

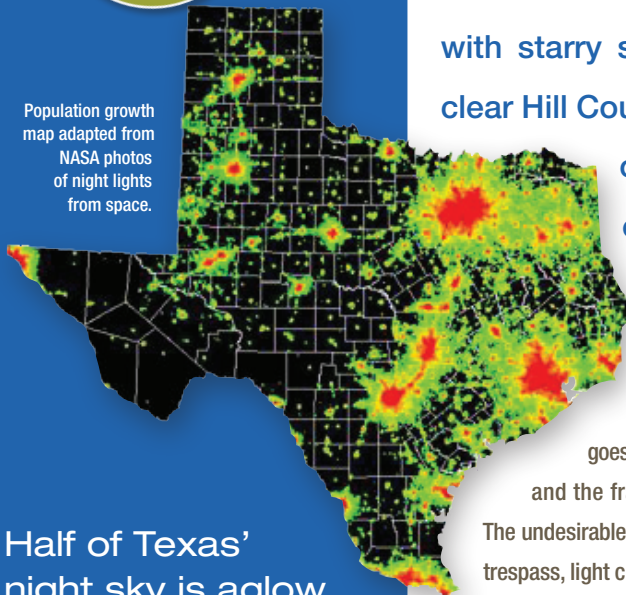


# Issue: Preserving The Night Skies

Photo By: Heidi Rae



Population growth  
map adapted from  
NASA photos  
of night lights  
from space.



## Half of Texas' night sky is aglow

*The darkest skies in North America belong to the McDonald Observatory, located in the Davis Mountains of West Texas. As responsible neighbors, the Hill Country is obliged to help protect this unique scientific and cultural resource.*

Hill Country night skies have a certain magic with starry skies blanketing the region. Stepping outside on a crisp, clear Hill Country night to gaze at the stars helps us escape the fast pace of our daily lives for a few precious minutes. It is essential to ensure that our awe-inspiring night sky is not lost due to ever increasing lights.

Outdoor lighting has unintentionally created light pollution. The trend goes hand in hand with population growth and the fragmentation of land ownership. The undesirable effects of light pollution – glare, light trespass, light clutter and sky glow – can make our region less attractive to visitors who play an important role in many local economies. There is good news – this problem is relatively easy to control and to “fix”.

Hill Country cities and counties are already taking steps to reduce light pollution. For example, Dripping Springs, Boerne, Blanco and Helotes have passed outdoor lighting ordinances; Marble Falls' is in the works. The Texas Legislature has also granted some counties the authority to deal with light pollution around observatories and certain military bases. Importantly, voluntary actions to reduce light trespass can also be taken by individuals, businesses and other entities.

Let's debunk the myth that bigger and brighter lights are better!



hill country alliance

## How to Preserve Night Skies

- **Aim lights down** – *light will project below and out to the sides of the fixture, not letting any light escape above the horizon. Install lights so the fixture is above the area to be illuminated. Light an area from below only when all of the light will be blocked from shining above the horizontal plane.*
- **Shield every light** – *all lights should be installed and shielded to hide the source of light from any normal viewing point. Eliminate glare and protect eyes from directly viewing the light source. Light trespass is usually solved when outdoor lights are shielded so the source of light cannot be seen from neighboring properties. Shielded, concentrated light requires less wattage than an unshielded fixture to achieve the same amount of illumination to light the area of interest. Thus, it saves money.*
- **Reduce the amount of light** – *select the light's wattage, or more accurately, the number of lumens, for the desired application. Consider that very bright light can make nearby areas dangerously dark, actually degrading security.*
- **Use lighting only when needed** – *leaving lights on when no one is there to use them wastes energy and money. Use a switch, timer, or motion detector to conserve valuable resources. Lighting unoccupied areas has not been shown to keep criminals away and may even attract them. But all lights, even those on timers or switches, still need to be shielded.*
- **Work with electric power suppliers and local governments** – *encourage utilities and local governments to start taking steps now to reduce light pollution and implement smarter night lighting policy as a standard business practice. Help educate citizens, consumers, institutions and businesses on the importance of preserving the quality of the Hill Country night sky.*

## Night Skies Partnerships

In summer 2011, with assistance from the Hill Country Alliance, the Board of Directors of the Pedernales Electric Co-op (PEC) approved a resolution affirming the Co-op's commitment to "protecting the beauty of the night skies" and pledged to "work together with landowners, businesses, residential communities and public entities in an effort to reduce the use of outdoor light fixtures that hinder Hill Country residents' ability to enjoy the night skies."

Recently, PEC and Kimble County entered into a first-of-its-kind, Night Skies Partnership to develop common sense solutions to light pollution problems. The Partnership will work to "protect the beauty of the night skies and allow others the full benefit and use of their private property."

Big starry night skies are an important part of the region's scenic beauty which brings significant economic benefits to the community. Voluntary efforts to reduce light pollution are being encouraged. As an initial step, PEC has agreed to install light shields, free of charge, for its Kimble County members with PEC light fixtures. However, the customer must request the shields. The PEC offer remains in effect until October 2012. This partnership will serve as a pilot project while PEC explores other ways to protect the night skies.

More Hill Country region partnerships are needed. Citizens, businesses, churches, schools and government entities can take simple steps to reduce outdoor lighting nuisances and preserve the magic of our night skies.

## Others Are Working to Preserve Night Skies

### A Local Hill Country Town Sets Example

The Hill Country town of Dripping Springs entered into a development agreement for several large commercial additions recently built within the community. The lighting portion of the agreement called for shielded lighting to reduce glare and light trespass. Reducing glare not only increases safety on the development property, but also enhances traffic safety on nearby roadways. Lighting fixtures with exposed bulbs produce glare making it harder to see. Imagine a car coming at you with its bright lights on. Beyond the glare are the darkest shadows where unseen dangers can hide.

Reducing light trespass with modern and appropriately directed fixtures keeps light on the property and eliminates energy waste. This approach exemplifies energy conservation, respect for private property rights, makes for good business and good neighbors.

The Dripping Springs agreement meets or exceeds lighting specifications as recommended by the Illuminating Engineering Society of North America. The finished construction is currently saving about 25% on energy consumption compared to the normal usage for the types of stores involved.

At HEB's fuel service station, the under canopy fuel pump area uses about 1120 watts, compared to the 2538 watts in the original conventional lighting plan, saving over 50% energy costs. The pumps and under canopy area are attractive and safely lit.

Customers don't encounter dangerous areas of blinding glare that could keep them from seeing pedestrians or other hazards in the surrounding area. Drivers passing by are not subjected to dangerous glare that usually accompanies unshielded outdoor lighting.

Home Depot reduced their outdoor lighting installation from about 47,700 watts in the original lighting plan to about 37,400 watts after implementing requirements of the development agreement. Besides realizing significant cost savings, control of glare and light trespass onto neighboring properties is virtually eliminated.

Chase Bank, Whataburger, McDonalds and other businesses have also installed the same fully shielded fixtures as Home Depot and HEB, achieving overall similar cost savings in electrical usage and reductions in glare. The development agreement creates safer areas as the community moves to the future and helps to preserve the night sky.





# Friendly Outdoor Lighting Saves Money

**FACT:** Approximately 30% of the energy cost powering unshielded bulbs is uselessly illuminating the night sky. This wasted energy costs \$2.2 billion annually in the United States alone. The immense volume of wasted light contributes to light pollution and the steady loss of a treasured Hill Country resource, our brilliant starry skies.

**PROBLEM:** Consider the popular outdoor halogen floodlight. We commonly see these everywhere, aimed willy nilly, often illuminating areas that neither need nor want the light ...such as a neighbor's bedroom window or the night sky.



Typical floodlighting with two 90-watt halogen bulbs

Floodlights can be a big problem, even if you live out in the country.

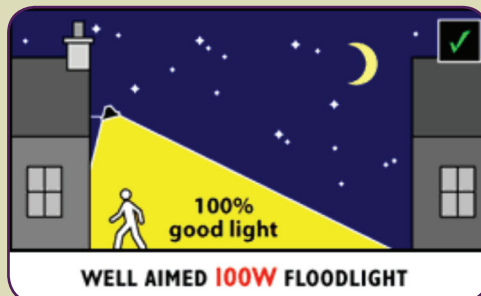


**SOLUTION:** By taking a couple of simple steps, this homeowner could do his neighbors and the night sky a big favor...and save money in the process! The homeowner could shield the light, redirect it to shine downward inside his own yard, reduce the wattage of the light bulbs, and still have the same amount of useable light within the desired area.

In this example, the homeowner could replace the two 90 watt halogen floodlights with two 50 watt halogen bulbs, put on a couple of Parshield Glare Visors and aim fixtures downward. These simple steps concentrate light where it is needed and save energy.

So not only is glaring light trespass onto the neighbor's property and our night sky eliminated, he also saves big on money.

Be considerate to your neighbors, turn off or shield your lights. It's easy!



Learn how to make your outdoor lighting night sky-friendly while saving yourself money, visit <http://www.hillcountryskies.com/>

## DOLLARS AND SENSE:

If the homeowner in our example is a customer of the Pedernales Electric Power Co-operative (PEC), he is paying 7 cents per kilowatt-hour for his electricity. Every hour the light is on costs him 1.3 cents (180 watts/1000 watts times 7 cents). Assuming the light is on dusk-to-dawn all year, it would be on some 4100 hours and he would pay PEC almost \$52 a year to run it. Wow! Those cents add up quickly. Now how many of these lights does he have around his house? You do the math for multiple lights.

But this homeowner is smart. He shielded and redirected the light and was able to replace the two 90 watt halogen bulbs with two 50 watt bulbs. Now every hour it shines only costs him 7/10th of a cent. Big difference. If he still runs it all night all year, his electric bill will be \$28.70 – almost half of what he was paying before just by having the light properly sized, aimed and shielded. He stopped wasting energy by not shining it into the sky or onto his neighbor's property. If he used 15 watt LED bulbs instead of the halogens, his annual cost would tumble to just \$8.61.

The homeowner saves even more energy and money if he puts the light on a timer or, better yet, a motion detector. Did you know artificial night-lights stop almost all living creatures, including humans, from producing melatonin needed for health? The light may make you feel safer, but studies show that it does not stop crime. Why light all night when it's so easy to save energy, money, make better neighbors, and preserve the night sky? Anyway you cut it, it's a "win-win" situation.

## SAVE ENERGY, SAVE MONEY, SAVE WATER:

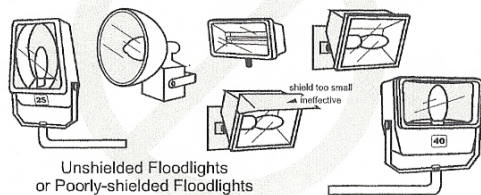
Homeowners might also be happy to learn that, in the big scheme of things, you are also saving water. Forty percent of all surface water in Texas, at some point along the way, is used for cooling or for generating steam for electricity provided on the state's grid. Every watt saved actually translates to water conservation. So, by curbing light pollution, we're also helping preserve another precious Hill Country resource, our water.

# Better Lights for Better Nights

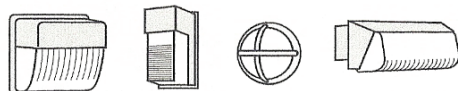
Help eliminate light pollution. Select the best fixture for your application using this guide. Use the lowest wattage bulb appropriate for the task and turn off the light when it's not being used.

## Unacceptable/Discouraged

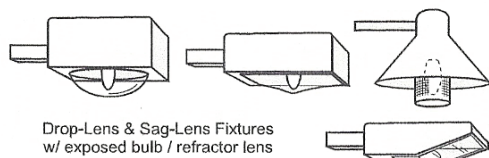
Fixtures that produce glare and light trespass.



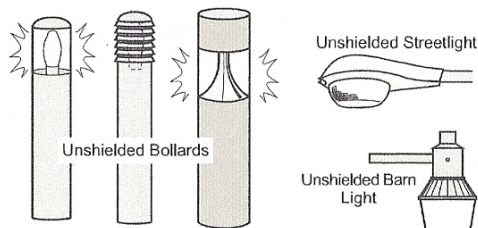
Unshielded Floodlights or Poorly-shielded Floodlights



Unshielded Wallpacks & Unshielded or Poorly-shielded Wall Mount Fixtures

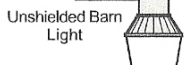


Drop-Lens & Sag-Lens Fixtures w/ exposed bulb / refractor lens

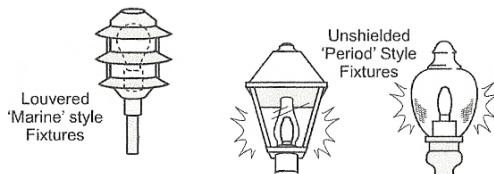


Unshielded Streetlight

Unshielded Bollards

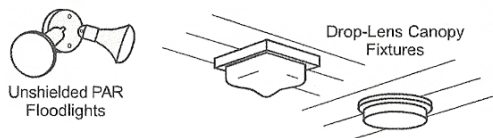


Unshielded Barn Light



Louvered 'Marine' style Fixtures

Unshielded 'Period' Style Fixtures

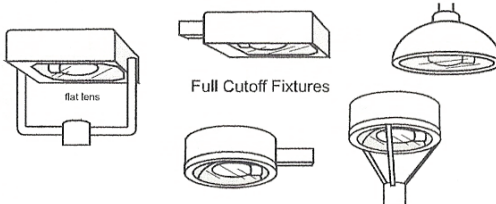


Unshielded PAR Floodlights

Drop-Lens Canopy Fixtures

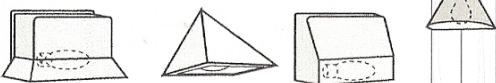
## Acceptable

Fixtures that shield the light source to minimize glare and trespass and to facilitate better vision at night.

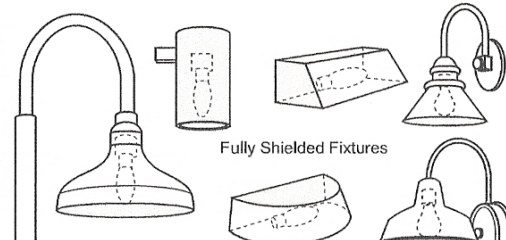


Full Cutoff Fixtures

Fully Shielded Wallpack & Wall Mount Fixtures

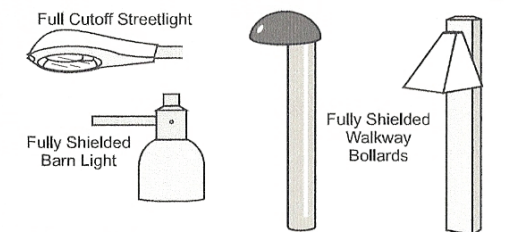


Fully Shielded Fixtures

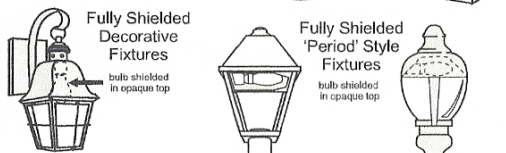


Full Cutoff Streetlight

Fully Shielded Barn Light

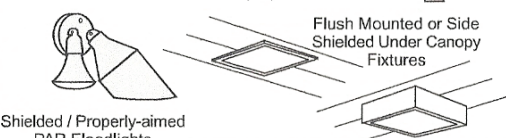


Fully Shielded Walkway Bollards



Fully Shielded Decorative Fixtures

Fully Shielded 'Period' Style Fixtures



Shielded / Properly-aimed PAR Floodlights

Flush Mounted or Side Shielded Under Canopy Fixtures

Helpful night sky resources, articles and links can be found at:  
[www.hillcountryalliance.org/HCA/NightSkies](http://www.hillcountryalliance.org/HCA/NightSkies)

“The stars are the jewels of the night,  
and perchance surpass anything  
which day has to show.”

— Henry David Thoreau

## Make a pledge— Join the Co-op! Hill Country Night Sky Co-op

Hill Country landowners, businesses and communities who would like to advance a spirit of Co-operation and commitment to protecting night skies have created the Hill Country Night Sky Co-op. All it takes to join is a simple promise to be a good neighbor and responsible with outdoor lighting choices. Sign up today!  
[www.hillcountrynightskycoop.org](http://www.hillcountrynightskycoop.org)

## Helpful Resources

**Texas Dark Sky Association (Texas IDA):** A helpful clearing house of resource information to spread the word about skyglow and how to reduce light pollution in Texas. [www.texasida.org](http://www.texasida.org)

**Pedernales Electric Co-operative:** A hill country electric Co-operative that has made protecting night skies a priority. [www.pec.coop](http://www.pec.coop)

**Hill Country Alliance (HCA):** HCA is a passionate community caring for the unique features, spring-fed streams, heritage ranch lands, spectacular beauty and culture of the Texas Hill Country for the benefit of future generations. [www.hillcountryalliance.org](http://www.hillcountryalliance.org)

**Hill Country Night Skies:** A resource developed by HCA to provide ongoing current information about night skies news, events, issues and information. [www.hillcountrynightskies.org](http://www.hillcountrynightskies.org)



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