

# LD+A

LIGHTING DESIGN and APPLICATION

Miami Cruises Ahead  
The Bridge Most Traveled  
LightFair Preview

**'Everyone  
is worthy of  
good lighting'**

An Essay on Light & Justice





# EDITOR'S NOTE

## Our Bill of Rights

All too often, our industry assumes that all constituencies have access to a baseline of effective lighting. When we take these minimum “table stakes” for granted, the approach becomes *let’s use our skill to tame, deploy or leverage the lighting that is already at our disposal*.

But what if it isn’t? What if all the lighting techniques, recommended practices and nuanced design we talk about in articles, webinars and at conferences are rendered moot because so many of the communities that could benefit are effectively blocked from good lighting? I kept returning to the essay on “Light & Justice” (p. 48) while our team assembled this edition of *LD+A*. The article is one step removed from the type of piece we typically publish—i.e., it doesn’t assume that good lighting is available to all.

Then it hit me: what Messrs. Bartholomew and Loeffler are really describing is light as a *right*, not a *privilege*. The article is essentially a metaphor for the Equal Protection Clause in the 14<sup>th</sup> Amendment to the U.S. Constitution. The Equal Protection Clause—which took effect in 1868, in

the aftermath of the Civil War—provides “nor shall any State...deny to any person within its jurisdiction the equal protection of the laws.” It guarantees that individuals in similar situations be treated equally by the law. Substitute *light* for *law* and you have the essence of this essay.



What the authors are really describing is light as a right, not a privilege

So, with that, here is my call to arms: Let’s develop an International Lighting Bill of Rights—a list of basic guarantees the industry is committed to supporting. Let’s broaden the scope of DEIR beyond companies to communities. As

Bartholomew and Loeffler write, “The new IES Diversity, Equity, Inclusion, and Respect (DEIR) Committee is a big step in the right direction to grow beyond our predominantly white and mostly male membership and perspective...But workforce diversity will only address one aspect of this problem. It is an equitable design practice that can have the most significant impact on under-served communities.”

**Paul Tarricone**  
Editor and Publisher  
ptarricone@ies.org



**Editor and Publisher**  
Paul Tarricone

**Managing Editor**  
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**Associate Editor/  
Digital Content Coordinator**  
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Published by IES  
120 Wall Street, 17th Floor  
New York, NY 10005-4001  
Phone: 212-248-5000  
Website: [www.ies.org](http://www.ies.org)  
Email: [ies@ies.org](mailto:ies@ies.org)

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# WITH GOOD LIGHTING AND JUSTICE FOR ALL

The concept of 'environmental justice' for all communities must extend beyond clean air and water to include well-designed lighting

By  
**Edward  
Bartholomew  
and Mark  
Loeffler**

**W**e—the authors of this essay—met over a decade ago as speakers at an IES conference in Mexico City. Over the years we have kept in touch, mostly about our shared interest in sustainable lighting design. We reconnected in the summer of 2020 during the great awakening in the U.S. to systemic racism viciously demonstrated by the murders of George Floyd, Breonna Taylor, Ahmaud Arbery and so many other people of color. This was in the midst of a pandemic that disproportionately decimated Black, brown and indigenous communities, bringing greater awareness of the racial injustices throughout the history of our country. In response, many corporations and organizations—including the IES—have recognized the lack of diversity within our industry and have undertaken new diversity, equity and inclusion efforts.

During this recent movement toward social justice, we began examining the role, responsibilities and practice of lighting with regard to environmental justice. This became an ongoing conversation about our mutual concern for lighting quality and inequality, especially in the public realm.

Environmental justice is a movement that emerged with the Memphis Sanitation Strike led by sanitation workers and joined by Dr. Martin Luther King, Jr. just before his assassination in 1968. Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income, with respect to the development, implementation and enforcement of environmental laws, regulations and policies. As noted by the Environmental Protection Agency, "this goal will be achieved when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."<sup>1</sup>

As is now being more widely acknowledged, minority neighborhoods have historically been pushed up against industrial sites through discriminatory zoning laws. This has deeply harmed the public health and prosperity of those communities. Dr. Robert Bullard—considered by many as the father of the environmental justice movement—wrote, "whether by conscious design or institutional neglect, communities of color in urban ghettos, in rural poverty pockets, or on economically impoverished Native-American reservations face some of the worst environmental devastation in the nation."<sup>2</sup> The environmental justice challenges that impact com-

munities of color as defined by the EPA include lead contamination, unhealthy drinking water, dangerous air quality and hazardous waste site exposure.<sup>3</sup> But over-exposure to harmful lighting is not listed.

**W**hat is the role of lighting in environmental justice? Our industry aspires to provide high-quality and sustainable lighting. However, lighting is not necessarily beneficial or benign. Bad lighting can be harmful to the environment and unhealthy for people. Marginalized communities endure worse lighting than prosperous neighborhoods. This pattern is pervasive. It is inequitable and unjust. As the American political and social pendulum has recently swung toward addressing and fixing infrastructural and environmental injustices, our industry must focus on addressing lighting inequities, especially in the public realm.

Everyone deserves good lighting and benevolent darkness. Well-designed, high-quality lighting is a signifier of prosperity, power and privilege. It is visually appealing, environmentally responsible and socially beneficial. Good lighting is a long-term investment in the acceptance, performance and value of a place or building. However, there is an imbalance and inequity in the standard approach to planning, design, engineering, procurement and installation of lighting systems. Most of the lighting industry's time, talent and technology goes to affluent, privileged and powerful clients, not to the benefit of everyone.

*"Light also materializes spatial inequality in demonstrating who has wealth, power, and status, marking out the unequal distribution of financial, social, and political power across space in numerous ways."*

Tim Edensor<sup>4</sup>

Marginalized communities generally suffer from poor lighting, which is visually distressing, environmentally harmful and socially hostile. The obvious indicators are indiscriminate distribution, uncontrolled glare, poor color quality, visual chaos and the obvious lack of intentional lighting design or illumination engineering. These communities do not have access to our expertise, knowledge and products. Bad, unjust lighting—especially outdoor lighting in the public realm—is indicative of infrastructural racism rooted in the historic redlining and economic oppression of Black and non-white communities. It is an aspect of institutionalized discrimi-

nation and negligence. This negligence goes along with potholes, poor drainage, missing sidewalks, polluted water supplies and other public blights imposed on these marginalized communities. Often adjoining over-lighted industrial sites, poor communities suffer more light pollution, which is a health and environmental hazard that also obliterates natural and beneficial nighttime darkness. Worse yet, lighting is often weaponized to reinforce power dynamics as a tool for surveillance, policing, and control of nocturnal behavior. When a neighborhood is branded a "high crime" area, the response is often to install excessive floodlighting on buildings and utility poles to protect property, under the misguided belief that more light is safer light.

*"Light's ability to characterize space as either appealing or unappealing furthers divisions that already exist between rich and poor."*

Isabella Creatura<sup>5</sup>

**U**njust lighting is nothing new. In the 18<sup>th</sup> century, Boston and New York City had "Lantern Laws" that required that Black, mixed-race and Indigenous enslaved people to carry candles or lanterns with them if they walked about the city after sunset and not in the company of a white person. Any white person was deputized to apprehend and punish a non-white person who walked without a light after dark. Fast forward to 2014 when the New York Police Department replaced its controversial "stop-and-frisk" policy with "omnipresence"—which is the installation of diesel-powered high-mast HID floodlights typically used for roadway construction sites. These lights were in parks and housing developments deemed dangerous or "high crime" areas. Persisting today, this lighting intervention creates the impression of a perpetual crime scene. It is noise, air and light pollution with dubious crime-fighting results. Brooklyn's Brownsville Houses residents say, "It's overwhelming. The lights shine into people's rooms, making it hard for them to sleep. They never turn off. The buzz from the generators never stops."<sup>6</sup>

*"Lighting has become a quick and easy action creating the perception that elected officials are responsive to the needs of the community."*

Bob Parks, CFLC, LC, MIES, Smart Outdoor Lighting Alliance<sup>7</sup>



Crime reduction is the leading excuse for over-lighting communities. A rigorous 2019 study, *Reducing Crime Through Environmental Design: Evidence from a Randomized Experiment of Street Lighting in New York City*,<sup>8</sup> found that street lighting can significantly reduce outdoor nighttime index crimes by about 36% and overall index crimes by about 4%. The study found that street lighting is cost-effective with a 4-to-1 benefit-to-cost ratio over the enormous expense of incarceration, with additional collateral benefits. This is impressive, except that the study's data was from the previously mentioned NYPD's "Omnipresence" temporary lighting intervention, justifiably perceived by residents as hostile and unjust. Regarding the potential of permanent lighting as a scalable and cost-effective crime reduction strategy, the researchers note some uncertainty. However, it stands to reason that an investment in properly designed and "just" lighting for streets, sidewalks and parks would generate lasting dividends and social benefits for these underserved communities.

*"Black communities, who have been under-resourced and ignored for decades, want to be seen, not watched."*

Tawana Petty<sup>9</sup>

Light pollution is inequitably concentrated in poor communities. A recent study titled *Light Pollution Inequities in the Continental United States: A Distributive Environmental Justice Analysis*<sup>10</sup> found that the residents of communities-of-color or low socio-economic status are consistently exposed to more ambient light at night than white and affluent U.S.

Over lighting in urban areas creates the impression of a perpetual crime scene, resulting in light pollution with dubious results.

citizens. The researchers identified three possible reasons for these findings. First, zoning laws which lump together disadvantaged areas with industrial areas which tend to emit high levels of artificial nighttime light to "protect property." Second, privileged and predominately white neighborhoods tend to embrace darkness as an amenity. And third, the historic characterization of particular racial and ethnic minority groups as "criminal" has possibly served to justify overlighting those neighborhoods to support nighttime policing and surveillance.

Light pollution is ecologically harmful and visually distressing, but it is also a public health hazard. Medical researchers consider light pollution to be one of the fastest growing and most pervasive forms of environmental pollution. A longitudinal study from Harvard's T.H. Chan School of Public Health, titled *Outdoor Light at Night and Breast Cancer Incidence in the Nurses' Health Study II*,<sup>11</sup> found possible links between excessive outdoor light at night and breast cancer. It looked at comprehensive data from more than 100,000 women across the U.S. enrolled from 1989-2013. The researchers linked nighttime satellite images of residential addresses for each study participant. It found that the top 20% of women exposed to the highest levels of outdoor light at night had an estimated 14% increased risk of breast cancer, as compared with women in the bottom 20% of exposure. The link is stronger for night shift workers who live in over-lighted neighborhoods and never escape artificial lighting or have the opportunity to enjoy comfortable darkness.

Our lighting industry is uniquely aware of the wisdom of investing in good lighting. This is reflected

in the new IES LP-2-20 *Designing Quality Lighting for People in Outdoor Environments*, which emphasizes visual reassurance as a key goal over the security of property or the suppression of crime. We know that good lighting benefits urban revitalization, public health and safety, energy conservation, environmental balance, job creation and economic performance. We understand how to correlate our good lighting practices with sustainability and green building benchmarking programs to further validate its necessity. As the lighting industry expands the definition of good, sustainable lighting to include public health and personal wellness, we must also address social equity and environmental justice.

However, we—the lighting industry, as well as the entire AEC profession—are not sufficiently equitable, inclusive or diverse. This hinders our collective ability to see and act on these opportunities for “just” lighting improvement projects. The new IES Diversity, Equity, Inclusion, and Respect (DEIR) Committee is a big step in the right direction to grow beyond our predominantly white and mostly male membership and perspective. By actively considering and implementing new initiatives for outreach, education, training and leadership to welcome persons of color to the lighting industry, the IES can begin to reflect the whole society it intends to serve. It will reinforce the IES’s stated mission “...to improve the lighted environment by bringing together those with lighting knowledge and by translating that knowledge into actions that benefit the public.” But workforce diversity will only address one aspect of this problem. It is an equitable design practice that can have the most significant impact on under-served communities.

**E**veryone is worthy of good lighting. Lighting is a critical element of social and environmental justice, and as practitioners, we must deliberately design to revitalize underserved, poorly illuminated communities. It must be part of a comprehensive investment in infrastructural improvements for historically marginalized neighborhoods. As we look to “Build Back Better,” lighting professionals have an opportunity to advocate, design and provide high-quality, good lighting to under-served, vulnerable communities that need it the most. Targeted investments in quality lighting will prove its worth by providing for more equitable and sustainable prosperity for all. ©

*We look forward to expanding on these ideas with our “Light + Justice” presentation at LightFair 2021. We will follow up this essay and our LFI talk with an article in 2022 with examples of how quality lighting can improve under-served communities. Lighting’s intersection with environmental justice is a crucial progression of our industry toward positively impacting all of society.*

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**THE AUTHORS** | Edward Bartholomew, IALD, LC, Member IES, LEED AP, is the principal of Bartholomew Lighting, a Black-owned design consultancy based in Cambridge, MA. He has more than 30 years of experience designing sustainable, inspiring and award-winning architectural lighting systems. This fall, he will co-teach a graduate lighting class at Morgan State University, the first HBCU to ever receive a Nuckolls Fund for Lighting Education grant.

Mark Loeffler, IALD, LEED Fellow and principal of Mark Loeffler Design Consulting, has practiced lighting and sustainable design for more than 30 years. Based in Connecticut, he has spent his career advocating for joyful, invigorating, healthful and sustainable design, consulting on notable academic, healthcare, research, corporate, institutional and recreational buildings in the U.S. and around the world. He has taught and lectured widely for universities and professional conferences, focused especially on environmentally responsible lighting design.

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