



TEAM FLAGSTAFF



SLEDS Project Update

- Introductions
- Background / History
- Completed Tasks
- Final Step
- SLEDS Team - Discussion





Background / History

- Limited Field Testing – 89 North, West Street... - 2013
- Dark Skies Conference – ‘Blinded by the Light’– August 2014
- SLEDS
 - IGA with ADOT - June 2015
 - FMPO – Surface Transportation Program
 - FY 16 - \$100K - Consultant Contract – October 2015
 - FY 16 - \$200K – Test Fixtures – June 2017
 - FY 17 - \$41k – Consultant Contract Change Order – April 2017





TEAM FLAGSTAFF



Highlights of RFP – Challenges and Opportunities

“We seek to identify how the City can affect a solution to this challenge. At the same time, we identify it as an opportunity for Flagstaff to demonstrate to other municipalities an innovative lighting solution for dark-sky preservation with LED technology.

This entails:

- A cost effective solution to long-term street lighting needs that achieves municipal objectives for safety and cost effectiveness and astronomical objectives for maintaining dark skies.
- Innovation that advances the industry or best practices for technology transfer that advances the purpose of preserving dark skies.”





TEAM FLAGSTAFF



Highlights of RFP – Project Direction

- Maintain or approximate current lighting levels
- Do not adversely impact the City's dark sky natural resource or the missions of the Lowell Observatory and the U.S. Naval Observatory
- Utilize existing light pole infrastructure

Measures of Effectiveness may include:

- Light Uniformity
- Brightness and Spectrum Analysis from several perspectives
- Color rendition
- Wind loading (Effective Projected Area)
- Public commentary on lighting levels and color rendition
- Life cycle costs including, but not limited to, initial capital expense, energy use, and maintenance





TEAM FLAGSTAFF



Completed Tasks

- Assessment of viability of LPS
- Structural Analysis of Mast Arms
- Installed and Evaluated Test Fixtures
- Public Survey and Lighting Tours
- Consultant Report
- Proposed Engineering Standards





TEAM FLAGSTAFF



LPS – Low Pressure Sodium





TEAM FLAGSTAFF



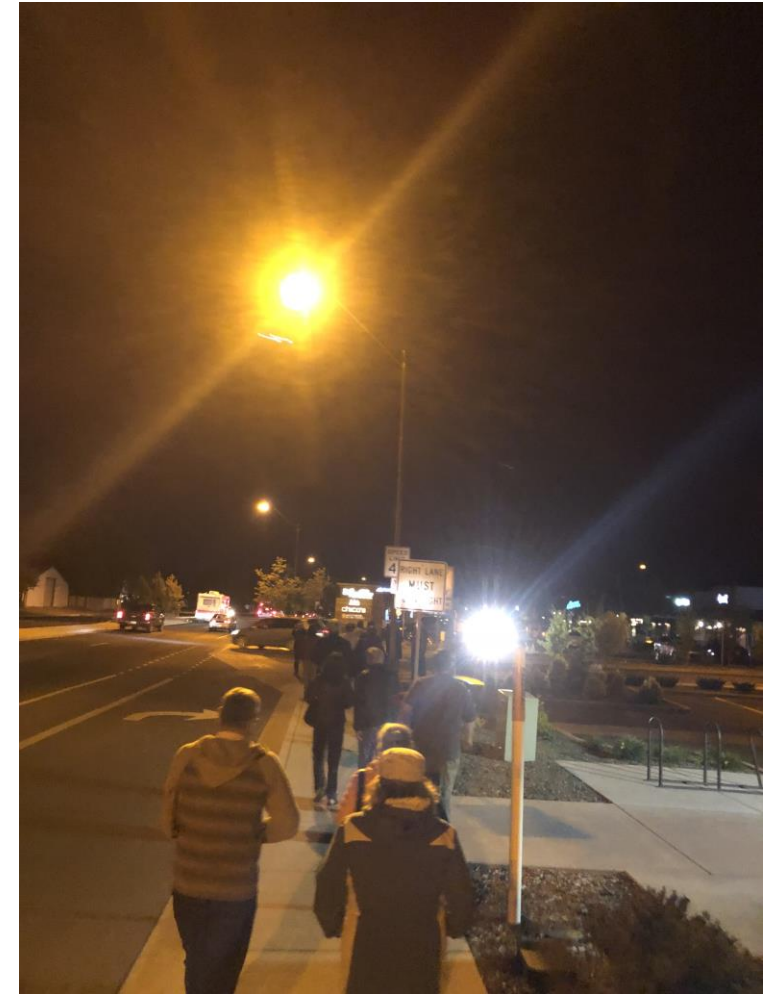
Lighting Tour



STREET LIGHTING

The City of Flagstaff is conducting streetlight tests in your neighborhood.

For more information on dark skies and streetlights, please visit:
www.flagstaff.az.gov/3818/Street-Lighting-Dark-Skies





TEAM FLAGSTAFF



Retrofit and New Construction Engineering Standards

- Retrofit Strategy
 - Lighting Fixture changeout (3500 fixtures)
 - Mixture of Narrow Band Amber (NBA) and Phosphor Converted Amber (PCA) for Major Streets
 - Narrow Band Amber for Collector and Local streets
 - Proposition 419 - \$8,000,000 beginning CY 2020 (\$1.33M for 6 years)
- New Construction
 - New underground, poles and fixtures
 - Narrow Band Amber





TEAM FLAGSTAFF



Final Step

- Develop Engineering Standards Ordinance for City Council consideration – Fall 2019





TEAM FLAGSTAFF



SLEDS Team

- Jeff Hall, Lowell Observatory
- Paul Shankland, US Naval Observatory
- Fred Vrba, US Naval Observatory
- Chris Luginbuhl, Dark Skies Coalition
- Chris Monrad, Monrad Engineering
- Jim Benya, Benya Burnette Consultancy

Discussion

