional \$100,000 of annual value for every 100 workers"** earning an average yearly salary of \$50,000.⁴





VARIED LIGHTING FOR INDIVIDUAL SPACES

The Science Behind Different Hues for Different Rooms

Different spaces in your facility call for varied lighting hues. Measured by the Kelvin scale (K), lighting temperatures can range from 1900K (candlelight) to 10000K (the equivalent of a bright blue sky).⁵

**WARM LIGHT (UP TO 3000K):
IDEAL FOR BREAK ROOMS OR MORE INTIMATE SPACES**

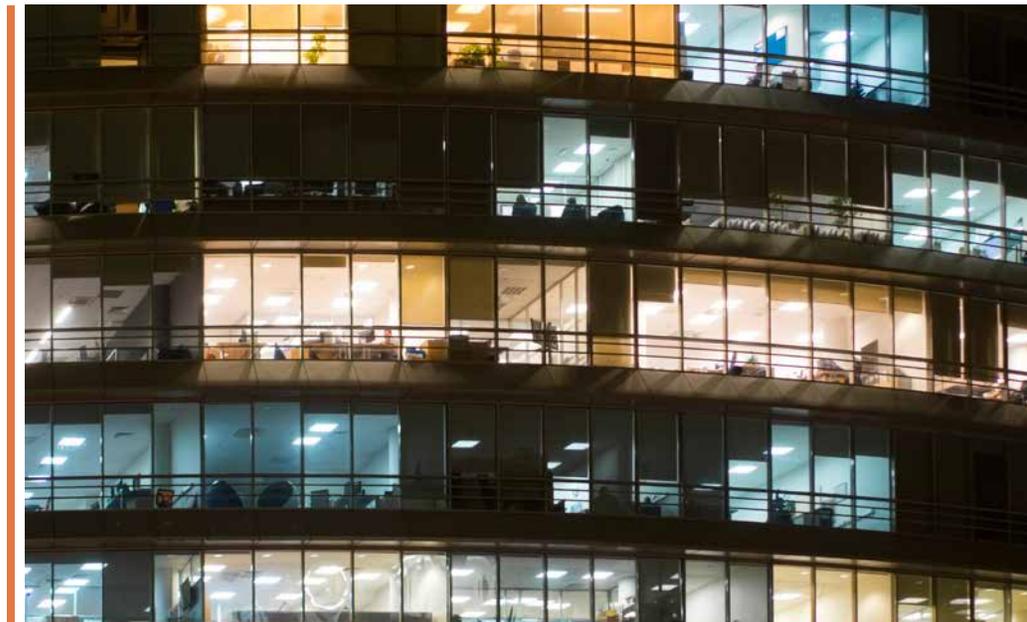
Ensuring occupants have space to unwind starts with the right lighting. Warm-toned lighting fixtures provide a sense of comfort and relaxation, promoting a well-balanced work environment.⁶

**COOL LIGHT (3100K-4600K):
IDEAL FOR LOBBIES OR CONFERENCE ROOMS**

In group meeting spots like classrooms or conference rooms, mid-range lighting temperature can be used to ensure that occupants feel comfortable in their surroundings, yet alert.⁶

**DAYLIGHT (4600K OR MORE):
IDEAL FOR BRAINSTORMING ROOMS**

In spaces where occupants should feel invigorated and motivated, blue or cooler-toned lighting should be used to encourage team collaboration and innovation.⁶





TALENT ATTRACTION AND RETENTION

Well-Lit Spaces Attract the Brightest Candidates

Without an engaging environment conducive to learning and productivity, attracting top talent can be a challenge. If your team has been considering a revamp to enhance facility environment and design, you're not alone: 81% of corporate real estate decision-makers are engaging with landlords to assure they deliver the environment and amenities needed to attract and retain talent.⁷ In fact, **21% of 18- to 24-year-olds have rejected a job offer from a potential employer because of poorly designed offices.**⁸

Lighting, which plays a key role in office design, can be an overlooked player in the recruitment process. A study conducted by the Harvard Business Review found that access to **natural light was the #1 attribute of a positive workplace.**⁹ A bright, cheerful ambiance can be mimicked in various ways, like changing the type of light bulbs used (warm white instead of fluorescents), installing a lensed, indirect lighting system, and using matte paint to minimize glare.⁹





ADVANTAGES OF HUMAN-CENTRIC LIGHTING

Why Intuitive Lighting Systems?¹⁰

- Maximizes concentration and energy
- Improves work performance and productivity
- Increases student achievement
- Assures health safety in the indoor environment
- Improves circadian rhythm and quality of sleep
- Biorhythm adjustments for night shift workers
- Increases emotional stability and lowers the rate of depression





HEALTH

The Impact of Light on Circadian Rhythm

Prioritizing occupant health is the first step in ensuring maximum productivity and satisfaction. **Harsh artificial lighting can interrupt the body's circadian rhythm**, a light-dependent biological clock that determines sleeping and eating patterns, as well as brain activity, hormone production and cell regeneration.¹¹ Interruption of the circadian rhythm can result in short-term physical and emotional effects like tiredness and reduced mental flexibility, as well as long-term consequences like depression, obesity, and heart disease.¹²

While the ideal lighting for optimal health is sunlight, a more realistic option can be found in blue light or light sources with color temperatures of 5000K or higher. Blue light can have a negative connotation, as it is believed to be a harmful light emitted from digital screens. While screens do emit blue light, researchers have found that humans get more blue light exposure from the sun.¹³ Therefore, while blue light exposure late at night from your phone

or computer can be detrimental to your sleep patterns, exposure during the day can have multiple benefits.¹³ Blue-enriched white light is proven to stimulate the brain, **improve alertness, performance, and sleep quality.**¹⁴ In a two-month office lighting study, workers noted the benefits of blue light, reporting that they felt happier, more alert, had less eye strain, and got more work done.¹⁵





STUDENT ACHIEVEMENT

The Blue Light Difference in Classroom Success

In learning environments like classrooms, intuitive lighting is crucial for student success. Studies show **students notably excel in spaces with more natural or blue-toned light**. Because natural light is not always an option in all areas of your facility, opting for natural light-imitating fixtures, like blue light bulbs, can be a promising alternative.

Outdated lighting, like cool white florescent bulbs, are used in virtually every classroom setting and are proven to cause harmful effects like bodily stress, anxiety, hyper-activity, attention problems and other distress leading to poor learning performance.¹⁶



A recent study of 21,000 U.S. elementary students showed that kids who were exposed to more sunlight during their school day displayed 26% higher reading outcomes and 20% higher math outcomes than kids in less sunny classrooms.¹⁷



WORKER SAFETY

Tailored Lighting Plans Equal Minimized Risk

Similar to student achievement, **worker efficiency and safety largely depends on quality lighting**. With fulfillment center workers often operating heavy, complex machinery and performing physical labor in an environment where attention to detail is key, oversights due to environmental stressors like poor lighting could mean costly mistakes and injury risk. Issues like lighting glare, poorly distributed light, and flickering bulbs can lead to consequences like work errors, property damage, and increased dangers caused by poor product stacking.¹⁸



Conclusion

As one of the key factors to human health and happiness, it's no wonder that light is becoming a top priority for facility managers across all industry groups. **The advancement of human-centric lighting systems brings a variety of advantages**, including increased occupant achievement and productivity, optimized tenant health, and more.

With ABM as your service partner, our team of experts can provide a customized, intuitive lighting plan to create enhanced occupant experiences for years to come.

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