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REPORT TO COUNCIL

SUBJECT

Direct Staff to Proceed with LED Streetlights Citywide Conversion Project and Approve Budget Modification No. 14

BACKGROUND

In an effort to continue reducing the City's carbon footprint and streetlight energy consumption and maintenance costs, staff has evaluated the conversion of all remaining high pressure sodium (HPS) streetlights to energy efficient light emitting diode (LED) fixtures. The City owns and maintains approximately 8,784 streetlights, the majority being the HPS type. Out of these, approximately 1,859 fixtures, mostly on arterial (major) city streets, were converted to LED in 2012. This left approximately 6,925 fixtures, mostly in residential areas that could now be converted to LEDs.

The City's first round of LED conversion were funded by an energy block grant from the federal government supplemented by PG&E rebates. The focus of this project was to maximize energy savings by targeting higher wattage fixtures that typically occur on major streets. A typical retrofit replaced a 200 watt HPS fixture with an 80 watt LED. Energy consumption savings realized after the conversion to LED based on PG&E's calculations and rate schedule effective January 1, 2014 was estimated to be approximately $119,000 annually.

In addition to energy savings, LEDs provide several advantages over the City's current HPS fixtures.

- Per watt, LED produces twice the amount of light as compared to HPS.
- LEDs provide a more uniform light distribution that improves visibility, and allow for better control over the amount of light projected on the back of the fixture so it would not be as bright on adjacent residences.
- Objects can also be distinguished with better clarity under the LED light. This is a safety aspect that can assist Public Safety during their nighttime work and allows motorists to more easily identify bicyclists and pedestrians.
- Another important fact about LED streetlights is that their reduced energy consumption delivers significant reductions in greenhouse gas emissions, supporting efforts to combat climate change.
- LED street lights do not contain mercury contents, and do not produce harmful UV rays; both are present in HPS streetlights.
- The average life of LED fixture is 25 to 30 years as compared to 2 to 3 years of HPS bulb. Furthermore, though HPS fixtures are brighter when first installed, with age they produce only 20%-40% of the light they produce when new. This is due to both the technology of the light and discoloration and clouding of the light lens caused by the heat from the light over time, which makes HPS streetlights more inefficient and expensive to maintain.
- LEDs are fully dark sky compliant, thus contribute to the enhanced experience of stargazing

and night sky watching.

EXISTING POLICY

General Plan, Chapter 3 - Land Use and Transportation Element C3.4.3 - Implement programs for repair of roadbeds, barriers and lighting.

Climate Action Plan - Energy Consumption (EC)-1 Lighting Efficiency - Increase the use of efficient indoor and outdoor lighting technologies.

ENVIRONMENTAL REVIEW

This project is exempt from the California Environmental Quality Act (CEQA) under section 15301(b), for existing facilities of both investor and publicly owned utilities used to provide electric power, natural gas, sewerage, or other public utility services.

DISCUSSION

Since the initial conversion of streetlights to LEDs in 2012 the Department of Public Works staff has continued to assess the feasibility of replacing remaining HPS lights, mostly in residential areas, with the more energy efficient LED streetlights. Over the years, LED technology has improved significantly and more cities are moving forward with conversion projects to take advantage of the potential savings in electricity usage. Since the City's initial installation project, the price per fixture for LEDs has significantly dropped from over $600 to under $300 per fixture. Prices vary based on manufacturer and characteristics of the fixture such as color temperature which, provides color contrast and affects the visibility of objects, efficiency of the light and life expectancy.

The majority of the remaining 6,925 HPS streetlights are 70 watt fixtures located in residential areas. The City's first retrofit project did not replace fixtures of this size and did not focus on residential areas. For retrofits in these areas staff has now evaluated available products on the market and focused on products that at a minimum meet the existing lighting levels on residential streets with at least 50 to 60 percent reduction in power consumption.

Design standards for street lighting are provided by the Illuminating Engineering Society of North America (IESNA) and the American Association of State Highway and Transportation Officials (AASHTO) Roadway Lighting Design Guide. By converting to LEDs the City will be able to achieve lighting levels that are closer to design standards with better distribution of light and reduced power consumption.

Total project costs are estimated to range between $1.7 and $2.3 Million. Based on PG&E's current rebate program the City would be eligible for up to $276,000 in rebates. Estimated savings in energy cost if all existing street lights were to be upgraded to LEDs would range between $245,000 and $310,000 annually. This savings figure varies depending on wattage of LED fixture selected, and assumes the current PG&E LS-2 rate schedule. Given the range of project costs and savings, an estimated range of simple payback periods is between 5.5 years and 7.5 years. There is no certainty that PG&E will carry its rebate to future years. The pay-back period without rebates would be a little over 7 years.

For the purpose of evaluation and to receive input from citizens staff completed a pilot project early this year (RTC14-0042); additional details on the outreach are detailed in the Public Contact section below. As a part of this project, LED streetlights from various manufacturers were installed at nine

different locations on residential streets. The results of the project were positive, an overwhelming majority of the residents preferred new LED streetlights over the old HPS streetlights.

FISCAL IMPACT

Retrofitting of remaining HPS streetlights to LEDs will require the creation of a new capital project and identification of funding. For a complete citywide retrofit, staff estimates the upper end of total capital cost to convert all the existing HPS fixtures citywide at $2,300,000. Overall City outlay would be repaid over time (approximately 7 years) by annual energy savings, estimated to be $245,000 to $310,000 depending on the LED manufacturer and type.

PG&E rebates may be available to further reduce the capital outlay, although PG&E is currently evaluating whether to continue their existing rebate program. Rebates if continued to future years will be paid back on completion of the LED installations.

The cost for operating and maintaining streetlights is budgeted in the General Fund. As the payback period for this conversion is relatively short, the General Fund can absorb an appropriation from the Budget Stabilization Fund to provide resources to retrofit the remaining streetlights, and include the operating savings as the payback on the investment. Additionally, as the savings are permanent, this will improve the fund's long-term position. Budget Modification No. 14 has been prepared to appropriate $2,300,000 to a new project to complete the LED retrofit of the remaining streetlights.

Budget Modification No. 14
FY 2015/16

	Current	Increase/ (Decrease)	Revised
General Fund			
Reserves			
Budget Stabilization Fund	$41,247,589	($2,300,000)	$38,947,589
Infrastructure Fund			
Expenditures			
New Project - LED Retrofit of Streetlights	$0	$2,300,000	$2,300,000

PUBLIC CONTACT

Staff conducted a pilot project and citywide public opinion survey. The purpose of the survey was to gauge the overall acceptance of the new LED streetlights. The survey was made available in early January 2015 through the Department of Public Works' web site, and also mailed out to the residents in the vicinity where the new LED streetlights were installed. In total 185 residents responded to the survey, with overwhelming majority favoring new LED streetlights over the old HPS streetlights. And, there was no marked preference shown for a specific LED fixture from the five different types installed. The summary of survey results can be found in Attachment 1.

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public

Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's website.

ALTERNATIVES

1. Direct Staff to Proceed with the LED Streetlights Citywide Conversion Project to convert all remaining HPS streetlights in the City and Approve Budget Modification No. 14.
2. Direct staff to make no changes from the existing conditions.

RECOMMENDATION

Alternative 1: Direct Staff to Proceed with the LED Streetlights Citywide Conversion Project to convert all remaining HPS streetlights in the City and Approve Budget Modification No. 14.

Upon selecting a responsive proposer, staff will seek City Council’s approval to award the contract.

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ATTACHMENT

1. Citywide Survey Results