Task Lighting

ENERGY SAVINGS – FACT SHEET

Understanding Task Lighting

Task lighting is typically employed to increase illumination above ambient levels at office desks, counters, and other work surfaces. If the use of task lighting can allow occupants to shut off or reduce overhead lighting, facility managers can achieve energy and cost savings.[1]

Types of Task Lighting:

There are basically two kinds of task lighting: Under-cabinet and flexible arm desktop models. The under-cabinet models are typically fixed linear fluorescent (T-8 or older T-12) systems used in partitioned office settings. The under-cabinet lighting systems come in various styles with optics that reduce reflected glare, veiling reflections and other issues that can arise. Under-cabinet systems typically are sold with office furniture units. Approximately one third of all office employees work in a partitioned office environment that could employ task lighting.[2]

Desk top flexible arm task lighting units are available with low wattage (< 20 Watt) compact fluorescent lighting systems. While incandescent systems can still be purchased, electronic ballast fluorescents are a must for any program. Flexible arm units have the advantage of allowing the user to specifically direct the light onto the task at hand.

Another application of tasking is in high ceiling manufacturing and warehousing environments. Many of these applications employ linear fluorescent systems suspended directly above a work surface.

Most task lighting is employed to augment illumination for specific tasks that demand a higher level of visual acuity. Properly used task lighting will improve worker productivity and facilitate visually demanding work tasks.

Saving Energy with Task Lighting

If facility managers are interested in using task lighting to save energy and reduce utility costs, they must promote and expand appropriate applications of task lighting. Energy efficient applications of task lighting can reduce overall ambient lighting energy use from 1.5 Watts per sq. ft. to 1.0 Watt per sq. ft. [3,4,5]

A Successful Task Lighting Initiative

In 2001, The Facilities Operations Department of Washington State University launched an initiative to distribute 600 energy efficient tasking lamps to university staff who would commit to turning off overhead office lighting for four hours per day. The task lamps were inexpensive (less than $20) desktop units using a 13-watt fluorescent lamp with easily accessible on/off switches. The task lamps were distributed free of charge to requesting individuals. To receive the lamp, each user had to register his or her name and contact information and commitment to turning off overhead lighting for 4 hours per day. The lamps were distributed with a sticker that reminded the users that they were part of the WSU Energy Saving Team and that the task lamp saved energy only when general lighting is turned off. Program educational materials stressed appropriate applications for lamps, such as exterior offices with windows. Since the program has ended, most users are satisfied with the task lighting and keep their overhead lighting off for 4 hours or more per day; some for all day. Of course, there are still some users that do not turn off the overhead lighting, but behavioral observation confirm that most are complying with the agreement. Facility staff estimated that the task lighting initiative would have a payback period of 5 years. [7]

Best Application Areas:

The use of task lighting must be accompanied by the reduction in ambient (overhead) lighting levels. To accomplish energy saving goals, suggested application areas of task lighting are as follows:

1. Exterior offices with daylighting/windows are usually the best application for task lights. Occupants can typically turn off overhead lights if natural lighting provides the low level back-

Estimating Your Potential Cost Savings

Using Task Lighting and Turning off Overhead Lighting For Four Hours per Workday

_____# offices/workstations x [2 overhead fixtures per office x _____ Wattage** per overhead fluorescent fixture — _____ Wattage of task lamp] x 4 hours per day x 250* days per year x $0.086/kWh*** x 0.001 = $ _____ savings/year

Payback estimated at 2– 5 years, depending on the cost of task lighting and rate of use.

* Typical number of annual workdays.
** Use 96watts for 4 foot, 2-lamp, T-12 systems. Use 192 watts for 4-lamp, T-12 systems; 58 watts for 2-lamp T-8's; 72 watts for 3-lamp T-8's; and 112 watts for 4 lamp T-8 systems.
***Average commercial rate of 8.6¢ per kWh in NC.

grounds needed. Southern exposures have the highest opportunities. Existing daylighting control, such as adjustable window blinds, shades or reflective fabric, can be adjusted to admit light while avoiding excessive glare to further improve lighting efficiency.

2. Dual switched offices. Some offices have dual or multiple switches to turn off a portion of the overhead lights. This is another good application area.
3. Remember that all applications are user specific. Each user's visual abilities, desk tasks and office environment characteristics are contributing factors to the appropriateness or inappropriateness of the applications. Some users may require brighter task lamps.

Ensuring a Successful Program

If a task lighting program is launched to save energy, a commitment by users to reduce general lighting must be secured. See the Washington State University Case study approach that helped ensure that energy was being saved with the use of task lighting.[6]

References & Resources:

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