Some quick outdoor lighting tips

When switching to Outdoor Compact Fluorescent Light (OCFL) Bulbs, as shown below, you will not need the same wattage as an incandescent bulb. Help preserve dark skies by not over lighting an area because of a simple miscalculation.

The Department of Energy and Environmental Protection Agency’s EnergyStar program have contributed the following table to assist in OCFL conversions.


<table>
<thead>
<tr>
<th>Incandescent Light Bulbs</th>
<th>Minimum Light Output</th>
<th>Energy Star Qualified Bulbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts</td>
<td>Lumens</td>
<td>Watts</td>
</tr>
<tr>
<td>40</td>
<td>450</td>
<td>9–13</td>
</tr>
<tr>
<td>60</td>
<td>800</td>
<td>13–15</td>
</tr>
<tr>
<td>75</td>
<td>1,100</td>
<td>18–25</td>
</tr>
<tr>
<td>100</td>
<td>1,600</td>
<td>23–30</td>
</tr>
<tr>
<td>150</td>
<td>2,600</td>
<td>30–32</td>
</tr>
</tbody>
</table>


Look for the IDA Fixture Seal of Approval to make sure you are buying a true dark-sky friendly fixture.

The International Dark-Sky Association (IDA), is an educational organization that seeks to preserve the natural night skies worldwide. Light pollution is an increasing problem threatening astronomical facilities, ecologically sensitive habitats, all wildlife, our energy use as well as our human heritage. Light pollution is excessive and inappropriate artificial light. The four components of light pollution are often combined and overlapping:

- **Urban sky glow**—the brightening of the night sky over inhabited areas.
- **Light trespass**—light falling where it is not intended, wanted, or needed.
- **Glare**—excessive brightness which causes visual discomfort. High levels of glare can decrease visibility.
- **Clutter**—bright, confusing, and excessive groupings of light sources, commonly found in over-lit urban areas. The proliferation of clutter contributes to urban sky glow, trespass, and glare.

Keeping lights on in unoccupied buildings, outdoor lights pointing up to the sky or unshielded lights create sky glow. Visit the IDA Web site at www.darksky.org to learn more about the causes of light pollution and what you can do to keep the skies dark.

3225 N. First Ave. Tucson, AZ, 85719 USA
Phone +1 520 293 3198
Fax +1 520 293 3192
www.darksky.org
ida@darksky.org

Rev 2009/July © International Dark-Sky Association
What is waste?

This office building depicts wasted energy. The office is empty, but all the lights are on. This type of illumination contributes to the general sky glow of the city as well wasting energy. Is the most efficient use of your tax dollars to keep buildings lit when they are empty?

Being dark sky friendly does not mean no light. It means using the light that you need for a particular task in the most efficient manner possible.

Good Lighting vs. Bad Lighting

The photo on the top shows light shining into the sky and creating glare. There are also many more lights being used. The parking lot on the bottom shows shielded lighting. Notice how fewer lights illuminate an area of similar size and without glare.

What is being done?

Municipalities are exploring new ways to save money and keep the skies as natural as possible. Dark sky friendly fixtures are similarly priced as traditional fixtures or the costs are off set through energy efficiency. Shielded lighting usually requires a lower wattage lamp because all the light from the fixture is pointed downward where it is needed.

Calgary, Alberta, Canada switched to shielded lighting in order to save money on their streetlight electricity consumption. By retrofitting their roadway lighting with flat lens fixtures, Calgary will see cost savings from reduced energy consumption of approximately $1.7 million a year.

Many cities are using new solid state lighting or light emitting diodes (LED) technology and solar power. These are terrific alternatives in terms of energy and cost savings. To be truly effective and not create sky glow, glare or light trespass, an LED or solar lamp must be pointed downward, fully shielded to emit no light above the 90 degree angle. A globe light “glare bomb” can still be a “glare bomb” even if it is an LED or solar powered lamp.

Carbon footprint

Wasted outdoor lighting, that shines directly upward, is estimated at 22,000 gigawatt-hours a year. At an average of $.10 per kilowatt-hour the cost of that wasted energy is $2.2 billion a year. In terms of how that affects our carbon footprint, here’s the math:

- 3,412 Btu to generate one kilowatt-hour
- 1 ton of coal = 20.1 million Btu
- 1 barrel of oil = 5.8 million Btu

- 3.6 million tons of coal, or 12.9 million barrels of oil are wasted every year to generate the energy for this lost light. That’s almost 451.8 million gallons of gasoline wasted.

Solutions

IDA believes that there are solutions to these issues:

- Shield and lower the wattage of all outdoor lighting: Homeowners, businesses, and cities.
- Use only the light you need to get the job done.
- Use timers, dimmers, and sensors to darken unoccupied areas. Shut off the lights when you can.

A shielded light uses less wattage and saves everyone money, reduces our energy use and shrinks our carbon footprint. Work with your neighbors and local government to keep the light on the ground and the skies natural. This is a win-win situation for everyone. You save money while preserving a valuable natural resource.