

Energy-Saving Strategies

These lighting tips can help cut costs and usage

By Andrew Wakefield

Rising energy costs, increasingly stringent building energy code requirements, and mandates for LEED-certified buildings have all created strong demand for energy-efficient solutions for both civilian and military housing.

A recent US Department of Energy study found that lighting consumes 39 percent of the electricity in commercial spaces and 20 percent in residential spaces, leading many to invest in high-efficiency light sources. However, the typical pursuit of energy savings can fail to take into account other important needs such as quality of light, occupant comfort, and productivity.

Beyond simple light source changes, here are some strategies that can save energy for BOQ, BEQ, family housing, squad bays, or mixed-use buildings without compromises.

1. Control all incandescent bulbs with dimmers. In many buildings, incandescent light sources are still popular because of their excellent light quality. Controlling those lights with dimmers will save energy and extend the life of the light bulbs. For example, setting the light level to 75 percent will reduce energy consumption by 20 percent and will make the bulb last four times as long, thus reducing the waste stream.

The savings on bulb maintenance more than pays for the dimmer, so any energy saved is a bonus. The dimmer will also improve the ambiance in the room by allowing the occupants to select the preferred light level.



Lights equipped with dimmers can result in increased energy savings.

2. Consider next-generation occupancy sensors. Although many first-generation sensors were unreliable and limited in capability, modern sensors can work in a wide variety of applications, feature reliable technology, and have configurable timeouts and modes that allow them to be tailored to the specific needs of the space. What's more, energy savings derived from having lights on only when a space is occupied can be significant.

The latest sensor solutions use radio frequency (RF) technology, allowing

them to be installed in minutes with no additional wiring.

3. Install timers. Gone are the loud, cumbersome, twist-to-turn-on timers that were used to automatically turn off lights and fans after a predetermined interval. User-friendly tap-on timers are now available for applications where timers are preferred to sensors.

4. Fully utilize timing capabilities. Many systems can be programmed to turn lights on and off automatically according to the time of day, and significant sav-



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ings can be realized with "timeclock" programming.

With this function, you can create a schedule for each day of the week that defines what time lights turn on (and to what level) and turn off. Systems with "astronomic" timeclocks control lights relative to sunrise and sunset rather than a specific time of day, so the timeclock automatically adjusts to seasonal changes. A combination of astronomic/ fixed-time events is useful for exteriors or public areas with many windows. For example, entrance lights can be programmed to turn on 15 minutes before sunset and turn off at midnight.

Optimizing existing systems

If there is an existing lighting control system and it is no longer configured to meet the original design intent, recommissioning may be the best solution. For facility managers that want to take a more incremental approach, the suggestions below can help increase savings with less time investment.

1. Adjust maximum light output. If a housing unit has fixtures with dimmable light sources, they are capable of providing more light output than is truly needed. Many lighting systems have a "high-end trim" feature, which enables you to limit the maximum light level to a value of less than 100 percent. This change will lock in savings and will increase bulb life—as described before—for many common light sources. This change should be made at the same time as any timeclock adjustments.

2. Reduce lighting usage. If the building has a more sophisticated system that offers a load shed feature, it may be possible to earn rebates or lower rates from the electricity supplier. The load shed feature allows users to reduce power consumption at the request of the utility; configuration of the load shed feature or training on how to use it is not time consuming and can result in substantial savings.

3. Evaluate system programming. People move around as needs change, and with new occupants come new requirements for light levels. It is a good idea to routinely check all parameters of the lighting system to ensure alignment



Occupancy sensors are another strategy for saving energy. The latest sensor solutions use radio frequency (RF) technology.

with the building's current use. Keep all of the tips above in mind when completing routine check-ups.

4. Upgrade or replace an out-of-date system. An updated system brings advanced control features and energy-saving capabilities to an older building. In most cases, a system can be upgraded to modern technology without significant facility rewiring or major disruption to everyday activities. A state-of-the-art system can include all of the features and strategies explained within this article.

5. Maximize use of daylight. When considering a new system, look at the opportunity to utilize natural light to the greatest extent possible. Daylight sensors allow a lighting system to automatically reduce electric light output when daylight is available.

6. Automate shade movements. Controllable shading systems can maximize daylight benefits without exposing occupants to unwanted glare. Systems that control the movement of shades in conjunction with electric light provide consistent light levels throughout the day.

Uncovering incentives

Based upon facility location and the scope of the improvement, you may be eligible to receive incentives, such as tax credits, utility rebates, or federal stimulus funds that encourage energy efficiency. Facility managers can determine if renovations are eligible for utility rebates by contacting their electric company. You'll find information on tax credits and stimulus programs on government Web sites.

There is a tremendous range of options when it comes to optimizing energy use. Make sure you understand all of the implications of a given option and choose the solutions that best complement the mission of your facility. Regardless of which changes you choose, there is no better time to start than the present. ■

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