

7. Streetlight Management

- **Since streetlight management is not a core Public Utilities Commission function, the Streetlight Management Program has not been given a high priority. There is a significant capital improvement backlog, particularly with regard to energy efficiency initiatives. There is no comprehensive streetlight capital improvement plan, no Streetlight Management Program business plan, no development of alternative funding sources, no comprehensive assessment inventory of the City’s streetlights, and no plan to eliminate the backlog of streetlight outages.**
- **Responsibilities for streetlight planning, design, construction, and maintenance are split between the Public Utilities Commission and the Department of Public Works. The Department of Public Works is also responsible for right of way projects that can damage underground utilities, thereby directly impacting streetlight functionality and program costs.**
- **Other cities place streetlight management programs in their major public works departments. By transferring the Streetlight Management Program from the Public Utilities Commission to the Department of Public Works or the Municipal Transportation Agency, the City could capitalize on organizational efficiencies that would (a) enhance right of way and traffic management services and coordination of capital improvement projects, (b) improve the ability to leverage alternative streetlight funding, and (c) allow the City to more aggressively pursue streetlight energy efficiency initiatives. The proposed transfer of responsibilities would be cost neutral, while simultaneously producing expanded revenue and cost reduction opportunities for the Streetlight Management Program.**

The Streetlight Management Program

The Public Utilities Commission’s Streetlight Management Program undertakes streetlight planning and design reviews in conjunction with the Department of Public Works, maintains and operates the City’s approximately 22,000 streetlights, responds to public complaints about streetlights, and coordinates with the Pacific Gas and Electric Company which owns approximately 20,000 streetlights in the City.¹ The Hetch Hetchy Enterprise provides power for all 42,000 streetlights and funds their maintenance.

In order to fulfil these functions, the Manager, Streetlights and Special Projects reports to the Acting Director of Power Operations and directly manages 4.00 full-time equivalent

¹ These Pacific Gas and Electric Company streetlights are being progressively replaced by the undergrounding program funded in part by the ratepayers of the Pacific Gas and Electric Company.

(FTE) staff.² These staff are supported by a further 6.00 FTE field staff managed by the Classification 7285 Transmission Line Supervisor II who also reports to the Acting Director of Power.³ In addition, off-budget, as-needed positions equivalent to 3.00 full-time equivalents (FTE) are funded by fees paid by developers, claims paid by insurance companies, and prior capital project appropriations.

Prior to 1997, Streetlight Management Program maintenance had been contracted out to a third party before management responsibility for the program was transferred to the Department of Telecommunications and Information Services under a work order from the Hetch Hetchy Enterprise Fund. The Public Utilities Commission subsequently assumed full management and maintenance responsibility, with support from the Department of Public Works (as discussed below) and the Department of Telecommunications and Information Services (through an annual \$20,000 work order to conduct automated random night checks for outages). No third party contractors are involved in City streetlight maintenance and operations.

Until it became fully subsidized by the Hetch Hetchy Enterprise Fund for the first time in FY 2002-2003, as shown in Table 7.1 below, the Streetlight Management Program was budgeted under the Public Utilities Commission's Bureau of Light, Heat, and Power which was funded by the General Fund. Between FY 2000-2001 and FY 2004-2005, the Streetlight Management Program's budget has decreased, and between FY 2000-2001 and FY 2003-2004, the program's annual actual expenditures have also decreased. Despite this, the Department under-expended its Streetlight Management Program budgets in both FY 2002-2003 and FY 2003-2004. Such under-expenditures may be accounted for if the Department (a) does not include off-budget recoveries in the budget, or (b) recovered more than anticipated.

² These 4.00 FTE positions comprise (a) a 1.00 FTE Classification 5366 Engineering Associate II, (b) 2.00 FTE Classification 5352 Electrical Engineering Assistants, and (c) a 1.00 FTE Classification 5601 Utility Analyst.

³ These 6.00 FTE positions comprise (a) a 1.00 FTE Classification 6252 Line Inspector, (b) 2.00 FTE Classification 7338 Electrical Line Workers, (c) 2.00 FTE Classification 7432 Electrical Line Helpers, and (d) a 1.00 FTE Classification 7345 Electrician.

Table 7.1

**Streetlight Management Program:
Budget Versus Actual Expenditures
FY 2000-2001 Through FY 2004-2005**

Fiscal Year	FY 2000-2001	FY 2001-2002	FY 2002-2003	FY 2003-2004	FY 2004-2005
General Fund \$ (Original Budget)	\$3,337,389	\$2,687,024	\$0	\$0	\$0
Hetch Hetchy \$ (Original Budget)	\$0	\$0	\$3,051,128	\$2,257,421	\$2,180,268
Total Original Budget	\$3,337,389	\$2,687,024	\$3,051,128	\$2,257,421	\$2,180,268
Less Actual Expenditures	<u>(\$3,867,857)</u>	<u>(\$2,692,384)</u>	<u>(\$2,072,627)</u>	<u>(\$2,210,902)</u>	
Under/(Over)-Expenditures	(\$530,468)	(\$5,360)	\$978,501	\$46,519	

Source: Public Utilities Commission Financial Services

Issues

The Public Utilities Commission's continuing management of streetlights presents the following challenges:

- Streetlights are the only hydroelectric-powered municipal facilities in the City's surface level right-of-way, which the Public Utilities Commission owns, maintains, and operates. In all other cases, the responsible municipal entity itself owns, maintains, and operates its facilities and purchases the hydroelectric power from the Hetch Hetchy Enterprise (for example, the Municipal Transportation Agency is responsible for traffic signals and MUNI power lines). The provision of streetlights is not a core Public Utilities Commission function.
- The Public Utilities Commission has not yet adopted a comprehensive streetlight capital improvement plan. The Acting Director of Power Operations advised that she has drafted various capital improvement plans for the replacement of incandescent series loop streetlight systems along Van Ness Avenue and in the Richmond and Sunset Districts but these have not been approved by the Public Utilities Commission for inclusion in the Department's budget submissions due to their significant cost and competing capital requirements within the Department. There is a significant capital improvement backlog. For example, the high voltage series loop lighting systems on

certain major roads, including Van Ness Avenue and Lombard Street, are antiquated, non-energy efficient systems with very expensive parts. Previous efforts to retrofit the Van Ness Avenue streetlights in a joint project with MUNI were discontinued and the funds were reallocated following the 1989 earthquake. There is no substantial proactive repair and replacement program currently underway. The current Manager, Streetlights and Special Projects has commenced the development of a new Capital Improvement Program to install and/or repair existing streetlights, remove graffiti, and enhance the Streetlight Management Program.

- The Public Utilities Commission has not developed a Streetlight Management Program business plan. There has been no development of alternative funding sources (for example, property owner assessment,⁴ State Gas Tax funds eligible for streetlighting, transportation funding for roadway initiatives, and/or increased third party funding of streetlight repairs). Further, the City's investment in its Streetlight Management Program has not been counted toward local match requirements in Department of Public Works and Municipal Transportation Agency roadway projects utilizing State and Federal grant funds.
- There is no comprehensive assessment inventory of the City's streetlights and their condition. The current Manager, Streetlights and Special Projects has commenced the development of such an assessment inventory.
- Due to the public and political interest in neighborhood streetlighting, the limited resources among City departments responsible for the right-of-way, and the lack of an overarching capital improvement program plan to provide a decision-making framework, streetlight management has the potential to consume a disproportionate amount of the Acting Director of Power Operations' time.
- Streetlight management consumes a portion of the Manager, Streetlights and Special Projects' time which could be more effectively focused on risk management issues (that position's primary responsibility).
- Little benefit is derived from Public Utilities Commission oversight. Occasionally the Public Utilities Commission has adopted resolutions about specific streetlighting programs (for example, a 1997 resolution permitting white lights, a 1999 resolution approving metal halide lighting in Mission Bay, and a 2003 resolution approving induction lighting on Octavia Boulevard). This is in line with the San Francisco

⁴ Los Angeles County has assessed property owners for streetlights since 1929. Its streetlighting program has approximately one staff member for every 1,000 streetlights and a full-time night crew, and has started installing a SCADA system which automatically monitors streetlight sensors every six seconds to identify streetlight outages. By contrast, the San Francisco system has approximately one staff member for every 1,692 streetlights, no night crew, and no automatic monitoring of streetlight outages (although it is currently researching the available monitoring systems and funding options).

Administrative Code, which makes streetlight specifications subject to the review and approval of the Public Utilities Commission.⁵

- Currently, the Department of Public Works’ landscape architects and its Bureau of Engineering’s Electrical Engineering Section prepare the technical specifications and the available street furniture options, and provide technical support. They choose the lighting systems for large developments such as the Embarcadero and the Third Street Light Rail. The Department of Public Works or its contractors construct the new streetlights, for which the Public Utilities Commission assumes responsibility for maintenance, after the warranty period expires. Yet, according to the Acting Director of Power Operations, the Department of Public Work’s design, technical, and construction decisions are often not well communicated and appear not to fully consider the Public Utilities Commission’s maintenance and other operational requirements. For example, the Public Utilities Commission is currently refusing to assume responsibility for lighting systems which have outstanding safety and reliability issues.
- According to the Acting Director of Power, there has also been inadequate communication with the Hetch Hetchy Enterprise from the Department of Public Works and its contractors over relocating streetlights and conduits during sidewalk alterations and street tree planting. The lack of adequate notice to the Public Utilities Commission increases the likelihood of damage to underground utilities during construction. To counteract this problem, the Public Utilities Commission is reprioritizing staffing resources to improve “underground service alerts,” the advanced marking of underground utilities to avoid damage during construction and to protect the City from repair cost liability if damage occurs during construction.
- Due the number of Streetlight Management Program staff available and the 925 miles of roadway within the City, the Department relies on streetlight malfunction notices from the public. Based on some recent random night checks for streetlight outages, there could be an approximately 10 percent unreported outage rate. This would represent approximately 2,200 outages at any one time. The Manager, Streetlights and Special Projects advises that, at the current levels of operation (repairing between 300 and 600 malfunctioning streetlights per month), this would take approximately four to seven months to correct this number of non-functioning streetlights. That repair time estimate does not consider (a) the current repair workload, and (b) the time to perform the additional night checks to identify the outages. The Manager, Streetlights and Special Projects estimates that the night checks could amount to 12 weeks of work for an employee.

⁵ “The Public Utilities Commission shall determine the intensity of illumination, number and spacing of lighting facilities and other details necessary to secure satisfactory street lighting.” (Ord. No. 9046 (1939), Sec. 14)

Responsible Department in the Future

While the City's streetlights are currently managed by the Public Utilities Commission, they could be managed by the Department of Public Works or the Municipal Transportation Agency. Within the context of the issues listed above, the following discussion considers the respective advantages of each department providing streetlight management services.

Advantages of Streetlight Management as a Public Utilities Commission Function

1. The Public Utilities Commission provides Hetch Hetchy power to the City-owned streetlights. Having streetlights under direct Public Utilities Commission management maximizes the department's expenditure control over the Hetch Hetchy Enterprise Fund. Even if streetlight management transfers to the Department of Public Works or the Municipal Transportation Agency, the Public Utilities Commission would continue to fund streetlight installation, maintenance, and operating costs (to the degree that there are no alternative funding sources). To help contain the cost of Hetch Hetchy Enterprise Fund revenue transfers, the Public Utilities Commission could enter into a memorandum of understanding with the Department of Public Works or the Municipal Transportation Agency which sets (a) a dollar amount per streetlight with an inflation adjustment formula for future years, and (b) energy efficiency goals for the Streetlight Management Program. For example, such a memorandum of understanding could set a 20 percent energy reduction goal over five years irrespective of any increase in the number of streetlights during that period.
2. In addition to the 10.00 FTE staff dedicated to the Streetlight Management Program, the Hetch Hetchy Enterprise uses its other Field Services Section staff to support the Streetlight Management Program when such additional staff are needed and available. For example, by performing work for developers, insurance companies, and capital projects, there has been sufficient funding available to hire off-budget and as-needed staff who have also been able to assist with streetlight work. If the streetlight management function is transferred to another department, that department may also use funds from fees paid by developers, claims paid by insurance companies, and prior capital project appropriations to reallocate additional staffing resources to cover the Streetlight Management Program.
3. The Public Utilities Commission directly contracts with the Pacific Gas and Electric Company, the other major owner of streetlights in the City. Pacific Gas and Electric Company wheels Hetch Hetchy power, maintains its own streetlights at a cost to the Hetch Hetchy Enterprise Fund, and uses Hetch Hetchy power for its own streetlights. Even if streetlight management transfers to the Department of Public Works or the Municipal Transportation Agency, the Public Utilities Commission would continue to manage the City's Pacific Gas and Electric Company contract.

4. The Public Utilities Commission has a shared cost arrangement with Caltrans for certain streets (for example, Lombard Street leading up to the Golden Gate Bridge). This is sometimes a 50/50 deal, with Caltrans performing maintenance under reimbursement by the Public Utilities Commission.
5. The Public Utilities Commission coordinates with the Pacific Gas and Electric Company for connection permitting and would continue to be so, even if streetlight management transfers elsewhere because the Hetch Hetchy Enterprise Fund needs to control the number of connections.
6. The Public Utilities Commission's oversight is another avenue for public input into streetlight management. However, as noted above, the Public Utilities Commission has provided little policy oversight.

Advantages of Streetlight Management as a Department of Public Works Function

1. The Department of Public Works takes the lead on repaving projects receiving Federal or State funds. The Department of Public Works can incorporate streetlighting into its transportation funding proposals for roadway initiatives, thereby leveraging non-Hetch Hetchy Enterprise Fund funding sources for new streetlights. Further, the Department of Public Works, in conjunction with its client, the Municipal Transportation Agency, can use the City's investment in the Streetlight Management Program as part of the City's local match requirements for grant-funded repaving projects.
2. The Department of Public Works is responsible for the right-of-way. Street lights are an integral component of the right-of-way given (a) their role to provide safe streets for vehicles and pedestrians, and (b) their presence as street furniture. The Department of Public Works is responsible for:
 - The policy framework governing right-of-way planning. This could include a streetlight capital improvement plan and a comprehensive streetlight assessment inventory.
 - Most other street furniture and related engineering work, except for traffic and pedestrian-related features which is the responsibility of the Municipal Transportation Agency.
 - Lighting in walkways, stairways, parking lots, tunnels, pedestrian bridges, and bike lanes.
 - An existing workforce with the necessary lighting skills and experience which could be supplemented by the 10.00 FTE Public Utilities Commission streetlight maintenance and operations staff.
3. At the present time, the Department of Public Works designs all undergrounding projects under a memorandum of understanding with the Public Utilities

Commission. The Department of Public Works' Bureau of Street Mapping's Street Coordination Center already coordinates all elements of the undergrounding projects executed by the Public Utilities Commission and the Pacific Gas and Electric Company. Making the Department of Public Works responsible for streetlight maintenance would ensure that streetlights and conduits are sufficiently considered during the planning for undergrounding work.

4. It would also be appropriate for the Department of Public Works to log all streetlight-related information in its Geographic Information System. This would improve "underground service alerts" to avoid damage during third party construction work to protect the City's infrastructure from repair cost liability if damage occurs during construction. Further, this would avoid the Public Utilities Commission outsourcing the data entry for real time mapping of the streetlight system through a Geographic Information System, as is currently contemplated by the Manager, Streetlights and Special Projects.
5. Transferring streetlight management to the Department of Public Works would ensure that streetlight design, purchase, construction, maintenance, operations, and storage are the responsibility of one department. As noted above, while the Department of Public Works' landscape architects and its Bureau of Engineering's Electrical Engineering Section prepare the technical specifications and the available street furniture options, and provide technical support, the department's design, technical, and construction decisions have often not fully taken into account the Public Utilities Commission's maintenance and other operational issues, according to the Acting Director of Power Operations. Such issues could be avoided if the Department of Public Works (and its contractors) resolved the issues internally.
6. Since 1991, the Department of Public Works has been responsible for graffiti abatement on all street furniture, irrespective of which City department is responsible for individual pieces of street furniture. The Public Utilities Commission has a standing work order with the Department of Public Works for streetlight painting to address graffiti (\$20,000 per year).
7. The Department of Public Works' nighttime street cleaners could report streetlight outages.
8. The Department of Public Works frequently attends neighborhood community meetings and learns about neighborhoods' streetlighting concerns. Transferring streetlight management responsibility to the Department of Public Works would allow the department to exercise greater control over lighting solutions. For example, on streets where City trees obscure the streetlights, the Department of Public Works currently controls the trees only, through its Bureau of Urban Forestry, yet the City's trees are just one part of the problem.
9. No new manager position in the Department of Public Works' Bureau of Street and Sewer Repair would be required to manage streetlights.

10. It is common for jurisdictions' Departments of Public Works to manage their streetlight programs. For example, Los Angeles County's streetlight program is managed by its Department of Public Works.

Advantages of Streetlight Management as a Municipal Transportation Agency Function

1. The Municipal Transportation Agency is responsible for all aspects of the roadway connected with traffic and pedestrians, including design, sizing, and placement of medians, sidewalks, traffic and pedestrian signage, and traffic signals. However, for new signals, the Municipal Transportation Agency goes through the Department of Public Works' Bureau of Engineering for electrical engineering and final design.
2. Streetlights and traffic lights share conduits, sidewalk property, and poles (most streetlight poles which hang over the roadway at intersections also hold traffic signals), and use similar maintenance and repair equipment. If a streetlight pole is knocked down and it has a traffic signal on it, the Public Utilities Commission will install the replacement arm and luminaire while the Municipal Transportation Agency will perform the rest of the work. The Municipal Transportation Agency is also fully responsible for approximately 40 streetlights in its Municipal Railway system.
3. The Municipal Transportation Agency takes the lead on transportation improvement projects receiving Federal or State funds. The Municipal Transportation Agency can incorporate streetlighting into its transportation funding proposals for roadway initiatives, thereby leveraging non-Hetch Hetchy Enterprise Fund funding sources for new streetlights. Further, the Municipal Transportation Agency, in conjunction with its contractor, the Department of Public Works, can use the City's investment in the Streetlight Management Program as part of the City's local match requirements for grant-funded transportation improvement projects.
4. The coordination of large projects would be improved. For example, the current overhaul of traffic lights along Lombard Street could be coordinated with a concurrent review of that street's lighting as part of the Mayor's initiative to landscape the medians of the City's major arterial routes. The Municipal Transportation Agency could facilitate the use, during large projects, of standardized streetlight parts.
5. A new manager position in the Municipal Transportation Agency's Department of Parking and Traffic (Field Operations Bureau) would be required to manage the Streetlight Management Program.
6. Traffic engineers manage some cities' streetlighting programs. However, in cities where traffic engineers are responsible for both traffic and street lights, those traffic engineers are usually part of the Department of Public Works.

Comparison of the Three Agencies

Based on the above analysis, transferring management responsibility for the City's streetlights from the Public Utilities Commission to the Department of Public Works or the Municipal Transportation Agency, and transferring the 10.00 FTE staff assigned to the Streetlight Management Program to the Department of Public Works' Bureau of Street and Sewer Repair or to the Municipal Transportation Agency's Department of Parking and Traffic, would achieve the following:

- The transfer of a non-core Public Utilities Commission function to a more appropriate City organization. Streetlights would no longer be the only hydroelectric-powered municipal facilities in the City's right-of-way which the Public Utilities Commission owns, maintains, and operates. The proposed transfer would reduce the pressure on the Acting Director of Power Operations' time and allow the Manager, Streetlights and Special Projects to focus on risk management issues.
- Potential leveraging of alternative funds for streetlighting.
- In terms of the Department of Public Works, transfer of the Streetlight Management Program would achieve (a) coherent right-of-way planning, (b) better management of the undergrounding program's impact on streetlights, (c) better coordination of streetlight design, purchase, construction, maintenance, operations, and storage, (d) congruence with the Department of Public Works' responsibility for graffiti abatement, and (e) more comprehensive solutions to neighborhoods' streetlight concerns.
- In terms of the Municipal Transportation Agency, transfer of the Streetlight Management Program would achieve (a) coherent traffic and pedestrian planning, (b) better coordination of streetlight pole repair, and (c) better coordination of large traffic and street light projects.

On balance, the Budget Analyst recommends that the Public Utilities Commission transfers the Streetlight Management Program to the Department of Public Works because such a transfer would achieve the most benefits.

Conclusions

Streetlight management is not a core function of the Public Utilities Commission. Little benefit is derived from Public Utilities Commission oversight.

There is no comprehensive streetlight capital improvement plan, no substantial proactive repair and replacement program currently underway, no Streetlight Management Program business plan, and no comprehensive assessment inventory of the City's streetlights and their condition. There has been no development of alternative funding sources and the City's investment in its Streetlight Management Program has not been counted toward

local match requirements in Department of Public Works and Municipal Transportation Agency roadway projects utilizing State and Federal grant funds.

There are strong arguments to be made for transferring the Streetlight Management Program to either the Department of Public Works or to the Municipal Transportation Agency. On balance, however, transfer to the Department of Public Works would achieve the most benefits.

Recommendations

The Public Utilities Commission General Manager should:

- 7.1 Authorize staff to negotiate with the Department of Public Works over the specific Streetlight Management Program resources to be transferred from the Public Utilities Commission to the Department of Public Works to ensure that the program is adequately resourced.
- 7.2 Promote leveraging of alternative funds for streetlights while continuing Hetch Hetchy Enterprise funding of streetlights to ensure that there is no impact on the General Fund.
- 7.3 Negotiate a memorandum of understanding between the Public Utilities Commission and the Department of Public Works. In order to contain the cost of Hetch Hetchy Enterprise Fund revenue transfers, this memorandum of understanding should cap the Hetch Hetchy Enterprise's funding for the Streetlight Management Program by setting (a) a dollar amount per streetlight with an inflation adjustment formula for future years, and (b) energy efficiency goals.

Costs and Benefits

Assuming that the Public Utilities Commission's Manager, Streetlights and Special Projects is reassigned to work full-time on the Department's risk management issues, transfer of the responsibility for streetlight management from the Public Utilities Commission to the Department of Public Works would be cost neutral because (a) there is no change in the 10.00 FTE maintenance and operations positions being transferred, and (b) the Hetch Hetchy Enterprise would continue to fund costs up to the current level and provide power to the City's streetlights.

To the degree that the Department of Public Works is able to find alternative funding sources for streetlights, particularly from Federal and State grant funding for roadway and transportation improvement initiatives, there could be a savings to the Hetch Hetchy Enterprise Fund at the current level of streetlight service. Alternatively, any new funding sources could fund service enhancements.

In order to contain the cost of Hetch Hetchy Enterprise Fund revenue transfers, a memorandum of understanding between the Public Utilities Commission and the

Department of Public Works should cap the Hetch Hetchy Enterprise's funding for the Streetlight Management Program by setting (a) a dollar amount per streetlight with an inflation adjustment formula for future years, and (b) energy efficiency goals.

Energy efficiency enhancements, such as the replacement of the high voltage series loop lighting systems on certain major roads, would have the following impacts:

- Hydroelectric power not required for the City's streetlights could instead be sold on the market thereby increasing Hetch Hetchy Enterprise revenues.
- Energy efficient equipment would reduce maintenance and operating costs over time.
- Technologically updated and more reliable streetlight equipment would enhance vehicular and pedestrian safety.