by Phil Sprague

Light up energy savings by following a few simple guidelines

It is time again for *The Rooms Chronicle's* annual lighting update. This year's article will provide hoteliers with a relatively comprehensive guide to take advantage of the most cost effective way to save lighting energy and perhaps improve the quality of the hotel's perceived product.

Before starting on this project, go to a Grainger's Equipment Supply store and purchase a $30 General Electric light meter. This meter reads light levels in increments referred to as "foot-candles". For those in Europe, the meter will measure using a different scale referred to as "lux". A foot-candle is a unit of measure of the intensity of light falling on a surface equal to one lumen per square foot.

As a rule of thumb, one should use the most efficient light source available to meet the recommended foot-candle level in each area of the hotel. The bar, the restaurant and the lobby are the only areas where interior design will be a factor that will likely outweigh efficiency.

Guestroom lighting

The following will summarize recommended foot-candle levels for areas within the guestroom:

- Writing Table.....30 foot-candles
- Sleeping Pillow.....15 foot-candles
- Below Welcome Light.....30 foot-candles
- Bathroom Vanity.....50 foot-candles

Almost all quality hotels have adapted a standard two-lamp, four-foot fluorescent "T-8" wraparound fixture in the guest bathroom. This type fixture will easily provide 50 foot-candles on the vanity. Be sure to specify a 2,700 degree Calvin temperature rating for the lamps, which is a warm white residential look. Also, consider including a motion sensor in the bathroom with a nightlight that costs about $40. This can typically provide a one year return on investment.

Over the years, ambient lighting throughout the guestroom has traditionally consisted of 100-watt incandescent lights. GE, Sylvania and Westinghouse have all developed spiral type compact fluorescent lights that can easily meet the foot-candle specification in the guestroom area. These are generally available in 23-watt and 27-watt configurations. Obviously, the 27-watt units will actually exceed the recommended light level, but they will also brighten up the room somewhat.

Guestroom corridors

For safety and security, guestroom corridors should provide a minimum of 25 foot-candles, especially in vending areas. Here, again, a relatively standard fixture is used throughout most types of hotels. That fixture is a two-lamp four-foot fluorescent "T-8" fixture, usually mounted in a valance directly above the guestroom entrance door. To create a sense of elegance or to achieve additional decorative lighting in the corridors, consider using a 15-watt flame tip incandescent lamp to accent artwork, etc. If a property has recessed can fixtures in the corridors, near the lobby or other areas, utilize a 15-watt compact fluorescent reflector type of lamp.

Pictured below: Energy efficient lamps such as this four-foot "T-8" lamp from Sylvania consume a mere 32-watts of electricity and last an average of 20,000 hours.

Kitchen and laundry

Because of the intensive work activity in these two areas, it is generally recommended that 50 foot-candles be maintained throughout. The most efficient source of light to maintain these light levels is a two-lamp, eight-foot "T-8" fluorescent fixture. A standard two-lamp, four-foot "T-8" fluorescent fixture would also serve this purpose. Use 3,600 degree Calvin or cool white lamps in these fixtures. These type lamps provide slightly more light than the warm white version. Also, remember that OSHA requires lighting slip tube covers over the tubes in these areas for safety.

Executive and sales offices

The best and most efficient fixture for offices is referred to as a 2 by 4 parabolic fluorescent fixture. These fixtures typically use 4 four-foot "T-8" fluorescent lamps. The fixtures should be mounted on about four to six-foot centers, or directly over desk areas. Typically, these offices have dropped ceilings, allowing the fixtures to be easily moved around to accommodate various desk layouts. Use cool white lamps in these areas for higher light output. Also, consider installing light switch motion sensors in offices that will automatically turn the lights off when the office is vacant for more than five minutes. As a rule of thumb, offices generally require in the range of 30 to 50 foot-candles.

Storerooms, lunchroom, and back-of-the-house

Here, once again, it is recommended that the standard two-lamp, four-foot fluorescent wraparound fixture be utilized with cool white lamps. These areas generally should be lighted to approximately 20 to 25 foot-candles. Also, use light switch or ceiling mounted motion sensors to automatically turn these lights off when these rooms are vacant.

Indoor pool

Generally speaking, the indoor pool is usually a relatively large room with a high ceiling. This is an excellent application for metal halide high-intensity discharge fixtures. 175-watt fixtures should be used, spaced about 15 feet apart. This will provide the pool with approximately 25 to 30 foot-candles. If decorative lighting is preferred around the perimeter of the pool room, consider using wall sconces provided with two 15-watt "PL" compact fluorescent lamps.

Stairwells

OSHA requirements state that stairwells shall be provided with an average of 15 foot-candles. This means that the main landing could be 30 foot-candles and the intermediate landing 3 foot-candles. The best light source for all stairwells is, again, the standard two-lamp, four-foot "T-8" wraparound fluorescent fixture. If your hotel currently has one two-lamp fluorescent fixture on each landing or two per floor, consider delamping or removing the intermediate landing fixture to cut energy consumption by at least fifty percent in stairwells.

Parking lots

The most efficient source of outside lighting in the United States is referred to as high pressure sodium. It has a yellowish look to it and provides very poor color rendering properties. Remember to try and never point parking lot lights directly at the hotel. Some guests are extremely annoyed by bright lights shining in their guestroom windows. For security and efficiency, parking lot light levels should be in the range of 3 to 10 foot-candles, or bright enough to read a newspaper. This can easily be obtained with 250-watt high-pressure sodium fixtures mounted about twenty feet off the ground. If you have a larger parking lot and require fixtures further away from the building, use a type of fixture that sends light directly downward. Make sure that all these outside fixtures are controlled by a photocell to ensure they stay off whenever it is light outside.

The Complaint Corner

Mr. Busy Business Traveler:	(…speaking to a front desk clerk late at night…) I have tried several times, but the printer in the business service center will not print my documents. I am very frustrated as I need these documents first thing in the morning.
Bad Reply:	Oh yea…We have been having problems with that printer for the past few days. I guess someone should have told you that when you checked in.
Slightly Better:	I am sorry, but the printer won't be fixed for three days. The service repair company is waiting on a special part. There is a photocopy shop down the street that is open all night. They can probably print up what you need.
Best Reply:	I am sorry Mr. Busy Business Traveler that the printer is not working at the moment. I would be happy to print up any items that you need from my computer in the back office while you wait. Or, if you leave me the list of files and the flash stick, I will print them up for you while you sleep tonight.

Upgrades and retrofits

As one can see, the majority of recommended lighting fixtures in hotels consist of either four-foot or eight-foot "T-8" fluorescent fixtures. For hotels that currently have old style "T-12" fixtures and that might be considering a retrofit to more efficient fixtures, they should consider using the new technology "T-5" four-foot and eight-foot fluorescent lamps. These are about half the diameter of "T-8" lamps, and have the same excellent color rendering qualities. Be sure to specify electronic ballasts for all lighting systems, whether they are "T-8" or "T-5". Because these fluorescent lights operate almost continuously in most cases, the retrofit project will likely have well under a two-year return on investment.

For hotels making lighting retrofits between January 1, 2006 and the end of 2007, there may be substantial tax credits available due to the Energy Policy Act of 2005. Be sure the hotel's tax accountant is aware of any lighting investments the hotel may have made during the year.

If a management team has been holding off on a guestroom conversion to compact fluorescents, now is the time to act. The cost of these screw-in lamps has dropped to the range of $3 this year. Therefore, the entire guestroom area with five table and wall lamps would cost in the range of $15 to convert to compact fluorescents, well under a two-year return on investment.

Conclusion

Lighting represents about 35% of the total electric load in hotels. By following these guidelines this significant energy expense could be reduced by 10% to 20%. This large reduction in electrical load in the hotel will also yield savings in the form of the Demand on the hotel's electric bill. The KW Demand is the peak load of the hotel during any given billing period. The guestroom lights alone in a 300-room hotel would save 30 KW every month, or an average of about $450 per month. This equates to savings of over $5,000 per year. ✧

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