

**PACIFIC GAS AND ELECTRIC COMPANY
2014 General Rate Case Phase I
Application 12-11-009
Data Response**

PG&E Data Request No.:	CCSF_003-12		
PG&E File Name:	GRC2014-Ph-I_DR_CCSF_003-Q12		
Request Date:	May 1, 2013	Requester DR No.:	CCSF-PG&E-3
Date Sent:	May 8, 2013	Requesting Party:	City and County of San Francisco
PG&E Witness:	Jeffery Hulon	Requester:	William K. Sanders

QUESTION 12

In PG&E's response to Question 6.a in the City's First Set of Data Requests, PG&E states "PG&E currently has an internal standard" for responding to maintenance requests. With regards to this standard, please provide a copy of any documents in which PG&E established internal standards for: (a) maintenance requests that do not require extensive repairs; and (b) maintenance requests that require underground or other extensive repairs.

ANSWER 12

Please refer to GRC2014-Ph-I_DR_CCSF_003-Q12Atch01 and GRC2014-Ph-I_DR_CCSF_003-Q12Atch02 for the Streetlight Maintenance Standards and Procedures.



**Pacific Gas and
Electric Company™**

UTILITY OPERATIONS (UO)

UO Standard S2309

ISSUING DEPARTMENT: **Electric T&D Engineering**
UO SPONSOR: **VP - E&P**

EFFECTIVE DATE: **02-03**

REVIEW DATE: **02-07**

PAGE NO.: **1** OF **3**

TITLE: Street and Outdoor Lighting

- Purpose** This standard establishes requirements for maintaining street and outdoor lighting equipment.
This standard supports Utility Standard Practice 22, "Safety and Health Program," and UO Policy 3-8, "Installation of Gas and Electric Facilities."
- Recession** This standard supersedes UO Standard S2309, "Street and Outdoor Lighting," effective 9-00.
- Safety** In the application of this standard, safety must be the main focus of inspection and maintenance practices. Safety procedures for working on or around individual pieces of equipment are listed in the equipment section of the *Electric Distribution Preventive Maintenance Manual*. In addition, the *Code of Safe Practices* is to be followed at all times. ***Personal and public safety can be time-consuming, difficult and involved, but shall never be compromised.*** Besides ensuring a safe electric distribution system for employees and the public and complying with regulatory requirements, additional benefits of an effective inspection and preventive maintenance process are system reliability and extended asset life.
- Implementation Responsibilities** The vice president of Engineering and Planning (E&P) is responsible for approving, reviewing, and distributing this standard. The vice president is also responsible for ensuring that area line organizations have sufficient budget funding to achieve all of the requirements as identified in the annual streetlight maintenance plan and this standard.
The vice president of Operations, Maintenance and Construction (OM&C) is responsible for ensuring that area line organizations have sufficient and properly allocated resources to achieve all of the requirements as identified in the annual street light maintenance plan and this standard.
OM&C area directors are responsible for developing annual preventive maintenance plans, which identify and request the resources necessary to achieve all of the area-specific requirements of this standard. These annual plans will also identify area-specific objectives for streetlight maintenance and any associated training to achieve the area-specific requirements of this standard. OM&C area directors are also responsible for ensuring that area employees are aware of and accountable for consistent and uniform compliance with the area-specific requirements of this standard. OM&C area directors are required to submit their

annual plans and periodic status reports to the director of Electric Transmission and Distribution (T&D) Maintenance for compilation into a systemwide annual plan on a schedule as determined by Electric T&D Engineering.

The director of Electric T&D Maintenance is responsible for the oversight of a prioritized streetlight maintenance program, including developing performance measures and establishing schedules for reporting the progress of the systemwide annual streetlight maintenance plan. The director is also responsible for implementing an effective quality assurance program to assess compliance with regulatory requirements and to support continuous improvement of the electric distribution maintenance program. The director of Electric T&D Engineering is responsible for initiating and requesting approval for any changes to this standard, and is authorized to update and reissue changes to the attachments associated with this standard.

Managers, superintendents, and supervisors who direct the maintenance of street and outdoor lighting are responsible for the safe, efficient, and timely performance of the necessary work to ensure compliance with this standard. Managers and superintendents are responsible for correctly tracking and reporting work progress. Supervisors are responsible for ensuring that employees who perform the maintenance of street and outdoor lighting are trained, knowledgeable, and qualified to perform the assigned tasks. They are also responsible for periodically checking the work of employees performing the streetlight maintenance to verify accuracy, completeness, and proper recordkeeping, and that auditable records and documentation are current, accurate, and readily accessible.

Employees assigned the task of maintaining street and outdoor lighting are responsible for effectively and efficiently performing their assignments. For their own safety and that of the general public, they are responsible for performing only the tasks for which they are trained, knowledgeable, and qualified. When necessary, they shall notify their supervisors of any additional training, equipment, or resources needed to effectively and efficiently perform their assigned tasks.

Compliance This standard sets forth procedures that ensure compliance with relevant portions of General Orders 95, 128, and 165. This standard also ensures compliance with the tariffs under which street and outdoor lighting are installed.

Definition of Terms **Glassware:** Glass or plastic lens covering a lamp.

Photocontrol: Photoelectric relay used to turn streetlights on and off.

Streetlight: A light used primarily for the illumination of streets, highways and other public thoroughfares, roadways, or other outdoor-traveled ways.

Date Issued/Updated*Effective:* February 2003*Review Date:* February 2007

Signed,

Shan Bhattacharya
Vice President
Engineering and Planning

Reference Documents *Tariff Application Guide*, Lighting Rates Section
Electric Overhead Construction Manual, Street Light Section
Engineering Document 015137, “Identification of Street Light Luminaires”

Attachment Attachment 1, “Procedures”

Attachment 1 - Procedures

The following procedures define the tariff expectations required to ensure that the best service possible is provided to Pacific Gas and Electric Company (Company) customers by adequate lighting maintenance. The extent of maintenance provided is determined by the following rates.

1. Company-Owned Lighting Systems (Rate Schedules LS-1A, B, C, D, E, F and OL-1)

All maintenance, including parts and labor, is to be done at Company expense.

A. Group Replacement Schedule

1. **Incandescent Lamps**, all wattages - every 2,000 hours or 6 months for normal all-night service and once each year for midnight service.
2. **Mercury Vapor Lamps**, all wattages - every 16,000 hours or 4 years for normal all-night service and once every 8 years for midnight service.
3. **High-Pressure Sodium Lamps (HPS)** - every 20,000 hours or 5 years for normal all-night service and once every 8 years for midnight service.
4. **Photocontrol** - normally every 10 years. For mercury vapor lamps and HPS midnight service, it will be every 8 years, to coincide with the lamp replacement.

Spot replacements for premature burnouts, vandalism, etc., should normally be made in 3 to 5 days after notification by the customer.

B. Maintenance

1. **Luminaires:** Level if necessary. Replace unreadable wattage stickers.
2. **Lamps:** Before installing a lamp, scratch out or mark the month and year on the base. Always install a lamp with the correct wattage. Over- or under-wattage lamps will cycle or burn out prematurely.
3. **Glassware:** Clean both inside and outside. Replace glassware if necessary.
4. **Reflectors:** Clean reflectors with water and a damp cloth. Replace reflectors if they are corroded or stained and their reflective ability is lost.
5. **Gaskets:** Replace gaskets as necessary.
6. **Photocontrols:** Clean the window and test on-off operation.
7. **Ballast:** In some cases, it may be more economical to replace the complete luminaire if the ballast is damaged.
Note: Replacement of a complete luminaire is a capital expenditure and should be recorded as such.
8. **Brackets (Mast Arms):** Tighten all hardware. Replace the brackets as necessary.
9. **Poles:** Inspect metal or concrete poles for general condition, appearance, corrosion, rust, etc. Also, replace or assign streetlight numbers on all poles that do not have legible designations. Any maintenance of LS-1C customer-owned poles is to be done as an

accommodation at customer expense, where the customer is unable to obtain the service elsewhere. Paint the poles as necessary.

- 10. Records:** All changes, additions, or removals must be recorded. Mark all corrections needed on the appropriate map and report. Return the corrected map and report to the streetlight coordinator for making the necessary billing and mapping changes.

2. Customer-Owned Lighting Systems

The extent of maintenance is determined by the specific rate schedule shown below:

A. Rate LS-2A, LS-3

No maintenance (energy and group switching only).

B. Rate LS-2B

- 1) The Company furnishes all labor and materials necessary for inspecting, cleaning, and replacing lamps and glassware and cleaning only of the reflector, if required.
 - **Make lamp group replacements the same as for those in Rate Schedule LS-1A.** Perform routine maintenance as outlined in Section 1, items B.1, B.2, and B.3.
- 2) In case of an outage, check for lamp outage only. Replacement of material, such as photocontrol, reflectors, ballast, etc., will be at the customer's expense.
- 3) Inspect the installation. Submit any recommendations for customer action in writing through the proper channels.

C. Rate LS-2C

The Company provides complete routine maintenance for the entire system. All labor is at the Company's expense. Maintenance includes the same service as in LS-2B plus:

- 1) Maintaining and making the necessary repairs to keep the system operative without replacing equipment, overhead wiring between poles, and other accessible wiring in and on poles.
- 2) Furnishing photocontrols. All the material costs except for lamps, photocontrols, and glassware, are at the customer's expense.
- 3) Inspecting for major repairs or replacement of circuits, conduits, poles, or fixtures. Submit any recommendations for major repairs to the customer in writing for the customer's action.
- 4) Isolating trouble in the customer's system.
- 5) Painting poles, as necessary.

3. Painting of Electroliers and Streamlined Poles

Steel electroliers and streamlined poles are purchased galvanized and do not usually need to be painted. Where painted poles exist, it is important to maintain the condition and the appearance of the painted surfaces.

Tariff requirements for painted LS-1 and LS-2C poles are based on poles being painted every 10 years. These poles are identified by a “1” in the pole paint column of the streetlight detail report. The necessity and frequency of painting may vary considerably from one area to another depending on atmospheric conditions. See Table 1 for approved coatings and code numbers.

4. Approved Paints for Painting of Electroliers and Streamlined Poles

Table 1 Approved Paints

PG&E Number	Color
50	Primer
21	Olive Green
53	Black
108	Silver Gray
113	Aluminum
125	Pearl Gray
607	Gray Green
608	Light Gray Green
610	Green (Telephone)
632	Tower Green
633	Light Tower Green

5. Troubleshooting HPS Luminaires

The following items are needed for troubleshooting:

- A. Photocontrol-shorting cap (Code 352197).
- B. High-pressure sodium (HPS) lamp that is known to operate properly.
- C. Starter that is known to operate properly.
- D. HPS ballast, pulse and open-circuit voltage tester (Code 270303).
- E. Mercury vapor lamp that is known to operate properly.
- F. Incandescent lamp with a medium to mogul base adapter (Code 394001).

Use the following systematic field troubleshooting procedures to verify the source of trouble and to make the necessary field corrections:

- A. When a lamp will not light, perform the following actions:
 - 1) Check for voltage at the terminal block. If “OK” proceed to Step No. 2.

- 2) Remove the photocontrol and replace it with a photocontrol-shorting cap. If the lamp lights, the problem was a defective photocontrol or a poor connection in the photocontrol receptacle. If the lamp fails to light, go to Step No. 3.
- 3) Remove the photocontrol-shorting cap to de-energize the luminaire. Replace the HPS lamp with a known good HPS lamp and replace the photocontrol-shorting cap. If the lamp lights, the trouble was a defective or hard-starting lamp. If the lamp does not light, proceed to Step No. 4 if a HPS voltage tester is used. Otherwise, proceed to Step No. 5.
- 4) Remove the photocontrol-shorting cap to de-energize the luminaire. Replace the HPS lamp with the voltage tester. Reinstall the photocontrol-shorting cap. If the tester does not indicate enough starting pulse voltage, but has proper open-circuit voltage, proceed to Step No. 6. If the tester does not indicate proper open-circuit voltage, proceed to Step No. 7.
- 5) Remove the photocontrol-shorting cap to de-energize the luminaire. Replace the HPS lamp with an incandescent lamp for 70-150-watt HPS lamps, or for 200-400-watt HPS lamps, a mercury vapor lamp of the same wattage, and reinstall the photocontrol-shorting cap. If the lamp lights, it indicates the ballast, socket, and power wiring are satisfactory. Proceed to Step No. 6. If the lamp does not light, it indicates that the trouble is in the ballast and power wiring. Proceed to Step No. 7.

Note: When testing 70-watt, 100-watt and 150-watt lamps, use a 100-watt 120-volt incandescent lamp with a medium to mogul base adapter in lieu of a mercury vapor lamp. This is necessary due to the low socket voltages on these lamps. A mercury vapor lamp will not start reliably at these low lamp voltages. Do not leave a mercury vapor or incandescent lamp in the fixture for an extended period, as the HPS system is not designed to operate with these other lamps and failure or limited ballast life could occur.

- 6) Remove the photocontrol-shorting cap to de-energize the luminaire. Replace the starter with a starter known to operate properly. Reinstall the HPS lamp. Replace the photocontrol-shorting cap to energize the luminaire. If the HPS lamp lights, the problem was a defective starter. If the lamp does not light, proceed to Step No. 7.
 - 7) The problem with this luminaire is beyond economical repair. It should be replaced. The replacement should be recorded as a capital expenditure.
- B.** For a dayburner, perform the following actions:
- 1) Remove the photocontrol and replace it with a new photocontrol. If the lamp relights, proceed to Step No. 2. If the lamp does not relight, the problem was a defective photocontrol. Cover the new photocontrol to check the full operation of the photocontrol.
 - 2) If the lamp still burns, there is a bad connection in the luminaire neutral circuitry to the photocontrol. This could be in the wiring or at the connection between the photocontrol and the receptacle.

It should be noted that a problem not usually seen in other high-intensity discharge lighting, but common to HPS street lights, is lamp cycling. This is usually called end-of-lamp-life failure. However, it could be caused by other reasons. Cycling occurs when the lamp goes off for no apparent reason, only to come back on after a few minutes. The “on” time will vary due to operating conditions such as supply voltage stability, ballast design, and lamp stability. This cycling continues until the lamp is replaced or another fixture component fails. Other conditions that can cause cycling are loose connections, faulty internal electrical connections to the lamp, high ambient-light level that causes the photocontrol to cycle, or severe vibrations that cause the lamp voltage to rise above operating limits.

Streetlight maintenance employees and others responsible for streetlight operations maintenance work should keep appropriate records; establish necessary follow-up to develop annual streetlight maintenance budgets and schedules; and ensure that the required cleaning supplies and replacement parts are available to maintain the street-lighting systems in their areas.

