Dark Sky & Light Pollution Fact Sheet

What is light pollution?

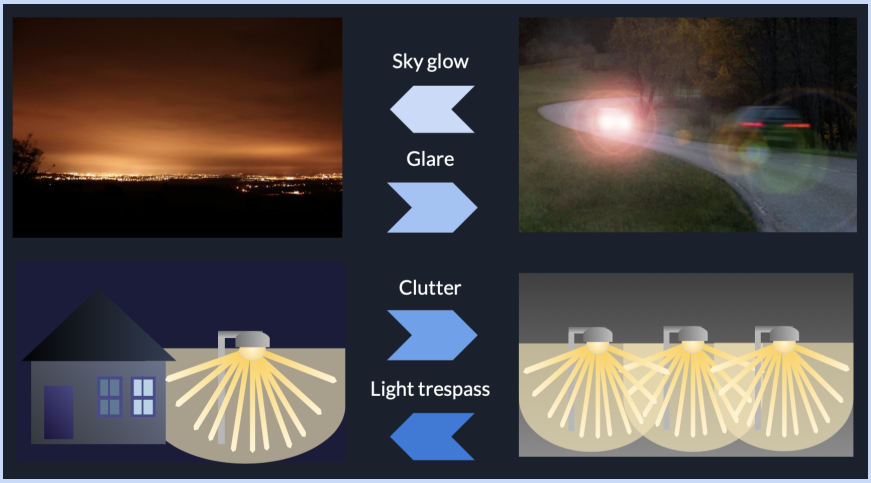
Light pollution is the result of excess artificial light where it is not supposed to be. It comes in the forms of sky glow, glare, clutter, and light trespass.

SKY GLOW is on display over any city of any size—it is that pink-orange glow lighting the clouds. It's that dome of light on the horizon even though the sign says you've still got fifty miles to go.

GLARE is excessive brightness which causes visual discomfort. It's the bright light shining in your eyes that you raise your hand to block.

LIGHT TRESPASS is the light allowed to cross from one property onto another. It's your neighbor's security light shining through your bedroom window.

CLUTTER is a bright and excessive grouping of random lights. One good example of this is Times Square.



What are the effects of light pollution?

Humans

- impaired night vision
- decreased melatonin production which can lead to: an increased risk of cancer, possibly an overproduction of estrogen, and/or suppressed regulation of bodily functions
- disrupted circadian rhythms resulting in: depression, insomnia, cardiovascular disease, and/or cancer
- blue light strain, which can result in: damage to retinal cells, macular degeneration, glaucoma, and/or possibly blindness

Environment

Mammals
- increased competition for food resources
- decreased foraging activity

Trees
- reduced photosynthetic efficiency
- Altered growth patterns

Corals
- disturbance in biological clocks
- decreased spawning

Bees
- Disruption of nighttime foraging and pollination activities

Insects
- gathering around lights leading to increased predation
- communication impediments

Climate Change
- 21,000,000 tons of CO_2 emissions from excess and wasted lighting annually

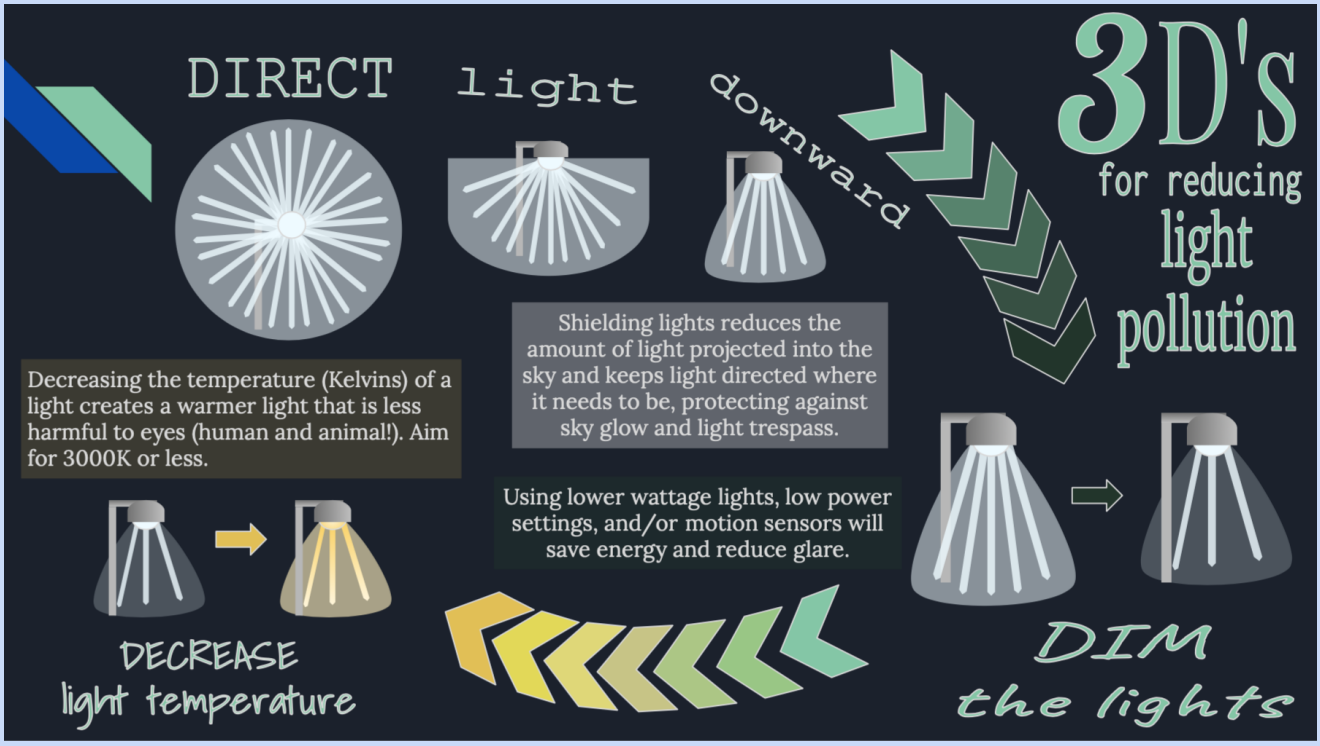
Frogs
- disrupted reproductive behaviors, including fewer mating calls
- increased predation due to gathering around and under light sources
- delayed metamorphosis or slower growth

Birds
- disorientation during night-time migration
- reduced nesting densities
- attraction to and collision with lights
- disruption of ability to sense earth's magnetic field

Sea Turtle Hatchlings
- inability to find the ocean due to confusion from lights
- altered behavior causing them to dwell near the surface of the water and remain visible to predators

What can we do?

There are three main ways to reduce light pollution: directing light downward, dimming lights, and decreasing light temperature.



Directing light down focuses on lighting only the necessary areas. Shielding lights or adding coverings can help direct light downward, thereby reducing the light directed upwards into the sky to minimize sky glow and reduce light trespass into neighboring properties.

Dimming lights refers to reducing the amount of light used, or using fewer lumens. This can happen in two ways: reducing the amount of light produced by a fixture or reducing the amount of time that the light is on. Using a lower wattage battery can help.

Watts: how much power is used

Lumens: how much light is emitted

Watts measure an amount of energy used per time while lumens measure light. Even though lumens are a more accurate measure of light, many bulbs are advertised using their wattage, because what your energy bill shows is the power used by the light bulb, not necessarily the light produced. This is why LED lights have become popular -- because they are energy efficient, producing more lumens for fewer Watts. As such, if you are trying to decrease the lumens of your fixture, you will need to be cautious about replacing your incandescent with similar incandescent of lower wattage, or an LED with much lower wattage. Look for information about lumens when considering your next bulb!

Decreasing light temperature works similarly to a flame: the hottest part of the flame is blue, while the coldest parts are red and orange. When we decrease light temperature, we are actually using what we visually consider more “warm” colors. Yellow and orange lights are less harmful to the environment and to humans in comparison to blue lights. Look for bulbs with a temperature under 3000 Kelvins!