



RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: JUNE 26, 2017

ITEM NO: 7

SUBJECT: CITY-WIDE STREET LIGHT LED CONVERSION PROGRAM STATUS REPORT FOR APRIL 2017

ISSUE:

Receive a status report for the City-wide Street Light LED Conversion Program.

RECOMMENDATION:

That the Board of Public Utilities receive and file the status report for the City-wide Street Light LED Conversion Program.

BACKGROUND:

On July 25, 2016, the Riverside Public Utilities Board, with six of eight members present, unanimously approved to forward the recommendation to the City Council to approve Work Order 1611216 for \$1,150,000; a Professional Services Agreement with Design Services, Inc. dba Benya Burnett Consultancy for \$855,290 for design services for a streetlight LED conversion project; the Permissible Use Of Greenhouse Gas Allowance Value And Proceeds Policy; authorize the City Manager, or his designee, to make changes to the policy in accordance with the goals of Assembly Bill 32 for the benefit of Riverside's retail electric ratepayers; and authorize the City Manager, or his designee, to attest and file the annual Electric Distribution Utility Use of Allocated Allowance Form to the California Air Resources Board.

The Utility Services/Land Use/Energy Development Committee met on August 18, 2016, with Chair Mac Arthur, Vice Chair Soubirous and Member Gardner, to consider forwarding a recommendation to City Council to approve Work Order 1611216 for \$1,150,000, a Professional Services Agreement with Design Services, Inc. dba Benya Burnett Consultancy; the Permissible Use Of Greenhouse Gas Allowance Value And Proceeds Policy; to authorize the City Manager, or his designee, to make changes to the policy in accordance with the goals of Assembly Bill 32 for the benefit of Riverside's retail electric ratepayers; and authorize the City Manager, or his designee, to attest and file the annual Electric Distribution Utility Use of Allocated Allowance Form to the California Air Resources Board. After discussion, the Committee unanimously voted to forward a recommendation to City Council for approval of all items.

The City Council met on September 6, 2016 to consider a recommendation to approve Work Order 1611216 for \$1,150,000, a Professional Services Agreement with Design Services, Inc. dba Benya Burnett Consultancy; the Permissible Use Of Greenhouse Gas Allowance Value And Proceeds Policy; to authorize the City Manager, or his designee, to make changes to the policy in accordance with the goals of Assembly Bill 32 for the benefit of Riverside's retail electric ratepayers; and authorize the City Manager, or his designee, to attest and file the annual Electric Distribution Utility Use of Allocated

Allowance Form to the California Air Resources Board. After discussion, the City Council unanimously voted to approve of all items.

The City Manager executed the necessary Agreement with Design Services, Inc. dba Benya Burnett Consultancy on September 9, 2016. Notice to Proceed was issued on October 3, 2016. The project kick off meeting was held on November 15, 2016.

DISCUSSION:

LED Street Lighting Conversion:

Riverside Public Utilities (RPU) oversees all aspects of the street lighting system for the City of Riverside. The system includes more than 6,500 mast arm lights mounted on wood and steel utility poles and over 24,000 ornamental streetlight standards. The Public Works Department operates intersection safety lights at 368 intersections throughout the City that include over 1,500 luminaires very similar to street lighting. This project will convert all public streetlights from high pressure sodium (HPS) streetlights (7 year service life) to more efficient light emitting diode (LED) streetlights (20 year service life). As technology has improved efficiency and light quality of streetlights, RPU has worked to determine solutions for a city-wide streetlight change that will provide community-wide benefit.

This multi-phase implementation of a city-wide streetlight conversion program to LED streetlights will honor the historic integrity of neighborhood streetlight aesthetics while enhancing quality of life in Riverside. New lights will provide better light quality/safety, energy efficiency/cost savings, avoid greenhouse gas emissions, and lay the infrastructure groundwork for future potential Smart City capabilities. Innovative use of project funding will capitalize on Riverside's progress for creating a sustainable community and will use a combination of Green House Gas (GHG) allowance proceeds and Public Benefit monies designated to support energy efficiency projects.

Smart City is a conceptual urban development vision that is gaining support around the world as technology advances. Smart City applications integrate multiple information and communication technology solutions to better manage a city's assets and services. Future Smart City initiatives hold the promise of using data sensing and control options to reduce energy consumption, improve transportation and parking, increase public safety, and employ timely relevant data to improve city services. Streetlights can be used as enabling infrastructure for Smart City applications. The LED lights selected for this project will be capable of accepting and supporting the sensors and communication modules necessary for future Smart City applications, which will be evaluated as part of the Phase 1 design scope of work.

On June 20, 2014, the Board of Public Utilities (Board) approved an LED Streetlight Pilot Project to support the City's sustainability efforts and to test light quality and efficiency in major shopping districts. This project reduced energy consumption equivalent to 51 average Riverside homes by replacing HPS luminaires that have a yellow hue with LED luminaires which have whiter light quality, increasing visibility (see below). In contrast to existing lights, LEDs last longer thereby reducing waste, contain no toxic materials, and are largely recyclable.

The pilot project replaced HPS luminaires with LED luminaires at 574 streetlights and the 208 intersection safety lights in those areas. This was direct replacement of luminaires only. The following five areas were selected for their high visibility and traffic exposure:

1. Market Street, from Fourteenth Street to 60 Freeway
2. University Avenue, from Market Street to 215/60 Freeway
3. Riverside Plaza, between Magnolia Avenue and 91 Freeway
4. Auto Center Drive, between Adams Street, Indiana Avenue and Jefferson Street
5. Galleria at Tyler, between Polk Street, Magnolia Avenue and Hughes Alley

Light Quality Example:

Old HPS Lighting (from surveillance camera) New LED Lighting (from surveillance camera)



This pilot project provided energy savings and corresponding reductions in GHG. Annually, the energy savings are 375,360 kilowatt hours (kWh) (equivalent 51 average Riverside homes). The annual emissions reduction due to energy savings is equivalent to 128 metric tons of Carbon Dioxide(CO₂) (equivalent to taking 27 passenger cars off the road). The annual value of the reduced energy consumption is approximately \$34,000. Additional LED benefits included improved visibility, color rendition, reduced maintenance, and improved effectiveness of Police Department video surveillance cameras as shown in the pictures above.

Based on the results of the LED Streetlight Pilot Project, staff worked with other City Departments to capture impacts and benefits of this project, and together they developed a multi-phased citywide Streetlight LED Conversion Program to convert all remaining streetlights and intersection safety lights to LED. Staff issued Request for Proposals (RFP) #1569 for project design. The scope of work includes updating current standards, preparing plans and specifications to bid the construction phases of the project, recommendations for Riverside Municipal Code (RMC) amendments, an analysis of the impact to potential rate changes for streetlights, and education/scoping workshops to evaluate future Smart City projects that could leverage the LED streetlight infrastructure.

Title 20 of the Municipal Code requires special review of the planned improvements for each of the 25 Historic Districts to assure aesthetics are appropriate and approved within those guidelines. LED conversions in these areas are usually done by internal conversion of the existing streetlight so to retain appearance and historical character. When this is not possible due to deteriorated condition or prior modifications, a replica LED luminaire will replace the old one. This will be evaluated and approved with concurrence of the Community Development Director and Community Development staff.

Project cost and benefit estimates for future phases will be studied and validated as part of the design process as options are evaluated and selected. Material procurement and bidding for construction contracts will proceed after the Phase 1 design work is completed. Future phases will be submitted to the Board of Public Utilities for work order approval and contract award as bid results are available.

April 2017 Status Report:

Consultant Design by Design Services Inc. DBA Benya Burnett Consultancy – 15% Complete

- Design Guide development – initial draft submitted for review
- Street Light Luminaire Materials Specifications – Initial draft submitted for review
- Dark Skies Ordinance – initial draft submitted for review
- Intersection Safety Light Design – Fourteen (14) locations were selected for pilot LED conversions projects.

Project Schedule:

	Calendar Year	2016					2017					2018					2019							
	Month	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Phase 1 - Design																								
Phase 2 Conversion - Arterial Streets																								
Phase 3 Conversion - Neighborhoods																								
Phase 4 Conversion - Historical Districts 1																								
Phase 5 Conversion - Historical Districts 2																								

Project Phases:

Phase 1: Design Services (included in this report). In progress.

Phase 2 (8000 lights): Full scale conversion on mast arm and conventional poles along arterial and collector streets, including conversion of intersection safety lights (with Public Works). Design is not yet started. Bid Award is tentatively scheduled for consideration by the Board of Public Utilities on October 23, 2017

Phase 3 (12,000 lights): Full scale conversion of remaining streetlights and intersection lights not located in Historic Districts or Neighborhood Conservation Areas. Design is not yet started. Bid Award is tentatively scheduled for consideration by the Board of Public Utilities on January 8, 2018.

Phase 4 (4,000 lights): Multiple projects addressing conversions in Historic Districts or Neighborhood Conservation Areas – with public meeting components to receive Certificates of Appropriateness. Bid Award is tentatively scheduled for consideration by the Board of Public Utilities on February 26, 2018.

Phase 5 (6,000 lights): Conversion in the final Historic Districts or Neighborhood Conservation Areas. Bid Award is tentatively scheduled for consideration by the Board of Public Utilities on April 23, 2018.

Street Light LED Conversion Pilot Projects:

Location	Status
Brockton Avenue and Park View Terrace	In Service 10/4/2016
Larchwood Place from Riverside Avenue to Ramona Drive	In Service 11/8/2016
Pennsylvania Avenue from High Street to Sedgewick Avenue	In Service 3/7/2017
Tibbetts Street from Magnolia Avenue to Brockton Avenue	In Service 3/29/2017
Madison Street from Railroad Avenue to Lincoln Avenue	In Service 4/7/2017

FISCAL IMPACT:

The entire City-wide Streetlight LED Conversion Program is estimated to cost approximately \$15,000,000. The consultant Professional Services Agreement with related staff, contract administration and contingency, is estimated at \$1,150,000. Sufficient funds are available in Major Streetlight Projects Account No. 6130000-470637. This amount is planned to be funded from existing Greenhouse Gas Allowance Proceeds.

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 Approved by: Girish Balachandran, Utilities General Manager
 Approved by: John A. Russo, City Manager
 Approved as to form: Gary G. Geuss, City Attorney

Certifies availability of funds: Laura Chavez-Nomura, Utilities Assistant General Manager/Finance

Attachment: Presentation