

Energy Saving: The Bright Thing to Do

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Everyone, of course, is in favor of energy conservation. That goes for you, me and even the power and fuel companies. But when it comes to doing something about energy saving, there often is more talk than action. We can easily postpone doing anything about the problem until tomorrow or, better yet, lots more tomorrows to come. Isn't that so?

Maybe not. If the recent "rolling black-outs" around the country are previews of coming non-attractions, then something similar could be arriving soon (if it hasn't already) to a neighborhood near you. Without getting into the pros and cons of deregulation, it seems likely that the cost of electricity to light and power our homes and businesses will be rising – not falling – for the foreseeable future. Thus, energy saving is no longer just a broad environmental issue but a critical pocketbook issue as well.

How best to cut down on your home or business lighting expenses? The no-brainer technique is to just use less electricity: turn off lights when not needed or substitute lamps of lower wattage. But while you'll be paying less when you follow this track, you'll also be getting less. Anyway you cut it, you've given up a certain amount of convenience and will be accepting a certain diminishment in your living standards.

A Better Solution

A better – and far more elegant – solution is to reduce your energy costs and actually get a higher quality of light than you've been enjoying all along. In the case of your lighting needs, that's the equivalent of having your cake and eating it, too. How would you do that? Through technology, specifically through the use of state-of-the-

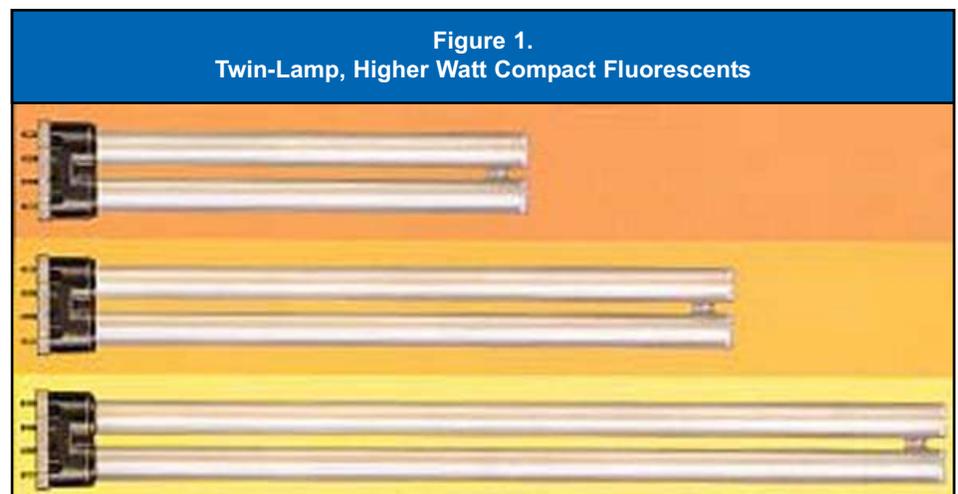
art lamping that is many times more energy efficient than standard "light bulbs."

Let's suppose you have an overhead fixture, a chandelier perhaps, that currently uses three 100-watt incandescent bulbs (or, more properly, lamps). If you now substitute three 75-watt halogen lamps for the standard lamps, you've saved 75-watts right off the bat, while still maintaining approximately the same light level. But you don't have to stop there. If you substitute three 28-watt compact fluorescent lamps instead, you'll lower your electrical draw by 216 watts, a 67% savings, and lower your electric bill by a commensurate amount. Finally, in the very near future, you can use a LED¹ at about 8-10 watts; lowering your energy consumption another minimum of 186 watts of power consumed; a 720% saving! Not only is this a staggering saving; but the LED produces no ultraviolet rays nor does it produce any infrared, which is heat. The kelvin of this LED may be selected for the optimum efficiency of its particular function. That is in a dining room one might prefer a warmer light where as in a computer room defi-

nately a high kelvin of 8,000 would be ideal. Add to all these benefits the fact that LED lamps last some 100,000 hours, the equivalent of 16 years.

However, the newest development, far out performing all of the above is the LED lamp. As we write they are being produced in every configuration and do compete lumen for lumen with existing "light bulbs"! For lumen delivered they are more than 20 times as efficient. That is saying that an existing 100 watt "light bulb" (this is an A lamp) producing 650 lumens can be replaced by a 4.5 watt LED producing 650 lumens. The LED also creates no ultraviolet as well as no infrared. Thus no heat and no light deterioration.

Don't think fluorescents can do the job? (If you've read our article, [What's Good About Fluorescent Lighting](http://www.RichArtCo.com/Articles/Fluorescent.pdf), <http://www.RichArtCo.com/Articles/Fluorescent.pdf>, you know that about 5,000-kelvin compact fluorescent lamps produce an optimum of quality light, providing better contrast and less glare.) Better yet, because it is rich in something called "scotopic lumens," you actually can use up to 30% less light and



have it appear as bright as before. Further, this light produces even better acuity. So, here in one fixture, we can reduce the energy requirement (and electric bill) by 67% and yet achieve an environment where vision is markedly improved. Talk about a win-win situation! LEDs (Figure 1) also come in a variety of kelvin and in the correct kelvin appear to also have a high scotopic/photopic ratio.

Are There Any Downsides?

Are there downsides? Yes, but not insurmountable ones. It is true that the newer lamps cost more initially; a typical compact fluorescent lamp ranges from \$15 to \$30. But while the life of a standard 100-watt incandescent bulb is only about 900 hours, a halogen rates at 3,000 hours and compact fluorescents run around 10,000 hours. In the case of the last mentioned, that means that over the life span of a fluorescent lamp, there's the equivalent of more than 16 incandescent "bulbs" you won't have to replace, and there's the reduced energy need with a proportional drop in your costs. Over, say, a three-year period, it's not unusual to rack up savings of \$50-\$100 for each and every lamp you use! In the case of LEDs the price now and for the next few years will be expensive, based on the amount of sophistication of the particular lamp; but for the energy saving and corollary savings in heat load and ultraviolet, all things considered they are amazingly inexpensive.

It's also true that the newest halogens and compact fluorescents (Figure 2) are not yet as readily available as ordinary light bulbs that can be bought at any supermarket or drug or hardware store. A compact triphosphor 5,000-kelvin lamp called PL13 saber produced by Philips Lighting, for example, has been on the market for a decade but is still hard to find. Possible sources might include lighting specialty outlets, home renovation and improvement warehouses or mail order firms. Your local power utility is often a good source of information, as are internet web sites such as this. At this writing LEDs are even more difficult to find, being still in the development stage. Probably the only availability

is via a web search or through a lighting designer or engineer.

A relatively newer "kid on the block" is the "twist" or "spring" lamp (Figure 3) which, in a smaller package, is closer to the sizes of the "light bulbs" they are to replace, an easier retrofit. These are available in 2,700 kelvin which gives you the same poor quality light as the "light bulb," BUT they are also available in triphosphor at 6,000 kelvin, with the extra visual quality. The triphosphor version, however is not readily available at your local lighting shop.

Now Is A Good Time To Start Conserving Energy

Yes, energy conservation will require some work on all our parts. But now is a good time to get started, and the results will be well worth our efforts. These Panasonic compacts retrofits have standard (medium) threaded base and the optimum in quality visual light. In addition, several companies have also produced a new generation of scotopically rich metal halide lamps. These, however, require special fixtures designed to take metal halide and are appearing mostly for track lighting. (See our article, [Track Lighting](http://www.RichArtCo.com/Articles/Track-Lighting.pdf), <http://www.RichArtCo.com/Articles/Track-Lighting.pdf>.) So, if you are involved in new construction or renovations or simply wish to retrofit more efficient lighting to your current fixtures, check out the new lamping coming onto the market. On the long run the energy we save – singly and collectively – will benefit us all. ■

Notes:

¹LED's are available now, but LEDs producing 1,500-1,800 lumens are several years off, at the time of this writing.

²Because of the difficulty in procuring these products we have put in the most usable sizes of the Panasonic compact retrofit fluorescents in 15 watt, 20 watt and 28 watt. See *Compact Fluorescent Lamps* for the details. For LEDs see our article, *The Light Emitting Diode Comes of Age*.

Figure 2.
Range of Compact Fluorescent Lamps



Figure 3.
"Twist" or "Spring" Lamps



About the Author

Bill Joel received his B.A. from Brown University with creative design courses at the Rhode Island School of Design. He did further studies in interior and lighting design at the New York School of Design and Pratt Institute.

A professional member of AID-ASID from 1963 to 1993, Bill received a Fellowship from ASID in 1978. In 1992, he became one of the first Certified Interior Designers of the Commonwealth of Virginia. His work experience includes residential, commercial and institutional remodeling and new structures, as well as a number of feasibility studies, all with an emphasis on effective, energy-conscious, quality-lit environments. For more details, consult *Marquis Who's Who in America*. Bill has also served as a member of the FIDER Board of Visitors and Accreditation Committee, Foundation for Interior Design Education and Research; set and lighting designer for the Richmond Forum and Barksdale Theatre; and guest speaker on various radio and TV spots. Bill may be reached at Rich@RichArtCo.com.