



Nancy E. Clanton is founder and President of Clanton & Associates, a lighting design firm specializing in sustainable design. She obtained her Bachelor of

Science degree (Architectural Engineering, Illumination Emphasis) from the University of Colorado, Boulder and is a registered Professional Engineer. Nancy is chairperson of the IESNA Outdoor Environmental Lighting Committee and Mesopic Committee, chair of the Model Lighting Ordinance IESNA and IDA joint task force, is a past member of the Board of Directors of the International Association of Lighting Designers and the IESNA board of directors. Nancy is currently on the USGBC LEED Environmental Quality Technical Advisory Group. Nancy was a topic editor for the IESNA Lighting 9th Edition Handbook and her committee was responsible for the production of the IESNA Recommended Practice on Lighting for the Exterior Environment. Nancy was lighting group leader for Greening of the White House, led the lighting workshops for the C40 conference in Seoul, and was awarded the IESNA Presidential Award in 1990 and 2006. Her firm has authored the Lighting Criteria for The Department of Defense Unified Facilities Criteria, Colorado Department of Transportation Lighting Design Guide and the exterior sections of California's Title 24 2008 energy code.

Energy Efficient Lighting with Nancy Clanton

AN INTERVIEW

Your firm, Clanton & Associates is known for high quality, sustainable lighting design—how have you seen your approach to energy efficient lighting change over the years?

It used to be that energy efficient lighting was mostly about making sure we had equipment that used the least amount of watts. Now we're finding that power quantity is the beginning of the design and not the end. We're also looking at reliability because sustainability has a lot to do with not having to change out equipment numerous times.

But the most basic way our practice has changed goes back to one element [that typically won't] change over the life of a building – daylighting. If you make good decisions at the beginning, the electric lighting plays second fiddle to the daylighting. It supports the daylighting without duplicating it. With a really well-designed daylit system, the electric lighting should not have to do it all.

Also, we've learned how important it is to make sure people have their own little environment of lighting. And now LEDs are a perfect application for a source that is close to what you're trying to light, is easy to control, and can be personalized. Maybe it's lighting a back panel or task lighting or a little bit of up-light in the space or accent lighting, which can be done with so few watts. We also see a higher satisfaction rate when people [have] really personalized lighting.

The third thing we're just now seeing is emphasis on the control system—being able to individually control every

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single light with intelligent controls. A vacancy sensor may be in a work space and an overall motion sensor may control the corridors or general areas for ambient lighting. Another granularity of lighting may be tied into the energy management system with peak demand response. And with intelligent lighting that can respond to a multitude of signals, it frees up the building construction industry by eliminating wiring diagrams and switch-legs, etc..., so that costs are reduced by using control devices at individual units instead of a huge wiring panel-based system. Wiring and copper are saved, and the electrical engineer doesn't have to optimize circuit design depending on how things are controlled.

In a recent interview with Metropolis, you mentioned the potential of organic LEDs (OLEDs) in complementing LEDs for better applicability. What changes do you feel should take place for these to achieve their potential?

First, I think LEDs should be used where they're best. They're not a really good "blob" of light source, but they're a great directional source. They want to be close to what they're lighting and they'll go a long distance; they're great at grazing or low-intensity lighting close to the source, which is why they're ideal for personalized lighting but not yet high-powered ambient lighting. But right now if LEDs are trying to be like the fluorescent lamp, they're failing miserably because you're taking a directional source and trying to diffuse it. That's where OLEDs will be fabulous: they are the blob, the surface brightness that we've been waiting for. But, right now, OLEDs are screaming for attention and a whole new look. I think OLEDs will get us to start incorporating light into our interior materials, like our desks and our panels, the entire ceiling or a fun different pattern in the ceiling—so we no longer really need lights to be hanging into the space. I think there will be a place for both OLEDs and LEDs, because OLEDs are a surface diffuse luminaire whereas LEDs are directional. The combination of the two I think will be beautiful.

As more and more attention is focused on upgrading and retrofitting existing buildings, what would you say should be a primary consideration for approaching the overhaul or retrofit of lighting systems in an existing space?

Clients often want projects to meet an internal rate of return, and are looking at utility rebates and energy and all that. And what happens is when you only look at that, you are forced into [the mentality of] only a light bulb replacement. While [that may be fine for a few lights here or there] I'm really fearful in the overall power quality of a building when you use heavy dependence on LED lighting, unless the power quality of the lamps themselves are equal to what we've been demanding for electronic ballasts. In homes, it may not be that big of an issue, but once we start looking at historic buildings or at commercial and large-scale deployment of retrofit LEDs, I think power quality issues must be addressed immediately. It's the real cost of replacement for retrofits that I think designers really need to recognize before they just choose an inexpensive LED replacement.

Of course, the retrofit market should be 95 percent of our designs, or renovations because we're not going to keep building up new buildings. We've got too much existing stock. So we really should be evaluating the daylighting. Don't just exclude daylighting thinking it's not worth it or it'll never pay back. It will if it's bundled with everything else, so it's important with renovations to not simply look at quick little lamp changes thinking that will solve it all.

I think there's a time to step back and really look at daylighting and ask if it can be improved? Can it provide an opportunity to get rid of the dropped ceilings and get better daylight penetration into the building? And then use your lighting, if it does need redesign, with less equipment. Introduce personalized lighting. Yes, you'll have light bulb replacements, and that's ok as long as you understand some of the repercussions you may be facing with power quality.

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Where do you see the future of lighting headed and what advice can you offer?

I see the future of lighting as being extremely flexible, and giving individuals greater control [in their personal space]. Some products allow you to light an entire workspace for something like 16 watts for multiple tasks. [Of course, you need to] add vacancy and occupancy sensors.

Ambient overhead lighting plays less of a role than ever before. So those days of grid ceiling where you have to plunk a light every four to six to eight feet on center,

I think will disappear totally. We don't want a sterile, uniform environment like we've been designing a lot of our [spaces]. I think we're going to go more with just space-luminance balance. I hope, control and personalization of lighting will become more important. If I had at my desk the same control that I have in my car—where my seat is heated if I wanted in the winter, or I could have a little air conditioning blowing at me—it would be a personalized comfort system with effectively lit surfaces in the space, not volumes. So, personalize your lighting and control the heck out of it.

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