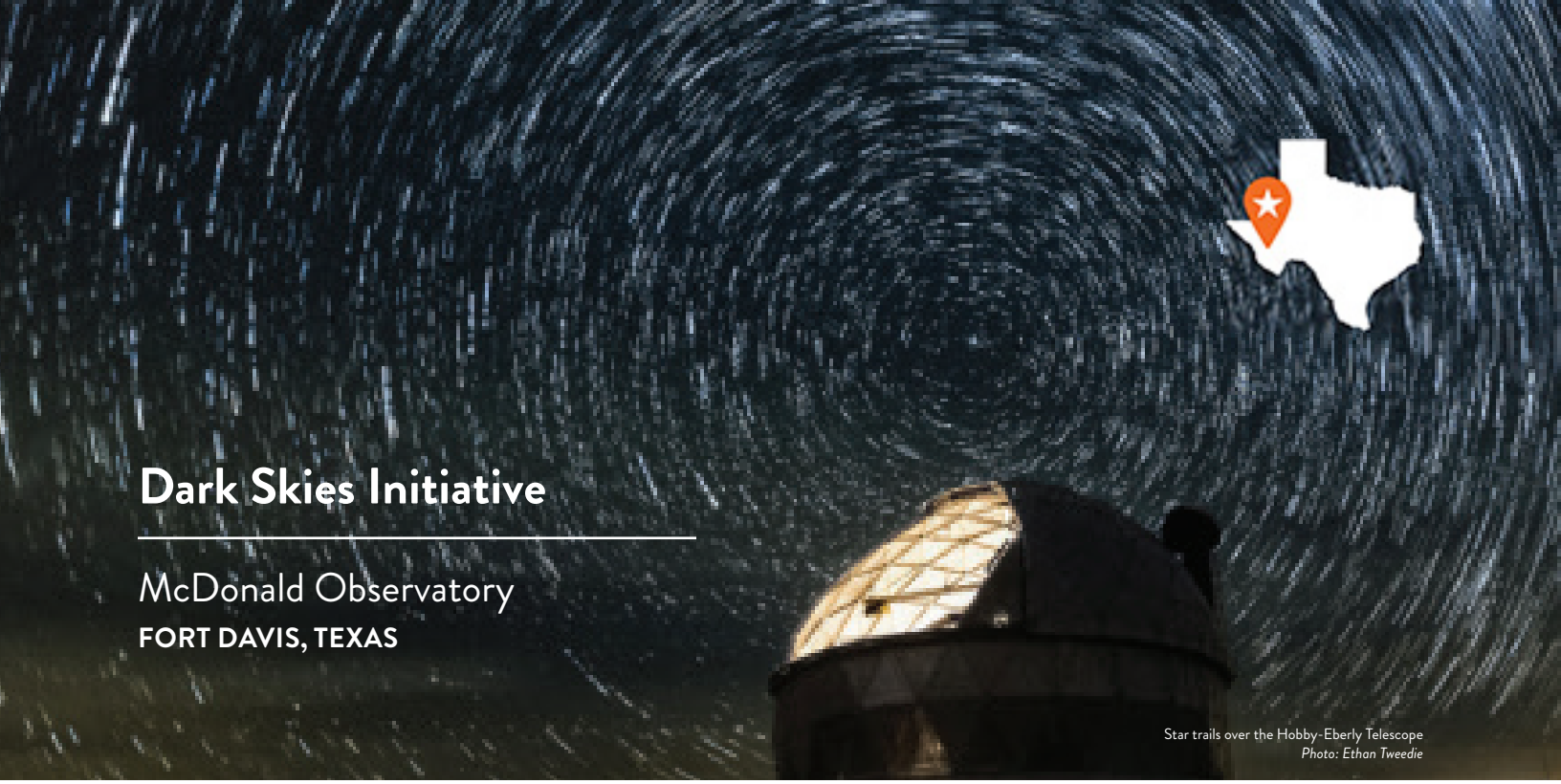


Dark Skies Initiative

McDonald Observatory

FORT DAVIS, TEXAS

Star trails over the Hobby-Eberly Telescope
Photo: Ethan Tweedie

McDonald Observatory
Fort Davis,Texas

LIGHT POLLUTION THREATENS THE DARK NIGHT SKIES IN THE HEART OF THE DAVIS MOUNTAINS OF WEST TEXAS.

Located atop Mount Locke and Mount Fowlkes and under some of the darkest night skies in the continental United States, sits the 500-acre world renowned University of Texas at Austin's McDonald Observatory. The Observatory's mission is to inform, educate, and inspire through their public programs, and support the teaching of the science and hobby of astronomy. The second largest employer in Jeff Davis County, the Observatory hosts approximately 100,000 visitors each year. Through a campaign of education and awareness, **the Observatory's Dark Skies Initiative seeks to protect the beautiful, milky-way filled night skies of West Texas for ongoing astronomical research and education.** To protect the dark skies surrounding the Observatory, the seven counties surrounding the campus have outdoor lighting ordinances and all the cities within these counties have similar municipal ordinances.

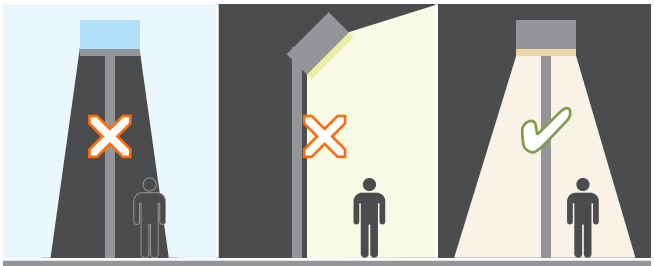
Apache Corporation tank battery using the latest dark sky friendly LED lighting technology. Note the light sources themselves are shielded from view, reducing glare, while providing a well lit working area. No light shines directly into the sky.
Photo: Bill Wren/McDonald Observatory

In recent years, the increase of oil and gas related activities in and around the Permian Basin has resulted in an increase of light pollution that threatens the dark skies. To measure the amount of light pollution surrounding the Observatory, all sky photometry data is collected. To address light pollution coming from the Permian, the Observatory has published "Recommended Lighting Practices" in partnership with the Permian Basin Petroleum Association, Texas Oil & Gas Association, American Petroleum Institute, and University Lands. An accompanying training video created in partnership with Apache Corporation is also available, that oil and gas operators in the Permian can utilize to properly implement dark skies friendly lighting practices.

Dark skies friendly lighting has been found to efficiently and effectively increase visibility and worker safety working on oil and gas operations by reducing glare.

Dark skies friendly lighting has been found to not only reduce light pollution, but also to efficiently and effectively increase visibility and worker safety on oil and gas operations by reducing glare. Additionally, dark sky friendly lighting consumes less electricity by redirecting previously wasted up-light to the ground, allowing for the use of lower wattage bulbs. **And converting to warm-white LEDs saves an average of 80% in power consumption!**

TIPS FOR IMPLEMENTING
DARK SKIES FRIENDLY LIGHTING



1. Use light only when and where you need it.
2. Use full cutoff fixtures.
3. Use amber lights instead of blueish-white light—preferably ≤ 3000° K (warm white)

The "Recommended Lighting Practices" include:

- Preparing a lighting plan documenting how lighting will be designed and installed.
- Use of audiovisual warning system (AVWS) technology for hazard lighting on structures taller than 200 feet.
- Use of full cutoff luminaires that are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source).
- Directing lights properly to eliminate light spill and trespass—construction and permanent lighting should be mounted and directed to focus light only on the intended area.
- Use of amber instead of bluish-white lighting—preferably below 3000° Kelvin color temperature (warm-white).
- Minimizing lighting usage during construction and operations—only using lighting when and where you need it!
- Use of vehicle-mounted lights or portable light towers for nighttime maintenance activities—mount high and aim low.
- Options if the need to flare arises—consider utilizing an enclosed combustor.

IMPACT

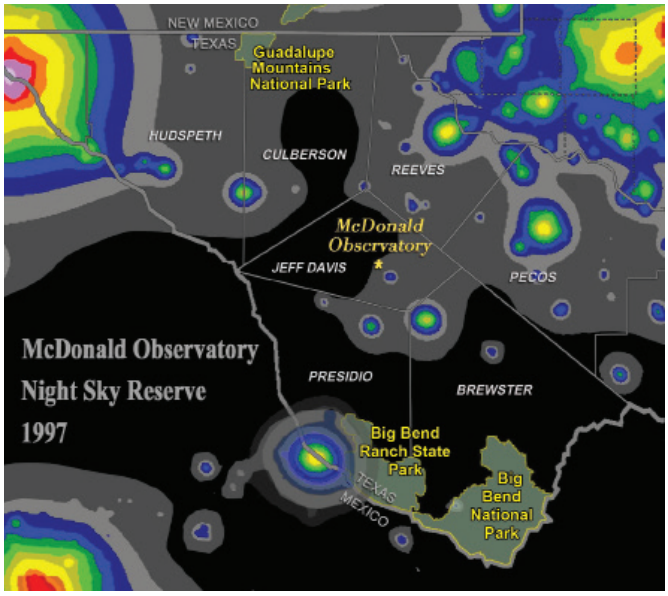
- Reduces light pollution
- Increases visibility and safety
- Average of 80% in electricity savings
- Benefits wildlife

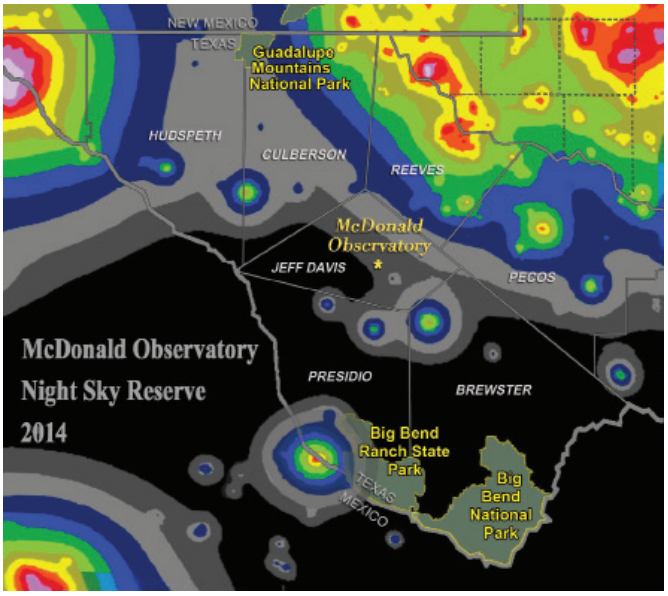
Texan by Nature is working to connect every oil and gas operator in the Permian, and in the state, to the Observatory in order to spread education and awareness of the positive benefits of the Dark Skies Initiative and encourage oil and gas operators to adopt the "Recommended Lighting Practices" because good conservation is good business.

PROJECT NEEDS

- **Partners:** Connections to oil and gas operators and businesses in the Permian and across the state who would like to learn more about the Dark Skies Initiative and adopt the "Recommended Lighting Practices".
- **Funding:** The Dark Skies Initiative is seeking funding to continue their campaign of education and awareness across the state and to fund the purchase of dark skies friendly lighting fixtures.

Before and after the oil and gas boom in the Permian Basin. Sky-glow from oil and gas related activities expands across the Pecos River and towards McDonald Observatory.
Source: The New World Atlas of Artificial Sky Brightness.





For more information - Web: mcdonaldobservatory.org/darkskies; Email: bwren@utexas.edu; Phone: (432) 426-4170.

This document was made in partnership with
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