NYSERDA Research and Development

Helping innovative technologies in the **Lighting Sector** come to life.

The Lighting Research Center's Laboratory Manager, Martin Overington, uses an integrating sphere to measure the overall light output of a light source.

Electric lighting consumes 22% of U.S. electricity and 8% of overall U.S. energy. While lighting consumes a lot of energy, it is also one of the most promising areas for energy improvement and quick return on investment.

Homeowners, business owners, and industrial facility managers have many opportunities to reduce their lighting energy usage by installing energy-efficient lamps and using lighting controls to turn off or dim lighting when spaces are unoccupied or sufficient daylight is available.

Lighting efficiency improvements can be used to:

- Save energy
- Create a greener, more sustainable and visually pleasing workplace
- Meet or even exceed stringent new energy codes
- Improve health, safety and sense of security
- Boost sales and economic development

Innovation and Energy Efficiency

NYSERDA's Lighting R&D program has helped promote innovation and energy efficiency in lighting by funding new product development projects with New York lighting manufacturers; demonstrating the benefits and savings of energy-efficient lighting products through third-party evaluations; and sponsoring research, training, and educational programs at Rensselaer Polytechnic Institute (RPI)'s Lighting Research Center (LRC).

NYSERDA's support of programs like the LRC's LED (Light-Emitting Diode) Lighting Institute helps educate lighting professionals on the latest solid-state lighting technologies and their applications. NYSERDA helps manufacturers overcome technical, financial and market barriers to new energy-efficient product development; and raises the public's awareness of the pivotal role lighting has in achieving environmental sustainability and long-term energy efficiency.

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Energy. Innovation. Solutions.

Featured Examples

Shining a Light on Real Energy Savings

Lamar Lighting's Occu-Smart lighting system in a stairwell.

High-rise stairwells typically are occupied less than 2% of the time. NYSERDA and Lamar Lighting, a manufacturer of fluorescent and LED luminaires, recognized the opportunity to save energy by illuminating the stairwells when people are using them and dimming the lights when the stairwells are empty. With NYSERDA co-funding, Lamar Lighting developed the Occu-Smart lighting system, which combines an ultra sonic motion sensor and two linear fluorescent lamps into a bi-level system in which lamps can be dimmed or switched off when the stairwell is empty. The system can provide **energy savings of up to 99%,** depending on the standby dimming level chosen and occupancy rates in stairwells without sacrificing convenience or safety.

A Work of Art

Gallery area in Mineola Public Library, Mineola, New York.

The Mineola Public Library proudly features the work of local artists in its gallery. Lighting framed paintings and photographs is in itself an artistic challenge. The accent lighting must showcase the aesthetic features of the artwork without glare or shadows, and meet energy code requirements that limit the amount of lighting power density allowed in the building. WAC Lighting, a manufacturer and designer of lighting solutions, collaborated with NYSERDA and RPI's LRC to develop and evaluate an innovative high-efficient LED track lighting system. The LED track system tested better than the compact fluorescent fixtures, and equal to the halogen MR16 system in illuminating the artwork, all while saving energy – **46% less energy than CFL recessed downlights** and **71% less energy than the MR16 track fixtures**. The LED lamps are cool to the touch, unlike the MR16's, allowing gallery workers to re-aim the lights even during operation. Lastly, WAC Lighting's LED track system meets the current energy code limits for lighting power density.

Better Learning Through Better Lighting

Audio-visual mode allows teachers to control visibility of projected images.

Technology has changed the classroom from grade schools to universities. Teachers use a variety of audio-visual and computer technologies to communicate with their students. These new technologies require new modes of lighting. NYSERDA partnered with FineLite, a company that produces high-performance direct/indirect lighting for workplaces and schools, to demonstrate and evaluate FineLite's Integrated Classroom Lighting System (ICLS) in 35 different New York State classrooms. The ICLS provides teachers with an integrated approach to lighting that includes four lighting modes with the control technology located in the front of the classroom to easily switch between modes. The teachers at the participating middle and high schools rated the ICLS favorably, citing both the quality of the light and the ability to control it as an improvement over the previous lighting systems. In addition, **six of the seven participating schools reduced their classroom lighting energy usage**.

Learn more at nyserda.ny.gov

NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise and funding to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce their reliance on fossil fuels. NYSERDA professionals work to protect our environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York since 1975.

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