

# Engineers unveil new lighting solutions

June 9 2009

---

A study by Carnegie Mellon University researchers argues that new lighting technologies can be a key player in the portfolio of strategies needed to promote energy efficiency and to help reduce the emission of greenhouse gases.

"Lighting our houses, streets and commercial buildings constitutes more than 20 percent of total U.S. electricity consumption. Light emitting diodes (LED) can reduce consumption and the emission of [greenhouse gases](#) because of their [high-efficiency](#) conversion of electricity to visible light," said Ines Lima Azevedo, a recent Ph.D. graduate from Carnegie Mellon's Department of Engineering and Public Policy (EPP), and a researcher at the university's Climate Decision Making Center and its Electricity Industry Center.

Azevedo, along with M. Granger Morgan, the Lord Chair Professor of Engineering at Carnegie Mellon and EPP Department Head, and Fritz Morgan, chief technology officer of Philips-Color Kinetics and a Carnegie Mellon alumnus, found that some LED technologies are already cheaper than most commonly used lighting technologies. The researchers concluded that it is imperative that society moves to solid-state lighting to save money and to help the environment.

"Technology and innovation in the area of lighting has quickly become a vital aspect of the broader movement toward increased energy efficiency and responsible use of global resources," said Morgan, past chair and current member of the EPA's Science Advisory Board and the Scientific and Technical Council of the International Risk Governance Council. He

is also a member of the National Academy of Science.

Morgan says white [light](#) emitting diodes offer a cost-effective solution to reduce emissions during a time when the nation needs to find solutions to meet the growing needs of an energy dependant society. "In addition to providing an energy-efficient alternative, unlike the fluorescent tubes they replace, solid-state lighting is mercury free," said Morgan, co-director of Carnegie Mellon's Electricity Industry Center. The more than 500 million fluorescent tubes discarded yearly in the United States introduce an estimated four tons of dangerous mercury into the environment.

The study, published in the March 2009 edition of *IEEE Spectrum Magazine*, also reports that the change to more sustainable illumination systems won't happen without policy interventions.

"Even if the LED technology is cheaper on a lifecycle basis, consumers are likely to stick to what they know," Azevedo said. "We need the design of smart policies to make this transition."

In addition to championing a phased-in transition to solid-state lighting, the researchers recommend development of nationwide illumination standards for new residential and commercial construction projects.

Source: Carnegie Mellon University ([news](#) : [web](#))

Citation: Engineers unveil new lighting solutions (2009, June 9) retrieved 25 April 2024 from <https://phys.org/news/2009-06-unveil-solutions.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is

provided for information purposes only.