

Los Angeles Department of Water and Power
Outdoor Lighting Program Rate Calculation Methodology

Unless a preexisting monthly rate is applicable, the monthly rates fixed for outdoor lighting (OL) service agreements are the Fixed Monthly Charges determined by the calculation methodology set forth as follows:

1. GENERAL DEFINITIONS:

Unless distinctly defined within this document, the terms utilized herein share the definitions provided in the Definitions section of the General Provisions of the Electric Rate Ordinance. For the purposes of this Los Angeles Department of Water and Power (LADWP) OL Program Rate Calculation Methodology, the following definitions shall apply:

1.1 All Night Time-of-Use Hours: They are the average monthly night hours that the OL will be turned on and are based upon the U.S. Naval Observatory Astronomical Application Department sunrise and sunset monthly average schedule for the Los Angeles area. The All Night Low Peak Period is on average 36.9 hours per month, and the All Night Base Period is on average 303.1 hours per month.

1.2 Average Energy Charge: A fixed monthly charge per fixture based upon electric energy units of kilowatt-hours (kWh). The Average Energy Charge is the sum of (i) the Average Watts of the fixture (divided by 1,000 to adjust for unit measurement conversion) multiplied by the All Night Low Peak Period hours multiplied by the OL Low Peak Period Energy Price and (ii) the Average Watts of the fixture (divided by 1,000 to adjust for unit measurement conversion) multiplied by the All Night Base Period hours multiplied by the OL Base Period Energy Price. The Average Energy Price is derived from Schedules LS-3 Rate A and LS-3 [i] Rate A of the Electric Rate Ordinance, which blend the charges of Schedules A-2 Rate B and A-2 [i] Rate B for each time-of-use period. The Average Energy Charge is escalated over twenty years using the Consumer Price Index for Urban Wage Earners and Clerical Workers 12-month percentage change for the Los Angeles Area published by the applicable federal agency for the calendar year preceding the year for which the Average Energy Charge is being established (Consumer Price Index Change).

1.3 Average Maintenance Charge: This is the cost for replacement of an OL fixture over a period of twenty years. The

Average Maintenance Charge will include Lineman standard labor and overhead, transportation, and fixture replacement costs, which vary over the life expectancy of the OL fixture type (for example, LED fixtures have a life of ten years and will be replaced once over the twenty-year period, and high pressure sodium fixtures and metal halide fixtures have a life of four years and will be replaced four times over the twenty-year period). The Average Maintenance Charge is amortized over 20 years by the monthly cost of capital. The cost of capital is established by the LADWP Finance Group and represents the time value of money.

1.4 Average Watts: For the purposes of calculation of the Average Watts, fixtures in inventory at the time of the rate calculation that provide equivalent lumens will be grouped together. The Average Watts is the weighted average of the nameplate rating stamped on the fixtures in each determined group with equivalent lumens. The Average Watts is expressed in units of watts.

1.5 Electric Rate Ordinance: City of Los Angeles Ordinance No. 168436, passed by the Los Angeles City Council on December 18, 1992, and all amendments, revisions, replacements, and supplements thereof, including but not limited to City of Los Angeles Ordinance No. 184133.

1.6 Labor Charge: The Labor Charge is the sum of the Engineer and Lineman labor used to initially install fixtures under the OL program. The Labor Charge is a fixed monthly charge and includes labor costs (standard and overtime), overhead costs, and transportation costs. The costs are amortized over 240 months by the monthly cost of capital. It is assumed that the initial engineering will use standard labor including overhead, and the initial fixture installation will use Lineman overtime labor.

1.7 Total Materials Charge: A fixed monthly charge which includes the total capital cost of a fixture, including but not limited to the support arm and bolts for mounting. The Total Material Charge is amortized over 240 months by the monthly cost of capital.

2. CALCULATION OF FIXED MONTHLY CHARGE:

The Fixed Monthly Charge is the sum of the Average Energy Charge, the Labor Charge, the Average Maintenance Charge, and the Total Materials Charge as defined above. The sum is then

adjusted for program retention losses. The Fixed Monthly Charge is rounded to the nearest quarter. The Fixed Monthly Charge is a per fixture monthly cost that will be fixed for the duration of the OL service agreement with a customer. LADWP's Rates Group shall issue the Schedule of Fixed Monthly Charges for OL Fixture Types annually. The Fixed Monthly Charges in a customer's OL service agreement shall be based upon the Schedule of Fixed Monthly Charges for OL Fixture Types dated the year of the execution of that OL service agreement and shall remain at that level for the full term of that OL service agreement.

To illustrate the calculation, the **Fixed Monthly Charge (a per fixture charge) = (AVERAGE ENERGY CHARGE + LABOR CHARGE + AVERAGE MAINTENANCE CHARGE + TOTAL MATERIALS CHARGE) * (RETENTION ADJUSTMENT FACTOR)** and shall be calculated by use of the following formulas:

AVERAGE ENERGY CHARGE =

$$[(\text{All Night Low Peak Period Hours}) * (\text{AVERAGE WATTS}/1,000) * (\text{OL Low Peak Period Energy Price}) + (\text{All Night Base Period Hours}) * (\text{AVERAGE WATTS}/1,000) * (\text{OL Base Period Energy Price})] * \sum_{n=0}^{19} \frac{(1+i)^n}{20}$$

Where the variable i is the Consumer Price Index Change and the variable n is the year indexed from 0 thru 19 using the summation function Σ .

AVERAGE MAINTENANCE CHARGE =

$$\text{PMT}(\text{monthly cost of capital, 240 Months, } [(\text{Lineman labor} + \text{overhead} + \text{transportation}) * \text{hours} + \text{cost of replacement fixture}] * (\text{number of times of fixture replacement as determined by fixture type over 20 years}))$$

LABOR CHARGE =

$$\text{PMT}(\text{monthly cost of capital, 240 months, } (\text{Engineer labor} + \text{overhead} + \text{transportation}) * \text{hours}) + \text{PMT}(\text{monthly cost of capital, 240 months, } (\text{Lineman overtime labor} + \text{transportation}) * \text{hours})$$

TOTAL MATERIALS CHARGE =

$$\text{PMT}(\text{monthly cost of capital, 240 months, } (\text{fixture cost, including but not limited to arm and bolts cost}))$$

RETENTION ADJUSTMENT FACTOR =

$$(100 \text{ percent} / \text{retention percentage})$$

3. ADDITIONAL DETAIL RELATED TO CALCULATIONS:

3.1 The amortized charges calculated above will be determined using the payment function of Microsoft Excel or its replacement as follows:

$PMT(\text{Rate, Number of periods, Present Value})$

Where Rate is the monthly cost of capital
(cost of capital divided by 12);

Number of periods is the contract term
(240 months, or 20 years); and

Present Value is the cost as specifically spelled out
in each formula, which may include labor, overhead,
transportation, cost of replacement fixture, etc.

3.2 The time-of-use OL Energy Prices referenced above are determined as follows:

OL Low Peak Period Energy Price = LS-3 Rate A and LS-3 [i]
Rate A Low Peak Period Rate + Pass-Through Adjustments

OL Base Period Energy Price = LS-3 Rate A and LS-3 [i]
Rate A Base Period Rate + Pass-Through Adjustments

Where:

Pass-Through Adjustments is the sum of the averages of the applicable rate adjustments, as defined in the Electric Rate Ordinance, that were published periodically for the calendar year preceding the year of execution of the OL service agreement with the customer. For illustration, a calculation is shown below (subscripts indicate a quarter):

Pass-Through Adjustments = $(ECA_1 + ECA_2 + ECA_3 + ECA_4) / 4 +$
 $(RCA_1 + RCA_2 + RCA_3 + RCA_4) / 4 + (VEA_1 + VEA_2 + VEA_3 + VEA_4) / 4$
 $+ (CRPSEA_1 + CRPSEA_2 + CRPSEA_3 + CRPSEA_4) / 4 +$
 $(VRPSEA_1 + VRPSEA_2 + VRPSEA_3 + VRPSEA_4) / 4 + (IRCA_1$
 $+ IRCA_2 + IRCA_3 + IRCA_4) / 4$

LS-3 Rate A and LS-3 [i] Rate A Low Peak Period Rate =
 $[8 * (\text{Blended Low Season Low Peak Period Schedules A-2 Rate B}$
 $\text{and A-2 [i] Rate B}) +$
 $4 * (\text{Blended High Season Low Peak Period Schedules A-2 Rate B}$
 $\text{and A-2 [i] Rate B})] / 12$

LS-3 Rate A and LS-3 [i] Rate A Base Period Rate =
[8*(Blended Low Season Base Period Schedules A-2 Rate B and
A-2 [i] Rate B)+
4*(Blended High Season Base Period Schedules A-2 Rate B and
A-2 [i] Rate B)]/12