



## Night Sky Friendly Guidelines

- 1. Determine if each light is necessary.**
- 2. Shield and direct lights only where illumination is needed.**
- 3. Turn lights off when you are not there or use motion or timing controls.**
- 4. Reduce the amount of light to only what is needed for the task.**
- 5. Select lights with a warm color (2700K or less is best).**

### **Part 1: Determine if Each Light is Necessary**

Ask yourself what function each light fulfills. Every light should have a clear purpose. Is the light needed? How does it impact the area, including your neighbors, wildlife, and the environment? Consider using reflective paints or self-luminous markers for signs, curbs, and steps to reduce the need for permanently installed outdoor lighting. Take the light out of service if it no longer serves a purpose.

#### **Q1A. Do each of your remaining lights serve a purpose?**

If 'Yes', move to Part 2.

If 'No', disable any lights that do not serve a purpose before proceeding.

## Part 2: Shield and Direct Lights Only Where Illumination is Needed

The Better Lights for Better Nights diagram below is a great starting point to learn about fixtures that can shield and control light direction versus fixtures that allow light to go upwards or on adjoining properties. Acceptable light fixtures shield the light source/bulb from normal viewing points and do not allow any light

### Better Lights for Better Nights

Help eliminate light pollution. Select the best fixture for your application using this guide. Use the lowest wattage bulb appropriate for the task and turn off the light when it's not being used.



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above a horizontal line drawn through the lowest point of the illuminating elements. The best fixtures tuck the bulb up in the fixture, minimizing glare and light trespass.

To avoid glare, the eye must be protected from directly viewing an overly bright light source. Even fixtures that are labeled full cutoff or fully shielded may need additional shielding to actually hide the source of the light from a normal viewing point. Shielding the light concentrates it where it is needed and usually allows you to reduce the wattage to get the same or more usable light. In fact, a wattage reduction is usually required to keep that concentrated light from producing reflective glare and causing an over-lighted situation. Aiming lights “down” does not mean to just angle the light towards the ground. The fixture must be positioned so it does not allow any light to go above a horizontal line drawn through its lowest part. In most applications, this requires the light be installed above the area to be illuminated.

The light from a properly installed fixture should project below and out to the sides of the fixture, like a

cone

with the peaked top of the light at the fixture. An acceptable fixture that is mounted at an upward angle would normally change it into an “unacceptable” fixture. There are situations where an ‘acceptable fixture’ would require additional shielding: for example, one mounted up on a hill would probably require the addition of a shroud or shield to keep it from shining directly on other properties.

Low output landscape lighting directed upward and shielded so that no one sees the source of the light from any other property is acceptable if the lights are turned off when no one is actively using them. Remember, both plants and animals need natural darkness to be healthy.

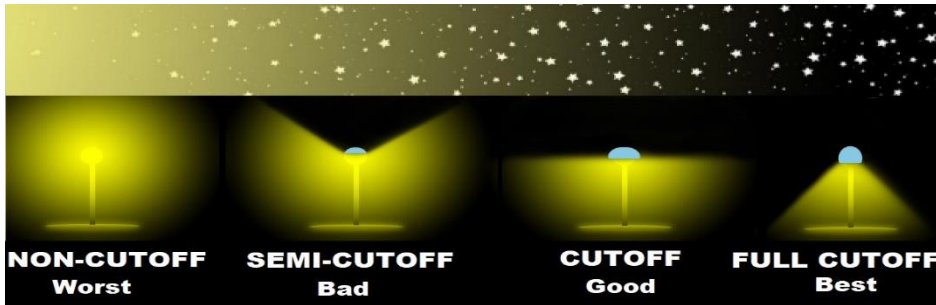
Using a smaller wattage bulb that is low enough to not create glare for light sensitive individuals can improve visibility on your property. Shielding the bulb from view may be done with a durable shield (sheet metal works well), heat resistant paint, or by replacing the fixture with one that hides the light source.

Take a tour and view your property from neighboring areas. Look at it from a nearby hill if possible. If your lights look star-like, you are paying for light to go on your neighbors’ property. Shield your lights and reduce wattage, and your pocketbook and your neighbors will be happier!

**Q2A. Do all of your outdoor light fixtures hide the source of the light and direct the light only where it is needed (and below the horizontal)?**

If 'Yes', move to Part 3.

If 'No', then proceed to Q2B.



**Q2B. Are the lights that caused you to answer question Q2A "No" low-output lights directed so no one off your property sees the source of the light, and which are turned off when no one is there to use them?**

If 'Yes', move to Part 3. If 'No', then your lights may need some adjustments. Please see the examples and suggestions for acceptable light fixtures and installation in Part 2.

### **Part 3: Turn Lights off When You Are Not There or Use a Motion Sensor or Timer**

Professional studies have shown lighting an unoccupied area can attract criminals. It is also a waste of energy. Turning off lights forces criminals to bring their own flashlights, causing them to be more noticeable if anyone is there to see them. It also allows wildlife to exist in the natural light of the stars and moon. Timers, motion detectors, and half-night photocells can provide illumination, if needed, for an area or facility.

**Q3. Do you normally turn off outdoor lights at night when no one is using them?**

If Yes, you're ready to move to Part 4.

If 'No', consider the installation of a timer or motion sensor, or include an explanation in Part 6 of why it is necessary to keep outdoor lights on in your particular situation

**Q4. Do your outdoor lights gently illuminate without glare, allowing you to see beyond the lit area? (If they light up some areas like daylight or create glare for sensitive people, then your answer is no.)**

If 'Yes', move to Part 5.

If 'No', reduce the amount of light on your property to a level where you can see what you want to see without causing glare and over-lighting. Illuminating an area with shielded lighting at a level appropriate to nighttime is your goal when you need artificial light. Note the photo on this page of a 24-hour emergency room. The lights are shielded and do not look

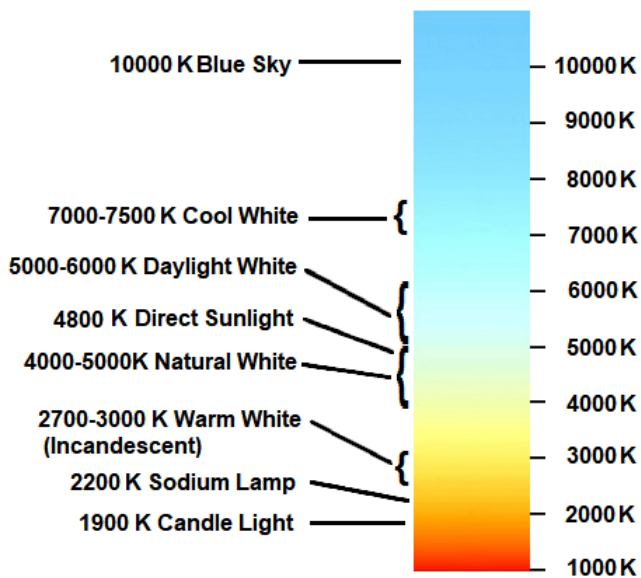


like stars. The parking area and sidewalks are very well lit. After you reduce the wattage on your outdoor lights or reduce the number of fixtures answer Q4 again to determine if your property might qualify for the award.

## Part 5: Select Lights with a Warm Color

Living things need light in the blue wavelength (white light) during the day, especially through the morning hours, but blue light should be avoided after dusk. With current technology, the best way to tell a light is blue-rich is to look at the color temperature of the light. Warm colored lights usually produce less light in the blue wavelength. The color temperature of a light may be listed on the package just as 'warm' or 'cool', or the manufacturer may indicate the Kelvin (K) rating for a light. Old-fashioned incandescent bulbs are rated around 2700K, which is described as a warm color. Many of the bright white LEDs are rated at 4000K and above. This bright white light suppresses the production of melatonin in living organisms which can, over the long term, damage the health of that organism.

Know when a particular light will be used and take into consideration what the color of the light does to living things. Remember, blue light should be avoided after dusk. You may find it interesting to research the lighting studies led by Dr. George Brainard that focus on the type of lighting used inside the International Space Station and its effects on the astronauts.



**Kelvin Color Temperature Chart**

**Lighting Facts** Per Bulb

- Light Output (Lumens):** 840. The brightness of the bulb. Higher lumens means more light is emitted.
- Watts:** 9. The energy require to light the bulb. Lower wattage means less energy used.
- Lumens per Watt (Efficacy):** 93. An indication of the efficiency of the bulb. A Higher number means it is more efficient.
- Color Accuracy:** Color Rendering Index (CRI) 87. The effect that the light the bulb produces has on the the appearance of objects.
- Light Color:** Correlated Color Temperature (CCT) 3100 (Warm White). The Kelvin Color Scale indicates the color of the light. Higher K values are cool colors and lower K values are warm colors.
- Brightness (Lumens):** 840 lumens. Same as light output above. Higher lumens means more light is emitted.
- Life Expectancy:** 22.8 years. How long you can expect the bulb to last based on a typical usage of 3 hrs/day.
- Light Appearance:** Warm to Cool. The same as color temperature. Higher K values are cool colors and lower values are warm colors.
- Energy Cost:** Estimated Yearly Energy Cost \$1.08. The estimated cost to use based on time and rate specified. It will vary depending on the actual usage and your electrical rate.
- Energy Star Logo:** This logo means the product has met certain energy-saving criteria as set by the EPA and DOE.
- Energy Used (Watts):** 9 watts. The energy required to light the bulb. Lower wattage means less energy used.

**Q5. Are your outdoor lights (that are brighter than the equivalent of 25 watts incandescent) warm colors? In other words, are they a little gold tinted rather than bright white?**

If 'Yes', you qualify.

If 'No', replace the bulbs in your outdoor light fixtures with bulbs rated at 3000K or less (less is better).

Consider one of the new LED bulbs that are also self-shielding. Afterwards, review Part 5 again to determine if your property qualifies.

**For more information see our Web Site: <https://comalcountyfriendsofthenightsky.org>**

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