



## Shedding Light

Restrictive new codes are prompting NYC designers to come up with bright ideas in lighting technology

BY TAMI HAUSMAN, PH.D.

For the first time since Edison invented the incandescent light bulb in 1879, the lighting industry is transforming itself. The federal government will retire all incandescent light bulbs by 2014, forcing the design community to find highly efficient, sustainable, and low-cost alternatives.

Local, state, and federal energy codes are becoming more restrictive, compelling lighting designers to reduce wattage but not skimp on light. Charles G. Stone, II, FIALD, IES, LEED AP, president of lighting firm Fisher Marantz Stone, says, “The kit of parts we used 10 years ago is almost completely obsolete, and this difference has transformed our business. We have always designed with both daylight and electric light, but now we have to bring very specialized knowledge to projects. It’s an exciting time.”

The challenge is especially significant in New York City. Lighting accounts for almost 20% of carbon from buildings, or about a third of commercial energy use. Although New York is among the most energy-efficient metropolitan areas in the U.S., its administration is one of the most aggressive in terms of passing green legislation. City officials hope to reduce greenhouse gas emissions as much as 30% by



2030. Partnerships with local organizations like the Urban Green Council (the New York Chapter of the U.S. Green Building Council) are helping to enact comprehensive energy reform.

### New technologies are lighting the way

Rapid improvements in lighting technology have already started to reduce carbon emissions. Products like LEDs produce more lumens per watt, or more light for less energy. LED light bulbs can be as thin as a half inch and require only 1/30th the amount of energy as an incandescent bulb, yet still achieve a variety of architectural effects. LED bulbs aren’t yet widely used, partly because they are five times more expensive than linear fluorescent bulbs. Lighting controls and sensors also help reduce energy waste by automatically shutting off lights not in use.

Still, the codes are changing faster than lighting designers and professionals can learn new skills and produce new technologies. Realizing that education is key, city officials collaborated with state agencies, professional associations, and non-profit organizations in November 2009 to establish the Green Light New York center. This non-profit lab will provide lighting information to decision makers – including lighting designers, architects, and building owners – and promote the development of sustainable lighting strategies. Green Light is scheduled to open this fall.





(opposite page left) Lighting is not just utilitarian, but it can beautify urban infrastructures like Triple Bridges, a project for the Port Authority Bus Terminal's elevated bus ramps, designed by PKSB Architects and Leni Schwendinger Light Projects.

(opposite page right and above) The David Rubenstein Atrium at Lincoln Center, designed by Tod Williams Billie Tsien Architects with lighting design firm Fisher Marantz Stone, uses low-energy LEDs to pull light down through the skylights.

(below) At the NYC Department of Transportation's New Sunrise Yard in Queens, designed by Gruzen Samton and Horton Lees Brogden Lighting Design, natural daylight floods the interior spaces and contributes to vast energy savings.

"Green Light will encourage designers to exceed code requirements and still get good quality," says Laurie Kerr, RA, LEED AP, a founder of Green Light and senior policy advisor at the Mayor's Office of Long-Term Planning and Sustainability. "Code has the broadest reach," she says, "but it's the least you can do" to save energy. She hopes designers will apply the "creative thinking that happens in LEED projects to raise the bar for architecture and, ultimately, to promote higher industry standards."

### Collaboration sparks creativity

New York has the right alchemy to spark creative ideas, since it has perhaps the highest concentration of architects and lighting designers in the world. The design community is taking "a more holistic approach to energy codes that goes beyond the output of individual fixtures," says AIANY Executive Director Rick Bell, FAIA, a Green Light board member. "Lighting and architecture are becoming more inseparable."

One model for collaborative practice is New Sunrise Yard, a building for the New York City Department of Transportation's facilities maintenance teams. Designed by Gruzen Samton for the NYC Department of Design + Construction and located in Ozone Park, Queens, it is oriented for maximum

daylight exposure and sun control. It will save about 90% more energy than the ASHRAE/IESNA Standard 90.1-2001. But it will not always be easy to replicate these results. Most New York sites are small and/or hemmed in by surrounding buildings, restricting proper solar orientation.

"Teams need to integrate lighting design into the design process early," explains Hayden McKay, AIA, FIALD, LEED AP, principal at Horton Lees Brogden Lighting Design, and lighting designer for New Sunrise Yard. "Collaboration generates powerful architecture. Factors such as glazing, orientation, fenestration, and materials all influence lighting quality and energy performance." For example, while glass absorbs daylight, it can cause excessive heat gain, heat loss, and glare. Stephen Cassell, AIA, LEED AP, partner at Architecture Research Office, which is designing Green Light's headquarters, says, "Sustainable daylighting strategies can directly shape buildings; I recently taught a studio at MIT called 'Form Follows Sunlight.'"

Lighting should not only be measured in terms of efficiency – it plays a deeper role than just delivering lumens. Like architecture, it has an emotive quality that should not be ignored. "Places like Times Square have a social, economic, and aesthetic influence that outweighs a simplistic energy calculation," explained Leni Schwendinger, IALD, president of Leni Schwendinger Light Projects. It's impractical to regulate lighting on a building-by-building basis, especially in a city like New York, where "the public realm is our living room," she adds. "We need some exceptions to the rule."

While codes can promote more sustainable practices, designers seek a more nuanced and inclusive approach to lighting that "accounts for the many meanings of the word 'sustainable,'" says Schwendinger. "We have to keep our cities exciting, vital, and livable." And, certainly, full of light. ■

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### Additional Resources

- [Green Light New York](http://greenlightnyc.org) greenlightnyc.org
- [New York City Lighting Council](http://lighting311.org) lighting311.org
- [Urban Green Council](http://urbangreencouncil.org/greencodes) urbangreencouncil.org/greencodes
- [PlaNYC](http://nyc.gov/planytc) nyc.gov/planytc

