CITY COUNCIL AGENDA REPORT

DEPARTMENT: Public Works **MEETING DATE:** December 15, 2020

PREPARED BY: Chris Castruita, Senior Management Analyst **AGENDA LOCATION:** AR-1

TITLE: Review of Potential Street Light Retrofit Program and Schedule LS-1 Option E, Energy Efficient-Light Emitting Diode (LED) Fixture Replacement Rate Agreement with Southern California Edison Company

OBJECTIVE: To review a proposed LS-1 Option E Agreement with Southern California Edison to retrofit Utility-owned High Pressure Sodium Vapor (HPS) Street Lights to LED Technology

BACKGROUND: Southern California Edison (SCE) owns and maintains approximately 1,659 of the street lights throughout the City of Monrovia (City) along residential and arterial streets. These street lights presently utilize high pressure sodium (HPS) lamps, which are a common technology for outdoor lighting uses. The utility charges a monthly fee, known as an LS-1 tariff, to provide electricity as well as operations and maintenance for each fixture; SCE, as the owner, provides for all maintenance, including lamp replacements, troubleshooting, and replacement following knockdowns.

At the November 17, 2020 Council Meeting, staff provided an overview of the LS-1 Option E tariff program (Option E program) to retrofit current HPS street lights to LED. LED lamps can produce light as much as two times more efficiently than HPS lights leading to lower electricity use, lower greenhouse gas emissions, and lower electricity costs. Under the Option E program, a customer city would enter into an agreement with SCE that funds the retrofit of the lights with an Energy Efficiency Premium Charge (EEPC) that would be added to the existing City street lighting bill. The reduced electricity costs would fund the EEPC and provide additional cost savings of approximately $14,000 per year.

During the November 17 meeting, the City Council requested staff to provide additional review of the potential impacts of LED street lighting on the community, specifically regarding potential public health impacts and equipment design. Council requested information regarding design options as they pertain to the color and brightness of the street lights

ANALYSIS: The primary purpose of street lighting is to illuminate the roadway & pedestrian walkway to provide accurate visibility at night of possible hazards, allowing sufficient time for drivers and pedestrians to react and reduce the proportion of accidents. In addition, street lighting provides increased security for the community and aides law enforcement.

Throughout the City of Monrovia, there are approximately 2,800 street lights within the public right of way, the vast majority of which utilize the existing high pressure sodium vapor (HPS) technology. Of the nearly 2,800 lights, 1,659 of them are owned, operated and maintained by Southern California Edison (SCE) with the balance of the lights being owned by the City. At this time, there is a proposal from SCE to retrofit the existing SCE streetlights with LED technology.

<u>Color and Brightness of Streetlights.</u>
The proposed change of street lighting from the standard HPS to LED will impact the visual appearance of the lighting throughout town, most notably related to the light color. Color temperature is a characteristic

of visible light and is stated in units of temperature, known as Kelvin (K). Light temperature runs on a color spectrum numbered from zero (0) to ten thousand (10,000). Lower temperatures produce a redder light, medium temperatures produce a whiter light, and higher temperatures produce a bluer light. For these projects, SCE utilizes General Electric (GE) Evolve LED light fixtures that produce 3,000K color temperature light, a light that is commonly perceived to be yellow in color. The current HPS light fixtures in use throughout the city produce about 2,200K, a light commonly perceived to be orange in color.

Feedback provided by the City Council on November 17 indicated a desire to have staff do further review and analysis on the available differences in lamps to be used, including color below 3,000k, as well as lamps with reduced wattage and brightness. In addition, there was an interest to understand more about the possibility of the lights being shielded to prevent light spillover.

In reviewing the lamps that SCE makes available through this program, the lowest color temperature that they use is 3,000k. In reviewing practices of many agencies – whether customers of SCE or of another electric utility - who have done similar projects throughout the state 3,000k appears to be the most commonly utilized lamp. The ability to manage the brightness of the lighting is derived more from the wattage of the lamp rather than the color temperature. Throughout the current SCE streetlight inventory, the City has street lights ranging from 50 watts to 250 watts, with the vast majority of them (approximately 75%) being 70 watts. These HPS lights will be replaced with an LED light that has a 3,000k color but varying wattage as outlined below:

HPS Light Wattage	Replacement LED Wattage	Quanitity
50	22	5
70	31	1,269
100	39	75
150	71	2
200	82	288
250	136	20

Currently, the 70 watt lights, being the most prevalent, represent the existing street lights in most of the residential neighborhoods. As these will be replaced with a 31 watt LED, they will be of a similar brightness to the existing lights with a different color appearance. The 200 watt lamps are currently deployed along main arterials and busier roadways and they will be replaced with an 82 watt LED. The brightness will be similar to the existing lights in those areas and will be brighter than 31 watt lamps that will be deployed within the neighborhoods. Although the 3,000k color will be consistent across the street lighting system, the brightness will be consistent with the existing application of lighting. For example, the brightness of the lights will not be the same along Duarte Road as they will along Highland Place, although the color temperature will be the same. In terms of color temperature, the International Dark Sky Association and the American Medical Association recommend LED lighting with a color temperature of 3,000k or below.

The proposed LED light fixtures are designed in a manner to direct light in specific directions, toward the street and sidewalk, reducing the amount of light spillover toward properties. This is helpful to eliminate concerns of light spillover or intrusion into properties adjacent to the lights; however, light shielding can be done as needed to further reduce any nuisance impacts of the lighting. In terms lamp shielding, SCE does have the capacity and ability to provide shielding for lamps as needed to mitigate the impacts of lights. Generally, this practice is not designed into the rollout of the project but rather is initiated after the lighting has been installed as it is substantiated by infield review. SCE will respond to concerns and requests related to the lighting and review the conditions to provide a remedy customized for the concerns, rather than a “one-size fits all” solution.

<u>Potential Health Risks Associated with LED Lighting</u>

Multiple public health organizations, including the World Health Organization and Los Angeles County Department of Public Health, have linked the provision of adequate outdoor lighting, including LED street lighting, to reduced incident of falls and injuries among pedestrians, improved roadway and public safety, and enhanced walkability leading to improved health outcomes for local neighborhoods. As a result of the increased prevalence of LED lighting in public settings, concerns have been raised related to the

health impacts of LED lighting as opposed to traditional street lighting technologies. The primary basis of the concerns is that the increased levels of blue light that result from LED lighting can cause disruptions to melatonin levels and sleep cycles, ultimately leading to increased risks of cancer and cardiovascular health issues.

At the November 17, 2020 meeting, staff presented an overview of potential impacts of the change of street lighting based upon an American Medical Association 2016 guidance paper on the potential effects of LED street lighting on human health. The guidance paper identified health concerns with human's increased exposure to blue-rich light produced by LED streetlights, which has been found to suppress melatonin a hormone that regulates sleep.

Staff has reviewed information from multiple public health agencies regarding the public health effects of increased exposure to blue-rich light on the population, including the National Academy of Medicine and Centers for Disease Control and Prevention. These agencies identify multiple long-term health impacts from changes in melatonin levels and sleep patterns, however these agencies identify indoor lighting and access to technology, such as smartphones and televisions, as the leading cause of sleep insufficiency rather than outdoor street lighting. Similarly, in a 2017 presentation on the public health impacts of LED outdoor lighting, the City of Pasadena Public Health Department concluded that the color of LED street lights would have "minimal to [no impact] for most people" due to the duration of exposure and quantity of blue light that LED street lights would produce. As proposed, the LED lights under consideration are a 3,000k, which is more yellow in color meaning that although these fixtures are LED, they create less of the concerning blue light that fixtures of higher temperatures would or that other technology devices, i.e. smartphones and televisions, create. In reviewing the impacts of streetlights, the American Medical Association recommends LED street lighting be used in temperatures of no more than 3,000k meaning that the proposed lamps are consistent with this guidance.

The SCE Option-E Agreement has been reviewed by City Staff and the City Attorney and is reflective of the items that have been discussed with the City Council for the proposed project to retrofit the existing SCE streetlights. As such, should the City Council desire to proceed with this project, the agreement is available for your consideration as a part of this item.

FISCAL IMPACTS: Southern California Edison has estimated that conversion of the 1,659 utility-owned street lights to LED would cost $625,400, at an average cost of $376.97 per light. This cost includes SCE furnishing all materials and labor to complete the lighting retrofits. SCE would recover these costs through amortizing those costs in the form of the Energy Efficiency Premium Credit (EEPC) on the City's monthly electricity bill over the course of 20 years.

Despite the addition of the EEPC to fund the retrofits, the reduced electricity consumption would still lead to the City saving money on a monthly basis. Based on the current rates, SCE projects the City would reduce electricity charges by $3,748.33 per month. When factoring in the addition of the EEPC, the City could expect to realize $1,142.33 in monthly cost savings as shown below:

Estimated Monthly Energy Cost Savings	$ 3,748.33
Monthly EEPC Charge	-$ 2,606.00
Net Monthly Savings	$ 1,142.33

At the conclusion of the EEPC payback period, it is estimated that the annual cost savings will increase to more than $47,000 per year, assuming electricity rate increases are consistent with historic averages. Should electricity rates increase at a greater rate, there is a potential for greater cost savings.

The Fiscal Year 2020-21 budget allocates $437,000 for Street Lighting Electricity, $251,000 (57%) of which goes toward the cost of SCE-owned street lights. Annual cost savings from participation in the Option E program would reduce those costs by $13,710 (based on current electricity rates), equal to reducing the FY 2020-21 program electricity expenses by 3%.

OPTIONS: The following options are provided for the consideration:

1. Approve the LS-1 Option E agreement with Southern California Edison for retrofit of Utility-owned High Pressure Sodium Vapor (HPS) Street Lights City-wide to LED Technology

2. Request additional information from Staff before taking action

RECOMMENDATIONS: Staff recommends approving the LS-1 Option E agreement with Southern California Edison for retrofit of Utility-owned High Pressure Sodium Vapor (HPS) Street Lights City-wide to LED Technology.

COUNCIL ACTION REQUIRED: If the City Council concurs, the appropriate action would be a motion to approve the Schedule LS-1 Option E, Energy Efficient-Light Emitting Diode (LED) Fixture Replacement Rate Agreement with Southern California Edison Company and authorize the City Manager to execute the necessary documents in a form approved by the City Attorney.

Sheet 1

SCHEDULE LS-1 OPTION E, ENERGY EFFICIENCY-LIGHT EMITTING DIODE (LED) FIXTURE REPLACEMENT RATE AGREEMENT

Form 14-965

SOUTHERN CALIFORNIA EDISON COMPANY
SCHEDULE LS-1 OPTION E, ENERGY EFFICIENCY-LIGHT EMITTING DIODE (LED) FIXTURE REPLACEMENT RATE AGREEMENT

This Schedule LS-1 Option E, Energy Efficiency-Light Emitting Diode (LED) Fixture Replacement Rate Agreement (Agreement), effective this 15th day of December , 2020 (Effective Date), is entered into between Southern California Edison Company (SCE) and City of Monrovia, an SCE customer taking service on Schedule LS-1 (Applicant), referred to collectively as "Parties," and individually as "Party." This Agreement provides for SCE, at Applicant's request, to replace the existing street lighting fixtures serving Applicant's premises with Light Emitting Diode (LED) street lighting fixtures to achieve energy efficiency benefits for Applicant, as set forth in Special Condition 14, Option E, Energy Efficiency-Light Emitting Diode (LED) Fixture Replacement, of Schedule LS-1.

The Parties agree as follows:

1. LED FIXTURES

SCE shall install, own, operate, and maintain LED Fixtures for Applicant as set forth in Exhibit "A" attached hereto and incorporated herein by this reference. The LED Fixtures provided hereunder shall at all times remain the property of SCE.

2. LED FIXTURE REPLACEMENT COSTS

2.1 The replacement costs of the LED Fixtures provided hereunder shall be borne by Applicant.

2.2 Applicant shall pay the charge for the LED Fixtures Replacement rate, which includes an Energy Efficiency Premium Charge (EEPC) and a Base LED Charge, under Option E of Schedule LS-1. Applicant elects Option E in lieu of an upfront, one-time payment of the replacement costs.

2.3 SCE does not guarantee that any energy or bill savings will accrue to Applicant as a result of the LED Fixture replacements.

3. COMMENCEMENT OF SERVICE

The Parties agree that SCE has the right to charge Applicant, and Applicant has an obligation to pay SCE, for the charges set forth in Schedule LS-1, Option E, commencing on the date SCE begins serving the LED Fixtures installed pursuant to this Agreement.

4. TERM AND TERMINATION

4.1 This Agreement shall be effective as of the Effective Date and shall continue for a term of twenty (20) years from the commencement of service as specified in Section 3 above (Term).

4.2 Applicant may terminate this Agreement at any time during the Term upon a thirty (30) - day advance written notice, provided that Applicant, prior to or within the 30-day advance notice period, assigns the Agreement to any New Party In (NPI) that owns, rents or leases the premises served by the street lighting fixtures replaced under this Agreement and will take service under Option E of Schedule LS-1 effective as of the date of termination; *otherwise*, Applicant shall pay a one-time termination charge equal to the present value of the balance of the EEPC of Option E over the remaining Term. The present value is determined based on SCE's authorized rate of return on rate base, or discounted rate of 7.90%.

5. AMENDMENTS; ASSIGNMENTS

5.1 Any changes or amendments to this Agreement must be in writing and must be executed by the Applicant and SCE and, if required, be approved by the California Public Utilities Commission (Commission).

5.2 Applicant shall not assign this Agreement without the prior written consent of SCE; provided, however, that Applicant may assign the Agreement pursuant to the terms and conditions of Section 4.2 above, and the NPI must assume all rights and obligations under this Agreement for the remaining Term. Any assignment and assumption shall be in a form acceptable to SCE.

6. NOTICE

Any notice either Applicant or SCE may wish to provide the other regarding this Agreement must be in writing. Such notice must be either hand-delivered or sent by U.S. certified or registered mail, postage prepaid, to the person designated to receive notice for the other Party below, or to such other address as either may designate by written notice. Notices delivered by hand shall be deemed effective when delivered. Notices delivered by mail shall be deemed effective when received, as acknowledged by the receipt of the certified or registered mailing.

Applicant:

Alice D. Atkins
(Name)
City Clerk
(Title)
415 S. Ivy Avenue
(Address)
Monrovia, CA 91016
(City, State, Zip)

SCE:

Business Customer Division
Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, CA 91770

7. NONWAIVER

The failure of either Party to enforce any of the terms and conditions or to exercise any right or privilege in this Agreement shall not be construed as a waiver of any such term and conditions or rights or privileges, and the same shall continue and remain enforce and effect as if no such failure to enforce or exercise had occurred.

8. SEVERABILITY

In the event that any of the provisions, or portions thereof, of this Agreement are held to be unenforceable or invalid by the Commission, or any court of competent jurisdiction, the validity and enforceability of the remaining provisions or any portion thereof shall not be affected.

9. APPLICABLE LAWS, RULES, AND REGULATIONS

This Agreement shall be subject to, and interpreted under the laws, rules, decisions and regulations of the State of California, without regard to its conflict of laws principles, the Commission, and SCE's Commission-approved tariffs.

SOUTHERN CALIFORNIA EDISON COMPANY
SCHEDULE LS-1 OPTION E, ENERGY EFFICIENCY-LIGHT EMITTING DIODE (LED) FIXTURE REPLACEMENT RATE AGREEMENT

10. CALIFORNIA PUBLIC UTILITIES COMMISSION JURISDICTION

10.1 This is a filed form tariff agreement authorized by the Commission for use by SCE. No officer, inspector, solicitor, agent or employee of SCE has any authority to waive, alter, or amend any part of this Agreement except as provided herein or authorized by the Commission. This Agreement is to be used in conjunction with Schedule LS-1 and supplements the terms and conditions of the Applicant's electric service under Schedule LS-1.

10.2 This Agreement shall at all times be subject to such changes or modifications by the Commission as said Commission may, from time to time, direct in the exercise of its jurisdiction.

10.3 Notwithstanding any other provisions of this Agreement, SCE has the right to unilaterally file with the Commission, pursuant to the Commission's rules and regulations, an application for change in rates, charges, classification, service, or rule or any agreement relating thereto.

11. ENTIRE AGREEMENT

This Agreement, including SCE's Commission-approved tariffs, constitutes the complete agreement and understanding between the Applicant and SCE regarding the LED Fixtures replacement costs. Prior agreements, representations, understandings, whether expressed or implied, and communications, oral or written, between the Applicant and SCE shall not be construed to be a part of this Agreement.

12. AUTHORIZATION SIGNATURE

In witness whereof, the Parties hereto have caused this Agreement to be signed by their duly authorized representatives.

APPLICANT

BY: _____

NAME: Dylan Feik

TITLE: City Manager

DATE SIGNED: December 15, 2020

SOUTHERN CALIFORNIA EDISON COMPANY

BY: _____

NAME: _____

TITLE: _____

DATE SIGNED: _____

SOUTHERN CALIFORNIA EDISON COMPANY

EXHIBIT "A"

SCHEDULE LS-1 OPTION E,

ENERGY EFFICIENCY-LIGHT EMITTING DIODE (LED) FIXTURE REPLACEMENT

APPLICANT

City of Monrovia

CUSTOMER ACCOUNT NO.

2-25-998-9754

SERVICE ACCOUNT NO.

3-001-8971-87

(Additional account numbers/addresses may be attached hereto.)

SERVICE ADDRESS

MELROSE AVE & HILLCREST BLVD

APPLICANT REQUESTED READY TO SERVE DATE

February 1, 2021

SCE READY TO SERVE DATE _____

DESCRIPTION OF **LED** FIXTURES/SCOPE OF WORK: SPECIFY HOW MANY STREET LIGHTING FIXTURE REPLACEMENTS ARE BEING REQUESTED AND AGREED TO UNDER THIS AGREEMENT AND OTHER RELEVANT DETAILS.

W.O. No(s): _____