



Date: October 16, 2015
To: Patrick H. West, City Manager *[Signature]*
From: Ara Maloyan, PE, Director of Public Works *[Signature]*
For: Mayor and Members of the City Council
Subject: Update on Light Emitting Diode (LED) Conversion

Public Works is prepared to install new light emitting diode (LED) cobra-head fixtures on both the City's traffic safety intersection lights and the City's streetlights. This project involves more than 25,000 light fixtures, and is estimated to cost \$6.7 million. The project will begin in mid-October, beginning with the traffic safety intersection lights.

This memorandum provides summaries of the project's history, funding, and progress made to date, as well as a timeline for the conversion of streetlights and other potential lighting projects.

Project History

Staff has been researching and testing LED fixtures for the conversion of the City's traffic safety intersection lights and streetlight system from high-pressured sodium (HPS) to LED fixtures. Staff approached the LED conversion project with the following guiding principles: the LED fixture for the City would (1) be cost effective; (2) meet or exceed the Illuminating Engineering Society's Roadway Lighting recommendations; and (3) generate energy savings to reduce the City's energy usage.

City staff pilot tested LED cobra-head fixtures for streetlights using four different products to determine the suitability of each fixture for the various lighting needs of the City. Cobra-head fixtures are attached to the arm of the streetlight light pole. Per an agreement with Southern California Edison (SCE), this energy efficiency field placement test took place in the following neighborhoods:

- Bellflower Boulevard and Pacific Coast Highway (northwest block)
- Florida Street and Hermosa Avenue (adjacent block)
- Silverado Park (southeast block)
- Willow Street and Clark Avenue (northeast block)

The City also conducted a pilot program for LED cobra-head fixtures for traffic safety intersection lights to illuminate the City's intersections. Traffic safety intersection lights typically sit above the traffic signal, and illuminate the intersection for the safety of pedestrians, bicyclists, and motorists. This pilot testing occurred at Santa Fe Avenue, between Pacific Coast Highway and Wardlow Road.

In August 2014, after several iterations of testing and a review of the photometric studies (a study to see if the LED fixture would properly illuminate the intersection or street), staff, working in close consultation with lighting engineers, determined that Leotek fixtures would be cost-effective and meet illumination standards.

Conversion of the City's streetlights will reduce yearly energy consumption by over 9.6 million kilowatts of energy, equivalent to reducing the carbon emissions of the City by taking 21,000 vehicles off City streets annually. A fact sheet (attached) highlights the tremendous impact this will have on the City.

Funding the Conversion

As previously noted, the anticipated cost to convert the City's 25,000 traffic safety intersection lights and streetlights is \$6.7 million. Recognizing that this is a significant financial endeavor, staff is finalizing negotiations with City Light & Power (CLP) and has sought opportunities for grants, partnerships, and financing to minimize the impact to the General Fund.

The project will be funded, as currently estimated, through a combination of sources:

Source	Amount
FY 16 One-Time Funds	\$100,000
Port of Long Beach Grant	\$660,000
Southern California Edison Rebates	\$3,100,000
Savings from reduced energy usage with SCE cash flow funding or a loan	\$2,800,000

The City Council approved \$100,000 in one-time funding for Fiscal Year 2016 for the LED conversion project for costs that are not covered by other funding resources. Additionally, the Greenhouse Gas (GHG) Emission Reduction grant Memorandum of Understanding with the Port of Long Beach in the amount of \$660,000 will fund the conversion of approximately 1,750 traffic safety intersection lights.

Staff also identified incentives, rebates, and financing provided by the California Public Utilities Commission's set-aside of ratepayer money. Staff worked with The Energy Network, a Los Angeles County sponsored organization that supports public agencies in achieving energy efficiency, and with SCE to apply for incentives, rebates, and SCE "on-bill financing" (OBF). On August 10, 2015, SCE approved the City's application. Specifically, the City will receive \$3.1 million in rebates to fund the project, and, potentially, an additional \$2.8 million, should the City decide to pursue on-bill financing. On-bill financing is the likely last step in the financing and would provide the needed cash flow until the energy savings can pay the balance of the costs. If it is determined that bond financing is more effective for the City, then that mechanism will be used with debt service paid through the savings in electricity costs. If the financing is not ready at the time payments are due for the lights, cash will be temporarily drawn from reserves and replenished when actual financing has occurred (either OBF or a bond issue). For either transaction, City Council authorization will be needed.

Progress

Significant progress has been made since the pilot testing and selection of fixtures. Staff has identified a three-phase plan to effectively manage LED conversions for various types of infrastructure:

- Phase 1: Traffic safety intersection lights (approximately 1,750)
- Phase 2: City streetlights with initial fitting of cobra-head fixtures (approximately 24,000)
- Phase 3: LED conversions for other City-managed facilities such as parks, parking facilities and the beach lots. This phase is not yet funded.

Phase 1: Traffic Safety Intersection Lights (October 2015 – December 2015)

Installation of the traffic safety intersection lights with cobra-head fixtures will begin in mid-October 2015 and will be completed by the end of the year. Staff is currently working to identify the appropriate LED fixtures for traffic safety intersection lights on historic lampposts. These “pole top” fixtures require a different LED fixture. CLP will provide the City with a project schedule for the installation of traffic safety intersection lights citywide within the next few weeks. This schedule will be shared with the Mayor and City Council Offices upon receipt.

An event to celebrate the start of this project is tentatively scheduled for October 29; more information will follow.

Phase 2: Streetlights (January 2016 – December 2016)

Installation of the streetlights will begin in January 2016, immediately after the completion of the traffic safety intersection lights, and will be completed by December 2016.

CLP will be able to convert LED fixtures at a rate of approximately 75 fixtures a day. It is estimated the conversion of the 25,000 lights will take a year to complete. This timeline takes into consideration the expected heavy winter storms as a consequence of the anticipated El Niño weather pattern. We expect to have a project schedule from CLP in December 2015, and will update the Mayor and City Council with this project schedule once received. Staff will also work closely with CLP to conduct outreach to residents and businesses about the LED streetlight conversion.

The City's conversions of the traffic safety intersection lights and streetlights have drawn considerable interest from peer agencies across the country, and we will be sharing our experience with them through the Climate Registry's webinar on October 21, 2015 to lend insight to other municipalities.

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Phase 3: Parks, Parking Structures, and Beach Parking Lots (Ongoing)

City Parks

Staff is preparing a plan for a coordinated, citywide conversion to LED in the City's parks, should future funding become available. Working in consultation with Parks, Recreation, and Marine, Public Works has started the process for outdoor LED conversion by conducting energy audits and fixture assessments at the City's regional parks: Cesar E. Chavez, El Dorado, Houghton, Ernest McBride, and Silverado. As with the streetlights, staff is pursuing incentives, rebates, and OBF options from SCE to convert the five regional parks as a pilot project. The pilot project, when able to proceed, will serve as a guide to convert all parks citywide as funding is identified. Also, new park development projects will factor LEDs into the cost of the project.

Parking Structures and Beach Parking Lots

The City also has begun the process for LED conversion by requesting energy audits at the CityPlace parking structures (Lot A, B, and C) and three beach lots (Alamitos Beach, Junipero, and Granada).

CityPlace parking structures will include both lighting in the structure, as well as the lighting on the rooftops. For the beach lots, the cobra heads will be converted. Use of the same fixtures as used for the streetlights will effectively manage maintenance costs. Public Works and Tidelands are closely collaborating on this project. These LED projects could be completed in 2016, depending on when the City receives approval from Southern California Edison for incentives, rebates, and OBF.

In both instances, the City will explore incentives, rebates, and on-bill financing from SCE to fund these projects. After the completion of these projects, staff will expand the conversions dependent on available incentives, rebates, OBF, and funding for the remaining City-owned parking structures and beach lots.

In summary, converting to LED lighting remains a priority for the City. Not only will the conversion reduce costs and conserve energy, it will brighten our corridors and enhance safety in our neighborhoods for many years to come. If you have any questions, please contact Seyron Foo, project manager for the streetlight conversion in Public Works, at (562) 570-6561.

AM:sf

Attachment: Streetlight fact Sheet

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LIGHT UP LED CONVERSION

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PHASE 1

The City will begin conversion of its 1,750 traffic safety lights, which sit above the traffic signal and illuminate the intersections for the safety of pedestrians, bicyclists, and motorists.

PHASE 2

Conversion of 24,000 streetlights will occur in 2016 over a one-year span after the traffic safety intersection light installation.

PHASE 3

The City will work to convert City parks, parking structures, and beach lots dependent on available funding.

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CONTACT

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THE FUTURE

The City of Long Beach will embark on a conversion of high pressure sodium (HPS) lights to light emitting diodes (LEDs) for traffic safety intersection lights and streetlights beginning in 2015.

The City has dedicated funding and leveraged the Port's greenhouse gas mitigation grant and Southern California Edison's incentives and rebates to fund the conversion. The City has also started the process of assessing its parks, parking structures, and beach lots for conversion.



25,000+
streetlights

\$1 million
annual maintenance and
energy savings

9,600,000 kWh = 21,000

annual reduction in energy consumption

cars off the road

PARTNERSHIPS

The City has worked collaboratively with The Port of Long Beach, The Energy Network, Southern California Edison, and City Light and Power to responsibly deliver a lighting conversion project and achieve energy efficiency for the City of Long Beach.

