



RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: JULY 25, 2016

ITEM NO: 12

SUBJECT: CITY-WIDE STREETLIGHT LIGHT EMITTING DIODE CONVERSION PROGRAM – (PHASE ONE - DESIGN) APPROVAL OF WORK ORDER 1611216 FOR \$1,150,000; PROFESSIONAL SERVICES AGREEMENT WITH DESIGN SERVICES, INC. DBA BENYA BURNETT CONSULTANCY RFP #1569, FOR \$855,290; PERMISSIBLE USE OF GREENHOUSE GAS ALLOWANCE VALUE AND PROCEEDS POLICY AND AUTHORIZE USE OF GREEN HOUSE GAS ALLOWANCES FOR QUALIFYING PROJECTS

ISSUES:

The issues for Board of Public Utilities consideration are approval of Work Order 1611216 for \$1,150,000, and a Professional Services Agreement with Design Services, Inc. dba Benya Burnett Consultancy, of Davis, CA, RFP #1569 for \$855,290 for design services for a streetlight LED conversion project; and to recommend City Council approval of the Permissible Use Of Greenhouse Gas Allowance Value And Proceeds Policy, and 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.

RECOMMENDATIONS:

That the Board of Public Utilities recommend the City Council:

1. Approve Work Order No. 1611216 in the amount of \$1,150,000 for the development of a City-wide Streetlight LED Conversion Program;
2. Approve the Professional Services Agreement with Design Services Inc. dba Benya Burnett Consultancy of Davis California, for the development of a City-wide Streetlight LED Conversion Program in the amount of \$855,290;
3. Approve the Permissible Use of Greenhouse Gas Allowance Value and Proceeds Policy ("Policy") as reflected in this report;
4. Authorize the City Manager, or his designee, to make changes to the Policy in accordance with the goals of Assembly Bill 32, as enacted in 2006, for the benefit of Riverside's retail electric ratepayers; and
5. Authorize the City Manager, or his designee, to attest and file the annual Electric Distribution Utility Use of Allocated Allowance Form with the California Air Resources Board.

BACKGROUND:

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 citywide 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 the 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 City-wide 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.

Multi-phase Timeline:

It is expected that city-wide conversion to LED streetlights will be completed by 2019. Five major phases of the project have been identified, with this first phase for design services stated herein. As design work is completed and estimates are solidified, each subsequent phase will be submitted for Board of Public Utilities approval as noted in the schedule below:

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																									

Figure 1 - City-wide Streetlight LED Conversion Program Time Line

Project Phases:

- Phase 1: Design Services (included in this report).
- 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).
- Phase 3 (12,000 lights): Full scale conversion of remaining streetlights and intersection lights **not** located in Historic Districts or Neighborhood Conservation Areas.
- 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.
- Phase 5 (6,000 lights): Conversion in the final Historic Districts or Neighborhood Conservation Areas.

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.

Projected Benefits of Conversion:

- 20 year life vs. 7 years with current lights.
- 9.9 years average payback of the conversion cost from reduced energy consumption, and maintenance expense.
- Annual energy savings of 10,251,000 kWh upon city-wide completion (equivalent to 1,398 homes).
- Annual GHG reduction of 3,249 tons of CO₂ upon city-wide completion (equivalent to taking 691 cars off the road).
- LED luminaires are staged for potential low cost rapid deployment of selected Smart City applications that will be studied and evaluated as part of Phase 1.
- Upon completion, the City-wide Streetlight LED Conversion Program is projected to achieve an annual cost savings \$922,000 for energy, and \$360,000 for maintenance. These savings can be reinvested in other City-wide streetlight capital needs in lieu of General Fund Street Lighting Service (LS-1) rate increases to fund needed projects.
- Conversion of 1,320 additional intersection safety lights is also expected to reduce billing to the General Fund through the Traffic Control Service (TC) rate by approximately \$57,000 per year due to reduced electric consumption.

Request for Proposal 1569 – Detail:

On December 30, 2015, RPU issued (RFP #1569 for Phase 1, development of a City-wide Streetlight LED Conversion Program. Twenty six vendors registered to receive plans and specifications, sixteen vendors attended a pre-proposal meeting and four responses were received and evaluated by an eight member multi-departmental Evaluation Panel. Design Services Inc. dba Benya Burnett Consultancy (“Benya Burnett Consultancy”) was selected based on superior pricing, excellent technical qualifications, solid references, and experience.

Staff began fee negotiations with Benya Burnett Consultancy to determine final scope of work and related fees. Negotiations were successfully concluded on May 24, 2016, for a not to exceed base fee of \$787,790, including options for intersection safety lights, with \$67,500 in expenses, for a total amount of \$855,290.

Staff evaluated optional fee items for inclusion in the scope of work and selected optional work items to include 1) development of design guide, construction standards and specifications for intersection safety lights; and 2) construction plans and specifications for conversion of the intersection safety lights to LED coordinated with the related streetlight LED conversion projects for the greatest economy of scale.

The Purchasing Services Manager concurs that the recommended actions comply with the City of Riverside’s Purchasing Resolution No. 22576.

Work Order and Full Project – Detail:

The Work Order breakdown is as follows:

Description	Amount	Percent of Total
RPU Engineering, Coordination, and Contract Administration	\$210,000	18%
Consultant Contract and Contingency	\$940,000	82%
Total	\$1,150,000	100%

The full project breakdown is proposed as follows:

Full LED Conversion Anticipated Project Breakdown	
Engineering Performed By:	Design Services Inc. dba Benya Burnett Consultancy
Electrical Work Performed By:	Contractors and City Crews
Anticipated Start Date:	September 2016
Anticipated Duration:	33 months
Coordination Required With:	Electric Field Crews, Energy Delivery Engineering, Customer Relations/Marketing, Finance/Administration, Power Resources, Planning Department, Historical Preservation Board, City Attorney’s Office, Parks & Recreation Department, Police Department, Office of Emergency Management, Public Works

Greenhouse Gas Allowances:

The goal of Assembly Bill (AB) 32, enacted in 2006, is for California to reduce its GHG emissions to 1990 levels by 2020. Central to the GHG regulations is the establishment of a Cap-and-Trade Program for GHG allowances, which requires that electric utilities, such as Riverside Public Utilities (RPU), have sufficient allowances to offset GHG emissions associated with generating electricity.

RPU expects to receive approximately one million allocated allowances per year through 2020. RPU expects this amount to be sufficient to meet its compliance obligations through 2020, and at times, RPU has had and may continue to have excess allowances that can be sold into the CARB quarterly auctions. To date, RPU received \$11,130,120 in proceeds from the sale of excess allocated allowances. These proceeds are to be used exclusively for the benefit of retail rate payers to reduce GHG emissions helping RPU meet state mandated carbon reduction goals. RPU is required to submit annual reports on the use of auction proceeds and allowance value to the California Air Resources Board (CARB), and how its use of auction proceeds comply with Cap-and-Trade Regulations and California Health and Safety Code Section 38500.

The GHG regulations contain limitations governing the use of the value and the proceeds derived from the directly allocated allowances. Such limitations are found in Section 95892(d)(3) and (5) of the regulations:

“Auction proceeds and allowance value obtained by an electrical distribution utility shall be used exclusively for the benefit of retail ratepayers of each electrical distribution utility, consistent with the goals of AB 32, and may not be used for the benefit of entities or persons other than such ratepayers.”
“Use of the value of any allowance allocated to an electrical distribution utility, other than for the benefit of retail ratepayers consistent with the goals of AB 32 is prohibited, including use of such allowances to meet compliance obligations for electricity sold into the California Independent System Operator markets.”

The existing City of Riverside Permissible Use of Greenhouse Gas Allowance Value and Proceeds Policy (Policy) identifies permissible uses of the proceeds from the sale of allocated allowances including, but not limited to, investments in cost-effective energy efficiency, demand response, and peak-shifting programs for the benefit of Riverside's retail electric customers. For greater clarity, staff recommends modifying the Policy to specifically list applicability of energy efficiency projects at City facilities and infrastructure to the non-exhaustive list of permissible uses of proceeds, and City Council adoption of that Policy. Staff also requests that the City Council authorize the City Manager to attest to and file with CARB the annual reports referenced herein as to the use of the auction proceeds.

Staff recommends that a new section, III.d.4., be added to the Policy list of permissible uses:

4. Energy efficiency projects at City facilities or infrastructure that will result in greenhouse gas emission reductions.

This project provides significant community benefits, and in order to avoid electric rate impacts, it is anticipated that the majority of funding will come primarily from proceeds derived from the sale of excess greenhouse gas allowances of approximately \$10,780,000 plus future proceeds, and also public benefits energy efficiency incentives of up to \$820,000, pending review after system design.

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.

Prepared by: Pat Hohl, Utilities Assistant General Manager/Energy Delivery
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, Public Utilities Assistant General Manager/Finance

Attachments:

1. Professional Services Agreement
2. Policy on Permissible Use of Greenhouse Gas Allowance Value and Proceeds
3. Presentation