International Dark-Sky Association (IDA) — Information Sheet #24

Security Lighting: Let's Have Real Security, Not Just Bad Lighting

One of the main goals for nighttime lighting is to have good safety and security at night, both at home and away from home, for ourselves, our families, our homes and property. However, the task is to **be** safe, not just to **feel** safe. This means that we need effective and efficient lighting. Good visibility is the goal. We want to be able to see well, rather than just lighting the criminal's way. This goal exists for us at home, on the streets, in parking lots, at work, wherever. Good lighting can be a help; poor lighting always compromises safety.

While most crime occurs during the day or inside buildings, we nonetheless want the feeling and the reality of being safe outside at night. That does not mean putting in the brightest light we can find, blinding everyone in the area, creating light trespass, and lighting up the night sky. What we need is effective lighting, lighting that puts light where we need it (and nowhere else) and where it will help visibility. That means: no glare, no light trespass, no direct uplight, no harsh shadows, no steep transitions from light to dark, etc. Lighting by itself does not ensure safety. Is there more crime in the "well lit" centers of large cities or in smaller towns with much less lighting? A cynic might derive a positive correlation between crime and light: the more light, the more crime. Current and past studies by competent crime authorities can be summarized as follows: "The paucity of data precludes any definitive statement regarding the relationship of lighting and crime, but there is a strong indication that lighting decreases the fear of crime." Quality lighting rather thana large quantity of poor lighting is essential for any real security.

Here are some examples of bad security lighting--lighting that too often compromises safety. Poor quality fixtures can give the illusion of safety or the feeling of security, but in reality they don't add to safety at all; they often make things worse. They are beacons to the criminal: "Come and get me, my lighting will help you, not me." In essence, they provide criminal-friendly lighting and a false sense of security.

1. **The 175-watt dusk-to-dawn "security light".** This fixture was designed in the old days when energy was cheap, there were no good lighting fixture designs, and the adverse effects of bad lighting were not well appreciated. It sells for $29.95 or less, but uses more than 200 watts of power. That means it costs about $70 per year to operate in most locations much more in high electricity cost areas. A good deal of the light output is wasted, going up or sideways where it does no good at all. This fixture has a great deal of glare, often blinding the homeowner and others. It splatters light everywhere, alienating neighbors. It casts harsh shadows behind trees and buildings, allowing criminals plenty of dark areas to hide in. It is a prime example of bad lighting. But it is in use by the millions throughout the country. Why? It's cheap, and bright. We see lots of glare so we think there is lots of light. But it is a most ineffective and inefficient light. (See IDA Information Sheets No. 3, 26, and 103 for more information.)

2. **Globes.** Again, light is splattered everywhere. Because they waste so much light, they require a high-wattage lamp to get any light on the ground. The lamp means a great deal of glare is produced, so much that it often is not easy to see the ground! Why are so many of these inefficient fixtures used? Mainly because they look good in the daytime! Only a very low wattage lamp (as in the days of gas lighting) should be used, thus preserving the daytime appearance and providing a nice nighttime "ambience". A separate, quality lighting system can be installed to light the ground. There is no glare or light trespass from this system, so it doesn't detract from the looks of the globes. This provides the desired attractiveness as well as good lighting and safety. It costs more initially, but there is now good lighting.

3. **Poorly shielded "wall packs" or similar fixtures.** These also splatter light everywhere, with some of the light getting where it's needed but most being wasted. They also create lots of glare. Well-shielded wall packs can be excellent light sources, if they have good light control; many have nearly none.

4. **Poorly designed or installed flood lights.** Flood lights can be good, if they have good light control. But they must be well-designed and well installed to take advantage of their pluses. Often they are poorly

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installed, aimed at what seems a random direction or, worse, right at the street (causing terrible glare for motorists) or at a neighbor's yard or bedroom window. We have all seen many examples of such bad lighting at night.

Enough of the bad, here now are some examples of good quality security lights:

1. **A well-shielded low pressure sodium (LPS) fixture**: This offers well-controlled light, energy efficiency, no glare. A lack of color rendering is not a disadvantage for most security lighting. Visibility is excellent with LPS lighting.

2. **A similar full-cutoff high pressure sodium (HPS) or metal halide (MH) fixture, or the new low-wattage compact fluorescent (PL) lamps used in good fixtures**: These have no uplight and no glare.

3. **Well-controlled and installed flood lights or spot lights**. These need great care in design and installation to be in the "good" camp, for almost all present installations are clearly not that way.

4. The **infrared sensor spot lights** that come on when someone walks into the field of view of the infrared (IR) detector. (They can activate an alarm too, if wanted.) These lights are very effective in terms of cost and security. They scare intruders away, they offer good visibility to the homeowner when needed (e.g. when taking out the garbage, or when there is an intruder). They must be installed so as to put the light only where it is needed, not shooting up into the sky or onto the neighbor's property. Under the house's eave is often a good location.

To see well, we need adequate light, but not too much. Too much can ruin our adaptation to darker areas at night, blinding us just when we need to see. When we go from too bright to too dark or vice versa, we have poor visibility for a while. This effect is called "transient adaptation", and good designs should minimize its adverse effect on visibility.

To see well, we need to minimize glare and dark areas near well-lit areas. This means good lighting design is required.

To see well, we must not allow the eye to be flooded with too much light when driving or walking at night. "Luminance overload" can easily compromise vision and dark adaptation.

Think, too, about energy savings. We should not waste light nor use inefficient light sources. More than a billion dollars is wasted annually in the U.S.A., with much more throughout the world, due to poor lighting.

What else can we do to maximize safety at night? Here are some ideas. Consult libraries, the local police, companies specializing in security equipment, and others for details and other ideas, but here are a few:

- Use good locks; use a peep hole in the door to see who is there before answering the door
- Have an effective alarm system; include motion sensors (such as are used in the IR spotlight mentioned above)
- Have good phone sense (what you say when answering the phone or on your answering machine)
- Play the radio when gone; put indoor lights on a time switch; put labels on your property (and put security labels on your windows)
- Have a dog; join or promote a neighborhood watch program (one of the best ideas: promote quality outdoor lighting through a neighborhood watch or other group).

Write IDA for a list of additional information sheets about outdoor lighting; we also have excellent slides that illustrate the differences between poor lighting and quality lighting.