

LED Streetlight Conversion

Citywide Conversion From High Pressure Sodium to LED
Streetlight Fixtures.

November 20, 2017

*Presenter: Drew Bryck, Environmental &
Sustainability Program Manager*



Purpose

- Provide results of Phase I streetlight audit approved by Council on June 5, 2017.
- Approve Energy Services Agreement (performance contract) with Ameresco.
- Approve Tax-Exempt Lease Purchase with Banc of America.

Background

- Incomplete data on city owned streetlights.
- Streetlight poles had reached end of life and needed replacement.
- HPS fixtures require more frequent maintenance.
- Large energy bills from both utilities.
- No LED standard in place for new development.
- Conversion is key piece of Municipal Sustainability Plan

Background

- Research began in early 2016 around the same time as Phoenix.
- Ameresco and Holophane subsequently selected by Phoenix.
- Cooperative purchasing would result in 38% material savings over original estimates.
- Council approved Phase I audit agreement on June 5, 2017.



Phase I – GIS Audit and Design

- The audit identified: fixture type, wattage, pole configuration, utility provider, etc.
- Utilizing this data, the appropriate LED retrofit fixture to correctly light each type of roadway was determined through photometric modeling of typical configurations.
- Once the fixture selections were complete, the guaranteed energy savings and final project costs were determined and provided in order to secure financing through a Tax Exempt Lease Purchase (TELP).
- Audit completed in October 2017.
- Financing terms completed in November 2017.



Phase I - Results

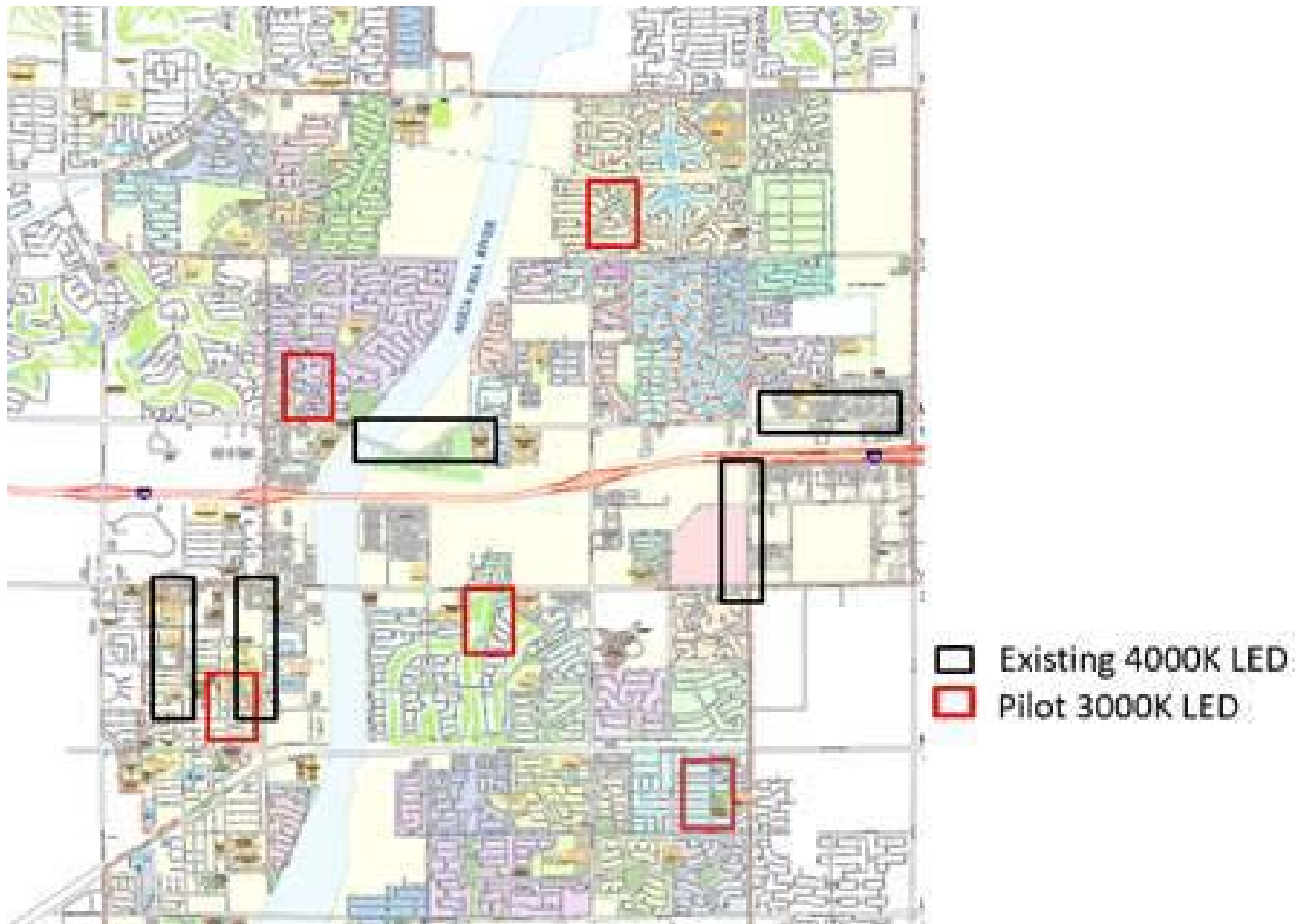
- 8,002 high pressure sodium lights.
 - Found 38 lights not included in original data.
- 394 decorative and specialty fixtures.
- 261 existing LED cobrahead fixtures.
- Need to replace 181 streetlight poles.
- Need to relocate 30 traffic cameras.
- Redesigned photometric standards to latest RP-8-14 guidance for LED .
(will only accept LED moving forward)



Public Outreach

- A citywide media release occurred on August 16, 2017, informing residents of the proposed street light change.
- The West Valley View published an article on the proposed change in their August 23, 2017 edition.
- Five pilot areas were installed across the city so residents would have the ability to view the new lights in person. The pilot areas were installed in mid-September, 2017.
- 331 letters were directly mailed to residents who were identified as living in and around one of the five pilot areas.
- A survey was created on the A Voice platform in order to garner feedback from residents in an easy fashion.

Pilot Areas



Public Outreach Cont'd

- The project was highlighted in the last edition of the RAVE.
- Two open houses were held at City Hall on September 18 and October 2, 2017
- Staff attended HOA meetings:
 - Garden Lakes on September 21
 - Crystal Gardens on September 28
 - Rancho Santa Fe on October 19, 2017

Outreach Results

- In total staff received feedback from 9 residents.
 - 8 comments were positive, primarily in response to an increase in light uniformity.
 - 1 resident did not like the view of the light across the street from their backyard.

Financial Summary

- Project cost \$ 3,245,882
- APS utility rebate (potential) \$ 45,956
- Energy cost savings (1st year) \$ 200,574
- Annual Estimated Operational Savings \$ 101,450
- Net Savings (estimated 20 yr.) \$ 2,143,615
- kWh savings per Year 3,069,541 kWh



Estimated Savings (20 year)

Year	Estimated Annual Energy Cost Savings
1	\$200,574
2	\$206,591
3	\$212,789
4	\$219,173
5	\$225,748
6	\$232,520
7	\$239,496
8	\$246,681
9	\$254,081
10	\$261,704
11	\$269,555
12	\$277,641
13	\$285,971
14	\$294,550
15	\$303,386
16	\$312,488
17	\$321,862
18	\$331,518
19	\$341,464
20	\$351,708
Total	\$5,389,497

Environmental Benefits



annual greenhouse gas emissions from removing **489** passenger cars from the road,

or



CO₂ emissions from **257,050** gallons of gasoline consumed annually,

or



CO₂ emissions from the energy use of **247** typical American homes for 1 year,

or



59,203 tree seedlings grown for 10 years,

or



greenhouse gas emissions avoided by not landfilling **796** tons of waste.

Phase II – Energy Services Agreement

- This phase includes material procurement, installation of the project scope of work, confirmation of performance and confirmation of energy savings.



Phase II – Energy Services Agreement

- Install 8,002 Autobahn ATBS series LED streetlights.
 - 5 year parts warranty.
 - 1 year labor warranty.
- Relocate 30 traffic cameras.
- Replace 181 streetlight poles.
- Guarantee energy savings for 10 years.

Tax-Exempt Lease Purchase



Aspiring. Achieving. Accelerating.

Project Financing

- Proposed project funding:
 - Avondale capital contribution: \$1,102,500
 - Tax-exempt lease/purchase (TELP) financing: 2,143,382
 - \$3,245,882

- TELP Terms
 - Banc of America Public Capital Corp.
 - 10.5 years (includes 6 mos. construction period).
 - Interest rate of 2.41%; locked through November 30th.
 - Financing secured by LED light fixtures.
 - Two percent (2%) prepayment premium.

- Capital contribution funded by General Fund transfers (Citywide Streetlight Replacement Program: 304-1164-00-8420)

TELP Payment Schedule

RENTAL PAYMENT DATE	RENTAL PAYMENT AMOUNT	INTEREST PORTION	PRINCIPAL PORTION	OUTSTANDING BALANCE	PREPAYMENT PRICE (INCLUDING PREPAYMENT PREMIUM, IF APPLICABLE)
12/1/18	\$109,503.96	\$45,070.04	\$64,433.92	\$1,800,512.08	\$1,836,522.32
6/1/19	\$109,503.96	\$21,696.17	\$87,807.79	\$1,712,704.29	\$1,746,958.38
12/1/19	\$94,838.46	\$20,638.09	\$74,200.37	\$1,638,503.92	\$1,671,274.00
6/1/20	\$94,838.46	\$19,743.97	\$75,094.49	\$1,563,409.43	\$1,594,677.62
12/1/20	\$97,652.96	\$18,839.08	\$78,813.88	\$1,484,595.55	\$1,514,287.46
6/1/21	\$97,652.96	\$17,889.38	\$79,763.58	\$1,404,831.97	\$1,432,928.61
12/1/21	\$100,551.42	\$16,928.22	\$83,623.20	\$1,321,208.77	\$1,347,632.95
6/1/22	\$100,551.42	\$15,920.57	\$84,630.85	\$1,236,577.92	\$1,261,309.48
12/1/22	\$103,535.02	\$14,900.76	\$88,634.26	\$1,147,943.66	\$1,170,902.53
6/1/23	\$103,535.02	\$13,832.72	\$89,702.30	\$1,058,241.36	\$1,079,406.19
12/1/23	\$106,607.05	\$12,751.81	\$93,855.24	\$964,386.12	\$983,673.84
6/1/24	\$106,607.05	\$11,620.85	\$94,986.20	\$869,399.92	\$886,787.92
12/1/24	\$109,769.77	\$10,476.27	\$99,293.50	\$770,106.42	\$785,508.55
6/1/25	\$109,769.77	\$9,279.78	\$100,489.99	\$669,616.43	\$683,008.76
12/1/25	\$113,025.96	\$8,068.88	\$104,957.08	\$564,659.35	\$575,952.54
6/1/26	\$113,025.96	\$6,804.14	\$106,221.82	\$458,437.53	\$467,606.28
12/1/26	\$116,377.88	\$5,524.17	\$110,853.71	\$347,583.82	\$354,535.50
6/1/27	\$116,377.88	\$4,188.38	\$112,189.50	\$235,394.32	\$240,102.21
12/1/27	\$119,828.78	\$2,836.50	\$116,992.28	\$118,402.04	\$120,770.08
6/1/28	\$119,828.78	\$1,426.74	\$118,402.04	(\$0.00)	\$(0.00)
TOTAL	<u>\$2,143,382.52</u>	<u>\$278,436.52</u>	<u>\$1,864,946.00</u>		

Schedule

- GIS Audit and Photometric Design Complete
- Finance RFP and Selection (concurrent) Complete
- Review and Approval by City Complete
- Approve ESA and TELP November 20, 2017
- Completion of Project June, 2018
- Confirmation of Performance July, 2018
- Guarantee of Energy Savings Annually for 10 years

Resolution - TELP

- Authorizes the execution and delivery of the TELP, not to exceed \$1.9 million, to acquire LED light fixtures (Equipment).
- Delegates authority to the City Manager and Assistant City Manager to determine the final TELP terms.
- Authorizes and ratifies all actions taken by the Mayor, City Manager, Chief Financial Officer, other City officers, and agents of the City which are necessary to further this Resolution and consummate all transactions contemplated by this Resolution.
- Declares an emergency in order to have the Resolution effective immediately.

Recommendation – Two Motions

- ESA: Staff recommends that the City Council approve an Energy Savings Agreement with Ameresco for the conversion of all City streetlights to LED technology, and authorize the Mayor, or City Manager and City Clerk to execute the necessary documents.
- TELP: Staff recommends that City Council adopt the Resolution authorizing the execution and delivery of a Tax-Exempt Equipment Lease/Purchase Agreement to acquire LED light fixtures (Equipment), authorizing and ratifying the taking of all actions necessary to further this Resolution and consummate all transactions contemplated by this Resolution, and declaring an emergency.