

Grand Canyon 2018 IDA Report

National Park Service
U.S. Department of the
Interior

Grand Canyon National Park



PARK PROVISIONAL STATUS

In June 2016, Grand Canyon National Park (GRCA) was named a provisional International Dark-Sky Park (IDP). GRCA completed a lighting inventory and populated a database of the approximately 5000 outdoor light fixtures that reside in the park. Currently, of those 5000 light fixtures, 40% are IDA compliant. The park is continuing work to plan retrofitting efforts and complete the actual retrofits. The park has until 2019 to retrofit two-thirds of its lights. Once the retrofits are completed and GRCA obtains full compliance, GRCA will become the most light-heavy park yet to achieve IDA compliance and full status as an International Dark Sky Park.

RETROFITTING PROGRESS

In 2018, between the NPS and concessionaires, 344 exterior light fixtures at and around the South Rim Village have been retrofitted and made dark sky compliant. Phases 1 and 2, which were described in the previous report, have been implemented. Specifically:

- Phase 1 resulted in retrofitting of 198 exterior light fixtures. This phase includes buildings and pathways from Verkamp's Visitor Center on the east to the Bright Angel Trailhead on the west. This high profile area encompasses the Hopi House, El Tovar Hotel, Bright Angel Lodge, Lookout Studio and Kolb Studio. Many of these fixtures are considered historic, meaning only re-lamping with dark sky compliant LED bulbs could occur in 92 of the 198 fixtures. The most dramatic changes were made along the Rim Trail, where previous unshielded fixtures were replaced with pole mounted barn light style fixtures. This phase was particularly complex due to historical significance of these buildings, which are within a National Historic Landmark District.

El Tovar North Porch before retrofit



El Tovar North Porch after Retrofit



Arizona Room before retrofit



Arizona Room after retrofit



- *Phase 2 consisted of exterior fixtures on 45 residential homes along Havasupai Street. A total of 146 fixtures were retrofitted, most of them with a fully shielded wall-mounted cylinder fixture. This effort is representative of future residential retrofitting phases where the majority of fixtures will fall under a small set of pre-selected fixture types.*

Retrofitting progress is tracked and viewed by the GRCA team using a new online mapping application. The tool provides a spatial representation of areas yet to be retrofitted. NEPA compliance was also completed in 2018 for the entire South Rim. Through that process, buildings and districts were separated by era of construction: 1955 and earlier; 1956-1972; and 1973 to present day. Appropriate replacement fixture types were grouped by era, analyzed, and cleared for use in future phases for the South Rim.

NEXT PHASES

Seven major phases are planned to be retrofitted from October 2018 through March 2019. The phases are named by the appropriate street name or place name. Four of these phases are residential areas, which are generally easier to plan and retrofit due to consistent fixtures and fixture placement. The other two phases are mixed-use buildings and will require more detailed planning. Retrofit prescriptions have been completed for each of the following areas.

Apache Street Phase is a residential area composed of historic homes with 122 fixtures to be retrofitted. Retrofitting in this area will consist largely of retrofits with barn light style replacement fixtures.

Coconino Apartments Phase is a post 1973 residential area composed of a series of apartment buildings with 253 fixtures to be retrofitted. Existing fixtures will be replaced primarily with fully shielded wall-mounted cylindrical fixtures.

Historic District Phase is a mixed-use area with 130 fixtures. There are large industrial buildings as well as a few residential. This phase requires more custom prescriptions due to the variety of building types.

Maswik Phase is a mixed use area composed of several hotel buildings and some historic residential cabins totaling 367 fixtures to be retrofitted. Retrofits include re-lamping of fixtures at the historic cabins and replacement of the remaining 335, primarily with fully shielded wall-mounted cylindrical fixtures.

Mohave Phase is composed of several multi-family residential buildings with 179 fixtures. These newer buildings have mostly similar fixtures resulting in a simple switch-out of old with new, compliant fixtures.

Village Utility Phase is a mixed use area composed of several industrial buildings and single-family residential buildings totaling 198 fixtures to be retrofitted. This phase represents two time periods and prescriptions have been completed for a variety of replacement fixtures.

School Phase is a mixed use area composed of several school buildings and some single-family residential buildings totaling 140 fixtures. Planning for this phase will occur in fall 2018.

OUTREACH

Grand Canyon hosts one of the largest annual astronomical festivals in the National Park Service (NPS), the Grand Canyon Star Party, which just wrapped up its 28th year. The Star Party implemented novel ideas to extend our night sky preservation message through various methods, such as: the formation of an astronomy-themed playlist on our Science on a Sphere media platform, a night-sky photography workshop, outreach booths from Lowell Observatory, a set of dynamic special guest speakers, a video-scope section in our telescope lots, and many others.

We also premiered an Audience Centered Experience “Pop-Up” which is a brand new method of interpretation on the forefront of experimentation in the NPS, and one of the first of its kind to experiment within the field of night-sky-preservation. This included placing a table, a chair, and a vintage cassette recorder out in the telescope lot under the starry sky, asking a question about night skies to visitors, and inviting them to anonymously record their answers.

Grand Canyon staff prepared and submitted an abstract to present Grand Canyon’s story of becoming an IDP at the upcoming IDA Meeting and Conference; their abstract was accepted.

SIGN

Park staff are working with a graphic designer / fabricator to produce a sign to recognize Grand Canyon as an International Dark Sky Park. The sign will be placed near the main entrance to the Visitor Center, which is also the location where the annual Star Parties are held. We anticipate having the sign implemented by the end of the calendar year.

FUNDING

GRCA’s level of development and vast number of light fixtures poses unique challenges in not just the complexity of planning for, tracking, and executing retrofits, but also in figuring out ways to pay for retrofits. This project would not be possible without the generous support of the Grand Canyon Association (GCA) and the individual donors for providing the majority of the funding for the program. As part of GCA’s Grand Vision Campaign which is focused on the Grand Canyon 2019 Centennial, GCA is hoping to raise up to \$1 million for the program. To date, they’ve raised over \$300,000 and have a pending donor commitment that will double available funds. In addition, has applied for and received approval for \$100,000 in FY 2019 through the Applied Helium Act to support retrofit costs and implementation.