

# Updating the Night Sky Protection Act



**DarkSky**  
NEW MEXICO  
CHAPTER

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# New Mexico DarkSky

- New Mexico DarkSky is our state's chapter of Darksky International.
- Darksky International, founded as the International Dark-Sky Association in 1988, is the globally recognized authority on light pollution issues and night sky conservancy.
- Formed in 2023 with over 100 members, New Mexico DarkSky conducts programs focused on:
  - Legislation/ordinances
  - Education/outreach/engagement
  - DarkSky places
  - Economic impacts

# Widespread Interest in Dark Skies

## 2023 Stakeholders Workshop Attendees

- DarkSky International and NM Chapter
- Illuminating Engineering Society
- Xerces Foundation
- NM Biopark
- Mesilla Valley Audubon
- Carroll Petrie Foundation
- New Mexico Wilderness Alliance
- Wilderness Society
- Santa Fe Conservation Trust
- Apache Point Observatory / NMSU
- New Mexico Tech/Magdalena Ridge Observatory
- Very Large Array
- NM True
- NM State Land Office
- BLM
- National Park Service
- Bandelier National Monument
- Carlsbad Caverns National Park
- New Mexico Oil and Gas Association
- Starfire Optical Range
- Albuquerque Astronomical Society
- Magdalena Astronomical Society
- Warehouse I-10 At Gallery
- Santa Fe New Mexican

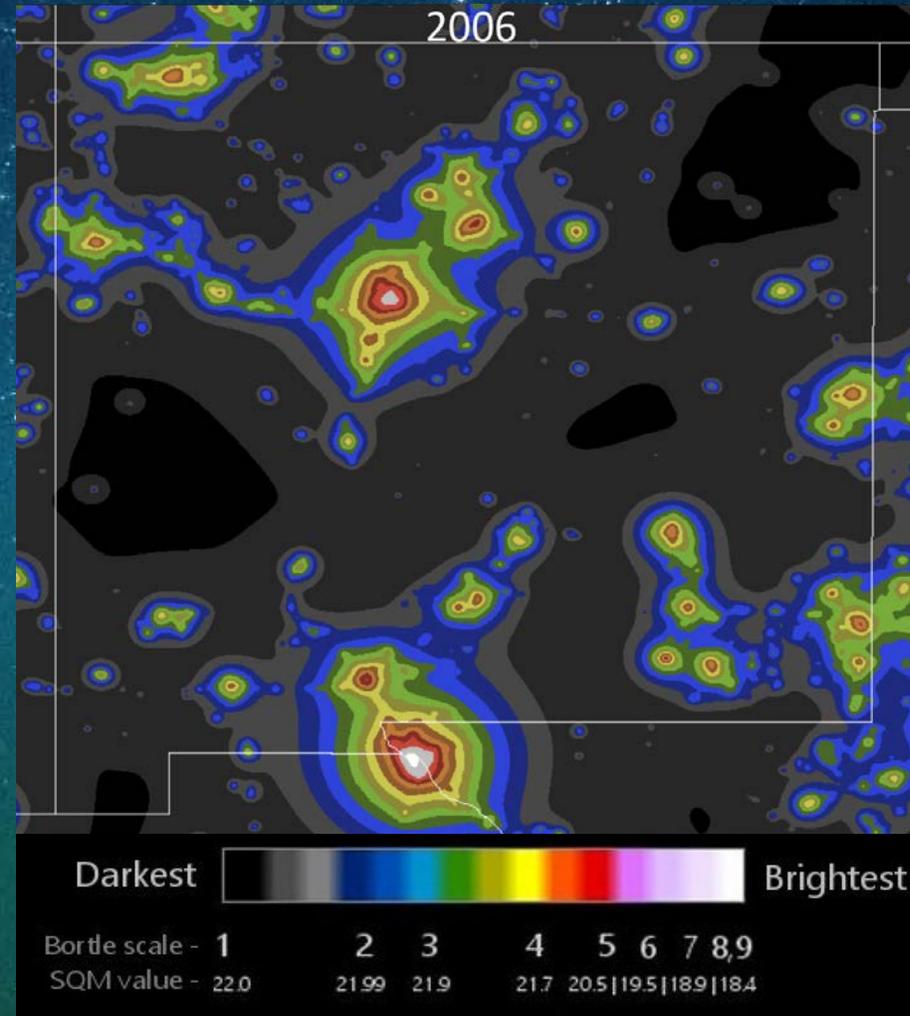
# The Night Sky Protection Act

- In 1999, the NM NSPA was adopted to "to regulate outdoor night lighting fixtures to preserve and enhance the state's dark sky while promoting safety, conserving energy and preserving the environment."
- The NSPA seeks these goals by **requiring the shielding of lighting fixtures to direct their output downward.**
- The provisions apply throughout the State with certain exemptions including existing lighting (until replaced) and lighting necessary for safety on farms, ranches, dairies, feedlots or industrial, mining or oil and gas facilities.
- Construction Industries Division is responsible for implementation on state property and county/local governments in their jurisdictions.

# Updating the Night Sky Protection Act

- The Night Sky Protection Act is not achieving its stated objectives and needs updating.
- The Act is outdated and needs improvement.
  - Lighting technology has greatly changed with the development and widespread adoption of LEDs.
- The Act is not curtailing the growth of light pollution.
  - In fact, light pollution is rapidly increasing – about 10% per year in nationwide measurements.

# New Mexico Light Pollution Map



# Light Pollution

- Light pollution caused by artificial lighting has three principal forms - skyglow, glare, and trespass.

## **Skyglow**

the brightening of the night sky over inhabited areas



# Skyglow Impact



# Light Pollution

## **Glare**

excessive  
brightness that  
causes visual  
discomfort and  
impairs sight



# Light Pollution

## **Trespass**

artificial light  
sources emitting  
light into adjacent  
properties or  
public right-of-way



# Impacts of Light Pollution

- Harming Human Health

We evolved with the natural light/dark cycle of day and night, the circadian rhythm. The proliferation of artificial light at night means most of us no longer experience truly dark nights.

Many studies have shown that exposure to artificial light at night negatively affects human health, including increased risk for: sleep disorders, depression, obesity, diabetes, heart disease, and some forms cancer.

- Creating Neighborhood Conflict

Lighting which intrudes on neighboring properties is a frequent source of conflict. Better lighting respects property owner rights.

# Impacts of Light Pollution

- Destroying Critical Wildlife Habitat
  - Plants and animals depend on Earth's daily cycle of light and dark to govern life-sustaining behaviors such as reproduction, feeding, migration, rest, and cover from predators.
  - Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures, including amphibians, birds, mammals, insects, and plants. Over 60% of pollinator species are active at night.
- Inhibiting Scientific Research
  - Skyglow interferes with observations by amateur and professional astronomers and threatens observatories engaged in scientific research and national security.

# Impacts of Light Pollution

- Decreasing Safety and Security
  - There is no clear scientific evidence that increased outdoor lighting deters crimes. It may make us feel safer, but it has not been shown to actually make us safer.
  - The truth is bad outdoor lighting can decrease safety by making victims and property easier to see. Moreover, glare from bright, unshielded lights can actually reduce visibility.
- Wasting Energy and Money
  - Lighting levels higher than necessary and light not directed for its intended use is wasteful. Wasting energy has economic and environmental consequences.

# Impacts of Light Pollution

- **Losing Cultural Connections**
  - Until recently, our ancestors experienced a sky brimming with stars – a night sky that inspired science, religion, philosophy, art, and literature.
  - The natural night sky is our common and universal heritage, yet it's rapidly becoming unknown to newer generations. It is especially important to native culture and traditions.
- **Undermining Tourism and Astrobusiness**
  - Astrotourism is one of the attractions featured by the Department of Tourism. A variety of businesses cater to those interested in the night sky, including astro communities and remote telescope hosting facilities for astrophotographers and astronomers.

# Responsible Outdoor Lighting

- Before addressing our recommendations, we want to emphasize that we recognize the importance of artificial lighting for work, play, travel, and other activities at nighttime.
- We believe that artificial lighting can support these activities and mitigate light pollution – provided the lighting is well designed and installed.
- DarkSky and the Illuminating Engineering Society jointly developed a set of principles for responsible outdoor lighting. IES is the recognized authority on lighting and the developer of the professional lighting standards issued by the American National Standards Institute (ANSI)

# The Five Principles of Responsible Lighting

Responsible outdoor lighting is

## 1 Useful

### Use light only if it is needed

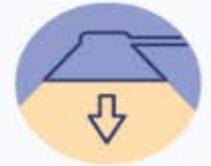
All light should have a clear purpose. Consider how the use of light will impact the area, including wildlife and their habitats.



## 2 Targeted

### Direct light so it falls only where it is needed

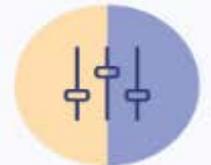
Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.



## 3 Low Level

### Light should be no brighter than necessary

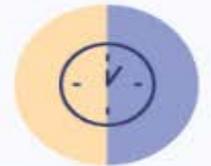
Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.



## 4 Controlled

### Use light only when it is needed

Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.



## 5 Warm-colored

### Use warmer color lights where possible

Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.



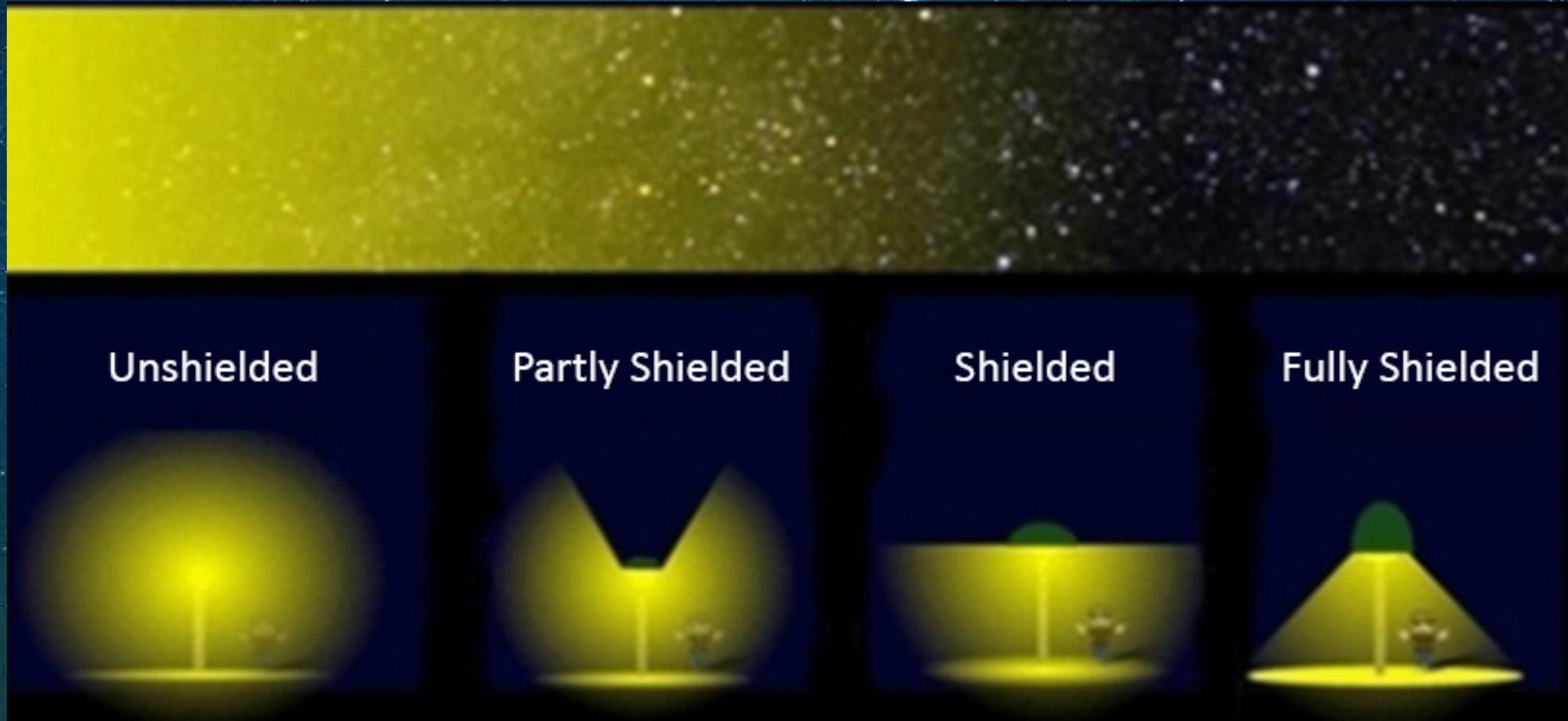
# Update - Purpose

| Current Provision  | Proposed Provision |
|--|--------------------|
| <p>74-12-2. Purpose.<br/>The purpose of the Night Sky Protection Act is to regulate outdoor night lighting fixtures to preserve and enhance the state's dark sky while promoting safety, conserving energy and preserving the environment for astronomy.</p> | <p>[Delete]</p>    |
| Rationale  |                    |
| <p>We understand that current legislative practice excludes purpose statements.</p>  |                    |

# Update - Definitions

| Current Provision  | Proposed Provision   |
|--|--|
| <p><b>74-12-3. Definitions</b></p> <p>B. "shielded" means a fixture that is shielded in such a manner that light rays emitted by the fixture, either directly from the lamp or indirectly from the fixture, are projected below a horizontal plane running through the lowest point on the fixture where light is emitted.</p> | <p><b>74-12-3. Definitions</b></p> <p>B. "fully shielded" means a fixture that is shielded in such a manner that no light is emitted, either directly or indirectly, at or above 10 degrees below a horizontal plane running through the lowest point on the fixture where the light is emitted.</p> |
| <p><b>Rationale</b></p>  |  |
| <p>DarkSky International now recommends that light be restricted to below 10 degrees from horizontal to prevent light trespass and to significantly reduce light extending to unwanted areas.</p>  |  |

# Update - Shielding



# Update - Definitions

| Current Provision  | Proposed Provision   |
|--|--|
| [None]   | 74-12-3. Definitions<br>C. "light trespass" means artificial light sources emitting light into adjacent properties or public right-of-way. |
| <b>Rationale</b>   |  |
| The term light trespass is now recognized to be an important principle that has an impact on safety, environmental issues, property owner rights, and light pollution. |  |

# Update - Definitions

| Current Provision  | Proposed Provision   |
|--|--|
| [None]   | 74-12-3. Definitions<br>D. "lumens" means a standard of measure that quantifies the amount of light emitted by a light source. |
| <b>Rationale</b>   |  |
| With modern light technology, the objective measure of light output is lumens in place of watts (which is a measure of the energy consumed by the source). |  |

# Update - Shielding

| Current Provision   | Proposed Provision  |
|---|---|
| <p><b>74-12-4. Shielding of outdoor light fixtures</b><br/>All outdoor lighting fixtures installed after January 1, 2000 shall be shielded, except incandescent fixtures of one hundred fifty watts or less and other sources of seventy watts or less.</p> | <p><b>74-12-4. Shielding of outdoor light fixtures</b></p> <p>A. Except for strings of small lights or temporary holiday lighting, an outdoor lighting fixture installed after July 1, 2025 that is mounted more than four feet above the ground shall be fully shielded and installed and maintained in accordance with the manufacturer's specifications and instructions for use.</p> <p>B. An outdoor lighting fixture that is mounted less than four feet above the ground and emits more than one thousand lumens shall not be directed toward the sky or a public right of way and shall not result in light trespass.</p> |

**Rationale**

This revision takes into account changes in lighting technology since the original NSPA, and is more specific

# Update - Non-Conforming Light Fixtures

| Current Provision  | Proposed Provision  |
|--|---|
| <p><b>74-12-5. Nonconforming light fixtures.</b></p> <p>A. In addition to other exemptions provided in the Night Sky Protection Act, an outdoor lighting fixture not meeting these provisions shall be allowed, if the fixture is extinguished by an automatic shutoff device between the hours of 11:00 p.m. and sunrise.</p> | <p><b>74-12-5. Existing nonconforming light fixtures</b></p> <p>A. In addition to other exemptions provided in the Night Sky Protection Act, an existing nonconforming outdoor lighting fixture not meeting these provisions shall be allowed, if the fixture is extinguished between the hours of 11:00 p.m. and sunrise or installed with a device that automatically turns off the light no longer than thirty minutes after the light is turned on.</p> |
| <b>Rationale</b>   |   |
| While existing lighting is grandfathered from replacement, such lighting must be turned off after 11:00 to minimize its impact, unless exempted. Exempted industries are not subject to 74-12-5  |   |

# Update - Exemptions

| Current Provision  | Proposed Provision   |
|--|--|
| <b>74-12-7 Exemptions</b><br>(1) outdoor lighting fixtures on advertisement signs on interstates and federal primary highways; | <b>74-12-7 Exemptions</b><br>(1) outdoor lighting fixtures on roadway navigation and safety signs on interstates and federal primary highways; |
| <b>Rationale</b>   |  |
| Advertisement signs can be lit from above and achieve the same functionality.  |  |

# Update - Exemptions

| Current Provision  | Proposed Provision   |
|--|--|
| <p><b>74-12-7 Exemptions</b><br/>(2) outdoor lighting fixtures existing and legally installed prior to the effective date of the Night Sky Protection Act; however, when existing lighting fixtures become unrepairable, their replacements are subject to all the provisions of the Night Sky Protection Act;</p> | <p><b>74-12-7 Exemptions</b><br/>(2) outdoor lighting fixtures existing and legally installed prior July 1, 2025; however, when existing lighting fixtures are replaced, their replacements are subject to all the provisions of the Night Sky Protection Act;</p> |
| <p><b>Rationale</b></p>  |  |
| <p>Existing lighting fixtures are exempted , until replaced, to avoid imposing a burden on property owners.</p>  |  |

# Update – Exemptions

| Current Provision   | Proposed Provision  |
|---|---|
| (4) outdoor lighting fixtures that are necessary for worker safety at farms, ranches, dairies, feedlots or industrial, mining or oil and gas facilities.  | (4) outdoor lighting fixtures that are necessary for worker safety at farms, ranches, dairies, feedlots or industrial, mining or oil and gas facilities installed prior to January 1, 2027. |
| <b>Rationale</b>  |   |
| Lighting industry suggests that responsible lighting can be installed at comparable cost so long as it is planned before construction. Responsible lighting is as safe or safer than wasteful lighting. This revision gives industry some time to make adjustments prior to mandating this for new installations. |   |

# Update - Exemptions

| Current Provision   | Proposed Provision   |
|---|--|
| [None]  | (5) Temporary lighting related to film or television production. |
| Rationale   |  |
| New Mexico has an active industry in this area, which we do not want to discourage. |  |



# Questions & Answers