

# Embracing Darkness: Steps Communities can Take to Preserve the Dark Night Sky

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Skyglow: Where Have All the Stars Gone?

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## **Introduction**

Imagine a world in which you look up and can't see the stars. Imagine a world in which the Milky Way is no longer visible to the naked eye - where people who are passionate about astronomy can only see the wonders of the galaxy through the lens of the telescope.

This world may soon become a reality for us and our children. Light pollution is a threat to the dark night sky and the incredible natural wonder that we hope to preserve. If we do not cherish and prioritize our night sky, then future generations will never be able to appreciate this natural resource.

Generations of storytelling and lore surrounding constellations could be lost if we do not start making changes. This is why it is so important that we take action now to reduce light pollution before it is too late.

It is not only humans who are affected by light pollution, however, countless animals suffer detrimental consequences from the effects of light pollution. Birds, bats, and even seals are disturbed by the absence of stars caused by light pollution.

We owe it to our planet and other creatures that we coexist with to reduce our footprint as much as possible, including our pollution of the night sky. The dark night sky is a great natural resource, and we must start taking light pollution as seriously as we do all other forms of pollution. This is as much of a threat to our thriving natural environment, and we must start taking action.

The first step is to become educated on light pollution. Many of you may not know what this is, and that is not uncommon. Education surrounding light pollution is severely lacking in high schools and colleges around the country. I will begin by informing you all about light pollution and the different causes and sources of this pollution, then I will discuss the impact that this has on our environment and community, and what steps we may be able to take as a community to reduce pollution.

### **Defining light pollution and its sources**

According to DarkSky International, light pollution is the human-made alteration of outdoor light levels from those occurring naturally. This means that our sources of artificial light increase the general lightness of the night sky by a significant amount.

Light pollution is seen in higher amounts in areas of concentrated populations and big cities, but communities all over the world produce light pollution at nighttime. Artificial light at night has been increasing at a rate of 2% per year until recently. This pollution produces the effect of sky glow, which is the brightening of the night sky over inhabited areas.

While light pollution is often made manifest by its large-scale, worldwide implications, even light pollution at small scales has been shown to have detrimental effects. Singular streetlights can cause harm to a community, so we must be continuously mindful of the small changes that could be made throughout our community.

The major sources of light pollution are streetlights, residential and commercial lights, oil and gas drilling sights, warehouse hubs, greenhouses, sports fields, and airports.

While some of these sources inherently produce high amounts of light that cannot be significantly minimized, light pollution can still be reduced by making small changes in our lighting behaviors. If every person in our community makes just one adjustment, these will compile to result in a meaningful reduction of the pollution we produce.

Residential and commercial lighting can be adjusted to ensure that lights are used at night very intentionally and that no lights are left on without reason. When these lights are carelessly left on, this can have serious consequences on the environment.

### **Effects of light pollution**

Light pollution can have serious, long-lasting implications for plants and animals all around the world. Some evidence suggests that birds' migratory patterns are impacted by the lack of visibility of the stars.

Other animals, such as beetles and seals, have been shown to utilize the night sky in their migratory and navigation behaviors. When the bright light from man-made cities blocks out the stars, these animals have no way to navigate and may become lost, stressed, or travel in the wrong direction.

It has also been shown that trees may leaf out earlier in the spring and keep their leaves later in the fall due to artificial lighting at night. These are disruptions that have cascading implications throughout the ecosystem and cannot be ignored.

It is our responsibility to minimize our impact on the planet and do our part to protect the natural cycles of our environment.

Light pollution can also have damaging effects on humans. For example, circadian rhythms can be disrupted by the light pollution produced by traditional blue-light-emitting LEDs.

Much of the world has been substituting high-pressure sodium lights for LEDs due to their favorable energy use, but these LEDs that emit blue light can be quite harmful to our health.

Light pollution also disrupts the ability of citizens and astronomers to clearly view the night sky and obscures the Milky Way galaxy. These issues impact all people and I am passionate about ensuring that all citizens of our community are educated on these issues so you can make informed decisions in the future.

This is why I am holding this event tonight, to help spread awareness in our community and ensure we all understand the value of preserving our dark night sky.

## **Changes to reduce light pollution**

You may be wondering what our small community can do to address this global environmental crisis. While it may seem unattainable, there are changes that we all can make to combat this pollution. One of these changes is implementing timed or motion-activated outdoor lighting.

Many light poles, driveway lights, and decorative outdoor lighting in residential areas stay on all night, even when residents are sleeping inside. This is an unnecessary contributor to light pollution and can easily be avoided. I encourage you all to invest in outdoor lighting that is motion-activated or turns off at a certain hour.

While this may seem like an inconvenient, expensive change, it can be done in small increments or when outdoor light fixtures burn out and need to be replaced anyway. I encourage you all to consider the great impact this can have on our environment if we all band together and make these changes as a community.

Another change that can be made is installing shielding light fixtures on any outdoor light sources. Unshielded lights cause glare, in which light permeates into areas in spaces where it is unneeded and unwanted. This glare can be detrimental to both humans and animals.

Glare from unshielded light fixtures can shine into drivers' eyes at night and disrupt their vision and has been shown to more directly impact the growth and foliage patterns of plants.

Shielded light fixtures create a barrier around the bulb to ensure that light only falls in the direct vicinity where it is necessary. This is a fairly simple and cost-effective solution that eliminates almost all harmful light permeation.

Along with encouraging our citizens to make some of these changes in their personal home lighting, I will also be supporting legislation to ensure that these efforts are mirrored by our city government.

It is vital that citizens and officials in our community band together to make the changes necessary to reduce light pollution. Being mindful of this, I will be proposing legislation to mandate that all city street lights have a shielding light fixture around the bulb.



I will be addressing this new legislation at the next city council meeting, and I would love to have the support of our community behind me as well. Another piece of legislation that I may propose would require all local businesses with over 100 employees to install motion-activated lighting.

Many large office buildings, factories, and plants utilize bright light systems that stay on at all hours of the night, even when the business is entirely vacant. As these businesses are some of the largest producers of light pollution, it would have an incredible impact if we could work with them to ensure that lighting is only in use at night when it is necessary.

### **Conclusion and call to action**

It is so important to me that all members of our community are banding together to address this serious issue. Even though our individual efforts may not be able to solve this problem, all of our efforts together can make a serious contribution.

In light of this, I would encourage you all to continue to stay involved with this movement going forward. You all have access to this survey in which I will collect your feedback on the event tonight.

I would love to hear your honest thoughts and opinions on this event and what improvements you would like to see in future events. This survey will also allow me to collect your questions about light pollution so that I may address these and send out relevant information to encourage further learning.

Most importantly, through that survey, I will collect the contact information of any citizens who would like to remain engaged with this issue. I will be sending out frequent updates on upcoming community events like this one, city council meetings where I will be addressing this issue, and any progress that we make with legislation surrounding light pollution.

It is my civic duty to serve our citizens, and I encourage you all to be involved and influence the policies that are implemented in our community.

Light pollution may sound like a vast, uncontrollable phenomenon that we have no chance of reducing as individuals. It is this mindset that we cannot let permeate into our community.

If each of us makes small sacrifices and works together, we can make a change for the greater good. On the city website, you will be able to find more information about making substitutions in your everyday life to reduce light pollution, along with resources for safe outdoor lighting options and shielding fixtures.

I have already made many of these changes in my own home, and I ask that you all consider making some small changes as well. It truly takes a village to preserve our natural resources and ensure that the environment is still beautiful and healthy for our children and grandchildren.

I appreciate all of your attendance tonight and the time that you have given me to share an issue I am so passionate about. I hope that this night provided you with ample learning opportunities and a new passion for protecting our dark night sky.

I have dreams that our community will be a pioneer in leading the switch to more conscious lighting choices and significantly decreasing the skyglow that is emitted from our city. With your help, I hope to make that dream a reality.

Thank you.

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