

# Do Energy Saving Light Bulbs Really Save Energy?

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Solaro Energy Co., Lake Elsinore, CA, manufactures and distributes a variety of solar powered lighting kits and systems for home and commercial applications. Their Solaro Day™ line of solar-powered lighting kits, uses Opto-Semiconductors (OSC's), the newest generation of LED-type lights. OSC's are brighter, simulate the healthy, natural light of the sun better, and are more efficient than traditional LED's.



Still the question on the minds of energy efficient minded consumers remains: does the latest generation of energy saving light bulbs save energy? From LED's to OSC's a whole new generation of light sources are flooding the market. They are not only affordable but also readily accessible. Do they really save energy? A comprehensive



study conducted by Osram, the German lighting company, provides evidence that they do.

While that may seem self-evident, until the release of the report on Monday the answer remained unclear.

That is because no one knew if the production of LED lamps required more energy than needed for standard

incandescent bulbs. While it is indisputable that LEDs use a fraction of the electricity of a regular bulb to create the same amount of light, if more energy were used in the manufacturing and distribution process, then the lighting industry could be traveling down a technological dead end.

The study results show that over the entire life of the bulb — from manufacturing to disposal — the energy used for incandescent bulbs is almost five times that used for compact fluorescents and LED lamps.



The energy used during the manufacturing phase of all lamps is insignificant — less than 2 percent of the total. Given that both compact fluorescents and LEDs use about 20 percent of the electricity needed to create the same amount of light as a standard incandescent, both lighting technologies put incandescents to shame.

“We welcome these kinds of studies,” said Kaj den Daas, chief executive of Philips Lighting North America. The Osram study “provides facts where we often have only emotional evidence.” Philips recently became the first entrant in the Energy Department’s L Prize, a race to develop the first practical 60-watt LED equivalent to a standard light bulb.

To calculate what is known as a Life Cycle Assessment of LED lamps, Osram compared nearly every aspect of the manufacturing process, including the energy used in manufacturing the lamps in Asia and Europe, packaging them, and transporting them to Germany where they would be sold. It also looked at the emissions created in each stage, and calculated the effect of six different global warming indexes.

Those included the amount of greenhouse gas emissions created by each process, the acid rain potential, eutrophication (excessive algae), photochemical ozone creation, the release of harmful chemical compounds, and the resultant scarcity of gas, coal, and oil.



Compact fluorescents also contain harmful mercury, which can pollute the soil when discarded.

In addition to the amount of electricity needed for each process, the energy used and the emissions created as a result, were also calculated. In China and Malaysia, where part of the LED production took place, that meant coal and natural gas respectively. In Germany, where the lamps would be sold, electricity is created from a mix of coal, nuclear and renewable sources.

The methodology followed the procedures set down in ISO 14040/44, an industry standard. The results were certified

by three university professors in Denmark and Germany as adhering to the standard.

"The difference in energy use between incandescents, compact fluorescents and LEDs is definitely significant," said Dr. Matthias Finkbeiner of Berlin's Technical University and chairman of the study's review committee. "The results are very stable."

While 60-watt lamps are more popular light sources, they were not used in the study as Osram does not yet have a commercial version. The amount of energy used to illuminate 60-watt-type lamps would increase, but the increase would affect all types of lamps and therefore not change the relative results, according to Dr. Berit Wessler, head of innovations management at Osram Opto-semiconductors in Regensburg, Germany.

Dr. Wessler expects the results to shift even more in favor of LEDs, as newer generations of that technology become



even more efficient, requiring less energy to produce the same amount of light.

"Everything I've seen strengthens the assumption that LED efficiency will increase," she said. "There has not been much improvement in incandescent efficiency in the last 10 years."

## Why energy saving lamps?

Do you still have misconceptions about energy saving lamps? Many consumers think they take too long to light up. That they produce cold light. That they can't be dimmed. That they are much more expensive than ordinary light bulbs. That they are tubular and don't fit into all lights. That they flicker ... Well this might well be still true of cheap bulbs and badly produced imitations - but it is not true of high quality energy saving lamps, and especially the innovative brand name lamps of the light-producing professionals, OSRAM.

OSRAM provides you a complete range of energy saving lamps, which will fit all your lights with E14 and E27 type bulbs - regardless of whether you have been using normal light bulbs or halogen bulbs. Our energy saving lamps are right up to scratch with these illuminants when it comes to "light comfort", and also make a nice optical impression, as proven by our bulbs in the classic light bulb shape.

However our energy saving lamps display their extra special strengths in living up to their standards of their brand name. OSRAM energy saving lamps live up to 20 times longer and consume up to 80% less energy than conventional light bulbs. And when it comes to purchase prices, OSRAM energy saving lamps quickly pay for themselves and save you money for a long time to come.

Light-a-home allows you to conveniently calculate how much you can save in your own home.

Your household budget is going to be much better off - and so is the environment! OSRAM energy saving lamps also reduce CO2 emissions by up to 80% compared with similar light bulbs.

This means you that while saving stacks of money, you will also be making an active contribution to climate control.

So as you can see - every argument points to OSRAM energy saving lamps! And the brilliance in the partnership between Solaro Energy Co. and OSRAM's lighting components.

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Solaro Energy Co. is the national leader in full-spectrum, natural lighting. The Solaro Day™ light is one of their flagship products, also known as **"The skylight that's not!"**

Solaro Energy is a leading innovator in the rapidly growing solar energy industry and has been designing American-designed, American-engineered, American-made, superior-quality skylights and solar-powered point-of-use products for over 20 years. They have developed several lines of solar-powered products that are economical, technologically advanced, and ruggedly durable.

Solaro Energy invents, engineers, manufactures, and distributes products for a wide spectrum of applications - residential, commercial, municipal, and more. Our solar-powered solutions are designed to help people get off the grid, promote independence, and encourage the preservation and conservation of the environment.

***"We don't pay for darkness at night. Why in the world would we pay for light during the day?"***

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**Experts in solar powered lighting systems,  
solar powered cooling systems, and  
solar powered electric generation systems.**

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**Life is better when it's powered by the sun!**