Community Environmental Council

Better Lighting

Join your neighbors in saving energy and money

Greening your life

With rising electricity costs, choosing an **energy-efficient** lighting system for your home or commercial space will help protect your pocket book while also protecting the environment. Lighting typically comprises over 30% of total electricity consumption—even more for office and retail settings. However, there are easy, **do-it-yourself steps** to improvement outlined in this brochure.

Five Steps: Get Started with **Better Lighting**

1 TURN OFF THE LIGHTS IN UNOCCUPIED AREAS

Turn incandescent bulbs off when they aren't being used. With compact fluorescent bulbs, turn them off if the room is unoccupied for more than 10 or 20 minutes. Consider posting signs by switches in rooms that are unoccupied for long periods (bathrooms, kitchens, copy rooms). Better yet, install occupancy sensors that automatically turn lights on when someone enters a room and off after a room has been empty for a short time.

2 LET IN SOME LIGHT!

Open your blinds, trim trees and hedges in front of windows, and rearrange your space so that task areas are near windows or skylights. By increasing daylighting, you reduce the amount of artificial light and energy needed for everyday tasks.

3 CLEAN YOUR LIGHTS

Chances are, if you haven't changed out your bulbs recently, they're covered with a layer of dust that is reducing the amount of light being emitted. By dusting the bulbs and the fixtures, you'll brighten your space and also ensure a longer life of the lamp.

4 REMOVE UNNECESSARY LIGHTING

Depending on your multi-bulb fixtures, you can likely remove a few bulbs and still maintain adequate lighting levels. This step is great for overhead fluorescent lighting in office and retail settings, especially when combined with Step #5. Dimmers are also a great way to reduce energy use and provide aesthetic or 'mood' lighting when a fully-lit space isn't necessary.

5 USE TASK LIGHTING

Use task lighting for desk tops, under cabinets in the kitchen, and in reading areas, etc. to reduce the need for overhead lighting. Task lighting is usually more aesthetically pleasing, and can easily incorporate the use of more efficient bulbs like LEDs.

Compact Fluorescent Lightbulbs **(CFLs)**

WHAT ARE CFLs?

CFLs are an advanced lighting technology that can be used in regular light sockets but require significantly less energy than traditional technologies such as incandescent bulbs.

WHY SHOULD I USE CFLs?

- CFLs use two-thirds less energy and **last up to 10 times longer** than incandescent lightbulbs.
- Because they use less energy and last longer, using them will **save you money** over time, even though they cost a little bit more up-front to purchase.
- CFLs produce about 70% less heat than incandescent lightbulbs, making them safer and **reducing cooling costs** in your home.
- Replacing your old lightbulbs with CFLs is a convenient way to reduce your energy consumption and thereby **reduce your carbon footprint**.

WHERE DO I BUY CFLs?

Retailers carry a variety of CFLs to fit most lighting fixtures, and with an assortment of shapes and sizes to choose from, there is a CFL available for almost every application. Always purchase a bulb with an **Energy Star Rating**.

Local retailers carrying CFLs include:

- Santa Barbara Home Improvement Center
- Ace Hardware Stores
- Livingreen
- Fiesta Furniture & Appliance
- County Sash and Door
- AAA Appliance Center
- Reid's Appliance
- Other major retailers such as Kmart, Home Depot, Costco, Osh, and Lowes as well as many local grocery stores

WHAT WATTAGE CFL DO I BUY?

Use this guide to determine the wattage you need.

Standard Bulb	Equivalent CFL Bulb
60w	15w
75w	20w
100w	26w–29w
150w	38w–42w
250w–300w	55w

WHAT ABOUT LIGHT QUALITY?

Today's CFLs provide high quality, flicker-free light. Full spectrum CFLs are designed to duplicate outdoor daylight characteristics and improve color perception, which allows for true and vibrant color presentation. Look for CFLs that say "full spectrum" for a light quality that you'll find most familiar.

SHOULD I BE CONCERNED ABOUT MERCURY?

CFLs contain an extremely small amount of mercury in a sealed tube about the size of the tip of a ball-point pen. In the U.S., the main source of toxic mercury emissions are coal-fired power plants. Even in areas such as Santa Barbara County where coal does not contribute significantly to power generation, CFLs result in decreased emission of several other harmful substances.

HOW DO I DISPOSE OF MY CFLs?

Because CFLs do contain a small amount of mercury, you'll need to take an extra step to properly dispose of them.

- If your CFL fails within the warranty period, return it to the manufacturer.
- If your CFL breaks, sweep (don't vacuum) the debris and wipe the area with a damp paper towel. Place the debris and paper towel in a plastic bag and take it to the appropriate hazardous waste collection center.
- Find local disposal options for your used CFLs. If you live on the South Coast your closest location is the Community Hazardous Waste Collection Center:

Community Hazardous Waste Collection Center
On the UCSB Campus next to the Facilities Management yard.
Saturdays 9am–3pm and Sundays 11am–3pm
Questions? Call the County of Santa Barbara at **805.882.3602**

Light Emitting Diodes **(LEDs)**

WHAT ARE LEDs?

LEDs are one type of solid-state lighting, which means that the light comes from solid objects instead of gases. Specifically, solid-state lighting uses semiconductors that convert electricity into light, while incandescent and fluorescent lighting creates light with filaments and gases encased in a glass bulb.

LEDs have been around for more than 40 years, but until recently were used only as indicator lamps in electronics, as well as in traffic lights, exit signs and flashlights. Today's LEDs can be used for most common lighting needs.

WHY SHOULD I USE LEDs?

Long Life. LEDs can last up to 60,000 hours. By comparison, CFLs last around 10,000 hours and incandescent lightbulbs about 1,000 hours. Additionally, the lifetime of LEDs is not affected by frequent on-off switching. LEDs usually dim as they reach the end of their life, instead of burning out abruptly like many other bulbs.

Energy Saving. LEDs can be 10 times as efficient as incandescent lighting, and current LED lighting technologies are twice as efficient as fluorescent lighting technologies.

Highly Durable. LEDs do not contain breakable glass or filaments and are difficult to damage.

Safe. LEDs are low voltage and cool to the touch. LEDs do not emit infrared or ultraviolet radiation or contain mercury.

Small Size. LEDs are good for lighting compact spaces and provide flexibility in lighting design.

Instant On. Unlike CFLs, LEDs do not require a warm-up time and light up instantly.

Fully Dimmable. LEDs do not change color when they are dimmed, unlike incandescent lamps.

WHAT ABOUT LIGHT QUALITY?

While older LEDs emit a cool, bluish light, newer LEDs emit a warm, white light.

WHERE DO I BUY LEDs?

Local retailers and internet sites carrying LEDs include:

- Home Depot (limited supply)
- **http://www.usa.lighting.philips.com/lightcommunity/trends/l-prize/wheretobuy.wpd**
  (Philips L Prize award winning LED bulb)
- **www.besthomeledlighting.com**
  (located in Oregon—easy to navigate website)

	15-WATT EQUIVALENT DECORATIVE BULBS			60-WATT EQUIVALENT FLOODLAMPS		
	Incandescent	CFL	LED	Incandescent	CFL	LED
Cost per Bulb	$0.69	$4.00	$10.97	$1.33	$4.47	$24.95
Watts Used	15	3	2	60	14	12
Lifetime (hours)	1,500	10,000	20,000	1,000	10,000	25,000
Total Bulbs to Purchase	40	6	3	60	6	2
Total Purchase Cost	$27.40	$24.00	$32.91	$79.80	$26.82	$59.88
Total Electricity Used	900	180	120	3,600	840	720
Total Cost to Use*	$144.00	$28.80	$19.20	$576.00	$134.40	$115.20
Overall Costs	**$171.60**	**$52.80**	**$52.11**	**$655.80**	**$161.22**	**$175.08**

*Based on an electricity rate of $0.16 per kWh. Actual rates can range from $0.12 to $0.31, depending on your usage, which may change your costs

Fiber-Optic Lighting

WHAT IS FIBER OPTIC LIGHTING?

Fiber optic lighting uses fiber optic cables to distribute light from a central illuminator or light source, typically an industrial-grade lamp. This technology allows for the use of one powerful yet efficient light source, natural or artificial, to illuminate the interior of a building.

The light from the illuminator is distributed through flexible fiber optic cables, which include side-glow and end-glow cables. Side-glow cables are illuminated throughout, while end-glow cables emit light only at the end and can be used to illuminate light fixtures.

WHAT ARE THE BENEFITS OF FIBER OPTIC LIGHTING?

Saves Energy. Consumes as little as 25% of the energy used by a typical fluorescent lighting system. Reduces cooling costs because cables does not emit heat.

Safe. Does not contain mercury, emit ultraviolet rays or heat. Does not transport electricity so reduces the risk of fire and electrocution.

Reduces Waste and Maintenance. Because only one, long-life lamp is used, it requires fewer lamp replacements than traditional systems.

Durable. Fiber optic cables are flexible, cold-resistant, and non-breakable.

WHERE CAN I USE FIBER OPTIC LIGHTING?

Fiber optic lighting is typically used in specific lighting applications, including the following:

- Building outlines
- Underwater, such as pools and spas
- Landscapes, decks, and walkways
- Freezer and refrigeration cases
- Restaurants, hotels, and nightclubs
- Steps, hallways, and exits

HOW MUCH DOES FIBER OPTIC LIGHTING COST?

The cost of fiber optic lighting is highly dependent on the installation type. While this technology is still typically more expensive to install than regular lighting, a recent study of their use in freezer cases at a California grocer showed that payoff from energy savings could occur within two years.

WHERE DO I BUY FIBER OPTIC LIGHTING?

- **www.fiberopticproducts.com**
- **www.del-lighting.com**

Solar Tubes

WHAT ARE SOLAR TUBES?

Solar tubes act as small skylights, allowing natural light into a building without requiring electricity or significant structural changes.

Solar tubes consist of a dome on the roof, which collects sunlight and directs it into a reflective tube that runs through the rafters. The light is then directed through a diffuser in the ceiling, which spreads light throughout the room and looks like a typical light fixture.

HOW DO SOLAR TUBES COMPARE TO SKYLIGHTS?

Solar tubes are relatively easy to install in existing homes, costing significantly less than traditional skylights. The advanced design of solar tubes allows them to provide as much light as significantly larger skylights, even on cloudy days.

WHY SHOULD I INSTALL A SOLAR TUBE IN MY HOME?

- Because solar tubes use natural sunlight to add light to your home, they will help save energy and decrease your electricity costs.
- Increasing the amount of natural light in your home may help improve your mental and physical well-being.
- Solar tubes are durable and are not likely to experience problems such as leaks or heat loss.

WHERE CAN I USE SOLAR TUBES?

Solar tubes can be used in any room or area of a home, including rooms that do not have direct roof access. For increased flexibility, solar tubes can be equipped with ventilation, light add-ons, and dimmers.

HOW MUCH DO SOLAR TUBES COST?

While traditional skylights can cost well above $1,000 to install, solar tube kits can be purchased for as little as $200 and self-installed in only a few hours. Professional installation costs are also low because no reframing, plastering, dry walling, or painting is required. Local installers can install solar tubes for as little as $500–600.

WHERE DO I BUY SOLAR TUBES?

- Contact Tubular George: **www.tubulargeorge.com** at **805.965.5589** for more information on installation in Santa Barbara County.

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