

FACT SHEET

OUTDOOR AND PARKING LIGHTING

PARKING GARAGE/ PARKING LOT LIGHTING

Safety comes first when it comes to lighting for parking garages and parking lots. Drivers need to be able to see where they are going and judge distances accurately. Pedestrians have additional needs: They need to be able to recognize people and vehicles and identify colors, and they need to feel comfortable there are no “dark corners.” Garage owners have found that lighting levels above the minimum guidelines attract more business by helping customers feel more secure.

The *ENERGY STAR*[®] *Building Manual* notes that “well-designed outdoor lighting is cost-effective, controls light by directing it where it is needed, reduces glare, distributes illumination evenly, and reduces light trespass.” Meeting these divergent needs, and at the same time saving energy and reducing costs, requires selecting the best type of lighting for your facility and making effective use of controls.

The most common lamps used for outdoor and garage lighting are high-intensity discharge (HID) sources, especially high pressure sodium and metal halide. Because this type of lighting is typically not suitable for dimming or frequent on-off switching, lights are often left on all night, even when the parking lot or garage is mostly or completely empty. Fortunately, a variety of control-friendly, energy-efficient options is available, including fluorescent, induction and LED lamps. Incentives to help you upgrade are available from ComEd's *Smart Ideas for Your Business*SM.

METAL HALIDE LIGHTING

While overall an improvement on older technologies, current-technology metal halide lamps still have advantages and disadvantages. Their advantages include good color quality, efficacies of up to 100 lumens per watt, and a wide range of sizes. The primary limitation of metal halides is their long start-up and restart times, which have been shortened but not eliminated by electronic ballasts. Fixtures for metal halides need to provide protection from both explosion and the relatively high levels of UV light that the lamp produces.

Advancements in HID technology have improved efficiency and color stability; some metal halides are now dimmable as well. Retrofitting or replacing existing mercury vapor, standard metal halide or high pressure sodium fixtures with either pulse start metal halide or ceramic metal halide fixtures will improve efficacy and may qualify for incentives of \$35 (parking garage exterior) or \$70 (parking garage interior) from ComEd's *Smart Ideas for Your Business*.

FLUORESCENT LIGHTING

New T8/T5 fluorescent fixtures offer high efficacy, very good color rendering, long life (up to 20,000 hours), good light quality, and generally few operational limitations for most indoor parking applications. They can be used with occupancy sensors and other controls to improve efficiency even further, and overall are the most economical source of commercial parking garage lighting. Upgrading your lighting to T8/T5s can earn incentives of 30 cents per watt reduced from ComEd's *Smart Ideas for Your Business*.

Fluorescent lights are, however, affected by cold weather and extreme temperature drops — cold temperatures cause the



mercury vapor pressure inside fluorescent lamps to drop, reducing relative light output up to 50 percent. For outdoor lighting, LED or induction lighting could also be considered.

LED LIGHTING

Recent advances in LED technology have resulted in a new option for lighting outdoor areas, including streets, roadways, parking lots and pedestrian areas. LEDs offer several potential advantages over metal halide and high-pressure sodium lighting:

- Having no glass or filaments, LED lights are less prone to breakage.
- They come on instantly without run-up time or restrike delay.
- Their small size means that even “large” LED fixtures producing thousands of lumens can be lower profile than their HID counterparts.
- The directional light emission of LEDs reduces light trespass and “skyglow.”
- They contain no mercury, lead, or other known disposal hazards.
- They are not affected by vibration.

Above all, LEDs are not affected by cold environments — in fact, they perform better in cold environments. This factor alone means that LEDs should be given serious consideration for lighting outdoor parking lots. Replacing existing HID fixtures, including canopy lighting and wall packs, with LED fixtures can be eligible for incentives of \$15 to \$110 per fixture, depending on the fixture replaced.

With all their advantages, LEDs have some drawbacks. LEDs are not inherently white light sources, and a poorly designed LED

product can flicker, shift in color, look dim or provide uneven light. Since they are a new technology, LEDs do not have the extensive performance data of some other light sources, and some organizations are hesitant to invest in relatively expensive new technology. The quality of LEDs from different manufacturers can vary significantly, so it's important to ensure that LEDs meet the specifications below.

Specifications for LED Lights

ComEd's *Smart Ideas for Your Business* program has defined specifications that LED lights must meet to be eligible for incentives, and these specifications are detailed on the application form. LED lamps and luminaires over 18 watts must:

- Be tested to IESNA (Illuminating Engineering Society of North America) LM-79-08 — an industry standardized test procedure that measures the performance qualities of LED luminaires and integral lamps — by a third-party DOE-accredited lab
- Carry a warranty on the light source and power supplies of three years or more
- Have a minimum efficacy of 35 lumens per watt
- Have a CRI of 75 or above

INDUCTION LIGHTING

Induction lighting is an emerging technology that is energy efficient and environmentally friendly. Induction lamps (electrode-less lamps) offer two significant advantages: The ability to produce a substantial amount of light in a relatively compact package and a long lamp life due to the elimination of the electrodes. The major drawback of induction lighting is high installed cost. In applications where maintenance costs are high, though, induction lighting systems can be cost-effective.

Higher wattage induction lighting (55 to 165 W) offers very long life (up to 100,000 hours) and can be a good choice anywhere that relamping and maintenance are difficult or hazardous, such as parking garages and exterior pedestrian areas. Because they lack electrodes and filaments, they are vibration resistant and do not flicker when they power on. They are also highly resistant to cold temperatures. Induction lights' short ignition time also makes them well-suited for security lighting systems and other sensor controlled systems.

Like LED lighting, induction lighting is expensive, and that high price is a significant barrier at present for induction lighting.

Replacing existing HID fixtures, including canopy lighting and wall packs, with induction fixtures can be eligible for incentives of \$15 to \$110 per fixture, depending on the fixture replaced.

GAINING ENERGY EFFICIENCIES

The first step in improving energy efficiency is to change inefficient HID lamps and/or fixtures to more efficient types. The next is to find ways to turn the lights off: using controls and sensors to reduce the amount of time that lights are on.

Simple controls, such as photocells, timers and occupancy sensors, are relatively simple to install and can make a big difference in energy.

- Photoelectric cells — built-in or stand-alone — switch outdoor lights on at dusk and off at dawn.

- Timers or clocks turn lights off and on at set times each day. A photocell plus a timer, or an "astronomical" time clock, ensures that on-off times track changing sunrise and sunset times.
- An occupancy sensor turns the lights on when it detects motion; lights go off when no motion is detected. Occupancy sensors in storage areas, stairwells, and the like can dramatically reduce lighting energy use.

All three types of controls can qualify for incentives of \$0.05 per watt controlled from ComEd's *Smart Ideas for Your Business* program.

"Smart" or sensor-controlled bi-level parking area fixtures are the next step in energy-efficient parking area lighting. The fixture includes intelligent controls for occupancy-based light level adjustment, enabling the light to switch between high and low levels based on the presence of vehicle or pedestrian traffic. During vacant periods, the lights operate at 50 percent of their maximum brightness; when motion is detected, the lights instantly adjust to 100 percent light output. These integrated controls, coupled with a high efficiency electronic ballast, reduce system operation and maintenance costs and extend lamp life.

Smart bi-level lighting also includes an efficient light source: pulse-start metal halide, LED or induction. Combined, the controls and the source can reduce energy use up to 40 percent.

Fluorescent bi-level fixtures for stairwells, halls, and other interior areas operate in a similar way: Each fixture maintains a low light level when the space is unoccupied and quickly switches to full light output when occupancy is detected.

Smart bi-level fixtures can pay for themselves quickly, and incentives from ComEd's *Smart Ideas for Your Business* program can shorten the payback period even more. Incentives of \$100 per fixture for ceiling fixtures and \$135 per fixture for wall pack fixtures are available for fixtures that meet specifications. Incentives of \$25 per fixture can help you upgrade T12 fluorescent bi-level fixtures with T8s.

OUTDOOR SIGNAGE

Outdoor signage is sometimes an overlooked source of energy savings, and, with its low profile, lower energy consumption, good performance in cold environments and impact resistance, LEDs are well suited to a variety of indoor and outdoor signage.

LEDs are also being used in outdoor channel signs to reduce energy and maintenance costs. Strings of LEDs can take the place of neon as well, and lighting manufacturers continue to create new ways to use LEDs in signage. ComEd's *Smart Ideas for Your Business* program offers incentives for replacing incandescent, neon and other low-efficiency signs with LED signs ranging from \$6 to \$25 per sign.

"Light pollution" is a concern in outdoor lighting. Ordinances and community standards vary, and local zoning departments should be contacted before implementing an outdoor lighting project. (For more information, visit the Web site of the International Dark Sky Association, www.darksky.org.)

CONTACT US

For more information about ComEd's *Smart Ideas for Your Business*, visit www.ComEd.com or call 888-806-2273.

