

## **The Top 10 Reasons for Not Installing a Dusk-to-Dawn, Mercury Vapor Yard Light**

By Dan Heim, President, Desert Foothills Astronomy Club

As the North Valley continues developing, the issue of light pollution becomes ever more critical. Our once-pristine desert night sky displays fewer and fewer stars as more and more artificial night lights come online. Development is inevitable — people keep making more people, and nobody's making more land. Fortunately, there are some easy choices we can make along the way to preserve the quality of our sky. The easiest is: eliminate unnecessary nighttime illumination, and make the necessary illumination better. Arizona Revised Statute, Title 49, Chapter 7, and Maricopa County Zoning Ordinance, Section 1112, both address the problem, but all too often are not enforced.

Our attempts to turn the Sonoran desert into a comfortable human habitat have brought us mixed blessings. We have conquered the climate with our irrigation and air conditioning, and provided an oasis from which the natural desert is still in reach. Many Arizonans choose to abandon the “big city” and live in that desert. Most embrace the natural environment, leaving the indigenous vegetation and landscape intact. But when we install brilliant sources of artificial illumination that run all night, we lose an integral part of that desert experience . . . the beauty of the Southwestern night sky. To that end, we present our “top 10” reasons to avoid bad night lighting. We hope to convince you *the only good night lights are billions of miles away*.

### **1. Cost of Operation**

The standard 175 Watt mercury vapor lamp, operating an average of 12 hours per day, over the course of one year, will use 767 kWhr of electricity. At the national average rate of 9.5¢/kWhr (2006) this will cost you \$72.87 every year. Given the alternatives, this is an unnecessary expense. A motion-sensor activated lamp, with shielding to direct the light where needed, will cost you less than 1/10 that amount. Plus, the bulb will last much longer.

### **2. False Sense of Security**

The glare produced by the bright, blue-white light creates harsh shadows and, if reflected from a shiny surface, can “redline” surveillance cameras. Flooding your yard with this light creates shadows that make for good hiding. Security experts agree that a motion sensing floodlight in the 100-200 watt range is by far more effective. Its sudden brightness will startle intruders and produce less-predictable shadow patterns.

### **3. Attracts Critters**

The vast majority of insects are photophilic (attracted to light). Along with these insects come those creatures that prey on insects, including scorpions, spiders, bats, and others. Your next visitors up the food chain will include rodents and rattlesnakes. You might just as well put up an illuminated marquee advertising ideal feeding conditions. Food, water, and shelter are scarce in the desert, but can often be found near sources of light [reference: *Desert Critter's Survival Guide*, page 1-1].

### **4. Attracts Lightning**

The tallest well-grounded structure on many rural home sites is the pole mounted yard light. Sure, the taller the pole, the better the light coverage, but this is a definite hazard during our monsoon electrical storms. Ben Franklin demonstrated the reality of this hazard over 100 years ago, using a kite tethered by conductive metal wire instead of string. The results were shocking.

### **5. Contributes to Light Pollution**

Arizona contains the greatest concentration of telescopes found anywhere on this planet. Astronomy brings significant revenue and prestige to our state. Tucson and Flagstaff have already enacted light-pollution ordinances to preserve the precious and vanishing resource of clear, dark skies. A.R.S. 49-1104 prohibits the sale of mercury vapor lights in this state as of 1991 (though many are still being sold through various outlets), and prohibits their use entirely after 2011. Enlightened individuals can, of course, act now.

## **6. Loss of Your Desert Night Sky**

When people from Phoenix visit my New River home for the first time, one of their most common comments is “Wow! You can see so many stars out here!” The 1994 California earthquake shut off power in parts of Los Angeles for a few days, during which time Griffith Observatory logged dozens of calls from curious people who wanted to know if “the weird sky had anything to do with the earthquake.” City dwellers have forgotten what the night sky is supposed to look like, and are surprised when it looks the way it should. The desert night sky is a natural resource, and a source of inspiration to all cultures. Turn off your lights, set up a chair, and watch the show.

## **7. Upsets Flora and Fauna Biorhythms**

If you grow plants or raise animals, consider how they have evolved to flourish under natural lighting conditions that guarantee darkness (or sleep) for an average of 12 hours each day. Many plants use the annual variation of the day/night ratio to trigger important functions. Animals, too, react to these lighting variations, in the setting of their internal biological clocks. Exposure 24/7 to light or dark is unhealthy.

## **8. Wastes Energy**

Light that is efficiently directed downward can serve us well. There are many sensible reasons for using nighttime lighting, primarily safety and security, but neither of those require lights to shine upward. Non-directed fixtures in the U.S. alone send an estimated 1 billion dollars of wasted light up into the sky each year (International Dark Sky Association Information Sheet #26). If light is directed only where needed, a lower wattage bulb (read \$) will suffice.

## **9. Bothers Neighbors**

Regardless of your personal views on light pollution, chances are some of your neighbors came to the desert because of its natural beauty, and don't appreciate your light glaring into their yard any more than they would fumes from an upwind rendering plant. Be a good neighbor, and be aware that what you do with your property affects those adjoining.

## **10. Light Trespass Nuisance Lawsuits**

If you ignore our recommendations, and have a neighbor that prefers solving problems with lawyers instead of conversation, you might find yourself on the receiving end of a “light trespass nuisance suit.” Case law for this legal action is already established in some states. But, as stated earlier, basic consideration of your neighbors' rights and sensibilities is all it takes to avoid unpleasant scenarios.

## **In Conclusion ...**

We need to start thinking about the dark night sky as a natural resource — and one that is endangered. It's not easy getting the word out. People who have never seen the stars in a really dark sky rarely suspect there's any problem. That's why amateur astronomy clubs are always happy to show you the night sky, no charge. The more people are aware of light pollution, laws notwithstanding, the sooner the problem gets fixed. You can help us spread the word. Download, or link to, this article at: [www.dfacaz.org](http://www.dfacaz.org). Feel free to make as many copies as you need, and distribute them wisely.

We thank the International Dark Sky Association in Tucson ([www.darksky.org](http://www.darksky.org)) for their assistance with this article. There are many resources on their website for both education and remediation.

The Desert Foothills Astronomy Club also provides an enlightening educational program on the issue of light pollution. This 90-minute multimedia lecture explains the causes of light pollution, and suggests solutions. To book a date for your group, contact Dan Heim at: [dan@heimhenge.com](mailto:dan@heimhenge.com).