

# FEDERAL RESEARCH FUNDING DRIVES MATERIALS SUCCESS

## LED Lighting

“...LED lighting has the potential to realize *billions of dollars* in energy savings.”

Indoor farming with LED lights can boost plant growth and production for a variety of crops, while reducing land and water usage.

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# LED Lighting

Light emitting diode (LED) technology improves lighting efficiency by 10x over conventional incandescent bulbs and 4x over compact fluorescent lamps. LEDs also have 10x longer lifetime than incandescents. Given these advantages, **LED lighting has the potential to realize billions of dollars in energy savings; with policies that support adoption**, the Department of Energy estimates savings of 348 TWh of energy by 2027, equivalent to 44 large (1000 MW) power plants.

Gains in efficiency and lifetime were realized through fundamental and applied research funded by the Department of Energy, the National Science Foundation, and the National Nanotechnology Initiative, among others. **Partnerships between government, academia, and industry have enabled LEDs to capture a large segment of the lighting market, creating thousands of jobs in the U.S. in the research and development of LEDs and related technologies.**

While the LED industry has made enormous advances over the last few years and greatly reduced the cost of LEDs, **continued government support for LED research is necessary to realize greater efficiency improvements and bring new applications to market.**

**Sources** "Department of Energy 2019 Lighting R&D Opportunities" <https://www.energy.gov/sites/prod/files/2020/01/f70/ssl-rd-opportunities2-jan2020.pdf>  
"Department of Energy Solid-State Lighting 2017 Suggested Research Topics Supplement: Technology and Market Context." [https://www.energy.gov/sites/prod/files/2017/09/f37/ssl\\_supplement\\_suggested-topics\\_sep2017\\_0.pdf](https://www.energy.gov/sites/prod/files/2017/09/f37/ssl_supplement_suggested-topics_sep2017_0.pdf)  
National Nanotechnology Initiative: <https://www.nano.gov/>



Efficient and long-lasting LED bulbs now come in a wide variety with designs and color tones that match traditional incandescent bulbs.

## UNDERSTANDING LED LIGHTING IN REAL-LIFE TERMS

**Reduce**  
lighting energy use by 40%,  
cutting electricity bills \$30 billion by 2027

**Conserve**  
resources needed for electricity generation  
& reduce associated pollution

**Innovate**  
new LED-enabled applications, including  
ultraviolet LEDs capable of eliminating  
viruses like COVID-19 on surfaces or PPE

**Improve**  
human health and productivity  
with LEDs that allow control  
of color and light intensity

# THANK YOU

**Federal Research Funding** allows for these advances to continue impacting the world and improving the quality of life.

