



**Application for International
Dark Sky Community Designation
for
Fountain Hills, Arizona, USA**

SEPTEMBER 2017





CONTACT INFORMATION

This application to IDA for Dark Sky Community designation for Fountain Hills, AZ was prepared through a collaborative effort by the Town of Fountain Hills and the Fountain Hills Dark Sky Association. Fulfilling the annual requirements will also be a collaborative effort by the Town and the Association.

Any questions about this application can be directed as follows:

Town of Fountain Hills

Marissa Moore, Senior Planner
Town of Fountain Hills
Email: mmoore@fh.az.gov
Phone: 480-816-8139
Website: fh.az.gov

OR

Fountain Hills Dark Sky Association

Joe or Nancy Bill, Co-Chairs
Fountain Hills, AZ 85268
Email: info@fhdarksky.com
Phone: 480-200-8289
Website: fhdarksky.com

Other Websites

Experience Fountain Hills
Chamber of Commerce

experiencefountainhills.org
fountainhillschamber.com

TABLE OF CONTENTS



	Page
NOMINATION LETTERS	4
INTRODUCTION	7
ABOUT THE TOWN OF FOUNTAIN HILLS	8
OUTDOOR LIGHTING ORDINANCE	15
MUNICIPAL LIGHTING COMPLIANCE	26
EDUCATION AND OUTREACH	28
A. News Release on Town Website	29
B. Rack Card	31
C. Presentations to local groups	33
D. Electronic Media – Website, Facebook, Twitter	34
E. Local Media Articles	37
F. Letter to Editor Series	41
G. Dark Sky Education in Schools	49
H. Dark Sky Awareness Events	51
I. Volunteer Expo	53
LIGHT POLLUTION CONTROL PROJECTS	54
SKY BRIGHTNESS MEASUREMENT	75
FUTURE GOALS	79
LETTERS OF SUPPORT	80

APPENDICES

ABOUT FOUNTAIN HILLS DARK SKY ASSOCIATION	100
POWER POINT PRESENTATION	106



Town of Fountain Hills

16705 E. Avenue of the Fountains, Fountain Hills, AZ 85268
(480) 816-5107

September 11, 2017

International Dark-Sky Association
3223 N. First Avenue
Tucson, Arizona 85719

Dear IDA Board Members:

On behalf of the Town of Fountain Hills, I am requesting approval of our application designating Fountain Hills as an International Dark Sky Community. On November 3, 2016, the Fountain Hills Town Council voted unanimously to update the lighting ordinance that conforms to the requirements of the International Dark-Sky Association (IDA). On April 6, 2017, by unanimous vote, the Town Council directed Town staff to prepare and submit an application to the International Dark Sky Association for consideration as a Dark Sky Community.

Fountain Hills stands apart from other communities in many ways: its signature fountain; its surrounding mountains and natural Sonoran desert landscape; its small-town character within a major metropolitan area; its countless festivals; its adjacency to parks, mountain preserves and trails; and its dark skies.

Fountain Hills' town leaders have supported the concept of a dark-sky community since before the Town's incorporation in 1989. As a result, our town's dark skies have been preserved and no other community in the Phoenix area is as well-positioned to pursue the Dark Sky Community designation as Fountain Hills.

It is my hope that the IDA Board of Directors will seriously consider designating the Town of Fountain Hills as a Dark Sky Community. The Town of Fountain Hills looks forward to joining other communities that have already been awarded this distinct honor and major accomplishment.

Please do not hesitate to contact me if you have any questions regarding our application materials.

Sincerely,

Linda M. Kavanagh
Mayor



Town of Fountain Hills

16705 E. Avenue of the Fountains, Fountain Hills, AZ 85268
(480) 816-5107

September 14, 2017

International Dark-Sky Association
3223 N. First Avenue
Tucson, Arizona 85719

Dear IDA Board Members:

For the past several months, the Town of Fountain Hills has invested considerable resources in preparing the community to be considered for designation as a Dark Sky Community.

After staff worked several months with the Fountain Hills Dark Sky Association in drafting Zoning Ordinance amendments modeling the International Dark-Sky Association's designation requirements, the Town Council unanimously adopted the zoning amendments in November of 2016.

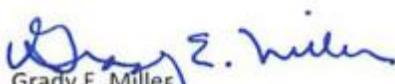
In 2016-2017 Town staff oversaw a project to upgrade and retrofit municipal lighting at various locations throughout town. The upgrades were completed at a cost of over \$23,000 and in full compliance with the newly-adopted outdoor lighting ordinance. The Town also plans to make additional investments in future outdoor lighting projects and other major capital projects to demonstrate its commitment as a Dark Sky Community.

Senior Planner Marissa Moore serves as the Town's subject expert and point of contact for the Dark Sky Community Program. Ms. Moore reviews site plans and building permits to ensure compliance with the lighting ordinance and educates the public (via phone, email, and walk-ins) about dark skies, outdoor lighting, and the Town's lighting ordinance. She will also be responsible for preparing and sending the annual lighting report to the International Dark-Sky Association.

In order to help residents understand the importance of dark skies, the Town has placed dark sky-compliant lighting brochures in the Town Hall lobby and Development Services customer service counter. The Communications and Marketing Coordinator will continue to publish information about the Town's dark sky efforts and will assist in educating the community about the importance of dark skies.

The Town of Fountain Hills is excited about the possibility of being designated a Dark Sky Community and is committed to maintaining this designation.

Sincerely,


Grady E. Miller
Town Manager

IDA MEMBER NOMINATION LETTER

International Dark-Sky Association
3223 N. First Avenue
Tucson, Arizona 85719



Dear IDA Board Members:

As IDA members and Board members of the Fountain Hills Dark Sky Association, it is our utmost pleasure to nominate Fountain Hills to be designated an International Dark Sky Community by the International Dark Sky Association.

Virtually nowhere else in the Phoenix metropolitan area can you see the night sky and enjoy astronomical observations as well as you can in Fountain Hills. We are shielded from the Phoenix metro nightglow by the McDowell Mountains on our west, the Salt River Pima-Maricopa Indian Community on our south, the McDowell Mountain Regional Park on our north, and the Fort McDowell Yavapai Nation and Tonto National Forest on our east. In addition, many of our early community leaders pursued conservative, common sense lighting ordinances that were ahead of their time.

To live in a community and not be impacted by the glare of city lights is a major benefit. Viewing the nightscape from Fountain Hills, or any dark location, is a magical experience of unparalleled beauty and awe that deserves protection.

As residents of Fountain Hills, we firmly believe that having our Town designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors, and future generations will continue to enjoy the beauty and wonders of our night sky.

Sincerely,

Joe Bill

Co-Chair and Co-Founder
FH Dark Sky Association

Nancy Bill

Co-Chair and Co-Founder
FH Dark Sky Association

Ted Blank, Board Member
FH Dark Sky Association
Co-Founder, FH Astronomy Club
NASA Solar System Ambassador

Dr. Craig Gimbel, Board Member
FH Dark Sky Association
Co-Founder, FH Astronomy Club
Donor of telescopes to FH Library

INTRODUCTION



The ever-encroaching light dome over our planet threatens a wondrous beauty that future generations might never learn to enjoy. Defending this diminishing resource is critical to preserving the vestiges of mankind’s history that until very recently, never included a capability to destroy the view of stars, constellations, and the Milky Way Galaxy.

For this reason, the Fountain Hills Dark Sky Association was formed in 2015. Through persistent and diligent attention to the steps required for Dark Sky Community designation, and with support from Town staff, progress steadily moved forward. While challenges were faced along the way, a major milestone was reached on November 3, 2016 when the Town Council unanimously approved an updated lighting ordinance that meets the requirements of IDA.

Upon approval of the ordinance, the focus then shifted to gaining enthusiastic support from the elected officials for the Town to pursue Dark Sky Community status. Success was happily achieved on April 6, 2017 with a **unanimous vote of support from the Town Council**. The Town also assigned staff member, Marissa Moore, Senior Planner, the responsibility to be the Town’s representative for all dark sky-related matters.

Fountain Hills, Arizona now wants to join the other far-sighted Dark Sky Communities that recognize dark skies is a quality of life issue. These communities, like Fountain Hills, have enacted appropriate lighting ordinances that protect the night-time environment yet allow smart lighting that provides adequate lighting for safety and for vibrant downtowns.

Approval of our application will help ensure an ongoing effort to educate our community about the benefits of minimizing light pollution. The designation will be a source of pride that will strengthen our resolve to defend the night sky and help us play our part in supporting the important role of astronomy in Arizona’s economy and ensuring that our citizens, visitors and future generations will continue to enjoy the beauty and wonders of our night sky.



ABOUT FOUNTAIN HILLS



The Town of Fountain Hills is a master-planned community located between the dramatic McDowell Mountains and the Verde River on the northeastern edge of the Phoenix, Arizona metro area. The rich history of the surrounding area dates back centuries when it was home to the Hohokam whose elaborate canal system along the Verde River is believed to have supported between 4,000 and 10,000 people from 1100 to 1450 AD. For largely unknown reasons, the tribe disappeared after that period and the Yavapai later migrated to the region.

The descendants of settlers from the 1860s turned this area into one of the largest land and cattle holdings in Arizona until the late 1960s when it was purchased by Robert McCulloch Properties. The design plan for McCulloch's 12,000-acre model city was completed by Disneyland designer



Charles Wood, Jr. They chose to install a fountain as the iconic centerpiece for the community, constructing it to be the world's tallest manmade fountain at the time. Centered in a lake in Fountain Park, the fountain reaches 560 feet when all three 600 horsepower turbine pumps are powered at the same time. Fountain Park attracts thousands of visitors each year. The community's founding birthday is considered to be December 15, 1970 when the fountain was first turned on. The town later went on to become incorporated on December 5, 1989.

Fountain Park with Red Mountain in the background.

DEMOGRAPHICS

Since incorporation in 1989, Fountain Hills has grown from a little more than 6,000 residents to a town of over 24,000 in 2017. The Maricopa Association of Governments estimates that the population of Fountain Hills will continue to grow to a build-out population of up to 35,000.

Key demographic statistics:

Population in 2014: 23,573

Population change since 2000: +16.5%

Median resident age: 57

High school or higher: 96.6%

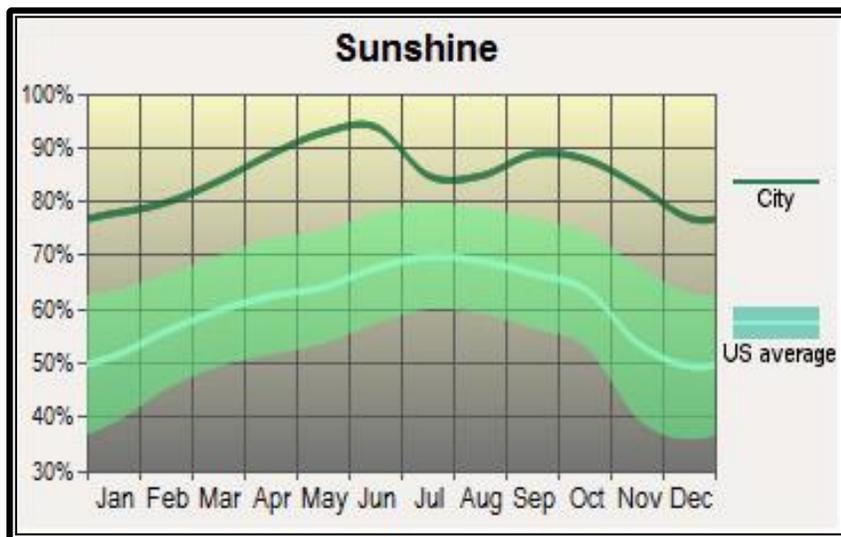
Bachelor's or higher: 45.7%

Median household income in 2015: \$75,670

Median house / condo value in 2015: \$422,434

Land area: 20.3 square miles (13,006 acres)

30% of land area dedicated to open space, golf courses, parks, and preserve.



300 days of sunshine per year - great for stargazing

COMMUNITY LIFE

Fountain Hills was named by Phoenix Magazine as the best place to live in the Valley of the Sun and was cited as “a welcome oasis on the outskirts of a metropolis”. In 2009, Business Week named Fountain Hills the “Best Affordable Suburb” in Arizona. In 2010, Fountain Hills was designated as a “Playful City USA” for its abundant open space and available playground equipment. A factor in these awards is not only the abundance of traditional parks, but also the variety of parks, such as a skate park, dog park, a splash park, and a nationally recognized disc golf course.



Disc Golf Course



Great Fair

When it comes to festivals and special events, Fountain Hills is in a league of its own, attracting several hundred thousand visitors each year. Just some of these celebrations and fun-filled activities include the Great Fair, Fountain Festival of Arts and Crafts, Oktoberfest, Thanksgiving Day Parade, Fourth of July fireworks, Concours in the Hills, Fountain Hills Music Festival, the premiere Mountain 2 Fountain 15K race, the Turkey Trot, the Memorial Championship Disc Golf Pro Tournament, Eggstravaganza, Fine Art and Wine Affaire, St. Patrick’s Day Festival, and weekly Art in the Park and Farmers Market.

Art is a significant part of our town’s heritage. Fountain Hills boasts over a hundred pieces of publicly displayed art throughout the downtown and among our public buildings. The eight original fountains along the Avenue of the Fountains were the beginning of the public art collection. Residents and visitors can wander the streets to enjoy the art, or take the “Art Walk” guided tour.



Joy of Music

One of the community's most valuable assets is its natural beauty. Four Peaks Mountain at 7640 feet looms to the east, with homes nestled in the foothills of the McDowell Mountains to the west. This places Fountain Hills in close proximity to hiking, biking, boating at nearby Saguaro Lake, and tubing and kayaking on the Salt River. Fountain Hills is also home to some of the more challenging and picturesque golf courses in the state of Arizona, four in total.



Snow-covered Four Peaks looms in the distance after a winter storm.

Adding to the attraction of Fountain Hills, 740 of its 12,000 acres have been set aside as a preserve. The preserve is contiguous with the McDowell Sonoran Preserve and the McDowell Mountain Regional Park. Combined, these areas encompass more than 50,000



One of four phenomenal golf courses



Hiking and mountain biking trail in the Fountain Hills Preserve

acres with over 200 miles of trails, making it a paradise for hikers, bikers, and horseback riders.

EDUCATION

Fountain Hills Unified School District #98 has three excelling schools: McDowell Mountain Elementary for kindergarten through 2nd grade, Fountain Hills Middle School for grades 3 through 8, and Fountain Hills High School for grades 9 through 12. There is a Montessori-style charter school that goes through 8th grade and a large, active homeschool group, Fountain Hills Christian Home Educators.

Fountain Hills High School engages in a student exchange program with our sister cities. Sister cities of the town include: Kasterlee, Belgium; Dierdorf, Germany; Ataco, El Salvador; Zamosc, Poland. The high school was ranked by U.S. News and World Report in the top 5% in their 2016 Best High Schools report.



Fountain Hills High School campus

NIGHT SKIES

Fountain Hills is fortunate to have one of the darkest night skies of any community near a major metropolitan area. We are shielded from the nightglow of the Phoenix metro area due to the presence of the McDowell Mountains to the west. Having the Salt River Pima-Maricopa Indian Community to the south, McDowell Mountain Regional Park to our north, and the Fort McDowell Yavapai Nation and Tonto National Forest to our east, we enjoy the benefit of dark skies naturally. These dark skies enabled Charles Juels, a Fountain Hills resident and amateur astronomer, to discover 475 asteroids, one of which he named Fountain Hills.



It was not only the terrain that made the dark skies possible, but it also was a conservative, common sense lighting ordinance that was ahead of its time and was enacted by our early community leaders. This has allowed us an easier path to seek Dark Sky designation today. In a map (see page 78) representing light pollution, Fountain Hills is ranked the same as Flagstaff, the first city in the world to be designated a Dark Sky Community by the International Dark Sky Association. Flagstaff is home to Lowell Observatory where Pluto was discovered, and the U.S. Naval Observatory.



Picture from Fountain Hills of moonrise over Superstition Mountains

It is known that a number of residents moved to Fountain Hills because of its dark skies. In 2015, two new residents to Fountain Hills along with a third resident formed the Fountain Hills Astronomy Club. The club now has a list of over 500 members. In March 2015, Craig Gimbel, one of the founding members of the Fountain Hills Astronomy Club, donated his telescopes to the Fountain Hills Library. Because the library has the telescopes available for checkout and co-sponsors monthly “Star Parties” with the Fountain Hills Astronomy Club, the Fountain Hills Library Branch of the Maricopa County Library District earned a national achievement award for innovation in county government programs in August 2016.

Because of the darks skies and significant astronomy-related activity, there has been growing community interest in the construction of a public observatory.

OUTDOOR LIGHTING ORDINANCE



With very helpful, expert guidance from IDA Program Manager Dr. John Barentine, the Town staff and Fountain Hills Dark Sky Association worked to update the community's Outdoor Lighting Ordinance. While the existing ordinance already had excellent shielding requirements, the updates focused on correlated color temperature and lumen density guidelines.

At the same time, updates to the Sign Regulations were also proposed to set a maximum of 100 nits for the nighttime brightness of electronic message boards.

The updated lighting and sign ordinances were unanimously approved by the Town Council on November 3, 2016.

Town of Fountain Hills Zoning Ordinance

Chapter 8

OUTDOOR LIGHTING CONTROL

Sections:

- 8.01 Administration.**
- 8.02 General Requirements.**
- 8.03 Prohibitions.**
- 8.04 Permanent and Temporary Exemptions.**
- 8.05 Procedures for Compliance.**

Town of Fountain Hills Zoning Ordinance
Chapter 8

Section 8.01 Administration

- A. Purpose:** It is the intent of this chapter to require lighting practices and systems that minimize light pollution, glare, and light trespass, and conserve energy while maintaining adequate light for nighttime safety, utility, security and productivity. Good modern lighting practices can achieve these goals and at the same time preserve the scenic view of the night sky, minimize lighting that would have a detrimental effect on astronomical observations, and prevent lighting that would be offensive to neighboring and near-by properties.
- B. Conformance with Applicable Code and Zoning Ordinance Provisions:** All outdoor artificial illuminating devices shall be installed in conformance with the provisions of this chapter, any other applicable provisions of the Zoning Ordinance and Building Codes of the Town of Fountain Hills, which may hereafter be enacted, as applicable.
- C. Approved Material and Methods of Installation:** The provisions of this chapter are not intended to prevent the use of any material or method of installation not specifically prescribed by this chapter, provided any such alternate has been approved in writing by the Town of Fountain Hills Zoning Administrator upon consultation with the Chief Building Official and finding that the proposed design, material or method:
1. Provides approximate equivalence to the applicable requirements of this chapter and applicable building codes; or
 2. Is otherwise satisfactory and complies with the intent of this chapter.

Section 8.02 General Requirements

- A. Shielding:**
1. All outdoor light fixtures with light output greater than 2250 initial lumens shall be fully shielded. fixtures with light output ranges from 1125 to 2250 initial lumens shall be at least partially shielded.

Town of Fountain Hills Zoning Ordinance
Chapter 8

2. Outdoor advertising signs constructed of translucent materials and wholly illuminated from within do not require shielding. It is recommended that existing mercury vapor fixtures either be replaced or be quipped with a filter whose transmission is less than ten (10) percent total emergent flux at wavelengths less than forty-four hundred (4400) angstroms. "Total emergent flux" is defined as that between three thousand (3000) and seven thousand (7000)-angstrom units.
- B. **Correlated Color Temperature (CCT):** In order to minimize the detrimental effects of blue light, the correlated color temperature (CCT) of any outdoor lighting fixture shall not exceed 3000K.
 - C. **Light Trespass:** Outdoor lighting fixtures shall be sufficiently shielded and aimed such that spillage of light onto adjacent properties is minimized and glare from the light emitting and/or reflecting parts of a luminaire is not visible from any adjacent property.
 - D. **Holiday Lighting Decorations:** Temporary outdoor holiday lighting decorations are permitted for a reasonable period before a holiday and are not subject to the requirements in this section 8.02. Holiday lighting in residential neighborhoods shall be minimized after 11:00 p.m. and shall be removed within two weeks after the holiday.

Section 8.03 Prohibitions

- A. **Searchlights:** The operation of searchlights is prohibited.
- B. **Recreational Facilities:** No outdoor recreational facility, public or private, shall be illuminated after 11:00 P.M. except to conclude a specific recreational, sporting or other activity that began prior to 10:00 P.M. Recreational facility lighting shall make appropriate use of adaptive controls when possible.
- C. **Outdoor Building or Landscaping Illumination:** The unshielded outdoor illumination of any building, landscaping, signage or other purpose, is prohibited except with light fixtures of less than 1125 lumens. The combined outdoor unshielded lighting shall not exceed 1125 lumens within a 25-foot radius. All illumination shall be so arranged as not to shine upon or reflect onto adjoining properties.
- D. **Exterior Lighting:** All lighting for off-street parking or loading areas or for the external illumination of buildings or signs shall be directed away

Town of Fountain Hills Zoning Ordinance
Chapter 8

from and shielded from any adjacent residential property and shall not detract from driver visibility on adjacent streets.

- E. Mercury Vapor:** All mercury vapor fixtures are prohibited.
- F. Signage:** All outdoor signage lighting shall conform to Section 8.02 and shall be of such size and color as not to interfere with traffic or limit visibility of adjoining property. Lighting on any sign not wholly illuminated from within shall conform to Section 8.02 and be directed towards the ground. Regulations relating to signs with intermittent, scrolling or flashing illumination are in Chapter 6, Section 6.08.CC.

Section 8.04 Permanent and Temporary Exemptions

- A. Nonconforming Fixtures:** All outdoor light fixtures existing and fully installed prior to the effective date of this chapter are nonconforming indefinitely; provided, however, that no change in use, replacement, structural alteration, or restoration (after abandonment of outdoor light fixtures) shall be made unless it thereafter conforms to the provisions of this chapter.
- B. Governmental Facilities:** Those facilities and lands owned, operated or protected by the U.S. federal government, the State of Arizona, or Maricopa County, are exempted from all requirements of this chapter. Voluntary compliance with the intent of this chapter at those facilities is urged. Town outdoor lighting facilities shall adhere to the following requirements:
 - 1. When new town-owned buildings and other facilities are constructed, or new town rights-of-way are established, the installation of new outdoor lighting fixtures shall be allowed only when (a) a specific need related to a hazardous nighttime situation is identified by the town or (b) lighting is deemed necessary as a matter of ensuring public health, safety and welfare, and is in the best interest of the town and the community.
 - 2. When existing town-owned buildings, other facilities and town rights-of-way are modified by physical alterations and/or by a change of use, the installation of new outdoor lighting fixtures beyond existing installations shall be allowed only when (a) a specific need related to a hazardous nighttime situation is identified by the town or (b) lighting is deemed necessary as a

Town of Fountain Hills Zoning Ordinance
Chapter 8

matter of ensuring public health, safety and welfare, and is in the best interest of the town and the community.

- 3.** Except as set forth in this section, with the establishment of any new residential subdivision where street rights-of-way will be dedicated to the town, the town shall not allow the installation of streetlights. However, in cases where it is determined that street lighting is deemed necessary in public rights-of-way for the health, safety or welfare of pedestrians, bicyclists and/or motorists, the installation of street lighting shall be permitted. All lighting so installed shall: (a) be fully shielded; (b) meet correlated color temperature requirements; (c) make use of appropriate adaptive controls; and (d) be subject to curfews as directed by the town council.
- C. Special Exemption:** The Zoning Administrator may grant a special exemption from the requirements of Section 8.03 only upon a written finding that there are extreme geographic or geometric conditions warranting the exemption and that there are no conforming fixtures that would suffice.
- D. Utility Exemption:** Utility companies entering into a duly approved contract with the Town of Fountain Hills in which they agree to comply with the provisions of these regulations, shall be exempt from applying for and obtaining a permit for the installation of outdoor light fixtures.
- E. Temporary Exemptions:**

 - 1.** Request: Any individual may submit a written request (on a form approved by the Zoning Administrator) for a temporary exemption to the requirements of this chapter, such exemption to be valid for days, renewable at the discretion of the Zoning Administrator.
 - 2.** The request for temporary exemption(s) shall provide:

 - a.** Specific exemptions(s) requested.
 - b.** Type and use of outdoor light fixture for which exemption is sought.
 - c.** Duration of the requested exemption.
 - d.** Type of lamp(s) and calculated lumens.

Town of Fountain Hills Zoning Ordinance
Chapter 8

- e. Total wattage of lamp(s).
- f. Proposed location.
- g. Previous temporary exemptions, if any.
- h. Physical size of outdoor light fixture and type of shielding to be provided.

3. In addition to the above data, the Zoning Administrator may request any additional information, which would assist in evaluating the request.
4. The Zoning Administrator shall make a decision on the application and shall notify the applicant of the decision within 10 days of receipt of a complete application. The exemption shall be granted upon a determination that the type and use of the outdoor light fixture is the for the shortest period of time and the minimum lumens needed for the intended purpose and shall not be detrimental to persons residing or businesses operating within a reasonable distance from the use location.

F. Special Events: Events that are approved through the special event permit, special use permit, temporary use permit, or administrative use permit processes may include specified exemptions from this chapter for the duration of the event, but only if they satisfy the criteria set forth above in subsection (E)(4).

Section 8.05 Procedures for Compliance

A. Application:

1. Any individual applying for a building permit or use permit who intend to install outdoor light fixtures shall, as a part of the permit application, submit evidence that the proposed light fixtures will comply with this chapter.
2. All other individuals intending to install outdoor landscape lighting or decorative lighting consisting of light fixtures under 375 lumens are exempt from the requirements of this section.

Town of Fountain Hills Zoning Ordinance
Chapter 8

B. Contents of Application: The application for building permit or use permit shall contain, but shall not necessarily be limited to the following, all or a portion of which may be part of or in addition to the information required elsewhere in this Zoning Ordinance.

1. Plans indicating the location on the premises, and the type of illuminating devices, fixtures, lamps, supports, etc.
2. Description of the illuminating devices, fixtures, lamps, supports, etc. shall include at least the initial lumen output, shielding planned, and manufacturer's catalog cuts, and drawings (including Sections where required). Additional information may be required, as deemed necessary by the Zoning Administrator.
3. If an applicant desires to use an outdoor light fixture that is different from what is in the application, the applicant shall submit the requested change to the Zoning Administrator with adequate information to allow a determination in compliance with this chapter.

The above required plans and descriptions shall be sufficiently complete to enable the reviewing department to readily determine compliance with the requirements of this chapter. If such plans and descriptions do not readily enable this determination, the applicant shall submit evidence of compliance by certified test reports as performed by a recognized testing lab.

C. Additional Requirements For Site Plan Application: for all site plans filed on or after December 5, 2016, the following lumen density caps shall apply:

1. In commercial, industrial, lodging, and multi-family zoning districts, unshielded lighting on a property shall not exceed:
 - A. 50,000 lumens per net acre in commercial, industrial, and lodging zoning districts.
 - B. 20,000 lumens per net acre in multi-family zoning districts.
2. To prevent over-lighting in commercial, industrial, lodging, and multi-family zoning districts, the total amount of lighting on a property, both shielded and unshielded, shall not exceed:

Town of Fountain Hills Zoning Ordinance
Chapter 8

- A. 100,000 lumens per net acre in commercial, industrial, and lodging zoning districts.
 - B. 50,000 lumens per net acre in multi-family zoning districts.
3. In single-family residential zoning districts and for single-family residential uses, outdoor lighting is not subject to a lumen density cap, but is subject to shielding requirements as set forth in section 8.02(A).

NOTE: The final two pages of the Fountain Hills Sign Regulations were modified to address the proposed updates for electronic message boards. Those two pages follow.

Town of Fountain Hills Zoning Ordinance

Chapter 6

SIGN REGULATIONS

CC. Electronic Message Center: Signs with intermittent, scrolling or flashing illumination, including electronic message center signs, are permitted in Commercial and Industrial zoning districts only; provided, however, that churches and schools may display such signs in residential districts. All electronic message center signs are subject to the following:

1. There shall be no moving or flashing green or red features that could be mistaken as traffic control devices.
2. Intermittent Changes:
 - a. Any changes to the face or copy of the sign must have a minimum of eight (8) second interval between changes.
 - b. Between the hours of 10:00 p.m. – 6:00 a.m., except for time and temperature.
 - (1) There shall be no changes to the face or copy of the sign; and
 - (2) The background must be darker than the text.
3. Led signs / electronic message displays are subject to all of the following:
 - a. Between the hours of 10:00 p.m. And 6:00 a.m.:
 - (1) Led signs shall not exceed the maximum lumination level of 100 nits; and
 - (2) Signs located adjacent to residential zoning districts shall be turned off.
 - b. Signs shall be equipped with photo cell sensors that are factory locked to:
 - (1) Adjust the sign to an appropriate light level during daylight hours; and
 - (2) DIM the sign at night to the required nit level as stated in this section.
 - c. An affidavit from the manufacturer or other evidence of compliance satisfactory to the town, attesting to the photo cell sensor equipment lock as required above shall be submitted with the sign permit application.
 - d. The electronic message center portion of the sign shall not have a white background and shall be turned off when the business is closed.
 - e. Signs shall include timers that automatically turn off the digital display.

Town's Commitment to Lighting Ordinance Compliance

In conjunction with the adoption of the updated Outdoor Lighting Ordinance, the Town acquired the meter shown below to provide the ability to measure Correlated Color Temperature. This is useful for addressing compliance-related issues and is one example showing the Town's commitment to preserving its dark skies.

Sekonic C-700-U SpectroMaster Color Meter

B&H # SEC700U • MFR # 401-702



SEKONIC

In Stock
Order now to ship tomorrow
Free Expedited Shipping

PRODUCT HIGHLIGHTS

- Incident Metering for Ambient and Flash
- Measures LED, HMI, & Fluorescent Light
- Measures Tungsten, Flash & Natural Light
- Range: 0.09 to 18,600 fc (1-200,000 lux)

Show more

★★★★★ Reviews 4 | Q&A 3

\$0.00 Tax Collected Outside NY and NJ ⓘ

You Pay: **\$1,499.00**

1 QTY

Add to Cart

Add to Wish List

MUNICIPAL LIGHTING COMPLIANCE

One of the requirements for Dark Sky Community designation is that within five years municipal lighting must conform with the updated, IDA-endorsed lighting ordinance adopted by the Town in December 2016. Since Fountain Hills has always had strict shielding requirements, the focus for identifying out-of-compliance municipal lighting was to measure correlated color temperature (CCT).

Fountain Hills Dark Sky Association board members Mark Derksen and Ted Blank used an Asensek "Lighting Passport" LED Spectrophotometer on January 18 & 19, 2017 to measure the CCT values of all suspect municipal lighting. The following six areas were identified as having lights with CCT values exceeding 3000K:

1. Fountain Park West Parking Lot Lights
2. Fountain Park Ramada Lights
3. Parking Lot Lights for Community Center, Library & Museum, and Town Hall
4. Town Building Wall Pack Lights
5. Fountain Park Monument Sign Lights
6. Fountain Park Bollards

Approval was granted by the Town Council on April 20, 2017 to replace items one through five above with energy-saving lights that would have a CCT value of 3000K or less. Items one through four were completed in spring and summer 2017 and the Town agreed to address item 5 (monument sign lights) within five years. Below were the replacement costs for items one through four:

Fountain Hills MUNICIPAL LIGHTING INVENTORY			
	LOCATION	Comments	Cost
1	Fountain Park - Southwest Parking Lot lights	Parking lot near splash pad and restrooms	\$ 2,193.75
2	Fountain Park - Ramada lights	Ramadas on west side of park near new east parking lot	\$ 1,662.50
3	Town Hall/Community Center/Library Parking Lots	Large lots serving Town Hall, Community Center and Library	\$ 18,843.75
4	Community Center Down-Lights over doors; Town Hall down-Lights over doors	Recessed lights over doorways	\$ 717.50
Total estimated cost for the town to comply with the adopted lighting ordinance			\$ 23,417.50

As for item six, the Fountain Park bollards were installed in 2015 and have a CCT value specified as 4000K (but measured in the field as being 3875K). When considering the lighting, the Town made a good faith effort to install proper outdoor lighting. At the time of purchase, these bollards were on the IDA-approved list. However, they have since been removed from the IDA-approved list.

Given that the expense of changing all the approximately 270 bollards is not financially feasible, the Town plans to phase in replacement lighting of 3000K or less as needed. The harsh temperature and fountain spray environment has already resulted in lamps needing replacement, so it is expected that a considerable number will be changed within 5 years.

It is hoped that the IDA Board will accept the Town's plan to replace the bollards with 3000K lighting or less as needed because:

1. The bollards were on the IDA-approved list at the time of purchase
2. Replacing all of them within a five-year time frame is not financially feasible
3. Replacing them with proper CCT value lamps as needed will result in a considerable correction within five years because of the harsh environment
4. Low-cost ideas continue to be pursued that have the potential to adjust the CCT values of all the bollards in a relatively short period of time.

EDUCATION AND OUTREACH



A broad spectrum of education-related activities has been and continues to be undertaken. The list below highlights the activities and each will be detailed in the pages to follow.

- A. Town News Release on Town's Website
- B. Rack Card
- C. Presentations to Local Groups
- D. Website, Facebook, Twitter
- E. Local Media Articles
- F. Letter to Editor Series
- G. Dark Sky Education in Schools
- H. Dark Sky Awareness Events
- I. Volunteer Expo

EDUCATION AND OUTREACH



NEWS RELEASE

Town of Fountain Hills
16705 E. Avenue of the Fountains | Fountain Hills, Arizona 85268
480.816.5100 | 480.837.3145 FAX | www.fh.az.gov

FOR IMMEDIATE RELEASE

2/14/2017

Page 1 of 2

TOWN CONTACTS:

Grace Rodman-Guetter
Communications and Marketing Coordinator
(480) 816-5165
gguetter@fh.az.gov

TOWN OF FOUNTAIN HILLS PRESS RELEASE

Town of Fountain Hills Dark Sky Ordinance – What Does It Mean For Residents?

In December 2016 the Fountain Hills town Council adopted a revised Lighting Ordinance, also called the “Dark Sky Ordinance” as Town Code. To view the complete guidelines, residents may look at the Town of Fountain Hills Zoning Ordinance Chapter 8 titled **OUTDOOR LIGHTING CONTROL**.
<http://fh.az.gov/232/Zoning-Ordinance>

Dark Sky Fountain Hills Lighting Ordinance FAQ’s

What is a Lumen?

A Lumen is the SI (International System of Units) unit of light output. A lumen is approximately the amount of light that falls on a one–square–foot surface one foot away from a candle flame.

What is Correlated Color Temperature (CCT)?

CCT (Correlated Color Temperature) is a measure of light source color appearance. In order to minimize the detrimental effects of blue light, the CCT of any outdoor lighting fixture shall not exceed 3000K.

- See Section 8.02B of the Town Zoning Ordinance.

What is light trespassing?

Light trespass is the spillage of light onto adjacent properties. Outdoor lighting fixtures shall be sufficiently shielded and aimed such that light trespass is minimized and glare from the light emitting and/or reflecting parts of a luminaries is not visible from any adjacent property.

- See Section 8.02C of the Town Zoning Ordinance.

What does shielding mean?

Shielding means covering or blocking a light so that light trespass is prevented and glare is minimized. All outdoor light fixtures with light output greater than 2250 initial lumens shall be fully shielded. Fixtures with light output ranges from 1125 to 2250 initial lumens shall be at least partially shielded.

- See Section 8.02A of the Town Zoning Ordinance.

Do I have to change my outdoor lighting immediately to comply with Town Code?

No. The Town's lighting ordinance allows current lighting to remain in place. However, Chapter 8 of the Town's Zoning Ordinance requires that any *new or replacement* lighting meets the new standards.

How will the ordinance effect special events in Town?

Events that are approved through the special event permit, special use permit, temporary use permit, or administrative use permit process may include specified exemptions from this chapter for the duration of the event, but only if they satisfy the criteria set.

- See Section 8.04F of the Town Zoning Ordinance.

How will the ordinance effect recreational facilities?

No outdoor recreation facility, public or private, shall be illuminated after 11:00 p.m., except to conclude a specific recreational, sporting or other activity that began prior to 10:00 p.m. Recreational facility lighting shall make appropriate use of adaptive controls when possible.

- See Section 8.03B of the Town Zoning Ordinance.

How will the ordinance effect holiday lighting and decorations?

Lighting that is controlled by timers, lighting used to light the fountain or lighting used on special occasions will not be affected by the ordinance. In section 8.02D Town ordinance states: Temporary outdoor lighting decorations are permitted for a reasonable period before a holiday and are not subject to the requirements. Holiday lighting in residential neighborhoods shall be minimized after 11:00 p.m. and shall be removed within two weeks after the holiday.

- See Section 8.02D of the Town Zoning Ordinance.

Does this affect landscape lighting?

Yes. Any new or replaced landscape lighting must meet lumen, CCT and light trespass regulations.

- See Section 8.03C of the Town Zoning Ordinance.

For more information please contact Marketing and Communications Coordinator at gguetter@fh.az.gov or Senior Planner Marissa Moore at mmoore@fh.az.gov

EDUCATION AND OUTREACH

RACK CARD

The first education tool completed was a rack card. This educational tool was needed as a handout at presentations, placement in racks, and for other opportunities to disseminate key information. The card summarizes smart lighting concepts, presents the mission of the Fountain Hills Dark Sky Association, and directs readers to the Association’s website for more information. Below are the front and back sides:

PROTECTING OUR NIGHT SKY



★ **How You Can Help** ★

- 1** **Use fully shielded light fixtures**



GOOD
Bulbs not directly visible



BAD
Bulbs directly visible
- 2** **Use only the amount of outdoor light needed - Avoid Light Pollution**
There is no scientific evidence that increased outdoor lighting deters crime.
- 3** **Use warm lights** See
Do not use bright white lights “What is CCT”
on back



- 4** **Avoid light trespass**

 - Don't let lights shine on neighbors' properties
 - Turn on outdoor lights only when needed or use timers or motion detectors.
- 5** **Have fun stargazing** - on your own or at a star party sponsored by the Fountain Hills Library and Astronomy Club (fhastronomy.org).

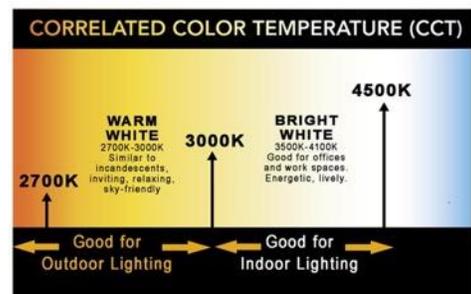
Visit us at:
FHDarkSky.com

The Fountain Hills Dark Sky Association is dedicated to educating the community about the advantages of smart lighting and protecting our unique dark sky.

What is CCT

CCT stands for Correlated Color Temperature. It defines color, not brightness of a light source. Lights with CCT of 3000K (Kelvin) are okay. Lower is even better. Lights above 3000K pollute the night sky and block our view of the wonders of the nighttime universe.

CORRELATED COLOR TEMPERATURE (CCT)



The American Medical Association (AMA) recommends that outdoor lighting be 3000K or less for health reasons, such as sleep disruption (leads to obesity, depression, diabetes, and more) and disability glare. The Town's lighting ordinance requires all new outdoor lighting be 3000K or less.

Visit us at:
FHDarkSky.com

Distribution of the Rack Cards

The rack cards have been an excellent way to help educate the community. As of July 2017, the cards have been distributed to over 300 people at 11 different presentations to local organizations. In addition, they are displayed and distributed at Town Hall and at the two locations in Fountain Hills that sell lights and light fixtures.



Rack Cards at Town Hall



Rack cards at cash register at Tractor Supply



Rack cards in lighting aisle at Paul's Ace Hardware

EDUCATION AND OUTREACH

PRESENTATIONS TO LOCAL GROUPS

Ted Blank, Amberleigh Dabrowski, Clayton Corey, and Joe Bill gave presentations to the following Fountain Hills organizations and clubs during the first half of 2017:

- February 1: Toastmasters
- February 3: Realtors Association
- February 16: Noon Kiwanis
- March 9: Four Peaks Rotary
- March 11: Daughters of the American Revolution
- March 23: Chamber of Commerce
- April 12: River of Time Museum Board
- April 25: Fountain Hills Cultural and Civic Assoc.
- May 2: Fountain Hills Rotary
- May 2: Sunset Kiwanis
- June 6: Neighborhood Property Owners Assoc. & Committee of Architecture



Ted Blank giving a PowerPoint presentation

Every presentation was very well received and led to strong support for the goals of the Fountain Hills Dark Sky Association and for designation of Fountain Hills as a Dark Sky Community. Rack cards were distributed to all in attendance. Particularly appreciated were explanations of smart lighting practices such as color temperature and the positive effect of shielding on objects that need to be lit.



Ted Blank demonstrating how shielding improves lighting



Ted Blank and Joe Bill pictured with officers of Four Peaks Rotary Club

NOTE: The PowerPoint presentation used is included in Appendix B.

EDUCATION AND OUTREACH

ELECTRONIC MEDIA

WEBSITE – FACEBOOK - TWITTER

Thanks to Board Member Clayton Corey, the Fountain Hills Dark Sky Association is very active online with a robust website (FHDarkSky.com) and blog (FHDarkSky.com/blog) as well as with Facebook (@FHDarkSkyAssociation) and Twitter (@FHDarkSky) accounts.

Although our social media pages are relatively new, we've provided feedback and support for residents looking for help. We've also engaged and communicated with other IDA communities and have supported and congratulated recent dark sky designated communities.

Our webmaster monitors the website closely to watch for trends and activity on our site so we can maximize our communication efforts to reach our most critical audience, the community of Fountain Hills. Our website sitemap has been submitted to the search engines, our metadata accurately captures our images and data, and our Google Analytics account is reviewed in our monthly board meetings.

At every opportunity, people are directed to our website for additional information. There, they will find topics such as: What is IDA, What is CCT, What are lumens, What is shielding, What are nits, Benefits of Dark Sky Community designation, About Fountain Hills Dark Sky Association, Frequently asked question, Blogs about recent events, and much more.

The following two pages show just two screen shot from the website; the Home Page and What Is CCT.

WEBSITE HOME PAGE

FOUNTAIN HILLS DARK SKY ASSOCIATION



HOME ABOUT BOARD INFORMATION CONTACT EVENTS BLOG FAQ'S LINKS

The Fountain Hills Dark Sky Association is dedicated to educating the community about the advantages of smart lighting and protecting our unique dark sky. With your help, light pollution and light trespass can be minimized so that we and future generations can enjoy the wonders of the nighttime universe.

Fountain Hills stands apart from other communities for a number of reasons: its signature fountain, its geography and scenery, its small-town feel in the corner of a major metropolitan area, its adjacency to parks, preserves, and national forest, and its dark skies.

How You Can Help

- 1 Use fully shielded light fixtures**

GOOD Bulbs not directly visible **BAD** Bulbs directly visible
- 2 Use only the amount of outdoor light needed - Avoid Light Pollution**
There is no scientific evidence that increased outdoor lighting deters crime.
- 3 Use warm lights**
Do not use bright white lights See "What is CCT" on back
- 4 Avoid light trespass.**
- Don't let lights shine on neighbors' properties
- Turn on outdoor lights only when needed or use timers or motion detectors.
- 5 Have fun stargazing** - on your own or at a star party sponsored by the Fountain Hills Library and Astronomy Club. www.fhastronomy.org



WE'RE ON TWITTER!

Tweets by @FHDarkSky

FH Dark Sky @FHDarkSky
The glare of urban living all but blots out the cosmic show overhead #LightPollution #DarkSky wired.com/2017/04/gavin-... via @WIRED



12 Breathtaking Photos of a World With...
Gavin Heffernan and Harun Mehmedinovic...
wired.com

FH Dark Sky @FHDarkSky
Another educational community presentation to educate about #LightPollution - #FountainHills #DarkSky Association fhdarksky.com/2017/03/24/pre-...



Presentation at Chamber of Commerce
Board Members Ted Blank, Jay Schlum, an...

WEBSITE – WHAT IS CCT

FOUNTAIN HILLS DARK SKY ASSOCIATION

HOME
ABOUT
BOARD
INFORMATION
CONTACT
EVENTS
BLOG
FAQ'S
LINKS

What is Correlated Color Temperature (CCT)?

CCT stands for Correlated Color Temperature. It defines color, not brightness of a light source and is measured in degrees Kelvin. A low CCT is in the amber end of the color spectrum while a high CCT is in the blue-white end of the spectrum. For reference purposes, a standard incandescent light is about 3000K while the bright white xenon headlights of some newer cars are 4500K.

CORRELATED COLOR TEMPERATURE (CCT)

From the Town of Fountain Hills Outdoor Lighting Ordinance: In order to minimize the detrimental effects of blue light, the correlated color temperature (CCT) of any outdoor lighting fixture shall not exceed 3000K.

There is a national movement to either limit or eliminate high CCT outdoor lighting. The reasons are twofold. First, in June 2016, the American Medical Association (AMA) adopted a groundbreaking report that affirms known and suspected impacts to human health and the environment caused by high CCT outdoor lighting. The AMA therefore recommends all outdoor lighting be 3000K or less because higher CCT lighting causes sleep disruption (which leads to obesity, depression, diabetes, and more) and disability glare.

Second, outdoor lighting above 3000K CCT causes light scattering in the atmosphere, which results in graying of the sky and a significant reduction in the ability to see stars and enjoy the wonders of our nighttime universe. See chart below.

Because of the above concerns, the Town of Fountain Hills approved in 2016 an updated outdoor lighting ordinance that requires all new outdoor lighting to have a CCT of 3000K or less.

LEDs represent the latest in energy efficient lighting. When first introduced, the standard CCT of LEDs was 4000K or higher, which produces a glaring, very bright white light. However, it is important to know that LEDs are now available with a CCT of 3000K or even lower and should be chosen when being purchased for outdoor lighting.

More technical information about Correlated Color Temperature can be found at: https://en.wikipedia.org/wiki/Color_temperature

PROTECTING OUR NIGHT SKY
 Fountain Hills
Dark Sky
 Association

WE'RE ON TWITTER!

Tweets by @FHDarkSky

RT FH Dark Sky Retweeted

FH Dark Sky @FHDarkSky
 Do you have a clear view or light polluted view of the night sky in your city or town?
 #SkyGlow #LightPollution #DarkSky #Stars #Astronomy

Clear View
 Light Polluted View
 Unsure of the Difference

Vote 31 votes · 6 days left

Retweet Reply Retweet 100

FH Dark Sky @FHDarkSky
 Thanks for the follow, @O_RemYY

Retweet Reply Retweet 100

FH Dark Sky @FHDarkSky
 Do you have a clear view or light polluted view of the night sky in your city or town?
 #SkyGlow #LightPollution #DarkSky #Stars #Astronomy

Clear View
 Light Polluted View
 Unsure of the Difference

Vote 31 votes · 6 days left

Retweet Reply Retweet 100

[Embed](#) [View on Twitter](#)

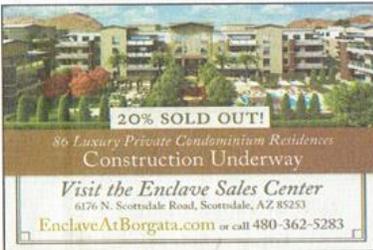
EDUCATION AND OUTREACH

LOCAL MEDIA ARTICLES



THE FOUNTAIN HILLS TIMES

Your Award-Winning Hometown Weekly Newspaper



20% SOLD OUT!
86 Luxury Private Condominium Residences
Construction Underway
Visit the Enclave Sales Center
6176 N. Scottsdale Road, Scottsdale, AZ 85253
EnclaveAtBorgata.com or call 480-362-5283

Vednesday, October 28, 2015 \$1.00 Volume 42, No. 43 • 28 pages • 2 sections

'Dark Skies' ordinance proposed

Would encourage 'smart' lighting

By Bob Burns
Times Reporter

A committee of citizens dedicated to preserving dark skies for Fountain Hills has asked the Town Council to consider an update to its Zoning Ordinance as it relates to commercial lighting regulations.

Staff has already drafted proposed changes to the lighting regulations and at its Oct. 15 meeting the council cleared the way for the suggestions move through the review process.

In a letter sent to the council in September, the Fountain Hills Dark Skies Committee states, "The current Zoning Ordinance was fine for the past and protected our dark skies. Now it needs an update to account for new technologies like popular LED lighting. Most LED lighting is very damaging to dark skies, yet options exist to purchase LED lighting that is acceptable.

"We should update the ordinance to include guidelines for the new technologies and by doing so, we can gain a Dark Skies label, which has additional benefit."

The committee, chaired by resident Nancy Bill, said it would assist with community education and awareness after the ordinance is updated.

"It's critical that people know that we're not advocating no lighting or inadequate lighting, but rather smart lighting that ensures safety, yet does not pollute our skies," Joe Bill told *The Times*.

According to the committee, Fountain Hills is in a good position to be the only community in Maricopa County to potentially achieve designation as a Dark Sky Community.

Sedona and Flagstaff are the only other Arizona cities with a Dark Sky designation.

In spite of being part of the brightly lit Phoenix metro area, Fountain Hills lies in a somewhat protected area that could allow it to achieve dark sky status.

The town is buffered by much of the Phoenix area lighting from the McDowell Mountains. It is also surrounded on other sides by vast areas of relatively undeveloped land including McDowell Mountain Regional Park, the Fort McDowell and Salt River Indian communities and Tonto National Forest.

In its report to the council the committee also notes that early community leaders had foresight to pursue conservative, common sense lighting ordinances.

Former town mayors Jerry Miles and Jay Schlum have stated their support for the dark sky initiative and both are members of the committee.

"We have become aware that thorough relatively minor amendments to the (Town Code) pertaining to outdoor lighting control, the Town of Fountain Hills may qualify as a Dark Sky community pursuant to the International Dark Sky Association," Miles and Schlum stated in a letter to the council.

"Such a designation would provide one more step in our objective to make our community a desirable location for new residents and new businesses."

The Fountain Hills Astronomy Club is also an enthusiastic supporter of the dark sky initiative. Ted Blank, a co-founder of the Astronomy Club, also wrote to the council.

"Our town is blessed with some of the darkest skies of any community this close to a major metropolitan area," Blank said.

"Our dark skies are a resource that we may pass down to our children and to future residents of Fountain Hills, but only if we are vigilant about maintaining them, since once gone they cannot be recovered.

"Our dark skies provide another reason to distinguish Fountain Hills as a destination town."

Bill said the committee would take the lead in seeking the Dark Sky designation if/when the council approves the amendments.

The proposed changes to the ordinance will be subject to a public hearing before the Planning and Zoning Commission, which will make a recommendation to the Town Council.

The council will also hold a public hearing prior to deciding on the changes.

LOCAL MEDIA ARTICLES

December 2, 2015 / THE FOUNTAIN HILLS TIMES / 3A

Dark Sky group attends conference

The International Dark-Sky Association (IDA) held its annual meeting in Phoenix the weekend of Nov. 14-15.

People from all over the world convened at this meeting to learn, discuss and share knowledge about the rapidly disappearing dark skies of the world and find solutions to what can be done about it.

In attendance at the meeting were two Fountain Hills residents, Nancy Bill and Ted Blank.

Bill is chair of the Fountain Hills Dark Sky committee that is working on getting the Town of Fountain Hills' lighting ordinance updated to address new lighting technologies and also to eventually get Fountain Hills designated a Dark Sky Community by

IDA.

Blank is a member of the committee, a co-founder of the Fountain Hills Astronomy Club and the organizer of the Star Parties that are held monthly outside the library in the Centennial Circle.

The conference included number of the sessions focused on the basic rules of good lighting design, among which are don't over light, use shielding to the light only where it's needed, and limit the amount of bright white LED lights, which have the most harmful effects on humans, wildlife and dark skies.

Bill said that she supports all appropriate lighting for information, ambience and safety, but she is dedicated to not los-



Members of the Fountain Hills Dark Skies Committee attended an international conference on the subject this past weekend. Pictured from left are: J. Scott Feierabend, IDA Executive Director, Fountain Hills Committee Chair Nancy Bill, John Barentine, IDA Program Manager, and FH Committee member Ted Blank.

ing the town's night sky asset to the new bright white LED technologies.

"As much as possible, we want to preserve seeing the night sky as our ancestors have seen it for thousands of years," Bill said.

She feels that in addition to the beautiful daytime views of the surrounding mountains, residents should be able to enjoy the night-time views as well.

Blank is hoping that

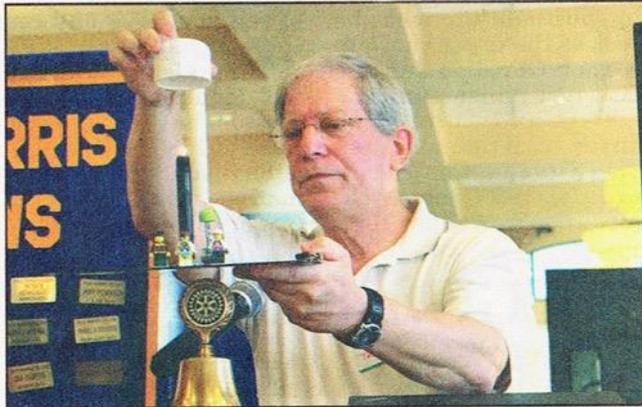
with the Dark Sky designation, the town can become an "astro-tourist" destination as has happened with other Dark Sky Communities.

Being close to a large metropolitan area puts the town at an advantage for promoting this aspect.

Anyone who is interested in this topic is encouraged to check out the IDA website at <http://darksky.org/>.

LOCAL MEDIA ARTICLES

6B / THE FOUNTAIN HILLS TIMES / April 12, 2017



Ted Blank, with Fountain Hills Dark Sky Association, demonstrates how lights can affect dark skies. Fountain Hills is hoping for the Dark Sky designation in the coming months.

Dark skies topic at 4 Peaks Rotary

Representatives of the Fountain Hills Dark Sky Association recently shared with Four Peaks Rotary members and guest the importance of preserving nighttime views of the sky.

The Fountain Hills Dark Sky Association is dedicated to educating the community about the advantages of smart lighting and protecting the community's unique dark sky. Protecting our night sky requires help from the community:

- *Use fully shielded light fixtures.

- *Use only the amount of outdoor light needed. There is no scientific evidence that increased outdoor lighting deters crime.

- *Use warm lights. DO NOT use bright lights. Lights with CCT of 3000K (Kelvin) are okay.

- *Avoid light trespass -- don't let lights shine on neighbors' properties. -- Turn on outdoor lights only when needed or use timers or motion detectors.

- *Have fun stargazing, on your own or at a star party sponsored by the Fountain Hills Library and Astronomy Club (fhas-tromy.org). Visit Dark Sky at FHDarkSky.com for additional information.

For more information about Four Peaks Rotary Club, contact President Art Tolis at 480-270-9244, art.tolis@yahoo.com. For membership information, contact Jeff Poynter at jeff@bogopromotions.com, or 480-440-2001, or visit fourpeaksrotary.org.

The club meets the second and fourth Thursday of the month at 7 a.m. at the Fountain View Village.

6A / THE FOUNTAIN HILLS TIMES / April 12, 2017

Opinion



Ryan Winslett
Editor

dark skies

Just a quick aside to discuss the process of earning Fountain Hills' Dark Skies distinction.

I lived in Flagstaff for nearly five years and, as our coverage in this week's edition points out, it is indeed a Dark Skies community.

I'm sure things have changed over the years in regards to regulations, procedures, requirements and the like but, if a college town with a big campus and a busy downtown area can manage it, I have little doubt that Fountain Hills can pull it off, too.

There are all sorts of ways to keep a town well-lit and safe without flooding the night sky with light, and now would be a good time to nail those plans down before downtown development (both physical and in terms of a "night life") get too far along.

Like many big things that happen in Fountain Hills, a group of local volunteers and cooperation from the Town are to thank for the process making it so far along already. Hopefully we're not too far off from seeing the whole thing through to completion.

LOCAL MEDIA ARTICLES



THE FOUNTAIN HILLS TIMES

Your Award-Winning Hometown Weekly Newspaper

Wednesday, April 12, 2017

\$1.00

Volume

Town pursuing Dark Sky designation

By Bob Burns
Times Reporter

The Town Council has told a citizens' Dark Skies Committee for Fountain Hills to go forward with an application to the International Dark Sky Association in an effort to obtain "Dark Sky" designation for the town.

The council voted unanimously (7-0) at its April 6 meeting approving a motion to direct the committee to continue the application process.

Town Senior Planner Marissa Moore told the council that with the committee's help, significant portions of the process are complete.

Moore outlined what is still needed for the application including a map of the town with demographic information; a copy of the town's lighting code, which was approved this past November; and a commitment by the town to bring existing municipally-owned lighting into compliance with code within five years. Two ongoing projects related to lighting at the Civic Center and Fountain Park parking lots will accomplish much of that.

Also, the town should demonstrate support for dark skies and quality outdoor lighting through publications, flyers, public service announcements and funding of lighting upgrades; provide evidence of wide support for dark skies among community organizations; show community commitment for dark sky education; provide a

minimum of 10 projects built under the lighting code that demonstrate effective application of the code; establish a continuing program of monitoring sky brightness using measurements; obtain letters of support from an IDA member and an elected official representing the community (Town Council member or School Board member) and, if desired, proposed alternative wording for the dark sky community such as Dark Sky Town or Starry Sky Town.

A key concern from council members is whether potential lighting restrictions could have an impact on economic development, particularly in the downtown area where there is a desire to create a vibrant nightlife.

While the town can bypass its own ordinances in the name of public safety, it is unclear how that might be viewed in relation to the Dark Sky designation, according to Moore.

Mayor Linda Kavanagh said she believes it should be more acceptable to carve out an exemption for a small portion of the community, like the downtown area, rather than have exemptions covering the entire town.

"Before we commit to this, I would like to know if it can be achieved without impacting potential business, particularly downtown," Councilman Art Tolis said.

Tolis also asked how other dark sky communities handle restrictions.

Moore noted that Arizona has only two designated dark sky communities, Flagstaff and Sedona, and she said both appear to adhere to the requirements quite well and still have successful business interests.

Joe Bill, co-chair for the community Dark Sky Committee, told the council he was going to use a football analogy to describe the process getting to the dark sky designation.

"We started out on the 50 yard line," Bill said. "We had such good field position because the town already had a good lighting ordinance."

Early efforts by the committee helped advance the ball to the 30 yard line, Bill said.

"With the updated ordinance we moved to the 10," Bill continued. "We have a new board for the committee, set up a website and gathered support letters."

"Tonight we are on the one-yard line, and with your approval [to move ahead] we will score the touchdown. The approval of the International Dark-Sky Association will be the extra point."

There is no specific timetable for receiving the designation. Bill said the committee will work closely with an IDA project manager to process the application and address any concerns or issues as they might arise.

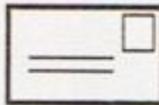
EDUCATION AND OUTREACH

LETTER TO EDITOR SERIES

After the Town Council voted unanimously to pursue Dark Sky Community designation, the Fountain Hills Dark Sky Association immediately embarked on a new effort aimed at community education. This was done with a "Letter to the Editor" series in the Fountain Hills Times. The first letter focused on thanking the Council for their support. The subsequent seven letters focused on educating the community about smart lighting practices and information about Dark Sky Community designation.

6A / THE FOUNTAIN HILLS TIMES / April 12, 2017

Dark Skies



A letter from:
Joe and Nancy Bill

The Fountain Hills Dark Sky Association is extremely pleased that the Town Council unanimously supported the goal to have Fountain Hills designated as a Dark Sky Community by the International Dark Sky Association (IDA). We want to thank the Council and Town staff for their support.

Our Association has worked for nearly two years on this project. We have accomplished much, including gaining a unanimous vote of the Council in November to update the outdoor lighting ordinance to address new technologies.

Board members of the FH Dark Sky Association are Joe Bill, Nancy Bill, Ted Blank, Clayton Corey, Amberleigh Dabrowski, Mark Derksen, Vicki Derksen, Craig Gimbel, Paul McEligott, Jackie Miles, Jerry Miles and Jay Schlum.

If IDA's Board of Directors approves our Town's application, Fountain Hills would be only the 15th community in the world to achieve this prestigious designation, which hopefully will be accomplished by year-end.

One requirement for designation is to educate

the community about smart lighting practices that minimize light pollution.

We have committed to this education process and will provide additional detail about things like color temperature, shielding, lumens, electronic message boards and the benefits of Dark Sky Community designation. This will be done through *The Fountain Hills Times*, presentations to community groups and our website.

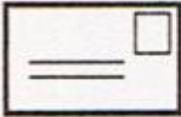
Rest assured that in no way do we advocate inadequate lighting for commercial or residential properties. Rather, our goal is to have outdoor lighting be properly shielded and be a warmer color temperature (think amber, not bright white).

To learn more about the FH Dark Sky Association and see some great educational information about lighting, visit our website at fhdarksky.com. If you read the section of the website "About Fountain Hills," we're confident you'll ask yourself the same question we did: "Who would not want to live in Fountain Hills?"

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / April 26, 2017

Smart lighting



A letter from:
Ted Blank

As a Board member of the Fountain Hills Dark Sky Association, I am submitting this letter as Part 1 in a seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation.

The Fountain Hills Dark Sky Association supports the appropriate use of outdoor lighting for safety or other reasons. However, it's important to use smart lighting.

A key to smart lighting is to use shielded fixtures. A fully shielded light fixture has a solid barrier (cap) at the top of the fixture where the lamp (bulb) is located. As a result, the lamp is not

visible below the barrier; hence no light is wastefully and annoyingly cast above the horizontal into others' eyes and into the sky.

Using smart, fully shielded lighting will prevent light trespass, which adversely affects neighboring properties; glare, which causes discomfort or temporary blindness; and sky glow, which destroys the splendor of the night sky. Additionally, shielded lights provide significantly more useful light than unshielded lights with the same size lamp.

Many different fully shielded light fixtures are available for all lighting situations and architectural styles and can be found on the IDA website, darksky.org.

When choosing landscape light fixtures, always choose those that provide predominantly downlighting rather than uplighting.

In addition to shielding, timers and sensors should be used to minimize unnecessary lighting rather than leaving outdoor lights on all night, which is a waste of energy and an annoyance to neighbors. And contrary to common belief, there is no scientific evidence that increased outdoor lighting deters crime.

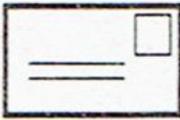
Another key to smart lighting is choosing the right Correlated Color Temperature (CCT), which is the subject of next week's letter.

More information, with illustrations, is available at our website, fhdarksky.com.

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / May 3, 2017

CCT lights



A letter from:
Dr. Craig Gimbel

As a board member of the Fountain Hills Dark Sky Association, I am submitting this letter as Part 2 in a seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation.

What does the CCT rating mean that is seen on all new light bulbs? CCT stands for Correlated Color Temperature. It defines color, not brightness of a light source and is measured in degrees Kelvin. A low CCT is in the amber end of the color spectrum while a high CCT is in the blue-white end of the spectrum. For reference purposes,

a standard incandescent light is about 3000K while the bright white xenon headlights of some newer cars are 4500K.

There is a national movement to either limit or eliminate high CCT outdoor lighting. The reasons are twofold. First, in June 2016, the American Medical Association (AMA) adopted a groundbreaking report that affirms known and suspected impacts to human health and the environment caused by high CCT outdoor lighting. The AMA therefore recommends all outdoor lighting be 3000K or less because higher CCT lighting causes sleep disruption (which leads to obesity, depression, diabetes and more) and dis-

ability glare.

Second, outdoor lighting above 3000K CCT causes light scattering in the atmosphere, which results in graying of the sky and a significant reduction in the ability to see stars and enjoy the wonders of our nighttime universe.

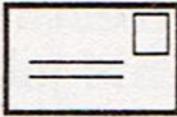
Because of the above concerns, the Town of Fountain Hills approved in 2016 an updated outdoor lighting ordinance that requires all new outdoor lighting to have a CCT of 3000K or less.

More information, along with helpful graphics to explain CCT, is on our website at fhdarksky.com.

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / May 10, 2017

Lumens & nits



A letter from:
Mark Derksen

As a board member of the Fountain Hills Dark Sky Association, I am submitting this letter as Part 3 in the seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation.

When buying new light bulbs, you might have noticed that lumens are being used more prominently to define brightness rather than watts. Why is that?

For decades, watts have been used to indicate the relative brightness of lights. This was a satisfactory approach during the time when incandescent lights (lights with a burning fila-

ment) represented the vast majority of light sources. However, watts are a measure of power used, not brightness; hence with the advent of new, more efficient lighting such as CFLs (Compact Florescent Lights) and LEDs, using watts to define brightness was no longer relevant.

On the other hand, lumens have always defined the intensity of light emitted regardless of the type of light source, whether it's an incandescent lamp, LED, CFL or others. For reference purposes, a 100-watt incandescent bulb produces approximately 1,600 lumens of emitted light. The latest LEDs can produce the same level of light output using less than

20 watts.

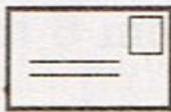
One other technical term worth noting is nits. A nit is a measure of luminous intensity per unit area used to indicate the brightness of flat screen displays such as electronic message boards, computers, televisions, etc. Studies have shown that a brightness above 100 nits causes temporary blindness for drivers. For that reason, communities across the country, including Fountain Hills, have adopted the 100-nit maximum for electronic message boards.

More information is on our website at fhdarksky.com.

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / May 17, 2017

Smart lighting



A letter from:
Clayton Corey

As a Board member of the Fountain Hills Dark Sky Association, I am submitting this letter as Part 4 in a seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation. Our website answers many questions commonly asked, but the following might be helpful.

Existing outdoor lighting is grandfathered in. The FH Dark Sky Association urges that new or replacement lighting meet the updated shielding and Correlated Color Temperature (CCT) guidelines.

The FH Dark Sky As-

sociation does not advocate inadequate outdoor lighting. Rather, smart lighting is advocated; i.e., properly shielded lighting in the amber color range (CCT of 3000K or below) and lighting with adaptive controls (motion detector or timer) so that lighting is not on at times not needed.

Leaving outdoor lights on all night does not decrease the chance of crime. Studies, like the Chicago Alley Lighting Project, show the opposite. Most property crime occurs during the day and some crimes, like vandalism and graffiti, actually thrive on night lighting.

Lighting controlled by timers or used for events, such as the lighting of the

Fountain, ball fields, holiday lighting, etc. is not affected by the Town ordinance nor is it a concern of the FH Dark Sky Association.

Due to harmful effects to human health, the American Medical Association (AMA) adopted in 2016 a report that affirms known and suspected impacts to human health and the environment caused by bright white/blue outdoor lights; hence it recommends outdoor lighting should be 3000K or less.

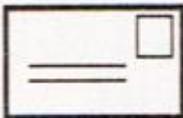
There are four ways you can help: Use fully shielded light fixtures, use only the amount of outdoor light needed, use warm (not bright white) outdoor lights, and avoid light trespass.

More information is available at our website: fhdarksky.com

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / May 24, 2017

What is IDA?



A letter from:
Vicky Derksen

As a board member of Fountain Hills Dark Sky Association, I am submitting this letter as Part 5 in a seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation.

IDA is the recognized authority on light pollution. Founded in 1988, IDA is the first organization to call attention to the hazards of light pollution, and its accomplishments are extensive.

One of IDA's programs focuses on working with communities to provide guidance for developing sky-friendly lighting ordinances and programs that educate the community

about smart lighting practices. Communities meeting the requirements set forth by IDA that show support of sky-friendly lighting practices can apply for the prestigious designation of Dark Sky Community. Fountain Hills Dark Sky Association has undertaken the mission to work with the Town to achieve this designation for Fountain Hills.

IDA promotes one simple idea: light what you need, when you need it. IDA recognizes some light at night is necessary for safety and recreation, but they work with manufacturers, planners, legislators and citizens to provide energy efficient options that direct light where it is needed and not uselessly up into the sky.

IDA's approach of public

awareness and extensive partnership is improving nighttime lighting on six continents. Achievements include:

- *Assistance with crafting ordinances.

- *Recognition of Dark Sky Places, which often capitalize on sustainable tourism due to their protected starry night skies.

- *The opening of an Office of Public Policy and Government Affairs in Washington, DC, to inform lawmakers and lobbyists on energy efficiency.

- *Development of a Fixture Seal of Approval program offering a rating system to determine the sky friendliness of light fixtures.

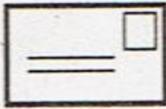
More information is available at IDA's website, darksky.org, or ours, fh-darksky.com.

LETTER TO EDITOR SERIES

Benefits of Dark Sky Community Designation

6A / THE FOUNTAIN HILLS TIMES / May 31, 2017

Dark Skies



A letter from:
**Amberleigh
Thetford Dabrowski**

As a Board member of the Fountain Hills Dark Sky Association, I am submitting this letter as Part 6 in a seven-part community education series, which is required by the International Dark Sky Association (IDA) for Fountain Hills to achieve the prestigious Dark Sky Community designation.

The benefits of Dark Sky Community (DSC) designation are many. First, we have residents who have purchased a home in our community specifically because it has dark skies, yet is close to a large city. With the addition of DSC designation (thus far, only 14 communities worldwide with this recognition), Fountain Hills will receive statewide and national

publicity.

Consequently, some of the millions in this country alone interested in astronomy will hear about Fountain Hills for the first time. They will learn about our dark skies, our Fountain, our mountain views, our festivals, our sculptures, our golf courses and much more. Undoubtedly, some will move here.

Second, if you add the rare and prestigious DSC designation to our Town's other phenomenal attributes, Fountain Hills will have a truly unique identity that can be promoted in a very positive way.

Third, astro-tourism is on the rise worldwide and with DSC designation, Fountain Hills would have a big advantage. Already,

people from Fountain Hills and beyond are coming to the monthly star parties co-sponsored by the Fountain Hills Library and Fountain Hills Astronomy Club.

Fourth, Dark Sky Community designation will be a catalyst for the possibility of building a public observatory in Fountain Hills, which would likely draw tourists and residents from throughout the metropolitan area to experience our night skies.

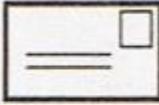
Lastly, DSC designation will call attention to our dark skies, thus aiding our efforts to educate the community about smart lighting practices.

More information is available at our website: fhdarksky.com.

LETTER TO EDITOR SERIES

6A / THE FOUNTAIN HILLS TIMES / June 7, 2017

Dark Skies wrap



A letter from:
Joe and Nancy Bill

As co-chairs of the Fountain Hills Dark Sky Association, we are submitting this final letter to summarize the key points of our community education series.

Letter one defined smart lighting. Emphasized was the importance of shielding outdoor fixtures, using downlighting and not uplighting, and using sensors and timers rather than leaving outdoor lights on all night.

Next, Correlated Color Temperature (CCT) – which defines color, not brightness of a light source – was explained. The Town lighting ordinance requires all new outdoor lights have a CCT of 3000K or less, which is a guideline supported by the American Medical Association for

health reasons.

Because new technologies made watts irrelevant as a measure of light output, letter three detailed how brightness is now defined by lumens.

Letter four addressed common questions. Key points are: 1) Fountain Hills Dark Sky Association does not advocate inadequate lighting, 2) Studies have shown that leaving outdoor lights on all night doesn't decrease crime, and 3) Holiday and special event lighting and lighting controlled by timers are okay.

The International Dark Sky Association (IDA) was highlighted in the fifth letter. IDA focuses on working with communities to help develop sky-friendly lighting ordinances and programs that educate the

community about smart lighting practices.

Last week's letter summarized the benefits of achieving Dark Sky Community designation. Achieving this recognition will add to Fountain Hills' unique identity, support the development of astro-tourism, act as a catalyst for a public observatory, support smart lighting practices, and make more people aware of our wonderful community, some of whom will choose to move here.

Later this year, we hope to celebrate with you the accomplishment of Fountain Hills being officially designated a Dark Sky Community.

Comments or questions can be emailed to info@fhdarksky.com. Also, be sure to visit our website at fhdarksky.com.

EDUCATION AND OUTREACH

DARK SKY EDUCATION IN SCHOOLS

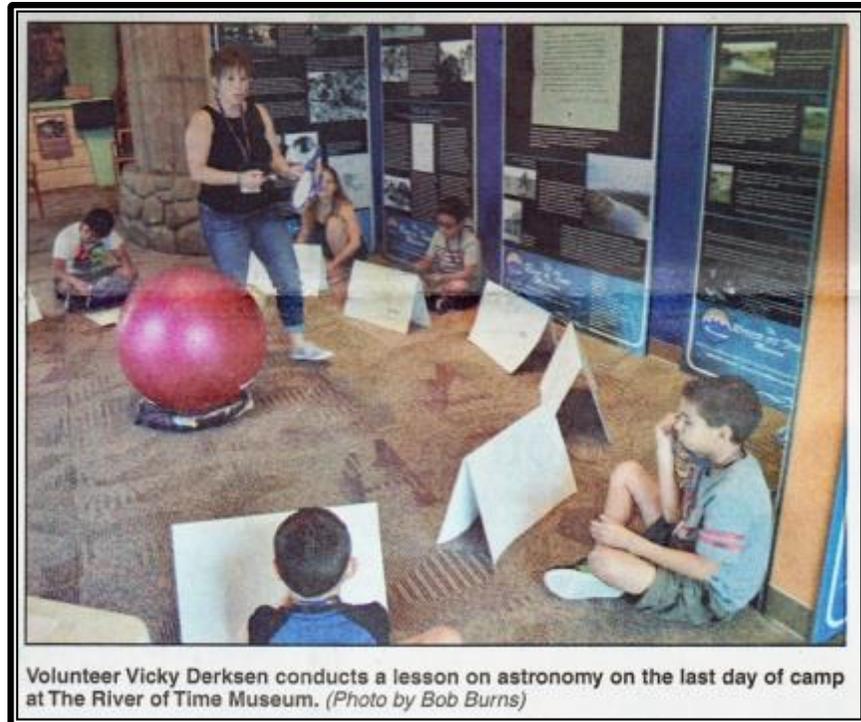
Dark Sky education in the local schools has had positive feedback so far, and we expect many new opportunities in the future.

During the 2015-2016 school year, FH Dark Sky Association Board Member Vicky Derksen taught a Classical Astronomy course to junior high and high school students of the Fountain Hills Christian Home Educators. Alongside their textbooks, students had a field journal they had to work through during the school year. Students were taught the vital importance of protecting our community's dark skies and watched the documentary "The City Dark".



During the same school year, Ted Blank (FH Dark Sky Association Board Member and co-founder of FH Astronomy Club) held a star party at the Fountain Hills High School campus. With the school's newest telescope, Blank helped students discover a twin star that had previously been known as a single star. While the star passed behind the moon, the participants took readings on a camera and translated it into a light analyzer. This helped them to determine that the single star was indeed two, one in front of the other.

The River of Time Museum has partnered with the Fountain Hills Astronomy Club to provide astronomy education to visitors. In June 2017, they hosted the Time Traveler's Summer Camp for grades 3-5. One of the days of the 4-day camp was entitled "Astronomical Antics". Ted Blank brought a solar telescope for viewing sun spots, while Vicky Derksen taught about the



Volunteer Vicky Derksen conducts a lesson on astronomy on the last day of camp at The River of Time Museum. (Photo by Bob Burns)

movement of the earth around the sun in relation to the zodiac constellations. Students learned how to navigate by day and by night and discussed how important it is to preserve our night sky.

Currently, Dr. Paul McElligott, science teacher at Fountain Hills High School and FH Dark Sky Association Board Member, has been working on developing an AP Capstone Astronomy class. The Capstone program consists of two parts. The first year is the AP Seminar, which equips students to look at real-world issues from multiple perspectives. Students consider education, innovation, sustainability, and technology in this stimulating coursework. Students participate in a team project and presentation, an individual project and presentation, and end-of-year written exam.

The second year of the program is the AP Research course. Students design, plan, and conduct a year-long research-based investigation, documenting their process with a portfolio. The program concludes with students defending an argument based on their research.

Dr. McElligot has partnered with Ted Blank on several occasions and has made plans to have our Dark Sky Association educate his students on the importance of preserving our dark skies. Our committee has plans to conduct coloring contests and essay contests for local students as a way of engaging them to think about the value of our dark skies. We will also be coordinating with teachers in the lower grades to give educational presentations to younger students.

EDUCATION AND OUTREACH

DARK SKY AWARENESS EVENTS



In a joint venture relationship, the Fountain Hills Astronomy Club and Fountain Hills Library sponsor monthly star parties. Astronomy Club members set up their telescopes at dusk while the library provides water and snacks. Then, for several hours, members of the public stop by to view the various wonders of the night sky highlighted in the telescopes. These parties have been held for three years except in the hottest months. High school student volunteers often help operate the telescopes for the public. The parties are well attended and are greatly appreciated as regular dark sky awareness events as required by IDA for maintaining Dark Sky Community designation.



Example of monthly Star Party announcement



Fountain Hills Library | 12901 N. La Montana Dr., Fountain Hills



Star Party 
Wed. May 3 @ 6:00 - 9:00pm

Join the Fountain Hills Astronomy Club!
Bring your lawn chairs and telescopes for
direct observation of the Moon, planets,
their moons, galaxies, star cluster. Next
Star Party: May 31.

Event Type: All Ages

Age Group(s): Family - All Ages

Date: 5/3/2017

Start Time: 6:00 PM

End Time: 9:00 PM

Description: Join [Fountain Hills Astronomy Club](#) and Fountain Hills Library as we present Star Party: The desert southwest is the astronomy capital of the United States. Here the sky is always a source of spectacle, inspiration, and discussion. Bring your lawn chairs and telescopes for a unique experience of direct observation of the Moon, planets, their moons, galaxies, star clusters, and gaseous nebulae. You'll be awed by this natural spectacle! Funded by the Fountain Hills Friends of the Library.

Library: Fountain Hills Branch [Branch location](#)

Location: Centennial Courtyard

Other Information: Thanks to a generous donation, the Fountain Hills Branch Library now has three telescopes available for check out! They can be checked out for one week by an adult and can be renewed up to five times if there are no customers waiting. Check one out at the Customer Service desk in the library or place a request online by clicking on the link above or by searching the catalog for Orion StarBlast.

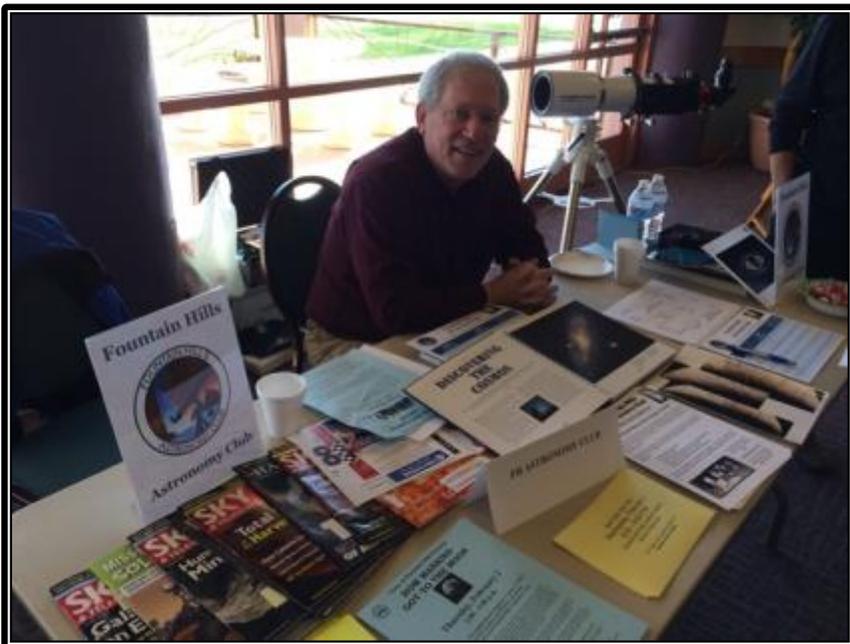
Contact: Karen Adams

Presenter: Ted Blank

EDUCATION AND OUTREACH

VOLUNTEER EXPO

On behalf of the Fountain Hills Dark Sky Association, Nancy and Joe Bill staffed a table at the annual Fountain Hills Volunteer and Activities Expo on January 25, 2017. Many attendees came by to inquire about the work of the Association and ask questions about smart lighting practices. Particularly helpful was demonstrating the difference between a 3000K and 5000K light.



Next to the FH Dark Sky Association table was the FH Astronomy Club table staffed by FH Dark Sky Association Board Member Ted Blank and other Astronomy Club members.

LIGHT POLLUTION CONTROL PROJECTS



Dark Sky Community designation requires that the application include a minimum of ten projects to demonstrate effective application of the lighting code and/or demonstrate success in light pollution control.

A combination of 16 business and Town projects that meet these criteria were identified, addressed, and documented. Not included, yet deserving of recognition, is that between December 2016 when the updated ordinance was approved and the end of July 2017, the plans for 28 new homes were approved under the guidelines of the new ordinance.

The following pages present 16 light pollution control projects:

1. Streetlights at Intersection of Avenue of the Fountains and Saguaro Boulevard
2. Park Place
3. Chase Bank
4. Fountain Park – West Parking Lot Lights
5. Fountain Park – Ramada and Monument Sign Lights
6. Community Center Parking Lot Lights
7. Library & Museum Parking Lot Lights
8. Town Hall Parking Lot Lights
9. Wall Pack Lights on Town Buildings
10. Copperwynd Resort
11. Adero Canyon Trailhead
12. Fire Station #2
13. Desert Vista Park
14. Four Peaks Park
15. Golden Eagle Park
16. Avenue of the Fountains Green Belt

PROJECT ONE

STREETLIGHTS AT INTERSECTION OF AVENUE OF THE FOUNTAINS AND SAGUARO BOULEVARD

As the work of the Fountain Hills Dark Sky Association got underway, Joe and Nancy Bill met with Town Development Services Department staff members to review upcoming municipal lighting plans. One upcoming project was to install six smaller scale streetlights at the intersection of Avenue of the Fountains and Saguaro Boulevard for safety reasons because of many pedestrians crossing to and from Fountain Park. The plan called for 4000K lights. However, after discussing the plan to update the Town’s lighting ordinance to require all outdoor lighting to be 3000K or less, the Town modified the lighting plan to specify a color temperature of 3000K for those six streetlights. Those streetlights were installed in 2016 and were confirmed in writing by the lighting contractor that they were in fact 3000K. This was further corroborated by Board Member Ted Blank using an ASenseTek Passport meter.



PROJECT TWO

PARK PLACE

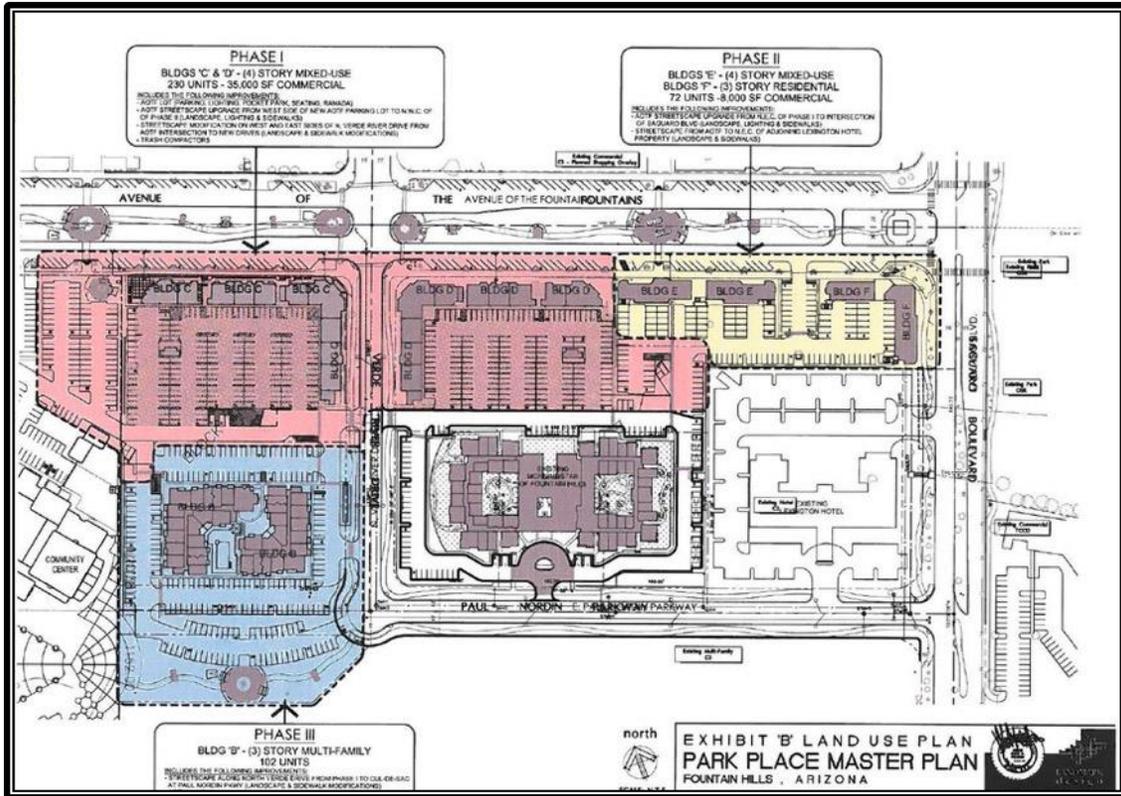
Currently under construction along Avenue of the Fountains is a large, mixed use project called Park Place. The development, up to four stories tall, includes 400 residential apartments, more than 40,000 square feet of commercial space, and parking lots to accommodate Park Place residents and commercial customers.

Early in the design phase, FH Dark Sky Association Board member Jay Schlum informed Bart Shea, the developer, that efforts were underway to update the Town's Outdoor Lighting Ordinance to comply with guidelines set by the International Dark Sky Association. As a result, Mr. Shea willingly adjusted Park Place lighting plans, which did call for 4000K fixtures, to specify that all outdoor lights have a CCT of 3000K or less and be properly shielded.

Park Place is a very large development project for Fountain Hills and thankfully, the lighting changes were able to be made in the plan before a significant investment in 4000K lights was made. The cooperation of Bart Shea was greatly appreciated by the FH Dark Sky Association.



Architect's rendering of Park Place



Park Place master plan



Status of construction on July 25, 2017

PROJECT THREE

CHASE BANK DRIVE-THROUGH LIGHT

The drive-through light at Chase Bank on Avenue of the Fountains was unshielded and directed a blinding glare horizontally onto the nearby Avenue of the Fountains. This light was a source of light pollution and a distraction to pedestrians and vehicles that would pass by. Bank officials were approached by FH Dark Sky Association Board Member Amberleigh Dabrowski and informed of the situation. They were unaware of the adverse impact of the light and readily agreed to have it redirected downward. Within 20 days of the initial communication, the light was appropriately adjusted and the glare eliminated.



Chase Bank before



Chase Bank before



Chase Bank before



Chase Bank after

PROJECT FOUR

FOUNTAIN PARK –WEST PARKING LOT LIGHTS

The west parking lot for Fountain Park has 13 pendant-style lights. FH Dark Sky Association Board members Mark Derksen and Ted Blank recorded the CCT values of these metal halide lights as 4657K. To bring these lights into compliance with the updated Outdoor Lighting ordinance that was adopted in November 2016, the Town Council agreed to have these lights replaced with 2700K LED lights. This project was completed In June 2017.



Google Map view of Fountain Park



West parking lot - Fountain Park



Pendant-style metal halide lights that were replaced with 2700K LED lamps

PROJECT FIVE

FOUNTAIN PARK – RAMADA LIGHTS AND MONUMENT SIGN LIGHTS

Fountain Park has three ramadas and three monument signs. The lights mounted to the ceilings of the ramadas were recorded by FH Dark Sky Association Board members Mark Derksen and Ted Blank to have a CCT value of 4445K. Each of the three monument signs were lit by 4000k LED lamps.

The Town replaced all the ramada ceiling lights with 2700K lamps in June 2017. Although the monument sign lighting was quite new, the Town agreed to replace all the 4000K LEDs with 3000K LEDs within five years.



One of three ramadas in Fountain Park



Note the ceiling lights



One of 3 monument signs in Fountain Park



One of the three monument lights

PROJECT SIX

COMMUNITY CENTER PARKING LOT LIGHTS

The inventory of municipal lighting conducted by FH Dark Sky Association Board members Mark Derksen and Ted Blank showed that the 39 metal halide parking lot lights at the Community Center had a CCT value of 4342K. While the Community Center hosts many daytime and evening activities, it's important to have the large parking lot in the center of the town display smart lighting, yet be safe. This information was brought to the attention of the Town.



Community Center and portion of parking lot



At the April 20, 2017 Town Council meeting, a municipal lighting plan was approved that authorized replacement of the 39 Community Center Parking lot lights with 2700K LED lamps.

This project was completed In June 2017.



Front Entrance - Community Center



Community Center at night



During replacements, one pole light temporarily had both high and low CCT lamps



Community Center parking lot with new lights installed

PROJECT SEVEN

LIBRARY/MUSEUM PARKING LOT LIGHTS

As a result of the municipal lighting inventory undertaken by FH Dark Sky Association Board members Mark Derksen and Ted Blank, the 30 pole lights in the Library / River of Time Museum parking lot were also shown to exceed the 3000K CCT guideline. This information was shared with Town staff.

As part of the municipal lighting plan approved at the April 20, 2017 Town Council meeting, the Library / Museum parking lot lights were scheduled for replacement.

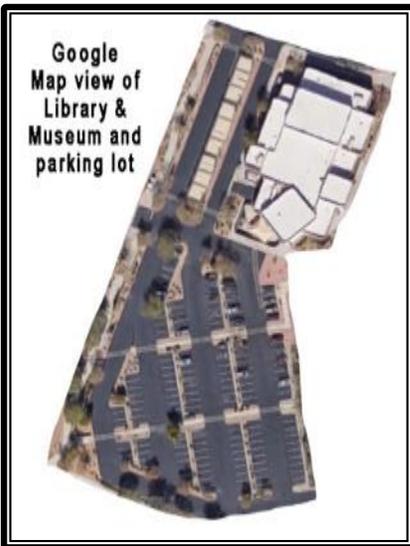
In June 2017, the Town of Fountain Hills replaced the 30 metal halide lights with 2700K LED lamps.



Library & Museum front entrance



Library & Museum parking lot



Parking lot pole lights with new 2700K lamps

PROJECT EIGHT

TOWN HALL PARKING LOT LIGHTS

Town Hall has 12 pole lights in the parking lot. The municipal lighting inventory undertaken by FH Dark Sky Association Board members Mark Derksen and Ted Blank showed that these, too, exceeded the new CCT guideline of 3000K or less. Being the same fixtures as were used in the Community Center and Library parking lots, they also were measured with a CCT value of between 4300K and 4400K.

Replacement of these lights was approved at the April 20, 2017 Town Council meeting in order to bring them into compliance with the updated Outdoor Lighting ordinance that was approved at the November 3, 2016 Town Council meeting

The 12 pole lights were replaced by the Town with 2700K LED lamps in June 2017.



Town Hall and parking lot



Town Hall front entrance

PROJECT NINE

WALL PACK LIGHTS ON TOWN BUILDINGS

Some Town buildings had metal halide wall pack lighting for security and other reasons. There are a total of ten of these lights and FH Dark Sky Association Board members Mark Derksen and Ted Blank recorded their CCT readings as 3753K.

The ten wall pack lights were replaced by the Town in June 2017 with LED lamps that comply with the 3000K or less CCT requirement in the updated Outdoor Lighting ordinance.



PROJECT TEN

COPPERWYND RESORT AND TENNIS CLUB

CopperWynd Resort and Tennis Club sits prominently on top of one of the hills that surrounds the town. FH Dark Sky Association Board Member Amberleigh Dabrowski arranged a meeting with the owners of CopperWynd Resort and Tennis Club to discuss the importance of reduced light pollution for our community and the potentially positive impact of astro-tourism. To support the initiative, they immediately contacted the architect responsible for the designs on their planned expansion and revised the architectural plan to be dark sky centric.



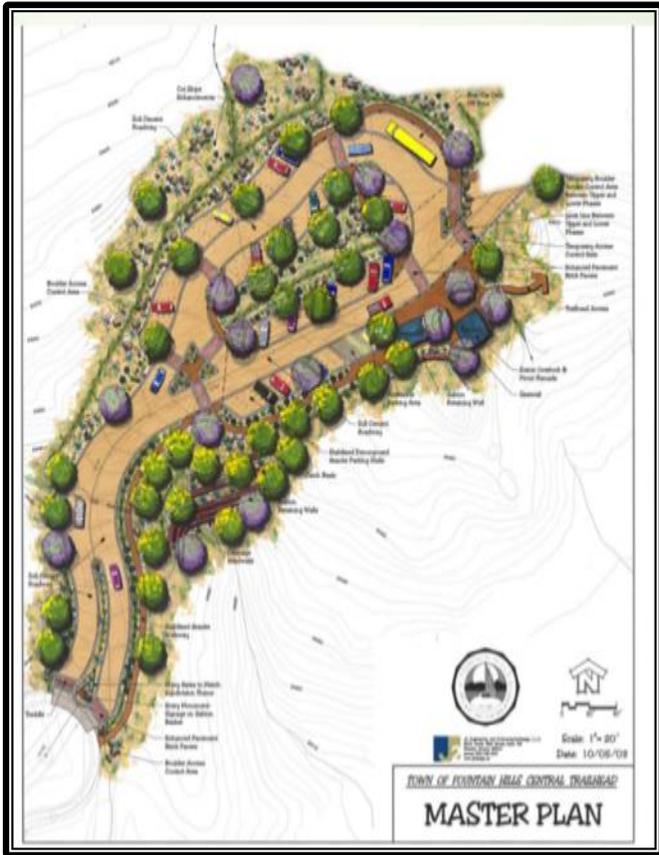
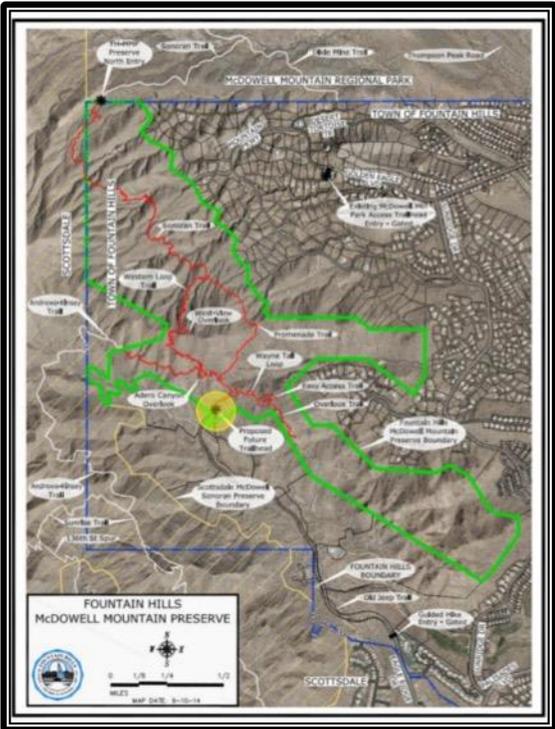
Photo: CopperWynd Resort Website

PROJECT ELEVEN

ADERO CANYON TRAILHEAD

The Fountain Hills Preserve is home to miles of mountain trails that are connected to hundreds of miles of hiking, biking and equestrian trails throughout McDowell Mountain Regional Park and the McDowell Sonoran Preserve.

Adero Canyon, a hidden enclave on the outskirts of Fountain Hills, has recently begun development with residential homes, but originally a part of the land was set aside for a trailhead. Trailhead plans were submitted to the Town and have gone out to bid as of July 2017. These plans include natural



elements and lighting that participates in preserving our dark skies and surrounding nighttime desert beauty.

Once a bid is approved, construction is expected to take from six to nine months, with an estimated completion date as soon as spring 2018.

PROJECT TWELVE

FIRE STATION #2

To help improve the safety and response time in Fountain Hills, a new Fire Station is being developed along Fountain Hills Boulevard. This new station has been specifically designed to blend in with the residential area without compromising functionality. The developers and architects have also planned for dark sky friendly lighting to promote our initiative and is estimated to be completed by summer 2018.

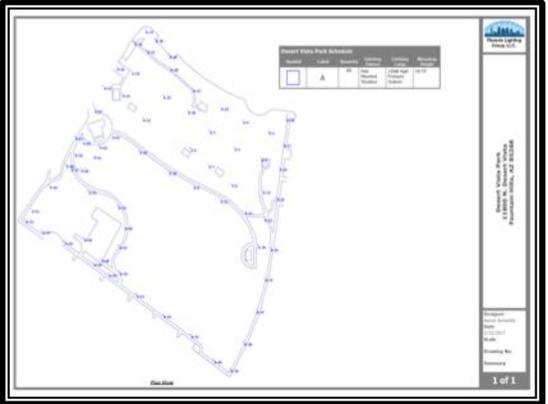
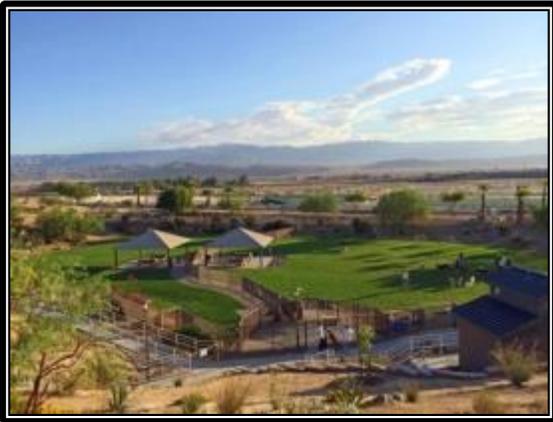


Photo: Jan 5, 2017 Town Council Presentation

PROJECT THIRTEEN

DESERT VISTA PARK

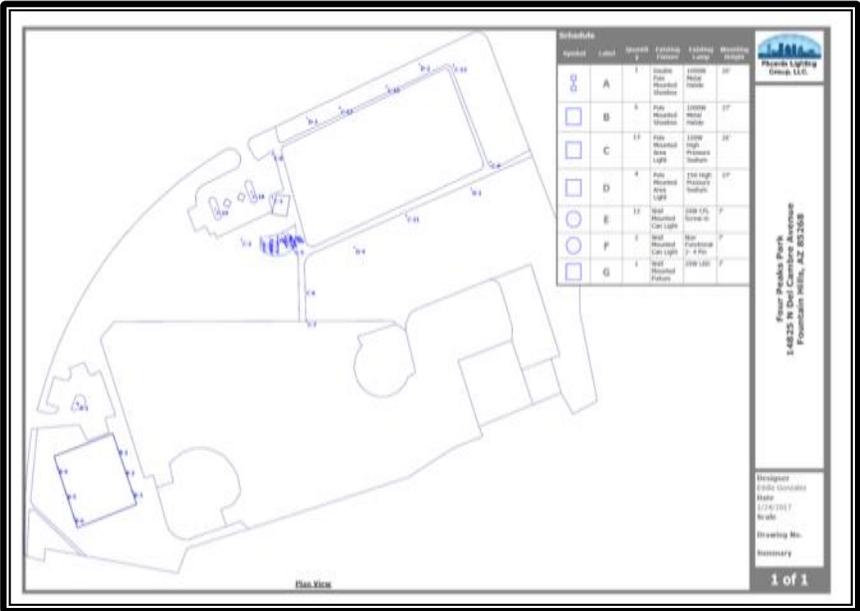
Desert Vista Park is a great area with 2 dog parks, athletic fields, ramadas, playgrounds and a skate park. A gem in the community, this park attracts families and younger crowds to participate in a sport or play. The dog park allows all ages to run and play fetch with their furry friends while socializing. All lights in the parking lot have been updated to be under 3000K CCT to support our dark sky initiative.



PROJECT FOURTEEN

FOUR PEAKS PARK

A secret and intimate park hidden in Fountain Hills is the Four Peaks Park. Originally a connection to the neighborhoods and the former Four Peaks Elementary School, this park is now a 15-acre active recreation area with a beautiful 100-foot steel pedestrian bridge to protect the wash and wildlife that flows below. This park also includes active tennis courts. The Town updated the parking lot, tennis court and wall sconce lights all along the park and followed the guidelines set forth in the updated Outdoor Lighting Ordinance.



PROJECT FIFTEEN

GOLDEN EAGLE PARK

Golden Eagle Park is a 25-acre active recreation area adjacent to the Fountain Hills High School. The park hosts numerous activities and leagues throughout the year, including Little League, adult softball, senior softball, high school athletics, and drop-in sports such as basketball, volleyball and tennis.



The horseshoe pit, volleyball court, basketball courts, ramadas and street lights were all updated with energy efficient LED lights having a CCT value of 3000K or less.

Plan View

Golden Eagle Schedule					
Symbol	Label	Quantity	Existing Fixture	Existing Lamp	Mounting Height
	A	23	Pole Mounted Shoebox	250W Metal Halide	17'
	B	3	Pole Mounted Shoebox	1000W Metal Halide	20'
	B-2	1	Double Pole Mounted Shoebox	1000W Metal Halide	20'
	C-A	19	Canopy	50W Metal Halide	15'
	C-B	1	Canopy		16'
	C-C	4	Canopy	100W Metal Halide	16'
	D	4	Pole Mounted Shoebox	1000W Metal Halide	20'
	E	7	Pole Mounted Shoebox	150W Metal Halide	17.5'
	F	7	Pole Mounted Shoebox	150W Metal Halide	17'
	H	5	Pole Mounted Shoebox	250W Metal Halide	20'
	I	5	Recessed Can Light	70W Metal Halide	0'
	J	6	2 Lamp To Wrap Fixture	(2) -32W Fluorescent Tube	0'

Phoenix Lighting Group, LLC

Golden Eagle Park
15500 E Golden Eagle Blvd, Fountain Hills, AZ 85268

Designer: Eddie Gonzalez
Date: 1/24/2017
Scale:
Drawing No.:
Summary:
1 of 1

PROJECT SIXTEEN

AVENUE OF THE FOUNTAINS GREEN BELT

The newly remodeled green belt of the Avenue of the Fountains has beautiful art work, fountain structures, trees, and ramadas that are utilized by visitors and locals throughout the year, most notably for art festivals and holiday fairs (Halloween, etc.). As an effort to participate in the dark sky initiative, the pole mounted architectural lights and column mounted architectural lights along the avenue have been updated to include lights below 3000K CCT.



SKY BRIGHTNESS MEASUREMENT



The Town of Fountain Hills and the Fountain Hills Dark Sky Association will fulfill the IDA requirement that an annual sky brightness measurement is taken and reported. The effort is being led by Fountain Hills Dark Sky Association board member Craig Gimbel with assistance from Ted Blank and Fountain Hills Town staff.

To obtain the required measurements, a Unihedron Sky Quality Meter was purchased by the Town of Fountain Hills.

The initial readings were taken on the evening of June 23, 2017. Those participating in this effort were Town of Fountain Hills Senior Planner, Marissa Moore and intern Cory Turner and Fountain Hills Dark Sky Association Board Members, Craig Gimbel, Ted Blank, Nancy Bill, and Joe Bill.



Model SQM



From left: Craig Gimbel, Cory Turner, Ted Blank, Marissa Moore, Joe Bill

The following four locations in Fountain Hills were selected for taking the annual sky brightness readings. They are:

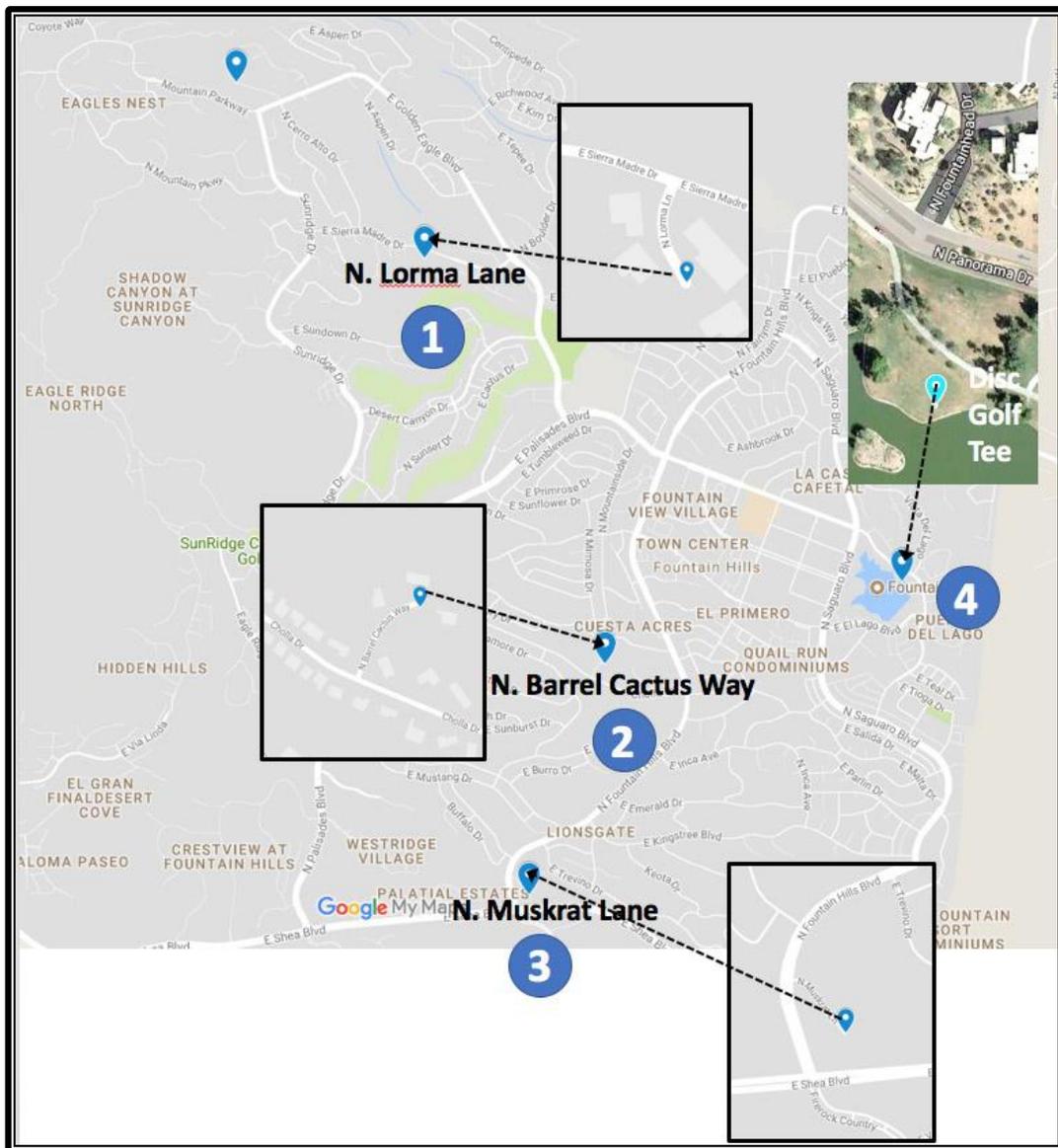
Location 1: N. Lorma Lane cul de sac

Location 2: N. Barrel Cactus Way cul de sac

Location 3: N. Muskrat Lane cul de sac

Location 4: Fountain Park Disc Golf Tee #6

MAP OF LOCATIONS



**FOUNTAIN HILLS, ARIZONA
SKY QUALITY READINGS**

LOCATION		N Lorma Lane	N Barrel Cactus Way	N Muskrat Lane	Shore-Ftn Disc Golf Tee #6
DATE		6/23/17	6/23/17	6/23/17	6/23/17
TIME		21:30	21:40	21:48	21:57
CLOUD		0%	0%	5%	10%
SKY QUALITY MEASUREMENT READINGS	1	19.52	19.40	19.21	18.91
	2	19.53	19.41	19.37	18.92
	3	19.61	19.45	19.35	18.97
	4	19.46	19.44	19.36	18.84
	5	19.50	19.45	19.32	19.05
	AVG	19.52	19.43	19.32	18.94
GPS-LAT (N)		33 37 27.5	33 35 53.1	33 34 58.8	33 36 11.6
GPS-LONG (W)		111 44 51.9	111 44 01.5	111 44 23.0	111 42 38.1
TEMPERATURE		31C (87.8F)	30C (86F)	31C (87.8F)	30C (86F)
ELEVATION		1838 ft	1782 ft	1773 ft	1551 ft

Light Pollution - Fountain Hills

similar to city area of Flagstaff



Source: LightPollutionMap.info

FUTURE GOALS



The Town of Fountain Hills and the Fountain Hills Dark Sky Association have discussed various ideas for future projects that would increase community awareness of and support for the goal of maintaining the dark skies above Fountain Hills. The projects would also enhance the appreciation of the night sky and help people understand that our community has a valuable resource worth protecting.

The following is a partial list of potential endeavors:

- Plan a Fountain Hills Dark Sky Festival for April 21, 2018
- Provide ongoing student and citizen education programs
- Coordinate a night sky student art and essay contest
- Initiate recognition program for businesses installing or having dark sky friendly lighting
- Create solar system walk along Avenue of the Fountains or other suitable location
- Design and install of Dark Sky Community designation signs at community entrances
- Work toward the establishment of a public observatory in Fountain Hills

It is important to note that it is only feasible to address some of the above at any given time. These goals will be reviewed on a regular basis to establish priorities and pursue projects as permitted by available resources.

LETTERS OF SUPPORT



The support letters obtained are presented in the following order:

Fountain Hills Chamber of Commerce

Fountain Hills Unified School District

Lowell Observatory

Phoenix Area Chapter, International Dark Sky Association

Fountain Hills Cultural and Civic Association

Neighborhood Property Owners Association (NPOA)

L. Alan Cruikshank River of Time Museum

Fountain Hills Astronomy Club

Copperwynd Resort and Club

Fountain Hills Noon Kiwanis

Royal Astronomical Society of Canada

Four Peaks Chapter of the Daughters of the American Revolution

Four Peaks Rotary Club

Fountain Hills Sunset Kiwanis

Rotary Club of Fountain Hills

Morningside HOA

Allen & Philp Partners

Dr. Paul McElligott

CHAMBER OF COMMERCE



April 6, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

The Fountain Hills Chamber of Commerce is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

Our organization has served the community as the collective voice of commerce as it maintains and improves the economic environment while providing leadership for improving the quality of life of Fountain Hills.

We feel that having the Town of Fountain Hills designated a Dark Sky Community will encourage unique types of commerce. We also believe that the designation will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies resulting in the quality of life which the citizens of our community have become accustomed to having.

The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Sincerely,

A handwritten signature in black ink that reads "Scott R. Soldat-Valenzuela".

Scott Soldat-Valenzuela
President/CEO



Board of Directors

Paul Perreault Jr., Chair
First Financial Equity Corporation

Christopher Siino, Vice-Chair
Owner, Siino Design

Audrie Ouellette, Secretary
Owner, A & H Pizza Companies,
LLC/ dba Little Caesars

Colin Horning, Immediate Past Chair
UMB

Boe James
VFW Post 7507

Rosaria Cain
Owner, Knoodle

Merita Kraya
Owner, Euro Pizza Café, Inc.

Suzanne Nann
Sonoran Lifestyle Real Estate

Sheri Patton
Owner, American Family Insurance
Agency

LeeAnn Torkelson
SRP

Dr. Nick Schultz
Owner, Healthsource Chiropractic
Clinic

Nathan Watters
Owner, Cummings Pest Control

Dr. Patrick Sweeney
Fountain Hills Unified School District



FOUNTAIN HILLS
UNIFIED SCHOOL DISTRICT

16000 E. Palisades Blvd.
Fountain Hills, AZ 85268
480-664-5000 PHONE
480-664-5099 FAX
FountainHillsSchools.org

June 1, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

On behalf of the Fountain Hills Unified School District, I want to express my strong support for the effort to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

We have an active Stargazers Club at our middle school and an active Astronomy Club at the high school, both of which engage in joint activities with the local Fountain Hills Astronomy Club. We are considering plans to expand our science offerings at the high school to include Astronomy, and possibly adding a Sky Shed Pod Max mid-sized observatory on the high school campus. In addition, plans are already underway to educate our students about the science of smart lighting practices. Achieving Dark Sky Community designation will further increase awareness of the importance of minimizing light pollution and will support our efforts to educate our students and community not only about how lighting can be adequate for safety yet protect our night sky, but ensure an environment that makes the installation of an observatory a wise use of our limited resources.

As a resident of Fountain Hills, I hope that achieving Dark Sky Community designation results in our citizens, visitors and future generations having the opportunity to enjoy the beauty and wonders of our star-filled sky.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Patrick Sweeney', with a large, stylized flourish extending from the end of the signature.

Patrick Sweeney, Ed.D.

LOWELL OBSERVATORY



1400 WEST MARS HILL ROAD FLAGSTAFF, AZ 86001
928-774-3358 FAX (928) 774-6296

April 13, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

On behalf of Lowell Observatory, I am pleased to offer my support to the Town of Fountain Hills in pursuing a Dark-Sky Community designation.

As you well know, the Phoenix metro is by far the largest source of sky glow in Arizona, one that not only threatens the state's multibillion-dollar astronomy industry, but prevents most of its residents from ever seeing the Milky Way and all but a few stars. Yet we are starting to see progress, step by step. Phoenix's adoption of 2700K LEDs rather than 4000K for its street lighting is a laudable demonstration of dark-sky awareness by city staff and council. Awareness of the value of dark skies at the community level is another critical aspect to controlling the area's sky glow, and the effort by Fountain Hills is therefore quite significant. We all should enthusiastically support these efforts, which can only help encourage further progress throughout the metro area.

I heartily endorse the efforts of the Town of Fountain Hills to establish itself as a Dark-Sky Community by the International Dark-Sky Association. It will be an outstanding example that I hope other communities in the Valley of the Sun will emulate.

Sincerely yours,



Jeffrey Hall
Director

INTERNATIONAL DARK SKY ASSOCIATION, PHOENIX AREA CHAPTER

06/08/2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

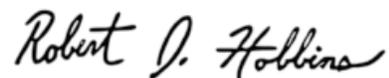
The IDA Phoenix-Area Chapter is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of their unique location and because their past and present town leaders have been committed to passing dark sky friendly ordinances.

However, we feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive not only to inform and educate their citizens about the benefits and importance of maintaining our dark skies but will also provide an incentive for other communities in the Phoenix metro area to follow suit. The result will hopefully be that Phoenix metro area citizens, visitors and future generations will have the opportunity to enjoy the beauty and wonders of our night sky without needing to drive hours outside of the city.

We are very excited to support the application by the Town of Fountain Hills to become the first Dark Sky Community in Maricopa County and applaud their efforts thus far!

Sincerely,



Robert J. Hobbins
Chapter Director
International Dark Sky Association – Phoenix-Area Chapter
hobbins.6@gmail.com
480-466-0458
PO Box 28460, Tempe, AZ, 85285

FOUNTAIN HILLS CULTURAL AND CIVIC ASSOCIATION

April 25, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

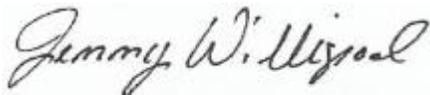
Dear IDA Board of Directors,

The Fountain Hills Cultural and Civic Association is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

Our organization has been active in our community since 1978 developing, promoting, and operating programs and activities that will preserve and enhance the cultural, civic, educational and social qualities of Fountain Hills. Preserving our dark skies is consistent with our goal to enhance the quality of life in our community.

We feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to enjoy the beauty and wonders of our night sky.

Sincerely,

A handwritten signature in cursive script that reads "Jenny Willigrod".

Jenny Willigrod, President
Fountain Hills Cultural and Civic Association



**NEIGHBORHOOD PROPERTY OWNERS' ASSOCIATION
OF FOUNTAIN HILLS, ARIZONA, INC.**

16810 E. Avenue of the Fountains, Suite 119, Fountain Hills AZ 85268-8496
www.npoafh.org • info@npoafh.org • Tel 480.837.5317 • Fax 1.848.260.5183

"Keeping Fountain Hills Neighborhoods Beautiful"

June 13, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

NPOA is responsible for upholding the development guidelines for over 4500 homes located in in Fountain Hills. The NPOA is the successor to the original Committee of Architecture established in 1972 by McCulloch Properties, the master developer of Fountain Hills. The NPOA and its Committee of Architecture are responsible for the aesthetics, public health, safety and general welfare of the community.

We feel that having the Town of Fountain Hills designated as a Dark Sky Community is consistent with the purpose and goals of the NPOA; and the harmful effects of light pollution.

We also feel that the designation will provide an ongoing incentive to inform and educate our citizens and homeowners about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

The Neighborhood Property Owners' Association of Fountain Hills, Arizona, Inc. (NPOA) and its Neighborhood Committee of Architecture is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

Sincerely,
Neighborhood Property Owners' Association

Allyn Wright
NPOA- President

FOUNTAIN HILLS L. ALAN CRUIKSHANK RIVER OF TIME MUSEUM

From: President [<mailto:president@rotmuseum.org>]
Sent: Thursday, April 13, 2017 2:04 PM
To: 'Joe Bill' <jbill@cox.net>
Subject: Letter of support

I hope this letter is helpful in your efforts to obtain Dark-Sky designation.

Debbie Skehen, President

April 13, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

The River of Time Museum is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association. The Museum's mission is to engage, entertain, educate, and inspire people about the Lower Verde River Valley through relevant topics and experiences as it pertains to our past.

Those who lived in our area before us, from Native Americans to ranchers and the cavalry, all enjoyed beautiful dark skies. Many of our modern day Fountain Hills residents also appreciate our dark skies, and we are proud of one resident in particular, Charles W. Juels, an amateur astronomer. He was a prolific discoverer of 475 asteroids, one of which he named the "Fountain Hills" asteroid. He is also one of the top 30 discoverers of minor planets with 315 to his credit using his observatory located in Fountain Hills.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances. However, we feel that having the Town of Fountain Hills designated a Dark Sky Community will help continue the legacy of having dark skies in our geographical area. The result will be that our citizens, visitors and future generations will have the opportunity to enjoy the beauty and wonders of our night sky as those who came before us have.

Sincerely,

Debbie Skehen
President
River of Time Museum
12901 N La Montana
Fountain Hills, AZ 85268
president@rotmuseum.org

FOUNTAIN HILLS ASTRONOMY CLUB



March 6, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

The Fountain Hills Astronomy Club would like to register its robust support for the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

Our Club's monthly downtown sky watches are well attended and the Town's dark skies allow even faint objects like the Crab Nebula to be easily visualized.

Fountain Hills has recently strengthened their already strong lighting ordinances to further protect the Town's dark skies. Going forward, continuing this protection will require ongoing efforts to educate the community. The Dark Sky Community designation will be a flagship item around which the Club's educational outreach programs to the community will be organized.

We strongly support the designation of the Town of Fountain Hills as an International Dark Sky Community.

Sincerely,

Ted Blank
NASA/JPL Solar System Ambassador and co-Founder, Fountain Hills Astronomy Club
Fountain Hills, AZ 85268



COPPERWYND

RESORT & CLUB

March 1, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board Of Directors,

CopperWynd Resort and Club is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association. Dark Sky Community designation will provide CopperWynd with a unique opportunity to vigorously promote astro-tourism to our guests.

Astro-tourism is fast becoming a growing niche in the leisure and vacation business sector. Because of Fountain Hills' dark skies, CopperWynd has already begun having astro-tourism activities such as stargazing parties with an astronomer for our guests and health club members. Without exception, these stargazing parties have been well received.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances. With Dark Sky Community designation, our guests, Town residents, and future generations will continue to enjoy the beauty and wonders of our night sky.

Sincerely,


William Hinz, Owner
CopperWynd Resort and Club

FOUNTAIN HILLS NOON KIWANIS CLUB

From: Kenjbrown <kenjbrown@aol.com>
Subject: Re: Dark Sky
Date: February 18, 2017 at 11:26:07 AM MST
To: jbill@cox.net

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

As the President of Noon Kiwanis, I would like to commend the Dark-Sky Association for their commitment to making us all aware of the value of smart lighting ordinances. Our members recently benefited from an “enlightening” presentation about the value of preserving dark skies in Fountain Hills.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances.

However, I’m sure I speak on behalf of the vast majority of our club members in stating that I feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Noon Kiwanis is very supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

Sincerely,

Ken Brown, President
Noon Kiwanis Club
Fountain Hills, AZ 85268

Royal Astronomical Society of Canada – Edmonton Centre

788, 10301 – 104 Street, Edmonton, AB T5J 1B9 Canada



November 27, 2016

To Whom It May Concern;

On behalf of the Royal Astronomical Society of Canada (RASC) - Edmonton Centre, I am writing to provide support to the Fountain Hills Dark Sky Committee in their efforts to preserve and protect the night sky from light pollution. The input of the Fountain Hills Dark Sky Committee in the proposed lighting ordinance can preserve dark skies now and for future generations.

The RASC Edmonton Centre has two hundred eighty members. For over eighty years we have been active in Edmonton and surrounding areas stimulating interest and promoting knowledge in astronomy and related sciences by providing at no charge public outreach and education. RASC Edmonton Centre worked with all levels of government establishing internationally recognized Dark Sky Preserves in the Beaver Hills of Alberta as well as in Jasper National Park. In addition the Centre has advised the City of Edmonton on efficient lighting.

Use of proper lighting to maintain a dark sky benefits humans and nature as well can save money over the long term by having the light directed to the ground where it is needed rather than shooting up into the sky.

In closing RASC Edmonton Centre fully supports the work of the Fountain Hills Dark Sky Committee in promoting efficient lighting for the citizens of their community.

Sincerely,

Luca Vanzella
President

RASC Edmonton Centre

<http://edmontonrasc.com>

president@edmontonrasc.com

Daughters of the American Revolution

March 11, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

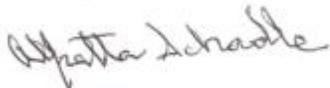
Dear IDA Board of Directors,

Our Four Peaks Chapter of the National Society of the Daughters of the American Revolution, Fountain Hills, is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances.

However, we feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies as seen by our ancestors. The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Sincerely,



Alfretta Schadle, Regent
Four Peaks Chapter, NSDAR
Fountain Hills, AZ 85268
National Society Daughters of the American Revolution

FOUR PEAKS ROTARY CLUB

May 2nd, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

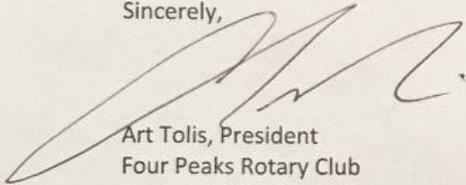
Dear IDA Board of Directors,

Four Peaks Rotary Club is a service organization based in Fountain Hills, Arizona. Our members care about our community, our world, and our future generations. As such, our organization is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

The dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances.

However, we feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Sincerely,



Art Tolis, President
Four Peaks Rotary Club
Fountain Hills, AZ 85268

SUNSET KIWANIS CLUB

May 9, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

The Fountain Hills Sunset Kiwanis Club is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association. As their President, I would like to commend the Dark-Sky Association for their excellent efforts to educate the community about the value of smart lighting.

However, I'm sure I speak on behalf of the clear majority of our club members in stating that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to enjoy the beauty and wonders of our night sky.

Sincerely,



Dori Wittrig, President
Sunset Kiwanis Club
Fountain Hills, AZ 85268

ROTARY CLUB OF FOUNTAIN HILLS



May 19, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

The Rotary Club of Fountain Hills is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association. As their President, I would like to thank the Fountain Hills Dark-Sky Association for their presentation to our club and their excellent efforts to educate the community about the value of smart lighting.

I'm sure I speak on behalf of our club members in stating that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our citizens about the benefits and importance of maintaining our dark skies. The result will be that our residents, visitors and future generations will continue to enjoy the beauty and wonders of our night sky.

Sincerely,

Michelle Holcomb

Michelle Holcomb, President
Rotary Club of Fountain Hills
Fountain Hills, AZ 85268

FOUNTAIN HILLS MORNINGSIDE HOA

From: Marianne <botanical@cox.net>
Subject: Morningside HOA Dark Sky Support
Date: April 5, 2017 at 9:05:14 AM MST
To: info@fhdarksky.com

April 5, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

Morningside HOA is supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association. Over the years, Morningside HOA has been diligent about requiring dark sky friendly lighting for our development.

In addition, the dark skies of the Town of Fountain Hills, unlike the rest of Maricopa County, have so far been preserved because of our unique location and because our past and present town leaders have been committed to passing dark sky friendly ordinances.

However, we feel that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our HOA members and town citizens about the benefits and importance of maintaining our dark skies. The result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Sincerely,

Marianne Jacobs, President
Morningside HOA
Fountain Hills, AZ 85268



13 March 2017

Mayor and Council
Town of Fountain Hills
16705 East Avenue of the Fountains
Fountain Hills, Arizona 85268

Re: Dark Sky Ordinance Discussion

Honorable Mayor Kavanagh and Town Council Members;

Please let this letter stand for being in full support of the adoption of a dark sky ordinance and having Fountain Hills designated a Dark Sky Community.....the beautiful sky and the views it affords both day and night is one of Fountain Hills many invaluable assets. Taking the steps necessary as a community to protect the night sky is the right thing to do.

Our firm, Allen+Philp Architects, is responsible for the planning and architectural design of the proposed renovation and expansion of the Copperwynd Resort which comes before you on the 16th of March (cases #DA2017.01 and #Z2017.02). It is the intention of the resort owners, Sarah Nolan and Bill Hinz, and the design team to 'do our part' by incorporating the fundamentals of dark sky sensitivity and responsible lighting design into the project. This action is good for the community and certainly enhances our guests experience of the resort and of Fountain Hills.

Founding partner and Fountain Hills resident,

A handwritten signature in black ink, appearing to read "Mark A. Philp". The signature is stylized and cursive.

Mark A. Philp



16100 E. Palisades Blvd.
Fountain Hills, AZ 85268

480-664-5500 PHONE
480-664-5599 FAX

FountainHillsSchools.org

March 6, 2017

International Dark-Sky Association
C/O Fountain Hills Dark Sky Association
info@fhdarksky.com
Fountain Hills, AZ 85268

Dear IDA Board of Directors,

As a science instructor, professor, and technology coach to high school and college students, I am supportive of the efforts to have the Town of Fountain Hills designated a Dark Sky Community by the International Dark-Sky Association.

I believe that having the Town of Fountain Hills designated a Dark Sky Community will provide an ongoing incentive to inform and educate our students and citizens about the benefits and importance of maintaining our dark skies. Our first class about the benefits of smart lighting and the causes of light pollution for our Fountain Hills' high school students will be scheduled soon. By educating our students and others, the result will be that our citizens, visitors and future generations will continue to have the opportunity to enjoy the beauty and wonders of our night sky.

Sincerely,

A handwritten signature in blue ink that reads "Paul McElligott PhD". The signature is written in a cursive style.

Dr. Paul McElligott
Fountain Hills High School - Science Faculty Member
Fountain Hills, AZ 85268

APPENDICES



A. About Fountain Hills Dark Sky Association

B. PowerPoint Presentation

ABOUT FOUNTAIN HILLS DARK SKY ASSOCIATION



MISSION AND GOALS

WEBSITE: www.fhdarksky.com

The advent of new lighting technologies, such as LEDs, threatened to:

1. destroy the Town's dark sky asset,
2. create annoying glare and overlit areas,
3. cause a graying of our dark sky and end the ability to see most of the stars currently visible,
4. adversely impact the opportunity to grow an astro-tourism industry, and
5. diminish the nationally recognized Fountain Hills Library telescope loaner program.

For these reasons, the Fountain Hills Dark Sky Association was formed in early 2015 with the following mission:

"The Fountain Hills Dark Sky Association is dedicated to educating the community about the advantages of smart lighting and protecting our unique dark sky."

The specific goals that were then set forth were:

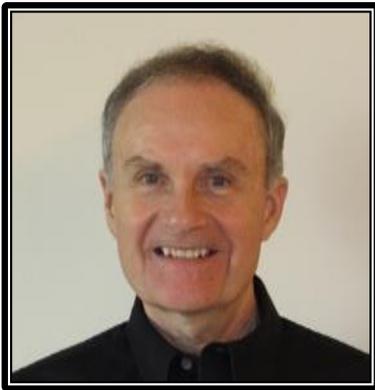
1. Obtain Town Council support for updating the outdoor lighting and sign ordinances to address new lighting technologies and meet the requirements of the International Dark Sky Association (IDA). This goal was achieved on November 3, 2016 when the Town Council voted unanimously in support of the updated ordinances.
2. Obtain subsequent Town Council support to pursue Dark Sky Community designation from IDA. This goal was achieved on April 6, 2017 when the Town Council voted unanimously in support.
3. Meet all application requirements of IDA to have Fountain Hills be awarded the prestigious designation of Dark Sky Community.
4. Meet annual IDA requirements to maintain Dark Sky Community designation.
5. Maintain an ongoing effort to educate the community about smart lighting practices

Early on, former mayors Jerry Miles and Jay Schlum, who are FH Dark Sky Association Board members, provided very helpful direction with the process of updating ordinances. Also, along the way to achieving the above goals, Dr. John Barentine, IDA's Program Manager, has provided and continues to provide invaluable guidance.

The FH Dark Sky Association is continuing to mature and has established an ambitious program for educating the community about lighting, creating incentives for installation of dark-sky-friendly lighting, and increasing awareness and understanding of the prestigious designation of International Dark Sky Community. These objectives are further detailed in the Future Activities section of this application.

Some of the above ongoing objectives will require fundraising. For this reason, the FH Dark Sky Association sought approval to operate under the 501(c)(3) umbrella of the Fountain Hills Cultural and Civic Association (FHCCA). The FHCCA, started by FH Dark Sky Association Board Member Jackie Miles, is a highly-respected organization founded in 1978 whose purpose is to develop, promote, and operate programs and activities that will preserve and enhance the cultural, civic, educational, and social qualities of Fountain Hills. After a presentation to the FHCCA Board, approval was granted on April 25, 2017.

BOARD MEMBERS



Joe Bill, Co-Chair

Joe has been a resident of Fountain Hills since 1987. He actively participated in the effort to obtain voter approval for incorporation, which led to his appointment to the first Town Council in 1990. His professional career was in health care administration and he has served in many different volunteer leadership roles in Fountain Hills, Scottsdale, and Phoenix. He served as an Adjunct Professor at ASU and taught strategic planning in their masters program, authored the book *Climbing the Ladder Less Traveled*, and claims that his 15 minutes of fame was when he was bitten by a rattlesnake. Ever since his first telescope as a Christmas present in sixth grade and his later attendance at astronomy camps, he has appreciated the wonders of the nighttime universe and the beautiful skies above Fountain Hills.



Nancy Bill, Co-Chair

Nancy has always appreciated being able to see a beautiful night sky whether it was while growing up in Wisconsin, living in the country in Minnesota while working at Mayo Clinic, camping in the Southwest, or living in Fountain Hills for 30 years. Although her careers as a lab manager and later as a CPA kept her busy, she usually found time to volunteer for various organizations and causes such as co-chairing the effort to bring a high school to Fountain Hills. Now that she is retired, she is devoting her time to her love of the dark skies by helping to preserve them in Fountain Hills and by frequently enjoying night viewing. She loves being reminded that no matter what happens during the day, the wonders of the universe are there every night.



Ted Blank, Board Member

Ted began to be passionate about amateur astronomy when he first saw the moons of Jupiter through a telescope from the high, clear air of the Sierra Nevada mountains. He is a past President of the New Hampshire Astronomical Society and is currently a NASA/JPL Solar System Ambassador. He was the first to receive the 250-hour award pin for public outreach from the Sidewalk Astronomers of America, a nationwide public service organization. After purchasing a home in Fountain Hills, he co-founded the Fountain Hills Astronomy Club and continues to help organize their monthly public viewing sessions in Centennial Circle.



Clayton Corey, Board Member

Clayton is a new resident of Fountain Hills who moved here from the brightly lit city of Providence, Rhode Island. First moving to Scottsdale, it wasn't too long until he discovered beautiful Fountain Hills and fell in love with the small town feel away from the hustle and bustle. The limited streetlights were a huge plus in his decision to move here. Clayton is an IT Manager for CVS Health, and sits on the Board of the Fountain Hills Toastmasters Club, the Fountain Hills Leadership Academy, Out and Equal Arizona, and the committee for Fountain Hills Relay for Life. He enjoys volunteering his time in the community and meeting new people.



Amberleigh Dabrowski, Board Member

Amberleigh is a five-year resident of Fountain Hills and is currently a Planning and Zoning Commissioner. Our community's dark sky is one of the main reasons why she chose to move to Fountain Hills; there is nothing more serene and quiet than looking out at the darkness and seeing the wonders of the universe at night. She participates in the Fountain Hills Dark Sky Association with hopes to preserve the serenity for each night ahead, and to help all residents appreciate the special significance and value the dark sky designation can bring to the community.



Mark Derksen, Board Member

Mark grew up in Phoenix and Tucson, moving to Fountain Hills in 1997 to teach junior high at New Life Christian Academy. He went on to become principal and later became Administrator. He currently works for Demand Drop, a company started by a family member that helps businesses acquire energy efficient lighting through SRP and APS rebate programs. When Demand Drop began doing business in Flagstaff, Mark became interested in learning about lighting that met Dark Sky standards. Living in Fountain Hills and learning classical astronomy with his children

developed his deep love for the night sky. He is committed to helping preserve our dark skies in Fountain Hills for his children and future grandchildren.



Vicky Derksen, Board Member

Vicky grew up under the dark skies in the panhandle of northern Idaho where she remembers frequently seeing the Northern Lights and the trail of the Milky Way. She moved to north Phoenix in 1995 where the only remarkable thing she remembered seeing in the sky was Comet Hale-Bopp. Vicky moved to Fountain Hills with her husband in 1997 to teach high school at New Life Christian Academy. After the birth of her children two years later, she became a homeschool teacher when her kids started pre-school, and continues to the present day by teaching them their

high school classes. Vicky has served as the Secretary of the Fountain Hills Christian Home Educators, our local homeschool group for five years. During the 2015-2016 school year, she taught a classical astronomy class to the homeschool student of FHCHE, giving them a deeper understanding and passion for the night sky. She graduated from the inaugural class of the Fountain Hills Leadership Academy in 2016. She joined the board of the Fountain Hills Cultural & Civic Association in 2017, and joined an educational committee currently being put together by the River of Time Museum. Vicky loves hiking and particularly enjoys Full Moon hikes hosted by the nearby county parks



Dr. Craig Gimbel, Board Member

Craig is co-founder of the Fountain Hills Astronomy Club. He donated part of his vast telescope collection to the Fountain Hills Library to be used by the library lending program, which resulted in the library winning a prestigious national award. Dr. Gimbel is an Assistant Research Professor at a leading dental school, specializing in lasers and optical light-based imaging. He would like to see an observatory ultimately built in Fountain Hills for education and astro-tourism commerce. With his medical and optical background, he definitely knows the detrimental effect of

wrong light waves that are dispersed into the atmosphere and visually seen directly by the retina.



Dr. Paul McElligott, Board Member

Paul is an instructor, professor and technology coach to high school and college students. He has won numerous state and national awards and recognition such as the Insight Teacher of the Year, State Science Teacher of the Year, “Hall of Fame” and Governor’s Award on Innovation. He has expertise in technology as a former research director, teacher negotiations as an education association president, running small businesses as a CEO, and winning over \$75,000 in cumulative grants in the last five years. He runs programs that include: robotics, chess club, research, automotive clubs, and Academic Decathlon. He has mentored students in the National Automotive X-Prize, five “World Robotics” competitions, and national science and engineering technology fairs such as the Intel Competition and AAPT International Competition. He is passionate that students experience hands-on STEM projects to create their future.



Jackie Miles, Board Member

Jackie was born in Denver and attended the college of music at the University of Colorado, Boulder in 1955-56 where she met her husband Jerry. When their son and daughter were in the upper grades at school, she completed her college education at California State University, Northridge, earning a Master of Arts degree in Communicative Disorders in 1983. Upon moving to Fountain Hills in 1990, Jackie became involved in the community, founding the Arts Council (which later merged with the Civic Association to become the Fountain Hills Civic and Cultural Association) and starting the In-Home Concert series and the annual Poinsettia Tree program. She is an Elder in the Fountain Hills Presbyterian Church, is a past president of Noon Kiwanis, serves on the board of the Sister Cities Corporation, and is treasurer of the Fountain Hills Auto Club. Jackie is hopeful that the beautiful Town of Fountain Hills will soon achieve a Dark Sky Community designation.



Jerold L. Miles, Board Member

Jerry was born in Rocky Ford, Colorado in 1936. After graduating from the University of Colorado in Boulder, he graduated at the top of his class from the UCLA law school. When he retired from the practice, he was one of the premier real estate lawyers in the State of California. In 1990, shortly after putting together a partnership to buy and rebuild the Saguaro Lake Marina, Jerry and his wife Jackie moved to Fountain Hills. Jerry was mayor of Fountain Hills from 1996 to 1998. He has served as an officer or director of the Golden Eagle Foundation, the Sunridge Foundation, the River of Time Foundation, the Senior Services Foundation, the Civic Association, the Library Association, the Cultural and Civic Association, and the Fountain Hills Sister Cities Corporation. Early in 2016, Jerry and his wife Jackie joined the Fountain Hills Dark Sky Association Board.



Jay Schlum, Board Member

Originally from West Bloomfield Michigan, Jay Schlum moved with his parents John and Dawn to Fountain Hills in 1977 when he was 12. The Schlums were early day real estate pioneers and Jay followed in his parents' real estate footsteps by being a licensed Realtor® since 1992. Jay served as Mayor of Fountain Hills from 2008-2012 and previously served as a Fountain Hills Councilman from 2004-2008. In addition to being an elected official Jay has volunteered and served as Chairman of the Fountain Hills Chamber of Commerce; Church President, Shepherd of the Hills Lutheran; Board Member and Executive Committee member, Scottsdale Area Association of Realtors (SAAR); Board Member, Greater Phoenix Economic Council (GPEC); President Four Peaks Rotary Club; and many other committees, commissions and boards.

COMMUNITY EDUCATION

POWERPOINT PRESENTATION

Slides 1 - 6

The presentation consists of six slides arranged in a 3x2 grid. The top-left slide is the title slide for the Fountain Hills Dark Sky Association, featuring a large orange moon and saguaro cacti silhouettes against a starry night sky. The top-right slide lists the Board of Directors, with names arranged in two columns. The middle-left slide defines 'Light Pollution' and lists its effects, including sky glow, glare, light trespass, light clutter, decreased visibility, and energy waste, accompanied by a diagram of light layers and a moon/cactus icon. The middle-right slide shows a comparison of star visibility between a clear dark sky and a light-polluted sky. The bottom-left slide displays four maps of the United States showing the increasing extent of light pollution from the late 1970s to 2005. The bottom-right slide shows a city skyline at night, illustrating the difficulty of reversing light pollution.

PROTECTING OUR NIGHT SKY

Fountain Hills
Dark Sky
Association

Board of Directors

- Joe Bill, Co-Chair
- Nancy Bill, Co-Chair
- Ted Blank
- Clayton Corey
- Amberleigh Dabrowski
- Mark Derksen
- Vicky Derksen
- Dr. Craig Gimbel
- Dr. Paul McElligott
- Jackie Miles
- Jerry Miles
- Jay Schlum

What Is "Light Pollution"?

- Answer: Any adverse effect of artificial light, including:
 - sky glow
 - glare
 - light trespass
 - light clutter
 - decreased visibility at night
 - energy waste

Light Pollution Reduces Sky Visibility...

Light Pollution is Getting Worse

... and is Very Difficult to Reverse

POWERPOINT PRESENTATION

Slides 7 - 12

**The Good News:
Fountain Hills Still Has Very Dark Skies!**



- Few streetlights
- Strong lighting ordinance
- Fortuitous location



The Moon from
Basha's
Parking Lot,
Fountain Hills

**Fountain Hills is currently no more
light polluted than Flagstaff!**



**Our New Lighting Ordinance Will
Help Us Keep It That Way!**

- Maintains intent of former ordinance
- Addresses new technologies like LEDs and signs
- Protects against proliferation of "glare bombs"
- Preserves our night sky
- Does NOT limit smart lighting as needed
- Enables us to move forward to become an International Dark Sky Community



**Goal of Good Lighting Design:
See What's Lit, Not The Light!**

very bad bad better best



- Shine lights down
- Fully shield them
- Light only where / when needed



**Recessed lighting
done badly... ... and done well.**



POWERPOINT PRESENTATION

Slides 13 - 18

A Safe Nighttime Environment Doesn't Require Brighter Lights - It Requires Smarter Lights!

Good visibility is the goal.

Photo © George Flesher

Dark Skies do not mean Dark Streets!

Flagstaff Night Scenes

Flagstaff Even Brews "Dark Sky Beer"

"Of all the pollution we face, light pollution is perhaps the most easily remedied."

-Verlyn Klinkenborg, "Our Vanishing Night," *National Geographic*, November, 2008

"All it would take to reverse the damage we are doing is simply to aim our night-time lights downward..."

Mike Masterson, 2009

Light Fixtures Emit All Colors of Light, But Blue Light Pollutes The Most

Blue light is scattered back up into the atmosphere more than any other color

The Amount of Blue Light Emitted By a Fixture Can Be Identified By Its Color Temperature (CCT)

2000 K: Almost no blue light

3000 K: Very little blue light

4000 K: A lot of blue light

5000 K: Mostly blue light

IDA and AMA both recommend LED lights be <= 3000 K CCT

POWERPOINT PRESENTATION

Slides 19 - 24

AMA
AMERICAN MEDICAL ASSOCIATION

The American Medical Association recommends that outdoor lighting be 3000K or less for health reasons, such as sleep disruption (leads to obesity, depression, diabetes, and more) and disability glare.

The Town's new lighting ordinance now requires all new outdoor lighting be 3000K or less.

(Unanimously approved in June 2016 by representatives of entire AMA membership)

These entities have all recently adopted 3000K as their specification for new municipal lighting:

- City of Phoenix
- City of Tucson
- New York City
- State of Georgia
- Chicago
- Los Angeles
- Honolulu
- Monterey, CA

And of course,

- **Fountain Hills!**

Benefits of "International Dark Sky Community" Designation

- **RECOGNITION**
 - Significant achievement for our community
 - Publicity: statewide and potentially nationally
 - Recent major article in USA Today about Dark Sky Designation of a Colorado community
 - Would become first community in the west so close to a major metropolitan area to be designated
 - Would be 4th town or city in state, behind Flagstaff, Sedona, and Oak Creek
 - Payson has also announced plans to apply

Benefits...

- **PRESERVATION**
 - Sets us on path, through ordinance, education, and awareness, to preserve our beautiful night skies for present and future generations
 - Fountain Hills is the only community to be so shielded from lights of a large city by surrounding mountains, parks, reservations, and national forests

Benefits...

- **ATTRACTION**
 - Supports the effort to generate AstroTourism for Fountain Hills
 - The possible development of a public observatory, spearheaded by our local astronomy club has the potential to attract many visitors to our community
 - If developed, it would be only the ninth public observatory in the country solely dedicated to public outreach; hence, the economic benefits could be significant
 - Businesses, such as restaurants, could offer specials for visitors on the evenings that star parties are scheduled

Benefits...

- **CONSERVATION**
 - Excessive lighting wastes money and energy
 - Unshielded lighting directed upward is not helpful AND wasteful
 - The publicity, education, and awareness associated with Dark Sky Designation will engender support from our residents and businesses to adopt an "appropriate lighting" mindset.

POWERPOINT PRESENTATION

Slides 25 - 29

How Is Dark Sky Designation Achieved?

- A committee of volunteers coordinates the requirements needed to comply and fulfills all annual requirements of IDA (International Dark-Sky Association)
- The Fountain Hills Dark Sky Association has been established

The Major Requirements to Become Certified Are Simple:

- ✓ Lighting ordinance that complies with minimum IDA standards
- Ten projects that demonstrate compliance with new ordinance
- Broad community support

Your support for this goal is important.

WHY?

Besides Recognition, Preservation, Attraction, and Conservation...

So Your Children and Grandchildren Can Continue to Enjoy Our Night Sky With You!



Because every DAY needs a NIGHT

Thank You!