



Lighting Up Your Life



A SPECIAL ADVERTISING SUPPLEMENT

The Future

BY MIKE BLOUNT

Looks Bright

NEW ENERGY STANDARDS
MAKE LIGHTING YOUR
HOME MORE EFFICIENT

Mankind has come a long way since the first lamps were created. They were crude by today's standards — often made from hollowed-out rocks or shells and filled with moss or another flammable material — but the invention marked the beginning of our fascination with lighting and the need to perfect it. While incandescent bulbs are still used in many homes today, recent improvements in lighting technology have made illuminating your home more energy efficient and manageable.

With these new advances, consumers will be able to find exactly what lighting product they need to perfectly light up their homes and use less energy at the same time.

In 2007, the federal government enacted the Energy Independence and Security Act, which set new efficiency standards for light bulbs being manufactured. Switching

Lighting Facts Per Bulb	
Brightness	800 lumens
Estimated Yearly Energy Cost	\$1.57
Based on 3 hrs/day, 11¢/kWh Cost depends on rates and use	
Life	5.5 years
Based on 3 hrs/day	
Light Appearance	Warm Cool
2700 K	
Energy Used	13 watts

Source: energysavers.gov

from incandescent bulbs to compact fluorescent lights (CFLs) or light-emitting diodes (LEDs), can reduce energy use by 80 percent when lighting a home. And, that savings in energy is passed on to the consumer in the form of a lower electricity bill each month. Bulb manufacturers are also making this transition even easier by creating



PHOTO AND COVER PHOTO BY ANNE STOKES

energy-efficient bulbs for almost every conceivable lighting scenario.

The Federal Trade Commission has worked with these same companies to develop a new label already in use that more accurately describes the light produced from each bulb to help consumers decide which bulb will accurately fit their lighting needs. Whereas watts measure the amount of energy needed to produce light from each light bulb, lumens measure the amount of light produced.

Each lighting product also includes valuable additional information on the packaging including estimated yearly cost, life-expectancy of the bulb, energy used and lighting appearance.

With these new advances, consumers will be able to find exactly what lighting product they need to perfectly light up their homes and use less energy at the same time. The future looks bright.

NEED TO KNOW

Glossary of lighting terms

- » **CFL (compact fluorescent light)** – These energy-efficient light bulbs use up to 75 percent less energy than incandescent bulbs with no loss in light. They last six to eight times longer than incandescent bulbs.
- » **LED (LIGHT-EMITTING DIODES)** – An LED is a chip of semiconducting material that releases energy in the form of light. LEDs can be used in task and reading lamps, cabinet lighting, recessed ceiling lights, porch, outdoor and landscape lighting, as well as art lighting, stair and walkway lighting, and retrofit bulbs.
- » **INCANDESCENT BULB** – An incandescent bulb contains a filament that is heated by an electric current to produce light. Halogen bulbs are another type of incandescent bulb.
- » **WATT** – The watt is a unit of measurement used to specify the amount of energy used to produce light. For instance, a 60-watt bulb uses 60 watts of energy to produce light.
- » **LUMENS** – A lumen is a measurement of how much light a bulb produces, regardless of the energy required.
- » **ENERGY STAR®** – This label means the lighting product meets energy-efficiency guidelines set by the U.S. Environmental Protection Agency. Lighting products with this label deliver superior performance, while using less energy.

Let Your Light Shine

PRINCIPLES OF LIGHTING MAKE YOUR HOME WORK FOR YOU

BY SUKHI BRAR

Each room in our home serves an important function in our lives. We use the kitchen to prepare and eat food. We use our living rooms to gather, watch television or read. We sleep, watch television or study in our bedrooms. By being aware of some basic principles, you can make your home's lighting match your lifestyle. These principles include: function of a room, energy efficiency, lighting controls, theme-specific fixtures, the brightness or darkness of surfaces, and layers of lighting.

"The function of a room can determine what type of light is needed. If you want to cook and read recipes, bright light is needed in the kitchen. If you do not cook, but like to entertain, you may need mood lighting instead," explains SMUD Lighting Specialist Connie Samla.

"If we light for a particular function, we use the electricity and the room better."

CONNIE SAMLA, SMUD LIGHTING SPECIALIST

Adjusting the lighting in our home depending on the use of a room helps save energy and makes the room work the way we want.

"We are paying for the electricity; if we light for a particular function, we use the electricity and the room better," Samla says.

Lighting controls help make a room more energy efficient. There are several types of controls, including switches that can be placed in an "on" or "off" position, adjustable dimmers, and automatic controls that can make lights go on or off automatically when someone enters a room or has left a room for a certain amount of time.

"Anytime we dim something we save energy and can also set the mood. In the dining room we recommend

a dimmer switch because low lighting can be used for dining and setting a mood, but bright lighting may be needed when someone uses the same room to study," says Samla.

Using light fixtures that complement the theme of a home is another lighting principle to be aware of. "If the house is a modern style, modern fixtures should be used, if it is a period home, period fixtures should be used," explains Samla.

The brightness of surfaces combined with lighting can affect how a room feels.

"Lighter surfaces reflect more light and make a room look bigger, while darker surfaces absorb light and make a room feel more cozy," says Samla.

The final principle, layers of lighting, makes a room more functional. Creating layers of lighting in the home requires using a mixture of ambient, task and accent lighting in the same room. For instance, in a kitchen you may need lots of bright "ambient" light when cleaning, you may need "task lighting" such as a bright light under a cabinet while preparing food on the counter, and when dining you can set the mood by using smaller "accent" lights.



PHOTO BY ANNE STOKES

TYPES OF LIGHTING

AMBIENT LIGHTING

Ambient lighting is bright lighting that is used to illuminate an entire room.

TASK LIGHTING

Task lighting is lighting that is tailored to a specific use. An example of task lighting is lighting located under a kitchen cabinet that illuminates the counter below. This is useful for food preparation on the counter when ambient lighting in the room originates from behind a person standing at the counter, causing a shadow to get in the way of a task.

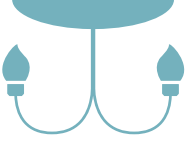
ACCENT LIGHTING

Accent lighting is not lighting that is needed to see, but is used to highlight an area of a room or show off one's personality. Accent lighting can be added to accentuate a fireplace with nice stone or brick, or it can be placed in front of a piece of artwork to show it off. **SB**

>> HOW TO BUY A LIGHT BULB In 5 easy steps

STEP 1: CHOOSE YOUR BULB STYLE →

Choose the right style based on your type of fixture. Keep in mind the size of the bulb (you may want to bring your old bulb to the store).

 A-LINE  SPIRAL	>> Use for general purpose lighting. Check packaging for compatibility with dimmers and three-way switches.	>> Floor/Table Lamp, Ceiling, Wall Sconce, Outdoor Covered  
 REFLECTOR(BR)	>> For more diffuse downlighting.	>> Recessed Cans 
 SPOTLIGHT REFLECTOR(PAR)	>> For outdoor or indoor spotlights.	>> Indoor and outdoor spotlights.  
 GLOBE	>> Great for applications where the bulb is front and center.	>> Vanity 
 BULLET	>> For covered outdoor fixtures.	>> Outdoor Covered 
 CANDELABRA	>> For chandeliers and outdoor lanterns where a "flame" look is desired.	>> Chandelier, Wall Sconce, Outdoor Lantern  

STEP 2: CHOOSE YOUR LIGHT OUTPUT →

Don't pick a bulb based on watts. Use lumens! The conversion chart will help you find how many lumens your old incandescent bulb put out (and how many fewer watts it takes for a CFL or LED to put out that same amount of light).

OLD INCANDESCENT	LIGHT OUTPUT	CFL	LED
>> 40 watts	>> 450 lumens	>> 9-13 watts	>> 8 watts
>> 60 watts	>> 800 lumens	>> 13-15 watts	>> 13 watts
>> 75 watts	>> 1100 lumens	>> 18-25 watts	>> 17 watts
>> 100 watts	>> 1600 lumens	>> 23-30 watts	>> 22 watts

STEP 3: CHOOSE YOUR TECHNOLOGY ↴

There are many pros and cons to CFL and LED bulbs, depending on their usage.

	COST	LONGEVITY (AVERAGE)	EFFICIENCY (SAVINGS OVER INCANDESCENTS)	COLORS	TYPE OF LIGHTING	WARM-UP TIME	HEAT OUTPUT	DIMMABLE	ENVIRONMENT
CFL 	\$	6 years	75 percent energy savings	Large color range	Best for omni-directional, ambient; mediocre for directional applications	Delayed brightness	Warm	Perform poorly	Contain trace amounts of mercury, must be recycled
LED 	\$\$	25 years	80 percent energy savings	Large color range	Excellent for directional, ok in omni-directional lighting	Instant brightness	Cool	Performs well in most dimmer switches*	No mercury

*Check to make sure your dimmer is compatible

STEP 4: CHOOSE YOUR COLOR ↴

The color temperature of a light bulb is an important factor to consider when buying the right bulb. Color temperature is measured in Kelvins or K for short.



STEP 5: CHECK THE LABEL ↴

Look for the ENERGY STAR® logo to ensure your product meets quality standards.



BRIGHT IDEA! ▶

Keep this page for the next time you need to replace a light bulb.

TOP 10 TIPS FOR BUYING LIGHT BULBS

1. Start by replacing your most often used lights with energy-efficient bulbs. Canned lights and table lamps are a great place to start.

2. Find the lighting product that gives off the amount of light you need (lumens), instead of the amount of energy used (watts).

3. Use the new information labels on the box to compare and contrast different lighting products to determine your needs.

4. To maximize your energy savings, choose the lighting product that provides the most lumens at the lowest wattage.

5. Look online or on the packaging for equivalency labels to help you make a decision.

6. Look for educational materials in the store. Many stores have displays showing the different colors each lighting product produces.

7. Look for the ENERGY STAR® label. The label indicates the lighting product meets government standards and is a quality product.

8. If you are replacing a light bulb, bring it with you to the store to match it with a similar shaped bulb. Each shape has different lighting uses.

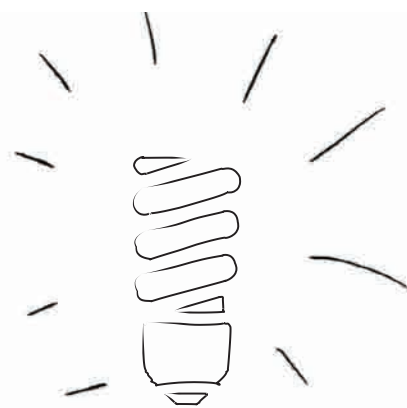
9. While LEDs are more expensive, they last up to 4 times longer than CFLs and far longer than an incandescent bulb.

10. Not all energy-efficient light bulbs can be used with a dimmer switch. Be sure to look for lighting products labeled as compatible. You may have to change your dimmer switch, especially if it was made for incandescent lighting. **MB**
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The New Frontier

HOW TECHNOLOGY IS DRIVING MORE EFFICIENT LIGHTING

BY MIKE BLOUNT



Sometimes, a little foresight can go a long way. Like investing a few dollars of each paycheck will eventually grow into a nice nest egg over time.

But in the case of new lighting technology, that foresight adds up to huge savings for the consumer, according to Dave Bisbee, a project manager at SMUD. Bisbee manages SMUD's lighting research programs.

"LEDs are much more energy efficient than ordinary incandescent light bulbs and they last 25 to 30 times longer."

DAVE BISBEE, SMUD PROJECT MANAGER II

While LED (light-emitting diode) bulbs are currently more expensive, they are slowly becoming more affordable. Meanwhile, consumers can take solace in the fact that LEDs will pay for themselves over time. New LED bulbs are driving more efficient lighting technology by using less energy — and that saves consumers money, Bisbee says.

"LEDs are much more energy efficient than ordinary incandescent light bulbs and they last 25 to 30 times

longer," Bisbee says. "For example, there are 8-watt LED lamps that produce the same amount of light as a 40-watt incandescent [bulb]."

While all LED bulbs are not compatible with dimmer switches, standards and labeling for dimmers are improving so consumers can easily match up the right bulbs and dimmers, Bisbee adds. Another advantage to LED bulbs is they produce less heat.

In the future, you will have the ability to control the color and intensity of some bulbs using smart phone applications or controls. Bisbee says the technology will be built into the bulb and there will be no need for additional controls.

As less efficient incandescent bulbs become less available, Bisbee says consumers have a few things to consider when switching over to new lighting technology,

"Not all LED products are created equal, so buy ENERGY STAR®-qualified products," Bisbee says. "Buy LED [bulbs] from reputable companies that you trust and remember that lighting is very subjective. Purchase and try one [bulb] before you buy large quantities."

Bisbee adds energy-efficient lighting technologies also help to protect the environment by reducing energy costs. While LEDs are environmentally friendly, they should be treated as e-waste and disposed of similarly to other electronic devices.

DOLLARS AND CENTS

How much does changing from incandescent bulbs really save?

In the average American home, there are 45 light bulbs in use at any given time, and a typical household leaves their lights on about three hours each day. Switching these lights from incandescent bulbs to energy-efficient bulbs is not only better for the environment, it saves you money on your energy bill as well. But how much exactly does it save you per year?

- » Replacing all of your 60-watt incandescent bulbs with equivalent halogen bulbs could save you **\$100.52** per year.
- » Replacing all of your 60-watt incandescent bulbs with equivalent CFL bulbs could save you **\$266.09** per year.
- » Replacing all of your 60-watt incandescent bulbs with equivalent LED bulbs could save you **\$280.87** per year.

Transforming Your Home

LIGHT CAN BE MEDICINE FOR YOUR HOME AND YOUR BODY

BY SUKHI BRAR



PHOTO COURTESY OF CONNIE SAMLA

Have you ever felt that your home was not the way you wished it was? Did you know that by making changes in the lighting in your home you can transform it into the place that you have always wanted it to be?

“Lighting should be designed for how a person lives. It is not always possible and not always cheap, but there are things we can do to help that,” says SMUD Lighting Specialist Connie Samla.

Changing little things like light fixtures so that they fit the style of a home can transform a space into one that fully exemplifies the style that a homeowner is trying to create. There are several lighting showrooms that are in SMUD territory where these types of light fixtures can be found; SMUD encourages customers to visit these places to find what they need.

Another way lighting can transform a home has to do with the shade of the surfaces used in a room. Lighter walls and cabinets tend to reflect light and make a room appear larger when the ceiling and walls are lit. By using darker surfaces and less light, a room can appear much smaller and cozier.

Using different types of lighting in one room helps make it more useful. Some homes stop at ambient lighting, meaning all of the rooms in the home have lighting that generally lights up the entire room.

“Ambient lighting is OK, but sometimes you have to adjust the way you would use the space so you can see, but if task lighting is added you could use the whole space because it opens up areas that ambient lighting may not get to,” Samla says.

Having different lighting on different switches adds flexibility and new dimension to the home. Depending on what mood you’re in, you could just have a corner light on to quietly read, or have all the lights on and use the entire room.

“Lighting in the home can also affect your health. During the day we need approximately 20 to 30 minutes

of daylight to help with vitamin D production for the absorption of calcium,” explains Samla.

During the day we also produce serotonin in bright light, which helps with mood. At night we produce melatonin, which helps with the sleep-wake cycle so we feel awake in the morning. If we are exposed to bright light at night it can halt melatonin production.

“Melatonin helps fight off sickness such as cold and flu, therefore it is best to sleep in a dark environment,” Samla explains.

Samla says that to light a room at night it is better to have an amber or red night light rather than a blue or white night light because red and amber lights are less likely to disturb the sleep cycle.

“Lighting should be designed for how a person lives.”

CONNIE SAMLA, SMUD LIGHTING SPECIALIST

Samla has personal experience with this issue. When the alarm clock on the side of her bed went out she bought a new one that had bright green numbers on it.

“I could not sleep because the numbers were too bright. I finally decided to take a red filter to cover the numbers and then I was fine,” Samla says.

“Studies show that those who fight their lighting clocks by exposing themselves to bright light at night to stay awake, such as graveyard shift workers, have a higher risk of getting cancer. Also, in areas of the world where there is not a lot of daylight, people intentionally expose themselves to bright light during the day in order to fight Seasonal Affective Disorder,” Samla says. “This shows that lighting is important for both our lifestyles and our health.”

LET THERE BE LIGHT

Lighting from past to present

18TH CENTURY

» 1792 – William Murdoch first uses coal gas to light his home.

19TH CENTURY

» 1875 – Henry Woodward patents the electric light bulb.

» 1879 – Thomas Edison develops the carbon filament within the incandescent light bulb.

20TH CENTURY

» 1920 – Oleg Vladimirovich Losev invents the first LED.

» 1926 – Edmund Germer patents the fluorescent lamp.

» 1990 – Blue LEDs are invented, allowing the development of white light.

21ST CENTURY

» 2007 – U.S. Congress passes the Energy Independence and Security Act.

» Today – Consumers have many options to light their homes.

WHERE TO GO TO GET MORE INFORMATION...



In addition to saving you money on your electricity bill, LED and CFL bulbs have a positive impact on the environment by being more energy efficient and using less resources to produce the same amount of lighting in your home. SMUD is committed to providing information to help you decide which lighting options work best for all your lighting needs.

WORKSHOPS

- >> To attend one of SMUD's workshops on the new lighting standards, lighting controls or ways to make your home lighting more efficient, visit www.smud.org/etc for dates and times.

HOME ENERGY EFFICIENCY EXPO

- >> Join SMUD on June 1 for the Home Energy Efficiency Expo. This event is free and open to all residential customers interested in lowering their energy bills. This event will feature information on how to operate your home efficiently and comfortably, product information on electric appliances and systems, and the chance to talk to SMUD experts about rebates, incentives and other ways SMUD can help reduce your bills. Visit www.smud.org/energyefficiencyexpo.

SMUD'S ENERGY-EFFICIENT LIGHTING PAGE

- >> For more information on SMUD's residential lighting program and energy-efficient lighting, visit www.smud.org/lighting.

LIGHT BULB FINDER

- >> Need help finding a bulb on the go? Visit www.lightbulbfinder.net to download the free mobile app for both iOS and Android smart phones. Light Bulb Finder allows you to view bulb images, compare costs and savings, and find the environmental impact of each bulb. You can even purchase bulbs directly through the app or find the nearest store.

ENERGY STAR®

- >> Bulbs with an ENERGY STAR® label are certified by the U.S. Environmental Protection Agency (EPA) to be energy efficient. For more information on the EPA's voluntary program to help businesses and individuals save money and protect the climate through superior energy efficiency, visit www.energystar.gov.

