

# Solutions

High-quality exterior lighting benefits modern society. However, the byproduct of poor lighting installations, **light pollution**, is commonly seen as glare, spillover, and sky glow. The objective is not necessarily to have less light on the targeted object, but to have better light. Manufacturers of [sky-friendly fixtures, below](#), offer viable alternatives to typical, offensive outdoor lights. You have choices.

What's the problem?	Why should I care?	What can I do?
<p style="text-align: center;"><b>Glare</b></p>  <p><i>Glare is light striking your eye directly from the source. A veil of light across your field of view reduces the contrast between objects--you can't see as well in the stark brightness.</i></p>	<p>For motorist and pedestrian safety, drivers need to discern objects at night. The two critical road signs at this intersection (left) are difficult to see because the eyes are overwhelmed by direct light, creating a hazard. Glare hinders true security by creating extreme shadows, offering refuge to criminals in spite of the bright lights. Glare can be discomforting, disabling, or blinding. As we age, the effect--and its impact on our lives at night--becomes worse.</p>   	 <p>Aim adjustable lights downward so they are level with the horizon. Purchase dark-sky friendly fixtures that have the light bulb tucked into the luminaire housing, not exposed to the eye. Install only light fixtures that are fully shielded. Install security lights with motion detectors for greater security. With lighted signs, request lighter text and logos/graphics against a dark, opaque background.</p> 
<p style="text-align: center;"><b>Spillover</b></p>  <p><i>Spillover is light that extends beyond the targeted object. This includes <b>light trespass</b>, which extends beyond property lines.</i></p>	<p>Light that is broadcast well beyond the intended area is wasted--an unnecessary loss of money. Light that encroaches upon the property of others, such as into bedroom windows, is a personal infringement. Neighbors are entitled not to have your bright lights shining into their personal space. Roadway light that spills into adjacent properties represents a waste of tax dollars.</p>  	 <p>Contain floodlights with clip-on visors and aim the fixtures downward. Install fully shielded lights, and do not place light mounts where the light crosses property lines. Save money by lessening the light output (in lumens) of existing fixtures.</p> 

## Skyglow



*Sky*

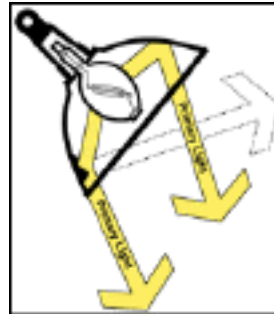
*glow* is the garish hue seen overhead from artificial light scattering in the atmosphere. The reflected light masks the background stars and creates a pallid-looking sky.



You could readily save the tax dollars spent on lighting the clouds.



Light sent skyward is a waste of that light (<2% of the cost) plus the additional energy loss (~98% of the cost) that went into producing the light pollution. (See [Energy Chain](#).) Our children are losing the heritage of the night sky. Most of them are unable to see the Milky Way galaxy or other dark sky wonders. Nocturnal animals are disrupted by the abnormal night lighting. Some studies suggest human health is negatively affected because of disrupted circadian rhythms due to light pollution.



Install simple visors over existing lights and purchase fully shielded fixtures. Find a less offensive way to express yourself



than through outdoor vanity lights (right) and landscape lighting. Ask your elected officials to select public



lighting fixtures that don't waste your tax dollars skyward.

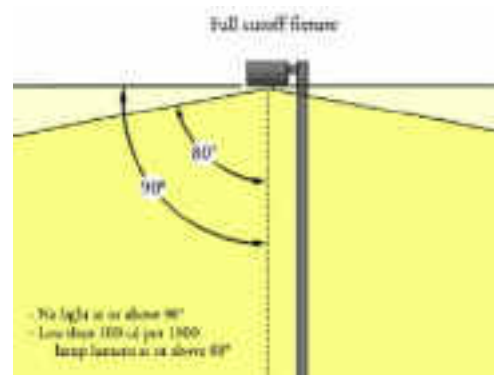
Help reclaim the vast public space overhead. Aim billboard lights down instead of up.

## Clear Diagrams

Bob Crelin offers clear diagrams that convey the qualities of dark sky-friendly fixtures.



[Better Lights](#)



[Light Plans](#)

## Waste

In broad terms...

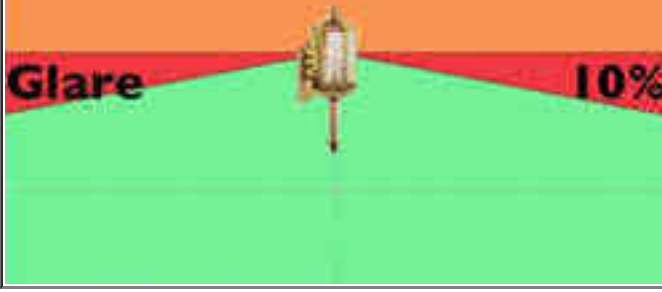
<http://www2.nature.nps.gov/air/lightscapes/lighting.cfm>

"For a typical unshielded light fixture, 50% of the light shines upward. This is a direct waste and is the main cause of light pollution. About 40% of the light shines downward...Light emitted horizontally tends to create glare, working against the productive

**Direct Waste - 50%**

**Glare**

**10%**



light. A shielded fixture eliminates the upward light and minimizes glare, allowing a much smaller wattage bulb to be used." Courtesy of the U.S. National Park Service.

**Caveat:** The total energy loss is much worse than it appears. See [Energy Chain](#).

## Suppliers of Sky-Friendly Lights



**Do it right.**

<http://www.darksky.org/lighting/>

A thorough list of good lighting fixtures and manufacturers are suggested by the International Dark-Sky Association. Good alternatives are readily available in all categories, styles, and price ranges.



<http://www.parshield.com/index.html>

Shield your floodlights and spotlights with a simple clip-on visor.



<http://www.starrynightlights.com>

Starry Night Lights is a night-friendly outdoor lights store.

<http://www.outdoorltg.com/>

Outdoor Lighting Associates specializes in retrofits.

<http://www.softlite.com/>

Soft Lighting Systems claims its sports facility lights permit no direct light above the horizon.



<http://www.flagpolebeacon.com/>

Dark sky friendly light for illuminating flags on flagpoles.

See also <http://www.youtube.com/watch?v=ln25agg6RsQ> for YouTube clip.



[http://www.treehugger.com/files/2007/08/\\_people\\_who\\_liv.php](http://www.treehugger.com/files/2007/08/_people_who_liv.php)

Lunar-Resonant Streetlights adjust brightness output to respond to ambient moonlight.

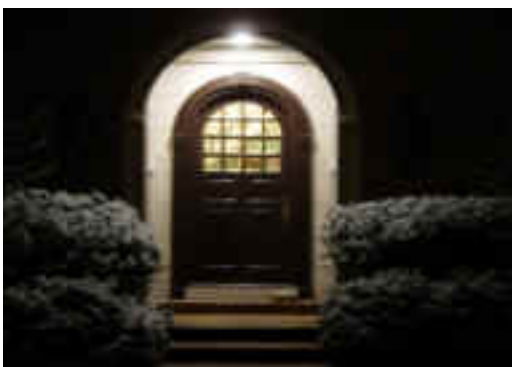
## What Else Can I Do (that saves me money)?



Right now you can save money and improve the night sky--*without it costing you a thing*. For example, if your outdoor lighting fixture has multiple bulbs, unscrew one or more bulbs (as shown) to lessen the output. You probably won't miss the extra light. Many neighborhood lights often do more to inhibit visibility (via glare) than they contribute to real safety. The glare of direct light creates strong shadows and poor contrast, rather than illuminating the property uniformly.

- Install a motion detector on exterior security lights. You save money while having a more effective deterrent.
- Replace wide floodlights with narrower spotlights of equal or less wattage.
- Aim all floodlights or spotlights downward so they are at least 45 degrees below the horizontal line.
- When replacing incandescent light bulbs with energy-efficient bulbs, use a lower wattage, for the light output (in lumens) of the energy-efficient bulbs is likely greater than that of the old bulb it is replacing. Otherwise you are only swapping one high-wattage light bulb with an equally high-wattage light bulb.
- Install dimmer switches and timers.

For the do-it-yourselfer, don't be swayed by the [misleading illustrations](#) in the *Home Depot Buyer's Guide*. Every lighting application around the home is available in a night-friendly version. The *Buyer's Guide* ignores the impact of exterior lights and erroneously suggest their outdoor light is confined to well-defined limits.



Other [NightWise resources](#)

[www.nightwise.org](http://www.nightwise.org)

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