

# Light pollution and Dark Skies



*This mosaic satellite composite image illustrates light pollution—the wasteful light we allow to wander into space  
NASA/Goddard Space Flight Center, Scientific Visualization Studio*

## LIGHT POLLUTION TERMINOLOGY

- **Glare** – excessive brightness that causes visual discomfort
- **Urban sky glow** – the brightening of the night sky over inhabited areas
- **Light trespass** – light falling where it is not intended, wanted, or needed
- **Clutter** – bright, confusing, and excessive groupings of light sources

## THE PROBLEM OF LIGHT POLLUTION

Urban dwellers everywhere are losing the ability to see planets and stars in the night sky. The spectacular view of the cosmos that has inspired science and art throughout history is disappearing. The glow of uncontrolled outdoor lighting has hidden the stars and changed our perception of the night. Light pollution wastes energy, harms ecosystems, increases greenhouse gasses, threatens astronomical research, and affects human health. Better lighting is the solution! The problems from light pollution can be solved by utilizing efficient, modestly bright outdoor lighting fixtures that are directed toward the ground and shielded to control glare.



*Before and during the East Coast blackout, 2003.*

## HARM TO WILDLIFE



*F.L.A.P. (Fatal Light Awareness Program) does its annual laying out of the birds. Birds confused by urban lighting become bewildered and trapped in the lighting of skyscrapers.*

Bad lighting can affect the foraging, mating, and migratory behaviours of nocturnal wildlife. For example, newly hatched marine turtles are often unable to find the safety of the sea because they become disoriented by inappropriate lighting. Tens of thousands of migrating birds die each year in collisions with buildings left illuminated at night.

## LIGHTING FOR SAFETY

Bright light does not increase safety. Ironically, too much lighting can threaten security by compromising vision with glare and casting harsh shadows where criminals can hide. The key to being safe is having uniform lighting that allows the eye to adjust to naturally dark conditions for maximum visibility.



*With the light shielded, the intruder is seen easily. Overly bright light can mask intruders.*

## HARM TO HUMAN HEALTH

Most life on Earth adheres to a circadian rhythm, a sleep-wake pattern dictated by the 24-hour cycle of light and dark. Exposure to excessive artificial light at night can disrupt the circadian rhythm and deregulate biological functions like eating and sleeping. Prolonged disruption of the circadian rhythm has been linked to sleep disorders, obesity, depression, diabetes, and an increase in the growth of cancer cells, specifically breast cancer.

## ENERGY WASTE

In 2002, approximately 30 percent of all outdoor lighting was wasted due to poor design. Unshielded fixtures that allow light to escape upward or provide more light than is required are major contributors to this inefficiency. In the US alone, wasted light costs \$2.2 billion annually and requires the energy equivalent to 12.9 million barrels of oil or 3.6 million tons of coal, producing 1.7 million tons of carbon dioxide.

## WHAT YOU CAN DO

- Install lighting only when and where it is needed and always direct it toward the ground
- Use fully shielded fixtures at home and encourage their use in the workplace
- Use energy saving features such as timers, dimmers, and motion sensors in all outdoor lighting
- Promote effective outdoor lighting ordinances in your community
- Educate your friends and neighbours about the economic, environmental, and security benefits of good outdoor lighting
- Visit the IDA website at [www.darksky.org](http://www.darksky.org) for free information and resources

**NB: Information taken from an International Dark Sky Association brochure available for download at: <http://www.darksky.org/guides-to-lighting-and-light-pollution/practical-guides-brochures>**