



City of
Casa Grande

LED Lighting Project

under State of Arizona Contract
ADSP014-0003466

April 18, 2016

AMERESCO
Green • Clean • Sustainable 



Project Goals

- Energy efficiency
 - Save energy and dollars through correct sizing and lighting levels
 - Control lighting where possible to facilitate City Functions
- Reliability/maintainability
 - 100,000 hour rated lighting fixtures with 10 year manufacturers warranty
 - Size fixtures for lumen requirements over long term
- “Provide the right amount of light”
 - Meet applicable codes
 - Account for safety
 - Minimize light pollution
 - Provide future dimming capability to improve efficiency when utility rates support value

Benefits of LED Street Lighting

- Better Color Rendering and Visual Acuity
 - On a scale of 1 to 100 with 100 being full sunlight, the current light has a Color Rendering Index (CRI) of approximately 25
 - The LED Lighting has a CRI of 70



Dark Sky Compliance and Light Pollution

- The International Dark Sky Association is working to protect the environment and the astronomical community by recommending that warmer color temperatures of lighting (3000k or less) be used as compared to higher color temperatures (4000 to 5000k)
- The project will be using 3000k fixtures to minimize light pollution per IDA recommendations

Adaptive Control System

- All fixtures provided under the project have the future capability to interface to a city-wide wireless control system
- Under the initial project, the lighting along the Electric Light Parade Route will have these controls installed
- The control system allows for the lighting to be dimmed or turned on/off
- At this point, the APS Rates do not provide a benefit for energy reduction so we have not included the controls on all fixtures but they can be simply plugged into the new fixtures in place of the photocell

Audit Findings and Project Scope

- The City has over 6000 lights within its limits
- Of these, there are fixtures owned by APS, SCID (East of I-10) and Electrical District #2 (5 Neighborhoods and some Roadway Lighting) that are not included in the project
- 3,867 Roadway and Intersection fixtures that are owned by the City will be upgraded
- Adaptive Controls will be installed on the 70 fixtures that cover the Parade Route

Roadway Lighting Designs

- 12 roadway configurations that account for over 97% of city roadway lighting
- Performed analysis of each configuration and consolidated similar types to minimize component requirements for maintenance while maintaining best cost/performance ratios

Energy and Light Pollution Reductions

- The Proposed Project reduces the Street Lighting Energy Consumption by 68%
- The Billed Utility Costs are reduced by 39%. This is due to fixed costs that are charged by APS that cannot be avoided.
- The Amount of Lumens removed from the environment is over 65%. This is possible because the light quality from the new fixtures is over 250% better than the current fixtures!

Proposed Project Financials

- **Roadway Lighting Project with Parade Route Controls**
 - **Total Financed Project Cost** **\$ 1,696,288**
 - **1st Year Maintenance & Energy Savings** **\$ 179,047**
 - **Estimated Utility Rebate** **\$ 215,726**
 - **Finance Term** **15 Years**
 - **Estimated Finance Interest Rate** **3.0%**
 - **Annual Benefit (Energy & Maintenance)** **\$ 71,189**
 - **15 Year Benefit (Energy & Maintenance)** **\$ 1,411,297**

Thank You

