

It's not always easy to find fully shielded fixtures. Most home building suppliers may have only one or two fixture types available. Electrical supply houses are often a better (though more costly) source. Commercial and industrial lighting designers are usually aware of good outdoor lighting practices and sources for fixtures. A partial list of sources is provided below:

GENERAL ELECTRIC:

Hendersonville, NC 28739 (800/626-2000)

HUBBELL LIGHTING

2000 Electric Way, Christiansburg, VA 24073 (703/382-6111)

KIM LIGHTING

P.O. Box 1275, City of Industry, CA 91749 (818/968-5666)

MIDWEST OUTDOOR LIGHTING SOLUTIONS,

Madison, WI, (608/255-1508) <LtgSolutions@aol.com>

THOMAS OUTDOOR LIGHTING

2661 Alvarado St., San Leandro, CA

RUUD LIGHTING

9201 Washington Ave., Racine, WI 53406 (414/886-1900)

Sources of Additional Information

International Dark-Sky Association (IDA)

<http://www.darksky.org>

The Illuminating Engineering Society of North America

<http://www.iesna.org/>

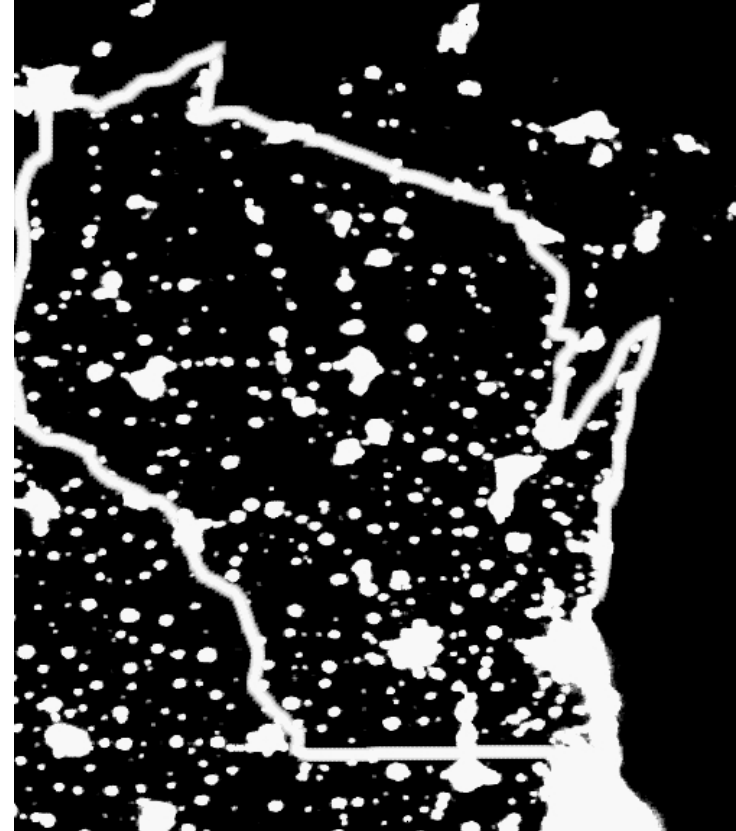
UW-Extension

Solid and Hazardous Waste Education Center

608/262-0385

<http://www.uwex.edu/shwec>

Sensible Outdoor Lighting: Practices for Preserving the Beauty of the Night



Wisconsin at Night From Space

While we all use artificial light to be able to see our way in darkness, the quality of our outdoor lighting can have a profound effect on our night time security and enjoyment. Poorly designed and installed lights cause glare and over-lighting that hamper the night vision of pedestrians and drivers, and create an unsafe nighttime environment, while sky glow from our cities hides the stars of our Milky Way galaxy.

The Town of Koshkonong has enacted an outdoor lighting ordinance to: “...curtail the degradation of the nighttime visual environment by encouraging lighting practices that direct appropriate amounts of light where and when it is needed, increasing the use of energy-efficient sources, and decreasing the wastage of light, sky glow, and glare resulting from over-lighting and poorly shielded or inappropriately directed lighting fixtures.”

To achieve these improvements, the outdoor lighting ordinance includes the following provisions:

- Use of fully shielded light fixtures to prevent glare and skyglow;
- Proper installation of shielded fixtures to prevent light trespass;
- Caps on the total amount of illumination per acre (or per parcel).

Specific exemptions to these conditions include: street lighting, emergency lighting, recreational lighting and holiday lighting. The outdoor lighting ordinance applies to all **new** construction and any modifications to existing structures of 25% or more.

This brochure is will help you understand how the provisions of the outdoor lighting ordinance apply to you. It also provides ideas on what you can do to voluntarily improve the quality of your outdoor lighting.



Unshielded

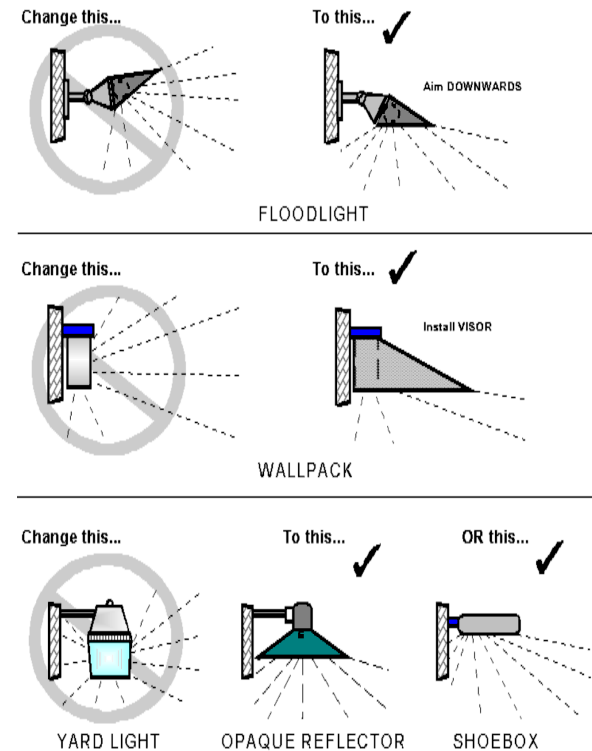


Fully Shielded

While the outdoor lighting ordinance does not apply to existing light fixtures, a few simple steps can improve the quality of your lighting.

- 1) Walk around your property along the property line to see if glare from any of your outdoor lights is visible. If so, re-aim the fixtures or install shielding to eliminate the glare and light trespass.
- 2) Can you add a motion detector to any of your security lights? If you have motion detectors, are they aimed and adjusted so they respond to movement without remaining on for extended periods?
- 3) How bright is bright enough? Try lower wattage lamps until you find the best bulb for your situation. Not only will you use less electricity, your bulbs will last longer.

Modifying Existing Fixtures



Courtesy NELPAG

Sensible outdoor lighting provides adequate illumination without glare or sky glow, and makes the most efficient use of our energy resources.

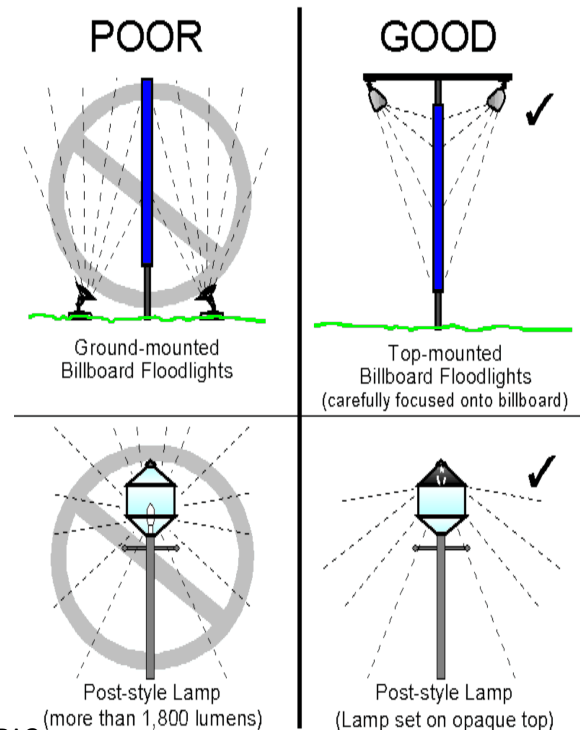
1. Provide adequate light for the intended task, but never over-light. Brighter is not always better, so try to choose lamps with the lowest level of illumination that will meet your needs. For commercial lighting, the Illuminating Engineering Society of North America (IESNA) publishes exterior lighting design recommendations.
2. Use fully shielded lighting fixtures to minimize glare from the light-producing source. Fully shielded means: "A lighting fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal...".
3. Install lighting fixtures carefully to maximize their effectiveness on the target area and minimize their adverse impact beyond your property line. Proper position and aiming is important. Place fixtures uniformly to illuminate the area without creating bright "hot spots" with dark shadows in between.
4. Use properly installed and adjusted motion detectors to minimize the amount of time your lights are on and to provide better security against intruders. For lights on timers or manual switches, use energy efficient lamps with good light quality.



Good outdoor lighting is easy, if you follow two simple principles:

1. **Illuminate only what you wish to see, and nothing else.** Our eyes are able to see at night because of the light reflected from the surface of an object. Glare from a bulb, light falling on objects we don't intend to illuminate, or light shining across the landscape or into the sky, are simply a nuisance and a waste. Shielded fixtures direct light toward what we wish to see.
2. **Use only as much illumination as you need.** Excessively bright lighting wastes energy, hampers our ability to see at night, compromises our security and makes for a harsh and unattractive nighttime environment. Several well aimed low wattage fixtures usually do a better job than a single, high output lamp.

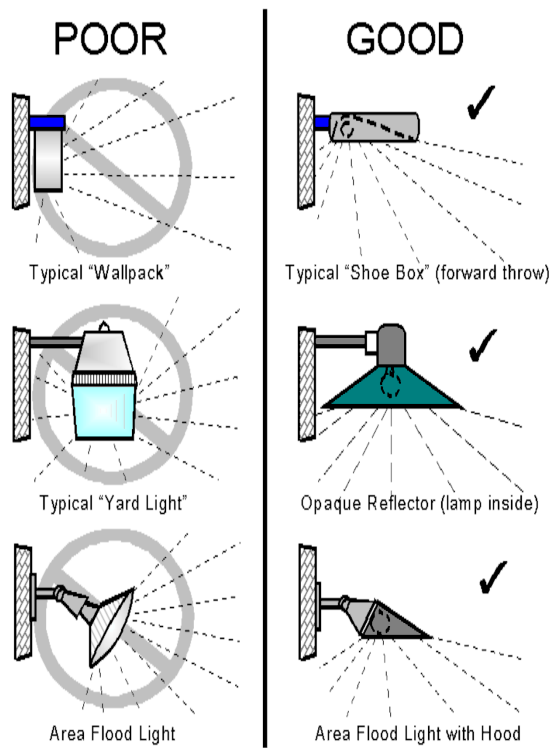
Examples of Some Common Lighting Fixtures



Courtesy NELPAG

Night Vision: Our eye can adjust to a wide range of light, able to see over light intensities of 1,000,000 to 1, while resolving a 1percent difference in luminance over that range. At night, the fully adapted eye can see a single candle 10 miles away! However, the eye's sensitivity to light and dark is not instantaneous. Walking out of darkness into bright light, we squint to adjust to the higher level of illumination. Walking back into the dark, we pause as our eyes adjust to be able to see in the dimmer light. This need for accommodation is caused by glare from light fixtures, or from over-illumination of a surface or object.

Examples of Some Common Lighting Fixtures



Glare: When you see a distant point of light (seeing light from the fixture itself, not what that light is meant to illuminate) you are observing glare. Glare is both the most common lighting problem, and one of the easiest to detect and fix. By shielding the light fixture to prevent light from reaching our eye, we can maintain our night vision while illuminating our surroundings. Glare also represents wasted energy. Poorly designed fixtures can waste 30-40 percent of the light they produce by glaring onto neighboring properties and into the night sky.

Light Trespass: Light trespass is light from one property shining onto an adjacent or nearby property. We all have seen street lights, commercial lights or residential lights spilling over onto adjacent property, illuminating what was not meant to be seen. Poorly designed outdoor lighting can shine out into the neighborhood, into bedroom windows, invading privacy, disturbing sleep, and creating an unattractive look to the area.

Sky Glow: Sky glow is the diffuse light in the night sky caused by outdoor lighting. Glare and over-illumination from city lights blind our eyes to the fainter light of the stars. Two-thirds of all Americans must travel into the countryside to be able to see the millions of stars of our Milky Way galaxy. Even there, glare and sky glow from dusk-to-dawn farm lights obscures the fainter stars.

Energy: Much of our outdoor lighting wastes energy because it is poorly designed and installed. This waste results in higher energy costs and increased environmental pollution from unneeded power generation. In Wisconsin, an estimated 1 percent of all electricity is wasted shining light into the night sky. Sensible outdoor lighting practices, combined with shielded fixtures and lower wattage bulbs can make for the most efficient use of our energy resources.

Lighting and Security: Dusk-to-dawn security lighting has become common. We've all noticed mercury vapor lamps on farms and garages, kept on long after the residents are asleep. A more effective approach to security lighting is the motion detector. A moving person will be more noticeable to neighbors and residents if they are suddenly illuminated. Shielded lights also improve security by allowing us to use our night vision to see dim objects and movement in shadow that would otherwise be obscured by glare.