

Meeting Code With LEDs

Lighting efficiency standards have been included in the International Energy Conservation Code (IECC) since the 2009 edition, where the prescriptive compliance path called for 50% of bulbs and fixtures were to be “high efficacy.” Since first being introduced into the code, the lighting industry as a whole has experienced rapid advancements in technology that have increased efficiency levels, improved quality and durability, decreased costs, and now provides a wide variety of “high efficacy” lighting options. As a result, the Energy Code has advanced to reflect the current state of the industry. The 2009 IECC required 50% “high efficacy” bulbs and/or fixtures as a *prescriptive* requirement. Now, the 2015 IECC makes that 75% requirement **MANDATORY!**

A major factor in the rapid advancements in lighting in recent years has been the development of LED technology. Most of us are aware of the two obvious benefits of LEDs; they offer unmatched energy and cost savings and their long life expectancy is over 4x’s more than other lighting technologies. LED lighting is one of the common options for meeting the “high efficacy” lighting requirements in the code, which also includes halogens, CFLs, and linear fluorescent bulbs. However, meeting “high efficacy” standards is not the only way LEDs help you with code compliance. Other code related benefits include:

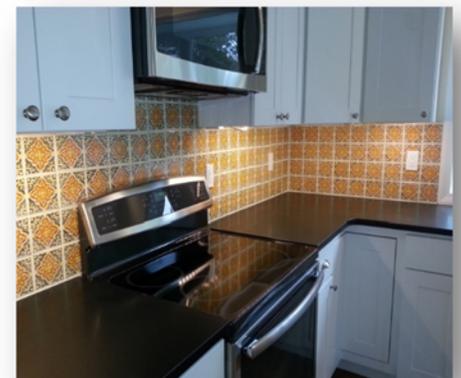
- They can help to lower your annual costs, which would provide you with extra points if using the performance path.
- Lighting controls and sensors are another area of the code that will continue to develop because of the significant impact it can have on reducing wasted lighting energy. LEDs are considered to be much more compatible, and offer more capabilities, with control systems.
- Innovative LED products, such as the surface mount LED to replace recessed cans offer improved air sealing to reduce leakage.

Advancements in LED technology are not just changing the requirements of building and energy codes; it is changing the entire landscape of the lighting industry. Because of their wide variety (and endless possibilities) of design styles, brightness levels (lumens), color (kelvin), and other characteristics, LEDs have moved lighting from an afterthought into a sophisticated design element of the modern home. Now, every aspect of lighting -- placement, function, control, style – can be designed to provide precisely what is needed in a particular room and for particular tasks, offering further opportunity for energy savings, convenience, homeowner comfort.

Adding steam to the LED movement, GE [recently announced](#) that they will stop making CFLs by the end of the year and make a complete transition to LED technology. Major retail outlets such as Sam’s Club, Walmart, and Ikea have also been moving away from CFLs and replacing them on the shelves with LEDs. Additionally, the US Department of Energy and EnergyStar both have [proposed new lighting standards](#) that will make it harder for CFLs to qualify.



Surface mount LEDs provide better air sealing and can help decrease leakage compared to recessed cans.



Integrated LED technology, like in the under-cabinet lighting pictured here, allows for more design options and better task lighting.

Identifying LEDs

As LEDs begin to take over the residential lighting market it becomes critical for building professionals to understand what they are looking at or looking for. A major reason that CFLs failed to meet expectations is that they didn't look like the traditional incandescent bulb everyone likes. Their squiggly shape was unappealing and the orange/yellow color of the light was unpleasant to many. For that reason, manufacturers are developing LEDs to closely mimic the look and feel of an incandescent bulb. Therefore, identifying whether a bulb or fixture is an LED is not as simple as looking for the squiggly shape of a CFL. When installed, a screw in LED bulb or a recessed LED looks almost identical as an incandescent or halogen. LEDs are even being designed to look like a vintage Edison filament bulb. Further, integrated LED technologies are also becoming more prevalent particularly in vanity fixtures, ceiling surface mounts, and under-cabinet lighting. It can be difficult to determine that exact type of light source that is being used in these fixtures.

The three images below portray how LED lighting technologies are being developed to mimic the look and feel of incandescent lighting. In each case, the LED bulb is pictured on the right with its incandescent counterpart on the left. This can make it very difficult for code officials and other professionals responsible for identifying lighting in to know exactly what type of light is being used in the home.



New York State Case Study

Newport Ventures and the New York State Energy and Research Development Authority (NYSERDA) are conducting a LED demonstration project in five new homes across the state. The purpose of the project is to highlight the advantages of LED lighting with regards to energy and cost savings as well as lighting quality. Each home was outfitted with 100% LED lighting systems and a Lutron Caséta Wireless control system to showcase the advancements of LED technology with respect to efficiency, reliability, quality, and design.

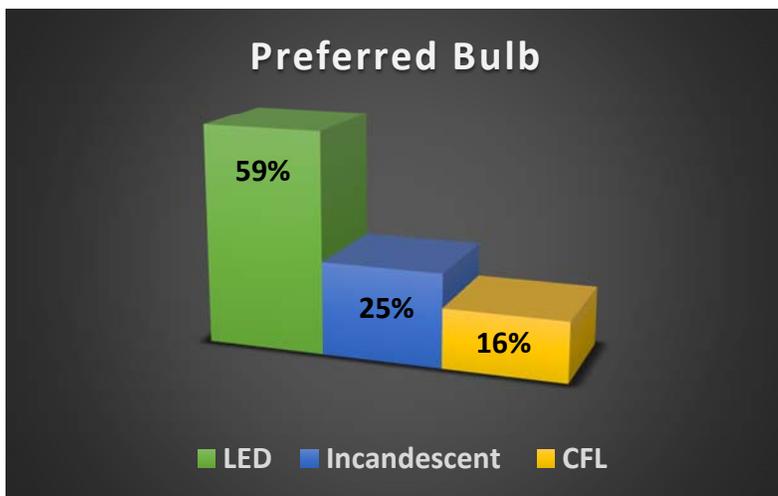
Each home in the project is monitored for a period of at least 9 months for energy usage and lighting costs. The table below summarizes the data that has been collected to date for the project. The energy consumption and costs totals include all five homes in the project. Estimates for a typical code home are based on actual usage and assume 50% 13W CFL and 50% 60W Incandescent bulbs.

Learn more about the LED Lighting Project by visiting the project page!
<http://newportventures.net/projects/solidstatelighting.html>

	Total Energy Consumption	Total Lighting Costs
100% LED Home	2,005 kWh	\$184
New York Code Home (50% High-Efficacy Requirement)	6,985 kWh	\$650
Savings	4,980 kWh	\$466
Estimated Yearly Savings	9,578 kWh	\$1,001

Consumers prefer LEDs over the competition!

A consumer perception study was conducted by Newport Ventures comparing, side-by-side-by-side, the three most popular bulb options (Incandescent, LED, CFL). Without seeing the bulb itself, participants were asked which light they preferred amongst the three. Based on the 900 plus surveys collected, the overwhelming majority participants preferred LED lighting over other options. You can read the full report [here](#).



“We tried CFLs in our old house and they would burn out in less than a year. We are very happy with the LED’s that are in this home. We like and use the dimmers all the time. We are especially fond of the under cabinet lights, which we like to use at night, and the LED lights in the ceilings.”
Homeowners- Canadaigua, NY

“Since installing the LED lights in 20 Cooper St., I install LED 100% in all of my homes.”
Greenhill Contracting- New Paltz, NY