

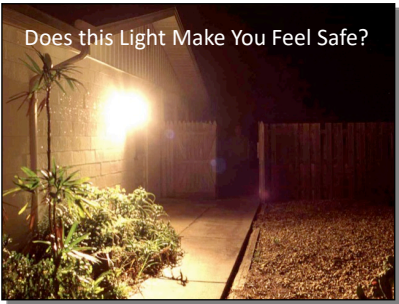


Slide	Facilitator
<p>Slide 1</p> 	<p>Do: [Welcome attendees. Introduce yourself.]</p> <p>[Tell attendees what you will accomplish in this time together.]</p> <p>Say: We all need light to see at night. You hear people say they want a “Dark Sky” ordinance. What does that mean to our lighting? What is the reality of so called “Dark Sky” practices?</p>
<p>Slide 2</p>  <ul style="list-style-type: none"> • Glare, Safety and Security • Light Trespass • Wasted Money & Energy • Community Economic Impact • Human & Environmental Impact 	<p>Say: Let’s first look at the challenges coming from our use of artificial outdoor lighting at night.</p>
<p>Slide 3</p> 	<p>Say: Imagine that you are standing outside, looking toward the light.</p> <p>Ask: Do you feel safe? [Wait for people to nod their heads or say “Yes.”]</p> <p>Say: Light makes us <i>feel</i> safe but are we <i>really</i> safe?</p> <p>We can see there is a bit of glare from this common flood light attached to the house. GLARE occurs when any bright, direct light hits your eye.</p> <p>If you can see the source of the light, it is producing glare.</p>

Slide 4



Ask: What happens when we shield the source of the light?
[Wait for attendees to notice the man.]

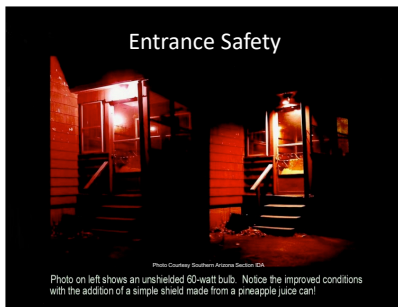
Say: Wow – that gentleman was there all along!
[Click back at the previous slide if needed to ensure that attendees see the difference shielding makes. If the room is dark enough, you can see the man in the previous slide too.]

Glare can severely diminish our ability to see well at night. **Glare negatively affects both safety and security. Unshielded, over-lighted or improperly aimed security lighting can actually reduce security by producing glare that can conceal someone with criminal intent.**

The effects of glare can jeopardize everyone's safety.

Ask: Why should we tolerate it?

Slide 5



Say: Most homes have some sort of outdoor light fixtures. Often there is at least one near the front door or steps so you can see where you are stepping as you come and go.

But not all lighting is created equal. Let's look at these two pictures. Notice the improved lighting on the steps and ground in the picture on the *right*. Also notice the glare in the picture on the *left*.

Ask: What is the difference in the light?

Say: In the right-hand picture, the homeowner has taken a pineapple juice can, cut it to fit over the fixture, painted it to match the house and installed it over the bulb. Voila! This homemade shield protects the eye from the source of the light and points the light down where it is needed. In doing so, the general visibility is improved *and* there is a great improvement in your ability to see where you will be walking.

Ask: Have you ever really looked at the lights around your house at night? Do they improve safety or blind you with glare? Do they waste your money by sending light where you do not need it?

Slide 6



Say: LIGHT TRESPASS occurs when the light source from one property may be seen from any other property.

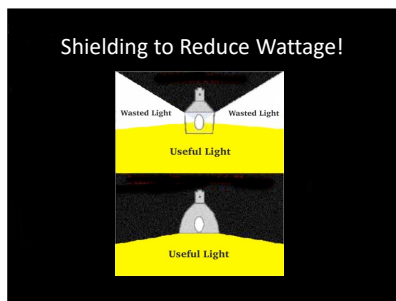
These buildings are across the street from each other. The home on the right has NO EXTERIOR LIGHTS ON! Can you imagine trying to sleep in this house?

Light trespass infringes on the property rights of the neighbor who has unwanted light intruding into his or her property. It can lower property values, reduce the quality of the nighttime environment and be a general irritant.

Everyone should have the right to the full enjoyment of property without being forced to live with unwanted light directed onto their property.

Be a good neighbor. Shield and aim all lights on your own property so that you cannot see the source of the light from any other property and none of your lights shine above any structure or vegetation on your property.

Slide 7



Say: And there is a real, tangible value to shielding your lights. A shielded light will allow the owner to reduce the wattage approximately in HALF and get the *same amount of useful light*. Other benefits of shielding include:

- Reducing the electrical cost in half.
- Cutting the amount of fuel needed to produce that energy in HALF.
- Putting the light where it is needed and reducing that GLARE that makes us less safe and secure.

Ask: Are you seeing the win-win here?

Say: Notice that every challenge we've talked about so far can be solved by shielding and directing lights onto the property where they originate rather than off or above the property.

Better Lights for Better Nights (Full Version) – Facilitator Guide

Slide 8



Say: We need illumination to feel secure, but we *do not* need glare. We actually need much less light to see at night than what we see in this cityscape.

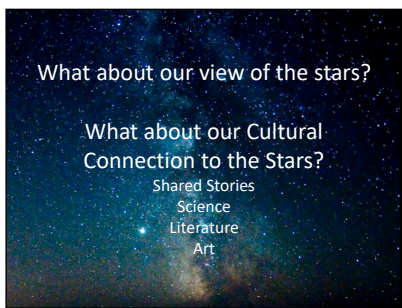
Too much light can detract from communities or individual properties.

Slide 9



Say: We need illumination to feel secure, but we **do not** need glare. When the glare is removed, we can appreciate the architecture and quaintness of this town.

Slide 10



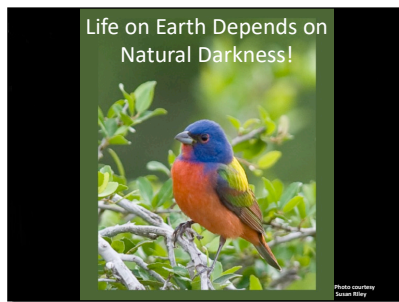
Say: Close your eyes and think about night when you were under a star filled sky. Take a deep breath and remember how it felt.

Ask: You can open your eyes now, but do you remember feeling more relaxed and grounded?

Think also about our cultural connection to the heavens. Humans have shared stories under and about the night sky for thousands of years. Our science, literature, and art are all influenced by stars and our view of the universe.

Say: Other living things are dependent on the natural night sky too and are affected by the diminishing of the night sky by artificial light.

Slide 11



Say: Almost all living things – plants and animals – need natural darkness to thrive. When artificial light slips into the world beyond where we *need* it to see, a different kind of habitat destruction results—in at least 4 ways.

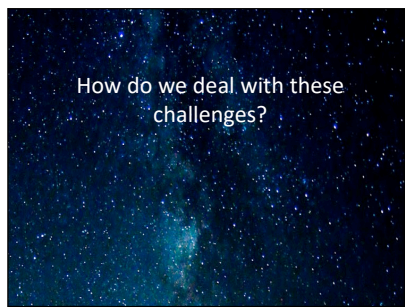
First, our artificial lights disrupt the navigational systems of many animals, including our beautiful migratory birds.

Second, our artificial lights at night cause the disruption of reproductive processes, circadian rhythms, and annual cycles. Part of that is the suppression of melatonin in almost every living thing—including humans. Melatonin is exceptionally important for health!

Third, artificial light also alters when plants bloom. Too much light at the *wrong* time of year may cause plants to attempt to bloom at the wrong time when pollinators are not around.

Finally, artificial light changes the balance between predators and prey, giving prey an unfair advantage.

Slide 12



Ask: How do we change our outdoor lighting to see better and fix these problems?

Transition: We have talked about the results of poor lighting. Now, let's look at what *good* quality lighting looks like and how to get it.

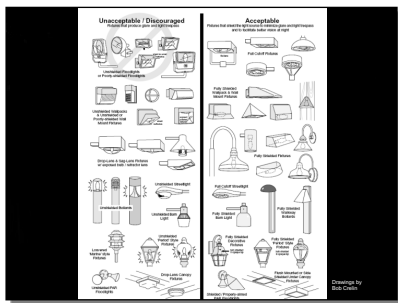
Slide 13



Say: Following the guidelines you see here can enable us to have as *much* light as we need, while limiting the harmful effects and waste that can be associated with outdoor lighting!

Now, let's look at some examples.

Slide 14



Do: [Hand out or offer “Better Lights for Better Nights” handout prepared by Bob Crelin.]

Say: Take a moment to skim through this handout. Note that all the lights on the “Acceptable” side *shield the source of the light*. This is one of the keys to being able to see better. **Shield that light source!**

Do: [Good Light, Bad Light Demo:

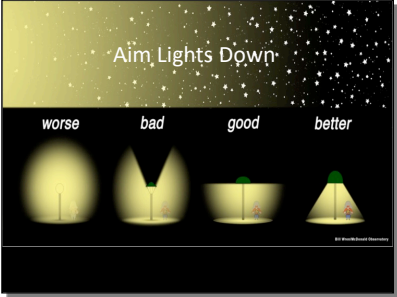


1. Show example of a good light purchased from Home Depot or Lowe’s, illustrating a light source that either has been shielded or contains a warm vintage-style light.
2. Show example of a bad light purchased from Home Depot or Lowe’s, illustrating an unshielded light source.
3. Turn the bad light off. Ask audience “Count the seconds until you stop seeing an image of the bad light in your eyes.” Poll the audience for answers.]


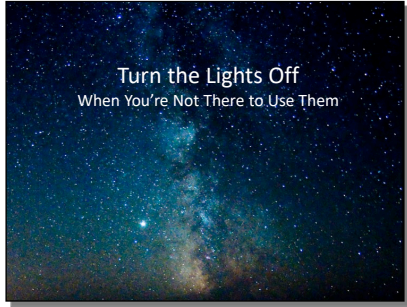
Slide 15





Say: As you saw in our demo, additional shielding protects us from glare and light trespass. The example on the right is the best! Interestingly, the term “Fully Shielded”, as defined by the lighting industry, does NOT include the shield that you see in the photo on the right.

We should either recess or shield the source of the light so that you do not see the source from any other property (nor from above). This reduces the light that shines in the “glare zone” and makes it easier for us to see at night.

<p>Slide 16</p> 	<p>Say: We can have the outdoor lighting we need and protect the night sky at the same time. Shield lights in the same way as the one on the far right. Notice the circle of useful light is the same in each depiction.</p> <p>For many years we thought that “full cutoff” lighting – like the one labeled “good” was the right thing to do. We now know that the light within 15 degrees up and down from that 90 degree “full cutoff” creates more sky glow than light that is directed straight up into the sky. So, go for the recessed light like the one labeled “better.”</p> <p>Ask: Can you recall examples of these types of lighting around your home and the areas where you shop?</p>
<p>Slide 17</p> 	<p>Say: Here is a positive example. Shielded lighting provides a safer and more attractive solution.</p> <p>Shielded/recessed lights are a great solution for residential <i>or</i> commercial needs. The key is to install the fixture or shield so that the light <i>neither spills above the horizontal nor onto neighboring property.</i></p> <p>Recessed or fully shielded lights under the gas station canopy provide excellent illumination to the pumps and the general area without creating glare for drivers pulling in or driving by.</p>
<p>Slide 18</p>  <p>Slide 18, continued</p>	<p>Say: Keep in mind that in addition to seeing better, saving money, protecting our health, and protecting the night sky, that good lighting is an asset for a business.</p> <p>A lot of businesses seem to be raging a war to see who can have the brightest lights. As you pull out of a brightly lit business into the darker street or vice versa, it takes your eyes time to adjust. During that adjustment period you and any other cars or people around you are at risk.</p> <p>Here is an example. Not too long ago this service station shielded its lights and reduced the wattage as a test. Notice in the picture on the right, the shielded lights--which are directed towards the ground--produce a more <i>even</i> distribution of light where it is needed, allowing you to see more clearly in the lit area as well as on the edges of the lit area.</p>

	<p>The unshielded lights on the left not only produce glare that reduces your ability to see but, the lights are so bright that the beams of light hit the ground and bounce back producing additional glare. Notice how the service station details look fuzzy in the photo on the left. That is a result of all the glare.</p> <p>The service station shielded their lights as part of a light pollution (LP) reduction experiment. They were <i>surprised</i> when they got an immediate increase in business.</p>
<p>Slide 19</p> 	<p>Say: Cooler lights (specifically cooler, whiter LED's) create more glare and therefore <i>reduce our ability to see at night</i>.</p> <p>Warmer lights not only create less glare, but they have less light in the blue wavelength. It is that blue wavelength that is most efficient at stopping melatonin production. That is, <i>the cooler, whiter lights are more detrimental to your health than the warmer lights</i>.</p> <p>If Needed: The cones of the retina respond to bright, whiter lights and provide daytime, that is, photopic, (fo' topik) vision. The rods are sensitive to dim light and we use them for nighttime, that is, scotopic (sca' ta pik), vision. Cones respond best to light in the yellow spectrum and rods are most sensitive to light in the blue-green spectrum. So, we not only need less wattage to see best at night, but we need to consider the color of the light.</p>
<p>Slide 20</p>  <p>Slide 20, continued</p>	<p>Say: A final and very simple thing you can do is to turn your lights off when you are not there, or when you can take the time to let your eyes adjust to see by the stars and moon.</p> <p>Yes, lights can make us feel more secure – but not necessarily BE more secure. We need to make sure the lights do not create glare that can blind us, and that they do not create a sharp contrast between the lit and unlit areas.</p> <p>We should remember that criminals need light too. Lighting manufacturers will tell you that lights</p>

	<p>prevent crime. But professional studies in the U.S and abroad show that light does <i>not</i> deter crime.</p> <p>We should also note that most home burglaries happen during the daytime.</p> <p>To use lights to improve security, the most effective means is to provide a sudden change to the surrounding environment. Sensor-governed security lighting that turns on when someone approaches an area is the <i>most</i> effective means of attracting attention and driving away someone with criminal intent. Remember that even these lights should be installed so that they neither produce glare nor uneven illumination that can conceal a criminal.</p>
<p>Slide 21</p> 	<p>Do: [Restate the Challenge.]</p>
<p>Slide 22</p> 	<p>Say: Any property – residential or business – is eligible to earn the Be A Star Award. The application guides you through a self-assessment of the lighting on the property.</p> <p>If the lights for that property pass the assessment, you mail in the last page to receive the signage and certificates.</p> <p>[Do: Provide a couple samples of the <i>Be a Star</i> application and assessment so people can review it to determine if they want to complete it for their property. Encourage interested parties to access the application online.]</p>

Slide 23



Do: [Share resources for further inquiry. Give people time to take photos of this slide or capture these resources as notes.]

Say: Thank you very much for the opportunity to share this information with you. I hope you have all found value in this presentation.

I encourage you to examine ways that *you* can invest in using better lights for better nights.

Ask: What questions do you have for me?