



Flagstaff Dark Skies Coalition  
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**In this issue:**

FDSC in 2023

Outdoor Lighting Code Update

Flagstaff Street Lights Progress

Board Of Directors Report

Fairbanks Dark Sky Preservation Update

Become a Member of FDSC

FDSC Membership Meetings

Deep Skies with Klaus Brasch

*No sight is more provocative of awe than is the night sky*

-- Llewellyn Powys

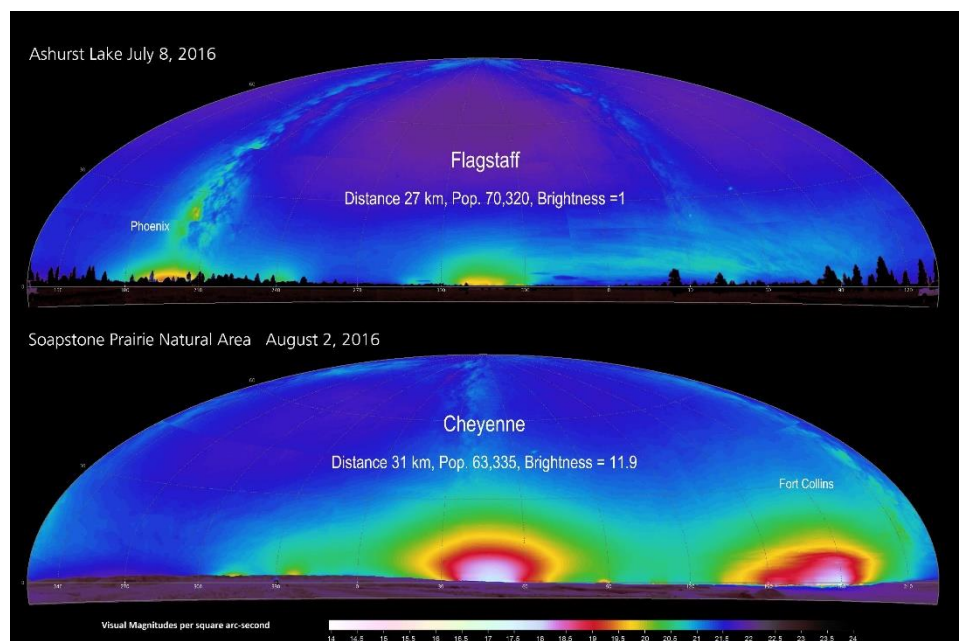


**FDSC in 2023**

2023 marked the Flagstaff Dark Skies Coalition’s second year as an independent nonprofit organization and FDSC built upon the foundation laid down in 2022. Another successful Star Party was held in September though the weather proved a bit challenging on two of the nights this year. Such is life for those who enjoy the many beauties in the night sky. The annual Flagstaff Star Party and Celebration of the Night are the keystone of our local public outreach, helping to nurture an awareness of and pride in Flagstaff’s successful protection of the star-filled night sky.

Fundraising will always be a core essential for FDSC and is built upon several pillars: Grants, sponsorships, donations and memberships. All of these elements combined to make 2023 a year in which the Coalition was able to shore up its balance sheet.

While Flagstaff already has demonstrated outstanding success in the control of light pollution, more can be done to unite the concerns and efforts of various parties (government, the business community, the educational and cultural communities, etc.), in and beyond Flagstaff, to address



*This is what success looks like – Flagstaff skyglow is less than 10% as bright as Cheyenne Wyoming (source: Pipkin et al. 2017)*

nighttime conservation. Our Coalition can serve to bring together diverse voices with common goals.

As a dynamic organization, a stable, sustainable FDSC has the potential to not only help Flagstaff and its surrounding area maintain its place as one of the best protected nocturnal environments in a metropolitan area on the planet, but to also serve as a model for other towns and cities to follow. In a world where light pollution and the resulting nighttime skyglow is increasing substantially each year, this work is critical. People need to be able to see the stars; ecosystems need less interference from stray light at night; energy waste from poorly implemented lighting needs to be curtailed. Flagstaff has a proven solution to protecting the night – more need to know about this and we hope you will help us with this project.

## **What's Happening with the Outdoor Lighting Code**

Coconino County Zoning Ordinance Section 4.3 Lighting Standards protects the County's dark skies, and the Ordinance in some form has been in place since the 1970s. A comprehensive amendment to this Section was approved by the County in December 2023 to bring the Code up to date with current technology. The updates assure that dark skies will remain a resource to be enjoyed by County residents and visitors for decades to come. The updates also implement Tiger standard to control light pollution and light trespass across property lines, maintain an environment that the County's astronomical observatories depend on, reduce energy consumption, minimize the potential disruption to nocturnal ecosystems, and to allow safe and efficient outdoor lighting. The County continues to take a leadership role in developing lighting codes that balance the need to preserve dark sky resources with the need for modern, efficient outdoor lighting practices. City and County Lighting Codes have been models worldwide.

In 2019, a Joint Land Use Study (JLUS) was completed and adopted by Coconino County. The JLUS is a cooperative land use planning effort between the County, City of Flagstaff, Naval Observatory Flagstaff Station and Arizona Army National Guard Camp Navajo. The JLUS goal is to ensure the lasting compatibility of military installations and their nearby communities. The two U.S. Naval Observatory sites in the Flagstaff region (the Naval Observatory Flagstaff Station west of Flagstaff, and the Navy Precision Optical Interferometer at Anderson Mesa) rely on dark sky conditions to conduct their missions. The JLUS contains a specific implementation strategy for the City and County to update their Zoning Ordinances to be consistent with one another, and pursuant to that strategy the County's recent updates include expansion of Lighting Zone 2 and removal of Lighting Zone 3, codification of a narrow-band amber LED standard in place of low-pressure sodium, and updated lumen and shielding requirements for both residential and commercial exterior lighting, among other changes. The JLUS also recommended creating a City/County shared staff position for a Dark Sky Lighting Specialist who is responsible for permitting, enforcement and outreach in both the City and unincorporated Coconino County. This staff position is now in place and manages outdoor lighting for both jurisdictions. A working group of local stakeholders and experts was formed in late 2019 to work on revisions to the Outdoor Lighting Standards as suggested by the JLUS and were instrumental in development of the Standards ultimately adopted by the County.

With these updates, the Coconino County and Flagstaff lighting codes continue to set a gold standard for effective night sky protection and light pollution control.

# Progress on Updating Flagstaff Street Lights

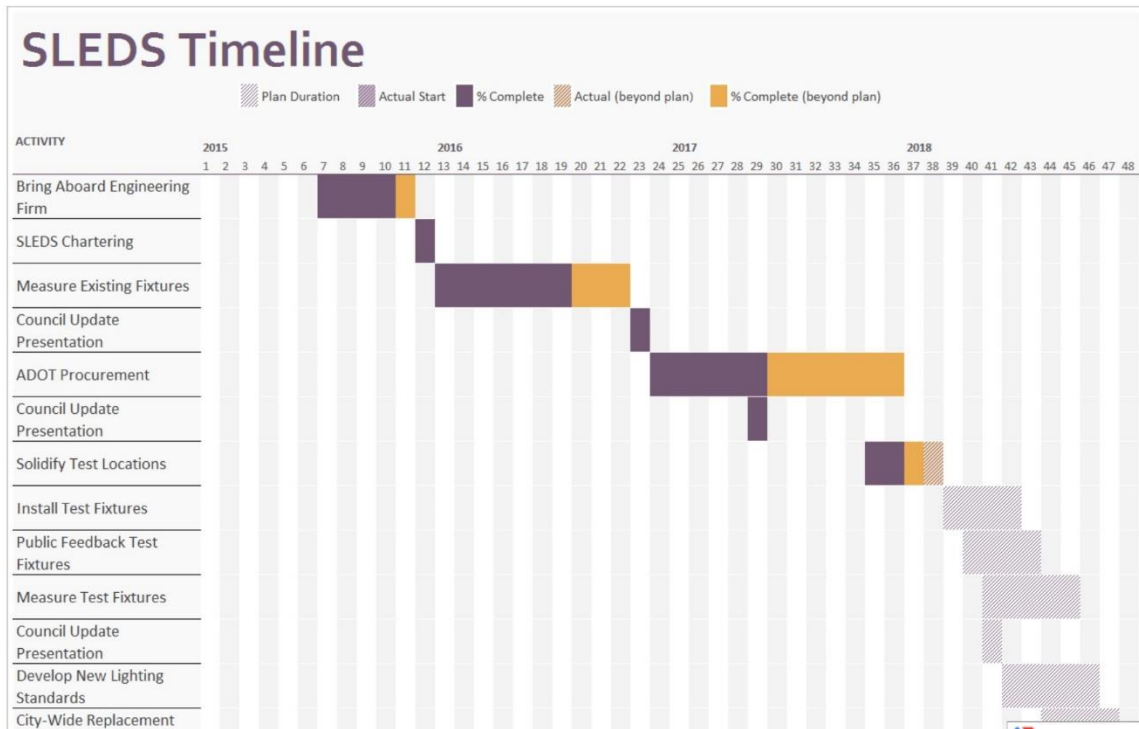
Jeff Baumann, Transportation Director, City of Flagstaff

The Street Lighting to Enhance Dark Skies (SLEDS) program is a multiyear project that teamed up resources from City of Flagstaff, Lowell Observatory, US Naval Observatory and the Flagstaff Dark Skies Coalition. The SLEDS team developed a number of engineering standards and specifications that set the path for Flagstaff's street lighting future. The City of Flagstaff City Council approved a series of City Engineering Standard updates that flowed out of the SLEDS program in 2020. The main theme of the update was to move the city from legacy Low Pressure Sodium fixtures to predominantly Narrow Band Amber LED (NBA). Narrow Band Amber LED (NBA) were selected as the only type of LED that maintains Flagstaff's high standard of night sky protection.

In 2018 the voters of Flagstaff approved Proposition 419, which provided continued funding for City transportation improvement projects and included \$8M for Dark Skies lighting replacements. In 2021 the city solicited bids for SLEDS compliant LED replacement fixtures and was successful in securing bids for each type of fixture that we maintain on City streets. For example, we use small approximately 2000 lumen NBA fixtures on local residential streets and larger 6000 lumen NBA fixtures on arterial streets.

The city has traditionally hired a maintenance provider to service our street lighting but has struggled in recent years to hire a responsive (local) provider. Knowing that we are looking at a multiyear upgrade program the decision was made to develop an in-house maintenance crew. This is a great approach, except for one issue,

as many other businesses and organizations have struggled to hire, so has the City. This has kept our upgrade program at a slower pace than we had hoped, but we have made progress replacing existing street lighting outages one by one as legacy fixtures expire. To date we have replaced approximately 500 residential street



lighting fixtures and almost 100 arterial / collector sized fixtures. The total City inventory is roughly 3500 fixtures, with about 2200 fixtures on local streets and 1300 on the collector and arterial system. As we have more success building the in-house crew and catching up on outages we will begin replacements on high priority corridors.

## **Board Of Directors Report**

The FDSC Board of Directors held its first 2024 meeting on January 18 at the Babbitt Ranches conference room where it reviewed the Coalition's activities in 2023, and plans for 2024.

There are openings available on the Board: the FDSC Bylaws call for a minimum of 7 Directors but there are only 6 Directors at this time. And there is a possibility that some Board members may retire in 2025. So, one of the principal goals of 2024 is find additional Board members who will enthusiastically work to further the mission of our Coalition.

FDSC is looking forward to a full slate of activities in 2024: First is the annual Star Party, scheduled for 26-28 September at Buffalo Park. Management structure and funding is in hand for this event. We are also considering another special fundraising event at the Nordic Village.

FDSC has received a \$10,000 "innovation and capacity building" grant from Creative Flagstaff. This grant will enable the FDSC to extend its outreach and engage new audiences. We will be initiating a new program – "Sky Watch" – to measure Flagstaff's night sky brightness using Sky Quality Meters. More than just producing measurements of our exceptional dark sky conditions, this program will foster engagement of new individuals and organizational partners.

In addition, this grant will support expansion of our outreach through events including night walks, and sky viewing events engaging other like-minded organizations such as the Coconino Astronomical Society and Audubon Society. We will also purchase and distribute dark sky compliant light fixtures and bulbs on a to individual who want, voluntary basis, to improve their outdoor lighting fixtures.

The Board recognizes that FDSC needs more volunteers to carry out the ambitious program in 2024 and beyond. FDSC needs more individuals to express their love for the beauty of the night sky and pride in what Flagstaff has accomplished by actively supporting the activities of the Coalition. Besides assisting with our established events such as the Flagstaff Star Party, we need volunteers to assist with membership outreach programs (for example this newsletter!), social media outreach, staffing tables at FDSC and other events around town, and other projects. If you are interested in helping out, please send a message to [info@flagstaffdarksdies.org](mailto:info@flagstaffdarksdies.org)!

## **Fairbanks Dark Sky Preservation Update**

Two years ago, leaders in Fairbanks, Alaska, contacted the Flagstaff Dark Skies Coalition seeking guidance regarding programs to reduce artificial light directed into their night skies and protect their view of the Aurora Borealis which is a major attraction for visitors to Fairbanks. FDSC Director Drew Carhart visited Fairbanks to discuss with them approaches to reduce unneeded outdoor lighting and improve efficiency of lighting to direct light only where it is needed.

Recently FDSC contacted Scott McCrae, President of Explore Fairbanks, who was one of the hosts for Drew two years ago, to see what has happened since Drew was there. Scott reported that "[W]e have not had an opportunity to pursue the initiative much further since Drew came here. It was not really a matter of pushback, rather, we on our end at the [Explore Fairbanks] level got sidelined with other political issues. It is something I certainly would like to revisit in as we do have some new local elected officials who would be more interested in this than others have been in the past."

FDSC looks forward to hearing from Scott and others in Fairbanks after the elections this year and that the new administration is preparing plans to move forward on installing outdoor lighting that preserves views of auroras. And of glorious stars when auroras are hiding.

## Become a Member of the Coalition

Your membership provides critical support for the mission of the Flagstaff Dark Skies Coalition: *To celebrate, promote and protect the glorious dark skies of Flagstaff and Northern Arizona, and by example, set the gold standard in night sky protection.* Your dues enable us to support the protection of our local night skies, and spread the message to others that significant, even dramatic, improvements are possible by following our example.

Our mission is to celebrate the wonders of the nocturnal ecosystem that all humanity inhabits, to promote awareness and participation, and to protect this natural resource for future generations as our common inheritance. We work to enhance public awareness about the night and advocate for public policies that reduce wasteful lighting. By celebrating the values found in natural darkness, we work to continue Flagstaff's 60+ years of worldwide leadership in night sky protection. <https://flagstaffdarksbies.org/become-a-member-of-the-coalition/>

## FDSC Membership Meetings

The monthly FDSC Membership Meetings are scheduled on the third Wednesday of each month via a Zoom link. Reminders are sent out via email a few days prior to each meeting. The agenda is typically in two parts: First are brief reports about business topics relating to the Coalition. This part is followed by a talk by experts on topics relating to the night and dark sky preservation. These talks are recorded and posted on the FDSC Youtube site – we currently have eleven talks that are available. Please check these out at <http://www.youtube.com/@FDSC> to learn more about topics ranging from impacts of satellite constellations on astronomy to the activities of the Fountain Hills dark sky preservation projects.

We are always looking for speakers so if you would like to propose someone or give a talk yourself, please contact Don Davis, Chair, Membership Committee at: [drd002@gmail.com](mailto:drd002@gmail.com).

## Deep Skies with Klaus Brasch

Also called Messier 31 after its discoverer, and perennial favorite near neighbor, this large spiral galaxy is part of the Local Group and lies a 'mere' 2.5 million light years from us. Like our own Milky Way, the Andromeda Galaxy is circled by two smaller satellite galaxies. Visible to the naked eye on dark transparent nights and a pretty view through small telescopes, it is even more impressive photographically. I imaged it last October with a fine 130-mm aperture refractor and a new spectrally modified Canon Re camera through narrow band pass filters that enhance the dark dust lanes in the spiral arms around the central core of the galaxy and bluish colored peripheral stars.

