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(*A Little Less*) Power To The People

Less is more

BY SARAH HEENAN

"How does this plan fare on energy?" asked a recent client as he perused the lighting plan for his latest home. That's not a question a Texas lighting designer specializing in high-end residences gets everyday, if at all.

But this one was a California transplant. "It's only a matter of time before the crisis hits the rest of the country, and I want to be prepared," he told us.

Hardly a day goes by that the headlines don't make us blatantly aware of the energy shortage into which

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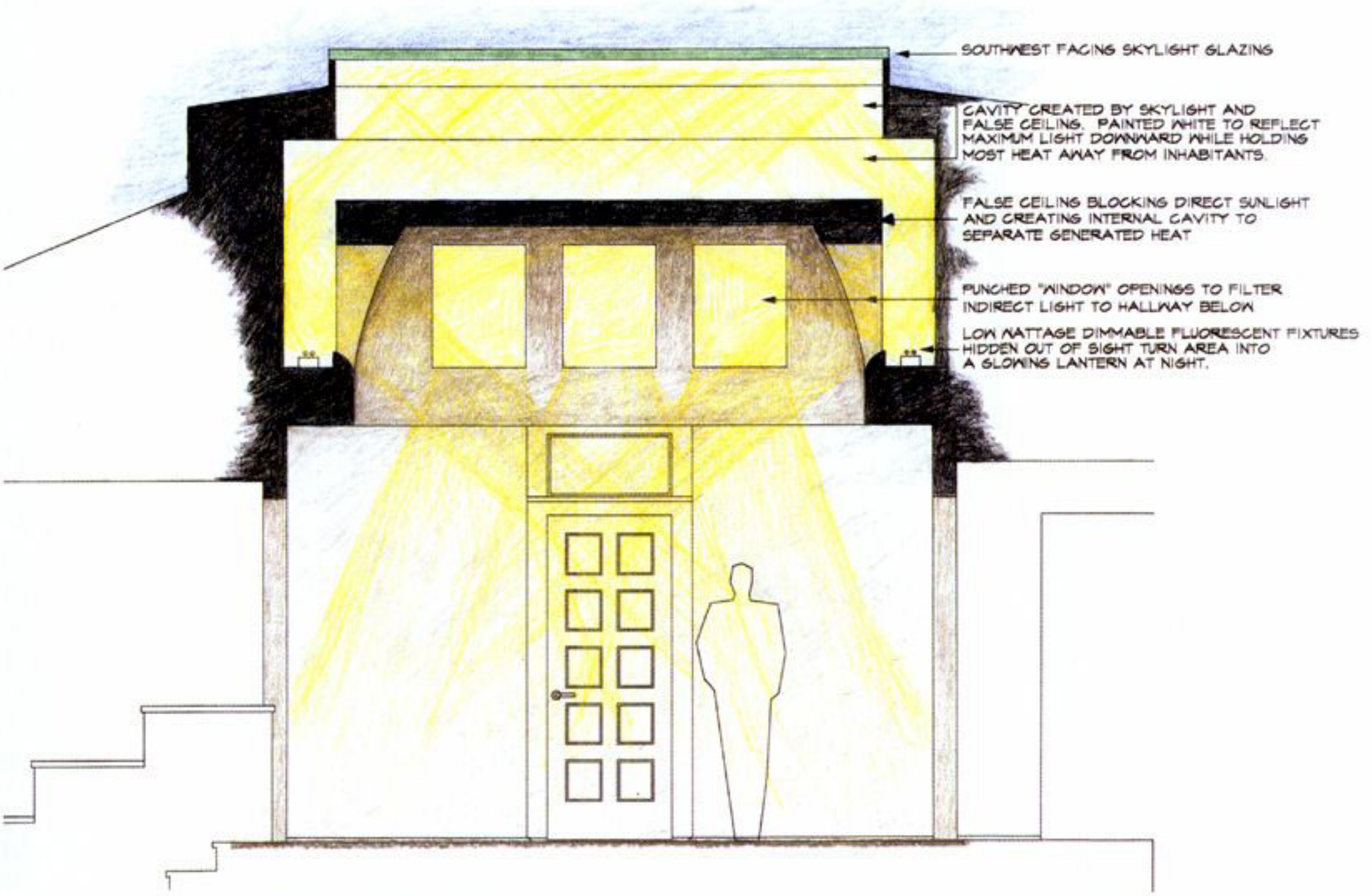

Section through custom skylight showing energy efficient pairing of sunlight and fluorescent fixtures. Drawing courtesy of Gary Furman Architects. Rendering by Sarah Heenan.

our country has stumbled. Politicians argue on Capitol Hill; blackouts roll through California suburbs; and energy surcharges show up on everything from flower delivery tickets to hotel rooms. Whether your concerns are environmental or financial, you no longer have to be from California to be thinking twice about your energy consumption. And there is no better place to begin the reevaluation than in the home.

Less Is More

Once the favorite toy of early adapter technophiles, the household dimming system is becoming increasingly common in the custom home market. Besides the obvious lures of convenience and aesthetics, a control system can also be a strong ally in the fight to lower energy consumption. Take, for example, the common misconception that one requires more light at night that during the day. In fact, during the day, interior lights need to be relatively bright in order to compete with the intensity of sunlight. Without a bright balance inside, a room within a house can quickly look dark and gloomy in comparison. Conversely, at night, a much smaller quantity of light is needed in most cases to create an attractive and livable space. Enter the dimming system, which allows lights to seamlessly and reliably transition to the needed level at the touch of a button.

It hardly seems surprising that the percentage that a typical residential fixture is dimmed is roughly equal to the energy saved, but few realize that lamp life increases exponentially as a fixture is dimmed. Consider this: An incandescent lamp that is dimmed to 90 percent output, a minimal change visually, saves 10 percent in energy and doubles its lamp life. If a lamp is kept at 75 percent output, the life is quadrupled (see figure 1).

Within its technical toolbox, the dimming system offers other advantages to the energy savvy user. Imagine having a single button to turn off all

Energy Savings Chart for: INCANDESCENT LIGHT BULBS*

Light Level	Electricity Saved	Lamp Life Extended
90%	10%	2 Times
75%	20%	4 Times
50%	40%	20 Times
25%	60%	Greater than 20 times

** Numbers are approximate*

Figure 1

the lights on a floor/room/wing/ house as you leave it or built in time controls that dim unnecessary landscape lighting after the family has gone to bed. The possibilities are, almost literally, endless.

Consider The Source

(aka: Fluorescent is, in fact, not a four-letter word)

Mention the word fluorescent to any modern homeowners and their eyes will grow wide with visions of offices cast in a green flickering light and emitting a headache-inducing buzz. This is the point they plant their feet and refuse to allow such a monster to come anywhere near the specifications for their homes.

And then comes the explanation. Today's fluorescent is leaps and bounds ahead if its predecessors. Electronic ballasts have eliminated the famous fluorescent flicker and buzz and are available in dimming units down to 1 percent. Phosphor mixes have improved in higher end lamps to the point that both color temperature and color rendition are competitive with incandescent. Studies have shown that even at a bathroom vanity, where

color rendition is of utmost importance, users were equally happy with the performance of incandescent and color corrected fluorescent. Combine this knowledge with the fact that incandescent lamps use approximately six times the wattage of fluorescent to get the same light output, and suddenly energy conscious homeowners have found a new friend.

Energy Savings Chart for: FLUORESCENT DIMMING*

Light Level	Electricity Saved	Lamp Life Extended
90%	10%	None
75%	25%	None
50%	50%	None
25%	75%	None

** Numbers are approximate*

Figure 2.

Standard linear fluorescent is easily built into ceiling coves or wall wash slots for a glowing ambient light. While compact fluorescent retrofits are flooding the market more than ever, advertising themselves as the best replacement for every table lamp and downlight in the house, it is recommended that these only be used in well shielded fixtures. The energy efficiency of compact fluorescent has a flip side in that it is able to output a large amount of light from a very small area—a wonderful feature when shielded, but not something at which you want to look directly.

Those who are not yet ready to embrace fluorescent in the home are not entirely out of luck. While incandescent won't become six times more efficient in the near future, there are some new lamp technologies, which show promise.

In the field of accent lighting, lamps with infrared coating (IR) are causing a stir. An IR coating within the lamp capsule ensures that radiated heat that would otherwise be lost is recycled back into the lamp filament. Because that heat is contained within the lamps, less wattage is needed to maintain the lamp's optimal operating temperature. So what does this realistically mean? A standard 90w PAR lamp can be replaced by a 60w IR PAR lamp with minimal impact to output and you'll see a 33 percent savings in wattage. A move to low voltage produces similar results. A standard 50w MR16 can now be replaced by a 37w IR MR16 without sacrificing center beam light output. IR coated lamps have an additional benefit of lowering the UV light that is emitted from the lamp, the culprit that will fade any artwork or fabric in its way over time.

Savings Are In The Details

When all is said and done, there is no light as environmentally friendly and affordable as the sun. Yet taking advantage of sunlight is not always as simple as adding more windows and skylights. Without proper attention to design, added sunlight can turn a room into a greenhouse, consuming much more energy in cooling costs than are saved in lighting. A good architect can study solar angles in order to optimally bring sunlight into even the darkest areas of a house. Ideally these light shafts will utilize reflected light and allow for the sun-heated air to be kept separate from the main volume of the room. Additionally, these areas can be detailed to do double duty by including hidden light fixtures, creating a built in lantern at night (see Figure 2).

It should be noted that being energy conscious, like most other responsible tasks, is rather thankless and rarely is it the path of least resistance. Much of these improvements require careful design, and the majority of the lamps which will help to achieve these effects often cost more and are harder to find than their lesser counterparts.

But in the end it's a worthy cause.

(Editor's Note: Sarah Heenan, IESNA, LC, is a Lighting Designer with Bos Lighting Design in Houston, TX. She can be reached with questions or comments at sheenan@bosltgdesign.com.

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