



The Society of  
Light and Lighting

## Opinion: The role of energy efficiency in the light and health conversation

For lighting, it seems energy efficiency is out, and wellness is in. Healthy lighting, wellness and all things circadian are trending, with the International WELL Building Institute's WELL recommendations for buildings coming up much more frequently in conversations and at conferences than the US Green Building Council's LEED rating system for buildings. There are many possible reasons, including the fact that LEED is older, perhaps passé, while WELL is new and exciting. Additionally, health is regarded by most people as more important than energy efficiency, for good reason. Perhaps, there is also less concern about lighting energy use due to the increasing efficiency of LEDs. While the role of lighting in buildings is expanding, more traditional considerations remain important, including the performance of visual tasks, comfort, safety, visual quality and energy efficiency.

Nearly 40 years ago, the seminal paper by Al Lewy and colleagues examining the relationship between light and melatonin suppression in the laboratory was published, leading to today's steady stream of research examining how light affects not only melatonin, but also mood, maladies, alertness and more. Researchers are considering certain spectral power distributions at certain times of day, the role of daylighting and are even exploring flashes of light at night. Research is also moving out of the laboratory, and into realistic settings, where the opportunity to consider energy efficiency and other traditional considerations easily aligns.

Why consider energy? The potential increase in energy use is a factor that cannot be ignored. While LEDs may have ushered in energy savings of 50% or more, varying recommendations for the light level and related spectrum needed to account for the physiological response to light are leading to increasing light levels in buildings, sometimes 100% more than what is recommended for visual tasks. Significantly increasing light levels should be done with care, particularly when the implications are scaled to the national level. The considerable increase of light levels is also not a forgone conclusion for achieving lighting that accounts for the health of building occupants. It is still the early days of research, particularly in realistic settings, and advanced lighting and control systems provide many opportunities for optimization in conjunction with research on the physiological response of humans to light. As advanced lighting and control systems continue to be adopted, the opportunities for this research in an array of applications with varying intensities and spectral power distributions will only increase.

It is a very exciting time to be a part of the lighting industry, with immense opportunities to expand what is known and what is possible. While energy efficiency need not dominate conversations regarding light and health, it also need not be excluded.

*Andrea Wilkerson, PhD  
Pacific Northwest National Laboratory,  
Portland, OR, USA  
Email: andrea.wilkerson@pnnl.gov*