

THE POST'S VIEW

# All the light we would rather not see

Light pollution is bad for our health and the environment. But turning off a few switches can help.



By the [Editorial Board](#)

December 11, 2024 at 11:00 a.m. EST

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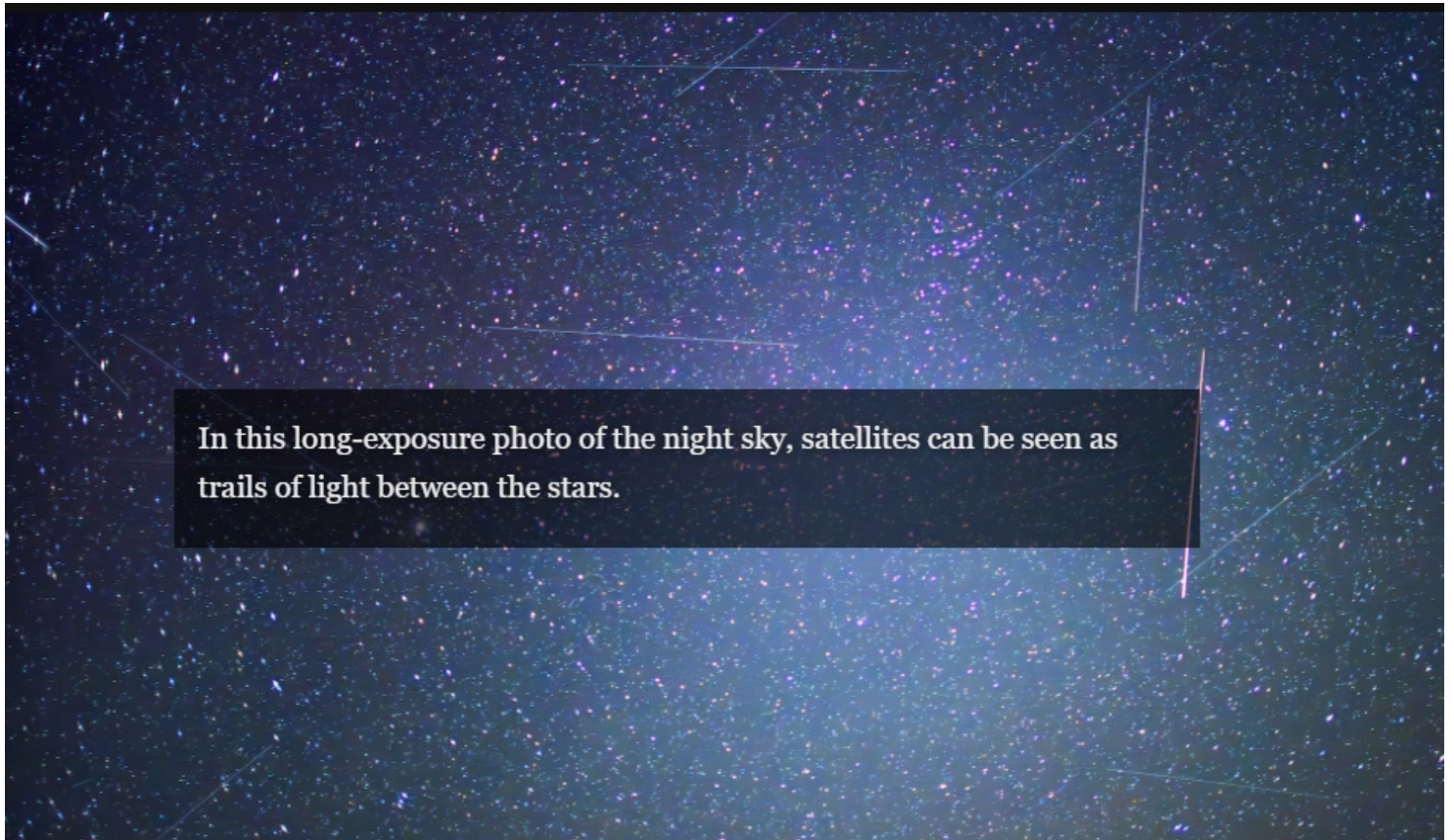
**T**he night sky is one of few things humanity has been able to rely on throughout the course of our history: to guide our travels, to light our ways, to measure the passage of time. But year by year, this astronomical tapestry is becoming harder to count on

— because it is becoming harder to see. It's not just stargazing that's getting more difficult. Light pollution is also disrupting our health and natural ecosystems. But there are a few things people can do to help, even saving money in the process.

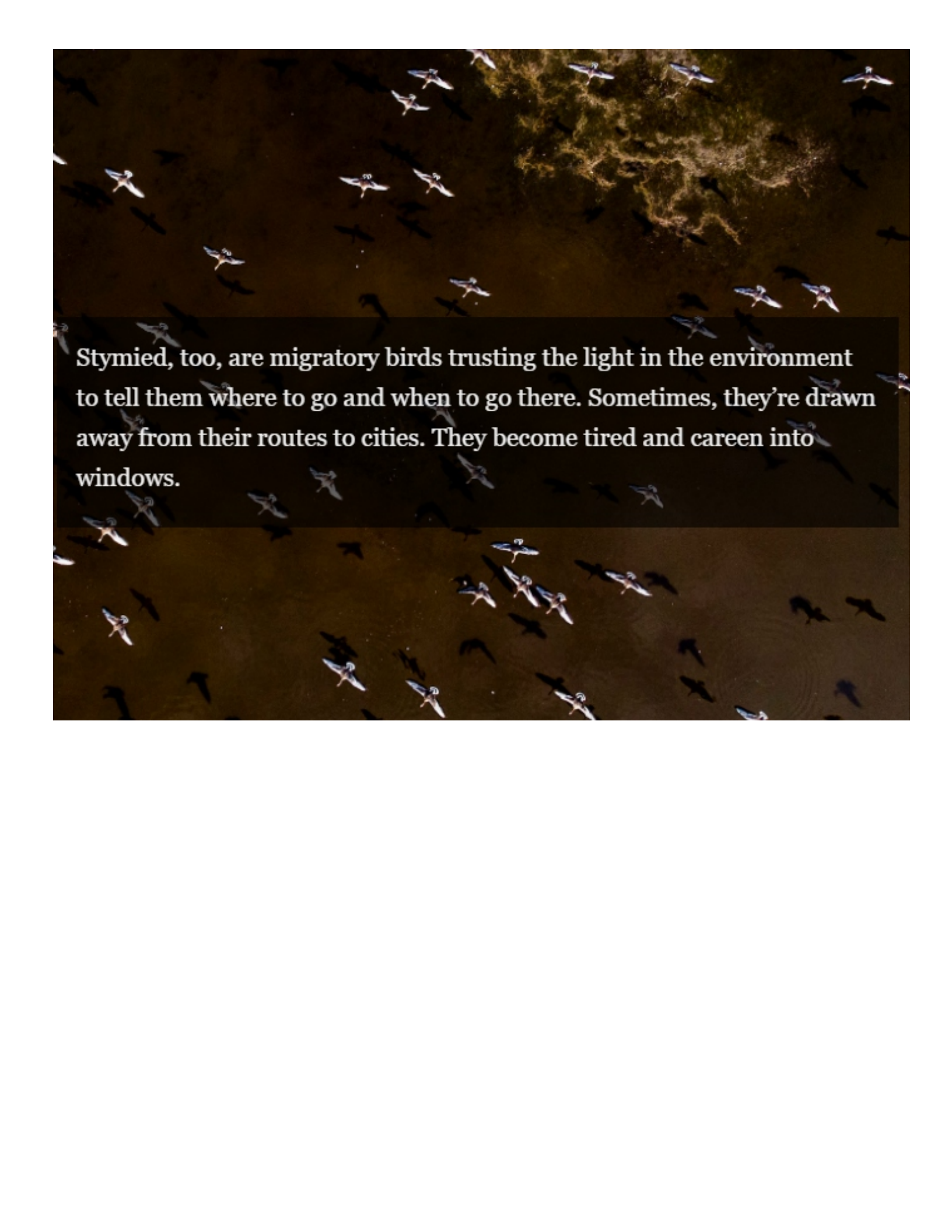
Light pollution occurs when humans alter the levels of outdoor light by contributing light of their own. This comes in many forms, including glare (think headlights hurtling toward you on a dark highway and straining your eyes) and light trespass (the unwanted illumination that comes your way from a neighbor's windows as you're trying to get to sleep). Most profound for our species, and for others, is what's known as skyglow: the phenomenon by which the night sky itself grows brighter than its natural state.

Skyglow, unsurprisingly, is worst over cities, where streetlamps, porch lights and even office buildings stay blazing even after most residents have closed the blinds and gone to bed. We ought to be able to see thousands of stars at night — and in truly remote spots, we can. But suburban Americans can make out only a few hundred, and urbanites usually only a handful or none at all. The glow from metropolises extends well beyond municipal borders. The National Park Service, for instance, has captured the illumination that rises from Los Angeles bleeding into the night sky from atop Mount Whitney in Sequoia National Park over 200 miles away.

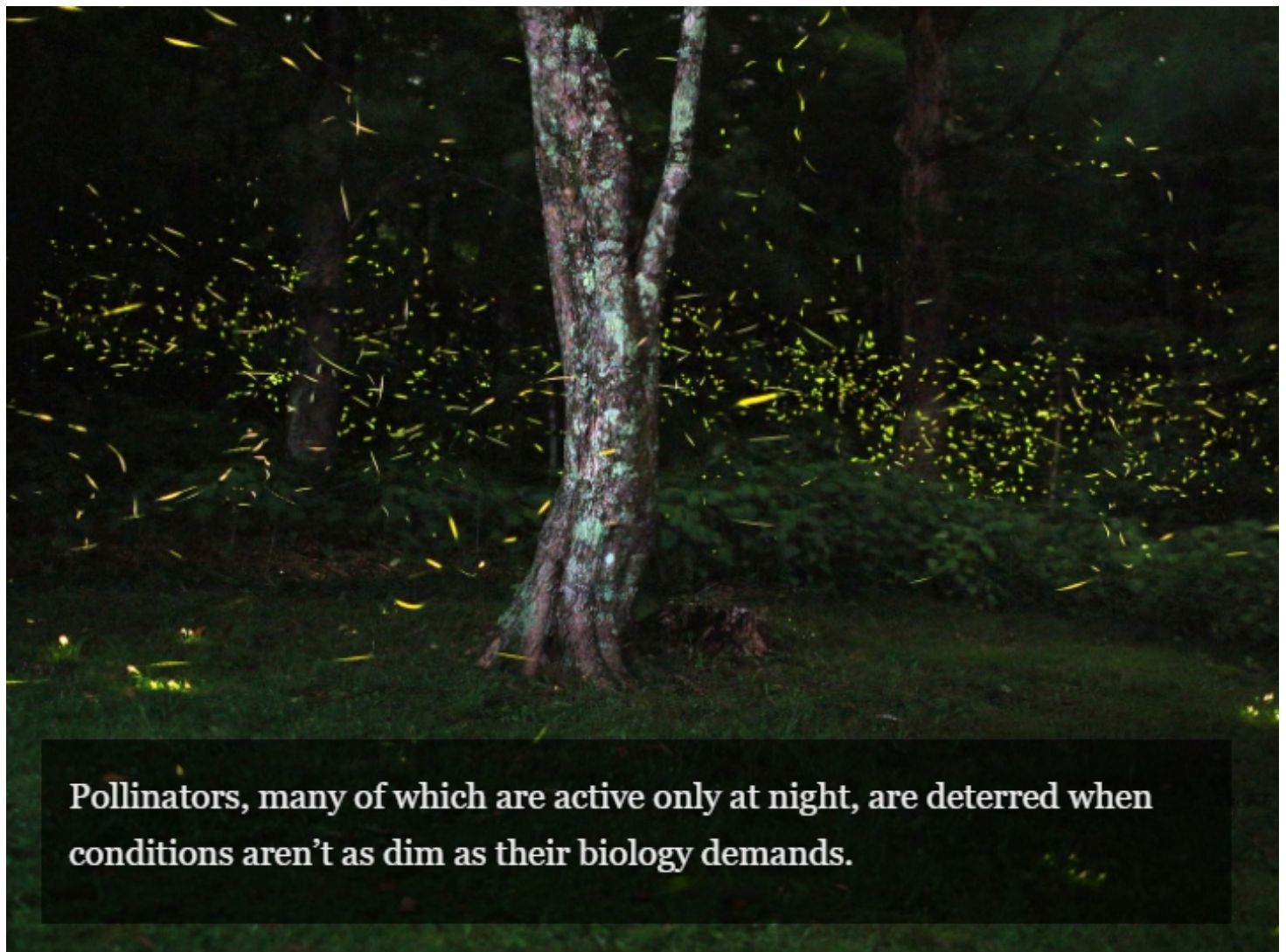
Yet spoiled views of the Milky Way are the least of the troubles light pollution causes our species — and other species. Astronomers find themselves stymied: They're having trouble finding areas dark enough for their observatories. And when they do find them, rapidly proliferating satellites can effectively photobomb their exposures by reflecting the light of the sun long after it has set. Scientists estimate that the new Vera C. Rubin Observatory in Chile will have 40 percent of its images ruined by trails from glinting satellites.



In this long-exposure photo of the night sky, satellites can be seen as trails of light between the stars.

An aerial photograph showing a vast flock of birds, likely terns, flying over a dark, flat landscape. A prominent patch of green, textured vegetation is visible in the upper right quadrant. The birds are scattered across the frame, with some appearing as dark silhouettes and others as lighter shapes with distinct wing patterns. A semi-transparent dark rectangular box is overlaid on the center of the image, containing white text.

Stymied, too, are migratory birds trusting the light in the environment to tell them where to go and when to go there. Sometimes, they're drawn away from their routes to cities. They become tired and careen into windows.



Pollinators, many of which are active only at night, are deterred when conditions aren't as dim as their biology demands.

The changes in their patterns affect ours, too: Indigenous communities that rely on their environments for food suffer especially when one link along that chain breaks.

And *all* humans experience the harms of disruption to our circadian rhythms — which happens when we're exposed to blue light during the night instead of the day. Not only do we sleep worse, but we're also more likely to become depressed or obese or stricken with cancer. The poorest parts of cities are usually the most overlit, so these burdens fall most heavily on those already struggling.



Hatchlings of the endangered loggerhead sea turtle. Scientists found that artificial lighting reduces their nesting success and stimulates predators. (Yuri Cortez/AFP/Getty Images)

Ever-brighter night skies might not feel like a crisis way down here. But a landmark survey discovered that the sky has become 10 percent brighter per year over the past 10 or so years. That means a child growing from a baby to a young adult is likely, by the time they are ready to head off to college, to see two or three times fewer stars every night than they could as a toddler. The sharp rise in satellites soaring through low Earth orbit, not to mention the debris caused by their frequent collisions, only worsens the problem.

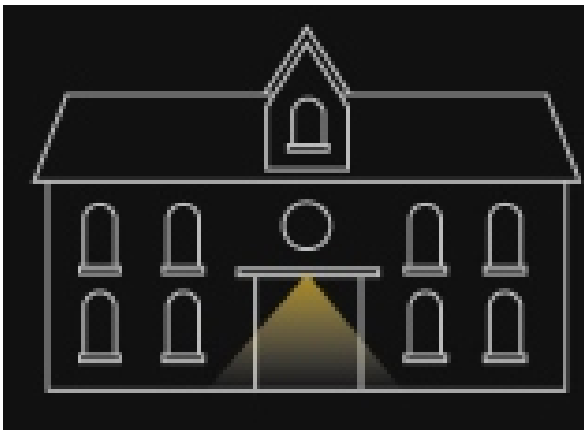
The good news is that people are making so many mistakes today that there's ample room to fix them. That starts with the satellites: Limiting debris, already imperative, will limit light pollution, too. Companies such as SpaceX are also already experimenting, at the National Science Foundation's behest, with adding shades, coatings and more to satellites so they blend in with space rather than shine out against it.

## What we can do to help

Reducing ground-based light pollution is even more doable. Right now, outdoor lighting accounts for half the average city's energy bill — but officials could save taxpayer money and enhance views of the night sky merely by bringing their rules in line with science.

Advocates have come up with five principles for responsible outdoor lighting that are pretty simple to follow: Make it useful, targeted, controlled, low-level and warm-colored. Here are the core recommendations:

# Do



Use focused, warm light pointing down, only when needed, preferably with timers or motion detectors.

# Don't X



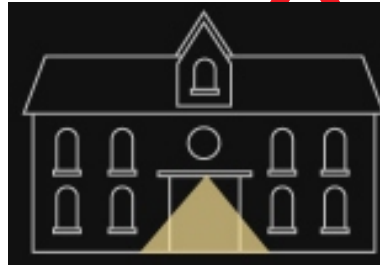
Use unnecessary lights

# Don't X



Point Lights Upward

# Don't X



Use more light than needed

# Don't X



Use Blue Light

There's a downside to those energy-efficient LED lights. The glow they emit is very bright and very *blue* — existing at wavelengths that, it turns out, scatter particularly widely in the atmosphere. And because LED lights are so cheap to burn, the people burning them have little incentive to turn them off when they're not needed. Some types of LEDs are “warmer” than others; only these should be used for outdoor lighting and only at the wattage necessary for sufficient illumination. The next step is to shield lighting fixtures so they only direct light downward, where it's needed, rather than upward, where it isn't doing anyone any good.



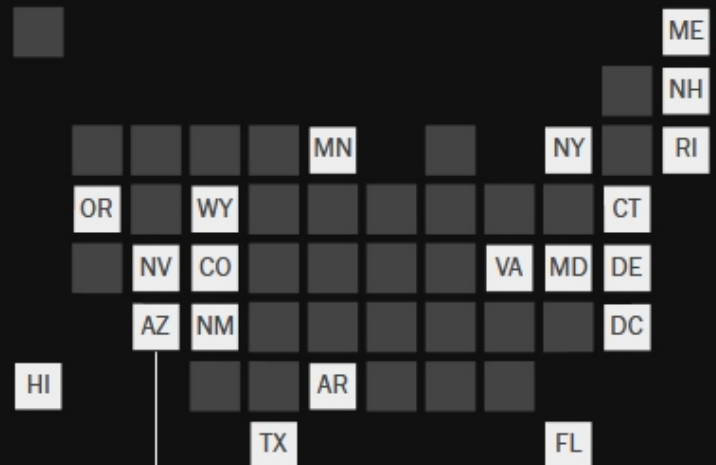
And perhaps the most basic principle is: Don't light what doesn't need to be lit. Or, as Smith College astronomy professor James Lowenthal put it, "start with darkness" and go from there.

The precepts of preserving the night sky work as well for countries as they do for individual folks, and they can be applied everywhere in between. Nations such as Chile, France, Spain, Germany and the Czech Republic have rules limiting light pollution. In the United States, at least 19 states have laws to turn their skies at least a little darker, too — by, for instance, preventing public funds from being directed toward fixtures that don't comply with proper practice. Some are more specific than others; a Florida rule, for example, focuses exclusively on nesting sea turtles.

And cities and municipalities have standards that are more specific still.

Although a rural and remote community with a robust nature tourism industry is obviously going to have an easier time turning off the lights than New York City, everyone everywhere can use those five basic principles of responsible lighting. The notion that crime will surge should metropolises make their streets a little less bright isn't supported by the data. And in many cases, those five principles aren't so much about *less* light as they are about *better* light: Replacing streetlamps that shine like flashlights in pedestrians' faces with shielded fixtures that target only the ground

### States with laws limiting light pollution

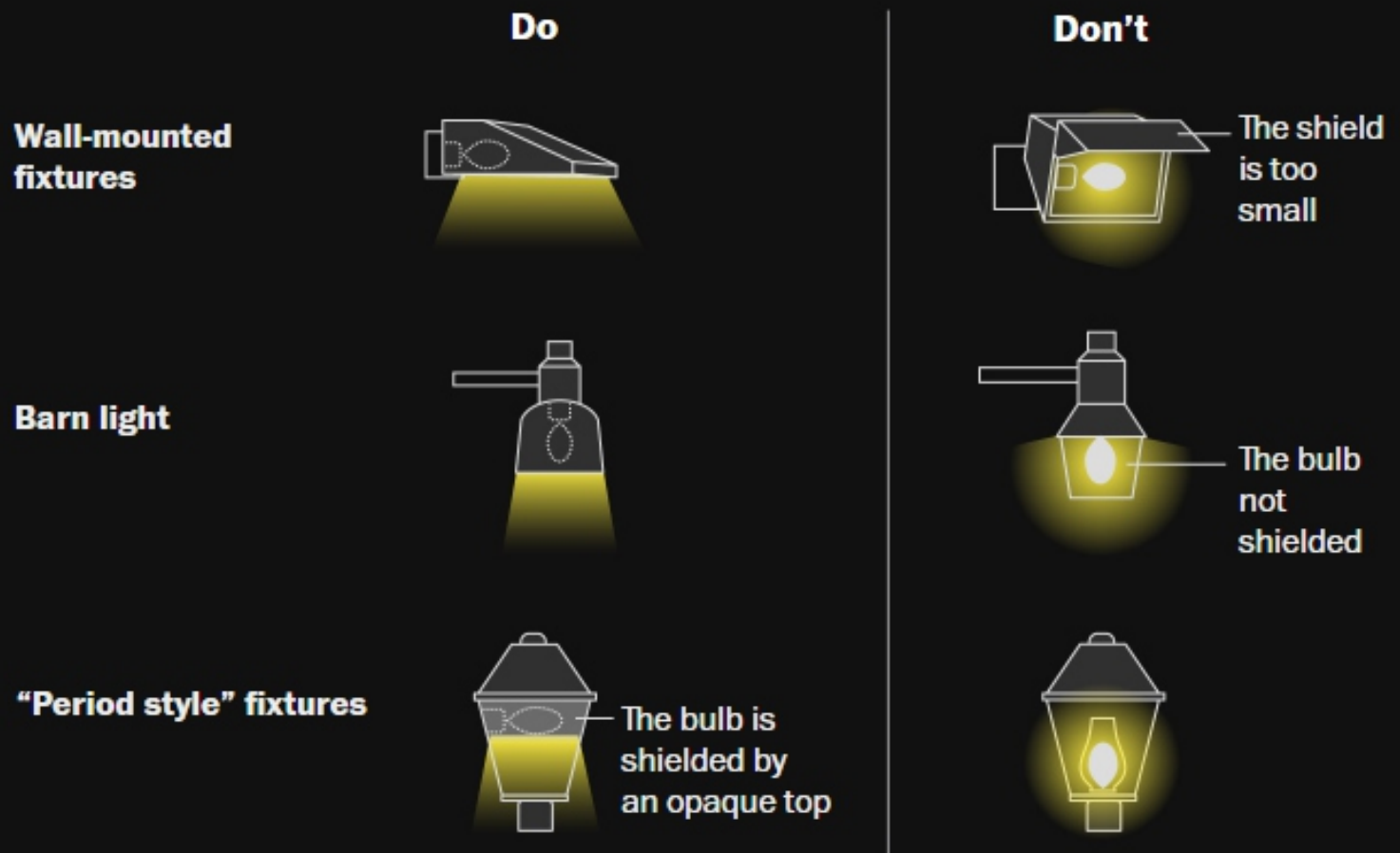


Known as a worldwide hub for astronomy, Arizona's light pollution law dates back to 1986.

Source: National Conference of State Legislatures

around them would eliminate glare — and actually make it easier to see.

## A few tips about light fixtures



Source: International Dark Sky Association and the Illuminating Engineering Society of North America

Aparna Venkatesan, a cosmologist at the University of San Francisco, studies ancient sources of light in the universe and works to understand the effects of light pollution on Indigenous communities here on Earth. She points out that the skies and space are our heritage as a species. People around the world and across time have looked up at the same moon and the same stars. The stories they've told about where we come from and where we're going are different. But the celestial backdrop to all these tales is something we share. The less we can see the stars, she says, the more that is lost — not only as scientists but also as storytellers.