



States Shut Out Light Pollution

By Jennifer Schultz

For much of Earth's history, the remarkable universe of stars has been visible in the darkness of the night sky. However, increasing urbanization, combined with the excessive and inefficient use of light, has created a kind of pollution that obscures the stars from view and leads to numerous other disturbances.

Astronomers recognized light pollution as a problem in the 1970s. Even with the most powerful instruments, they no longer could view stars and other celestial objects with the same clarity. While at least [2,500 stars](#) should be visible under normal nighttime conditions, only a few hundred can be seen in a typical American suburb. In most cities, residents are lucky to glimpse a few dozen. Yet the effects of light pollution extend well beyond our view of the night sky. Aside from the energy wasted, excess lighting can have serious consequences for human health and the environment. It can even affect the military's ability to train effectively.

Energy Consumption. Billions of dollars are spent in the United States each year to light streets, shopping areas and office complexes. Since many light fixtures are either poorly designed or emit light aimed in the wrong direction, much of what is spent on outdoor lighting is [wasted](#).

Humans and Wildlife. For humans, exposure to bright light at night can interfere with natural circadian rhythms (i.e., the 24-hour day-night cycle) by suppressing production of melatonin, the chemical that regulates sleep patterns. [Research](#) has linked this disruption to sleep disorders, depression, obesity and more.

Wildlife also is harmed by light pollution. Examples include the decline of lightning bugs, the death of birds during migration, and the fatal disorientation of newly hatched [sea turtles](#).

Military. Light pollution from nearby communities also can jeopardize military training capabilities. With the use of night vision equipment, a significant portion of military training now is conducted at night. These exercises simulate combat situations to help troops develop situational awareness and ultimately minimize casualties.

State Action

At least 17 states, the District of Columbia and Puerto Rico have laws in place to reduce light pollution. Most states that have enacted so-called "dark skies" legislation have done so to promote energy conservation, aesthetic interests and astronomical research capabilities. Municipalities in a number of states also have addressed the issue by adding light pollution control measures to their zoning codes.

Did You Know?

- Light pollution is the result of increasing urbanization, combined with excessive and inefficient use of light.
- Billions of dollars are spent each year on outdoor lighting that is either poorly designed or emits light in the wrong direction.
- State policies help reduce light pollution by promoting shielded light fixtures as well as low-glare and low-wattage lighting.

Most state laws are limited to outdoor light fixtures installed on the grounds of a state building or on a public roadway. The most common legislation requires installation of shielded light fixtures that emit light only downward. Other laws require the use of low-glare or low-wattage lighting, regulate the amount of time certain lighting can be used, or incorporate [Illuminating Engineering Society](#) guidelines into state regulations.

Known as a worldwide hub for astronomy, Arizona's light pollution law dates to 1986. The law requires all outdoor light fixtures to be fully or partially shielded, with the exception of emergency, construction and navigational airport lighting. Fixtures not in compliance are allowed provided they are extinguished between the hours of midnight and sunrise. In Colorado, installation of new outdoor light fixtures by or on behalf of the state requires "full consideration" of costs, energy conservation, minimization of light pollution and preservation of the natural night environment. A "full-cutoff fixture" must be used when output is greater than a certain amount of lumens, or units of visible light emitted.

Other states encourage such measures at the local level. New Hampshire has made it a priority to preserve dark skies as a feature of rural character. To that end, state law encourages municipalities to adopt ordinances to conserve energy and minimize light pollution. The effect of beach-front lighting on avian and marine life is also a concern in many coastal states. In Florida, a statewide [model lighting ordinance](#) serves as a guide for localities to protect hatching sea turtles.

Texas is the only state that has a law aimed at reducing light pollution around military installations. In 2007, the Legislature authorized counties, at the request of the military, to adopt measures governing the use of outdoor lighting within 5 miles of a military installation. County regulations must be designed to protect against interference with military activities.

Federal Action

Congress passed the [Energy Independence and Security Act \(EISA\)](#), which includes higher efficiency standards for light bulbs, in 2007. The act requires lighting to be at least 27 percent more efficient than traditional incandescent bulbs, meaning manufacturers must use different technologies to meet the standard, including halogen incandescent, compact fluorescent lamps (CFL) and LED technologies. These bulbs use less energy and last much longer than the incandescent ones they replace.

The U.S. Department of Energy (DOE) manages the High Performance Outdoor Lighting Accelerator ([HPOLA](#)) program, which encourages adoption of high-efficiency outdoor lighting at the municipal level. Cities can work with DOE to secure funding and install outdoor lighting systems. States also can join in a supportive role, working with three or more cities in their state or region.

NCSL Contact and Resource

Jennifer Schultz
(303) 856-1353

[NCSL Web page on Light Pollution](#)

