

# California State Auditor

B U R E A U O F S T A T E A U D I T S

## **San Francisco Public Utilities Commission:**

*Its Slow Pace for Assessing Weaknesses in Its  
Water Delivery System and for Completing  
Capital Projects Increases the Risk of Service  
Disruptions and Water Shortages*



February 2000  
99124

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# CALIFORNIA STATE AUDITOR

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February 17, 2000

99124

The Governor of California  
President pro Tempore of the Senate  
Speaker of the Assembly  
State Capitol  
Sacramento, California 95814

Dear Governor and Legislative Leaders:

As requested by the Joint Legislative Audit Committee, the Bureau of State Audits presents its audit report concerning our evaluation of the methods employed by the San Francisco Public Utilities Commission (commission) to assure an adequate, long-term, and reliable water supply for its Bay Area customers. This report concludes that the commission has been slow to assess and upgrade its water delivery system to enable it to survive catastrophic events such as earthquakes, fires, or floods. The commission has also been slow to estimate the amount of water it will need to meet demand in the future and to seek additional sources of water. As a result, the nearly 2.4 million customers in the City and County of San Francisco, and in Alameda, San Mateo, and Santa Clara counties who rely on the commission for their drinking water are at greater risk of disruptions and water shortages in the event of a catastrophe or a drought.

The commission's capital improvement plan currently lists about 200 capital projects requiring more than \$3 billion to complete. The commission plans to complete most of these projects over the next 15 years. In the past 10 years, however, the commission completed 54 capital projects at a cost of about \$270 million. Several factors contributed to the commission's inability to complete capital projects more quickly. For instance, the commission believes that insufficient staffing to manage the projects is a major factor. Other deficiencies that contribute to the slowness are inefficient contracting procedures, outdated project operations manuals, weak project monitoring, and inadequate project management training.

The commission acknowledges that it lacks the tools to streamline project development or to control such a large capital improvement program. Therefore, it has taken several measures to address the deficiencies. However, its ability to ensure a sufficient, long-term and reliable water system remains uncertain since most of these measures are still in development or were recently finalized.

Respectfully submitted,

MARY P. NOBLE  
Acting State Auditor

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# SUMMARY

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## Audit Highlights . . .

*Our review of the San Francisco Public Utilities Commission (commission) disclosed:*

- The commission has been slow to assess its water delivery system and has made little progress in completing capital projects aimed at improving system reliability.*
- Since 1994, the commission has known that it needs to identify additional sources of water, yet it did not begin to develop a water supply plan until 1996; completion of the plan is not expected until March 2000.*
- Several factors contribute to the commission's slow pace for completing capital projects, including shortages of project managers; out-of-date procedures for planning, designing, and constructing capital projects; inadequate systems to track progress; and the absence of formal training for project managers.*
- The success of its capital improvement program is uncertain because it is still developing some plans while it has only recently implemented others.*

## RESULTS IN BRIEF

The San Francisco Public Utilities Commission (commission) has been slow to assess and upgrade its water delivery system so it can survive catastrophes such as earthquakes, floods, and fires. It also has been slow to estimate the amount of water it will need to meet future demand and to seek additional sources of water. As a result, the nearly 2.4 million customers in four Bay Area counties who rely on the commission for their drinking water are at greater risk of disruptions and water shortages if an emergency or a drought occurs.

The commission is part of the City and County of San Francisco. Among other responsibilities, it provides drinking water to retail customers in San Francisco and to 28 wholesale suppliers serving parts of San Mateo, Santa Clara, and Alameda counties. Using a complex system of dams, reservoirs, treatment plants, pump stations, tunnels, pipelines, and valves, the commission transports much of its water to the Bay Area from Hetch Hetchy Reservoir in Yosemite National Park, almost 150 miles away.

Some parts of the commission's water delivery system, such as critical pipelines, are nearly 75 years old and are in dire need of repair or replacement. In addition, parts of the water delivery system do not meet modern seismic standards. However, the commission did not begin to study the system's overall reliability until 1994 and has completed only two of the study's three planned phases, with a delay of nearly three years between the completion of the first phase and the start of the second. This delay was due to the commission's failure to appoint promptly a staff member to manage the project and to problems with the contracting process.

The commission also has been slow to develop its water supply master plan, which will estimate the amount of water needed in the future and recommend ways of acquiring more water. Although the commission has known since 1994 that it eventually will need to find additional sources of water, it did not actively begin to develop the water supply master plan until 1996, and the results are not expected until March 2000.

Further, some customers have expressed concern regarding the commission's slow pace in completing capital projects aimed at upgrading its aging water delivery infrastructure. Information provided by the commission shows that it completed 54 capital projects at a cost of about \$270 million in the last 10 years, resulting in an average of five capital projects at a cost of \$27 million annually. Given the size, complexity, age, and declining condition of the commission's water delivery system, this project completion rate appears low.

There are many reasons for the apparent slow pace in completing capital projects, ranging from a shortage of project managers on staff to operational deficiencies such as a lack of up-to-date procedures for awarding contracts and for planning, designing, and constructing capital projects. Until recently, project managers also lacked an adequate system to track the progress of capital projects and preventive maintenance. Finally, although ongoing development is crucial to ensuring that staff members stay abreast of industry changes and that they improve their technical expertise, the commission is not providing any formal project management training to staff members who manage capital projects.

Although the commission is addressing the concerns with its more than \$3 billion capital improvement program, its success is uncertain because it is still developing some plans while it has implemented others only recently. For instance, the commission seeks to hire a program management consultant to provide the management services, specialized technical expertise, and staff development assistance it needs to undertake its huge capital improvement program. However, San Francisco's budget analyst is reviewing the proposed contract, and approval of this consultant by the commissioners and the board of supervisors is by no means certain.

For each of its three drinking water-related divisions, the commission is developing capital improvement plans to evaluate and prioritize the projects necessary to improve the reliability of the water delivery system. The plan for the Hetch Hetchy Water and Power Division, however, does not yet contain cost or schedule estimates for all identified capital projects. In addition, the commissioners have not yet adopted the three plans.

The commission also is working on a long-range financing plan for its Water Supply and Treatment and City Distribution divisions. This plan intends to show how the commission will finance the capital projects for these two divisions. However, a January 2000 report from the commission's consultant relies heavily on using voter-approved revenue bonds to finance the projects and does not sufficiently describe contingencies should San Francisco's voters reject the bond measures. A similar report covering the Hetch Hetchy Water and Power Division is not yet complete.

Executive-level turnover at the commission and the time it will take to fill these positions also contribute to the uncertainties. The absence of strong, consistent leadership greatly diminishes the commission's chances of success in meeting the significant challenges it faces in the near future, including the need to implement a large-scale capital improvement program and to obtain additional water supplies. On the other hand, turnover among the commission's executives also presents a unique opportunity to build a management team that will provide the leadership and expertise necessary to implement a cohesive capital improvement program.

## **RECOMMENDATIONS**

To ensure that the commission follows through on its plans, it should submit reports annually to the Legislature and its suburban customers for the next five years. These reports should describe the progress the commission has made in implementing each of its plans and the accomplishments it has achieved.

To improve the reliability of its water delivery system, the commission should continue to finalize, adopt, implement, monitor, and as necessary revise the plans and actions it has in progress. In particular, it should:

- Complete its facilities reliability study and its water supply master plan.
- Continue to address its operational deficiencies, including its contracting procedures, project operations procedures, tracking of capital projects, and tracking of preventive maintenance.

- Develop and implement a formal training program for project managers and ensure that staff members receive adequate training while this program is being developed.
- Be prepared to take alternative action if the commission or the board of supervisors decides not to approve the contract for its program management consultant.
- Complete the capital improvement plans for its three water-related divisions and seek formal approval from the commissioners.
- Develop a formal comprehensive plan to outline the staffing requirements necessary to complete its capital improvement plans.
- Complete and adopt a long-range financial plan for the Water Supply and Treatment Division, City Distribution Division, and Hetch Hetchy Water and Power Division. In addition, it should develop contingencies for its long-term financial plan in case the voters fail to approve the bonds for financing the capital improvements.
- Given the size and complexity of the challenges it faces in the near future, the commission should seize the opportunity to appoint individuals who have effectively implemented large-scale capital improvement programs. Further, it should take measures to ensure that it fills available positions promptly.

## COMMISSION COMMENTS

The San Francisco Public Utilities Commission agrees with most of our recommendations and did not fully address others. Our comments follow the commission's response. ■

# INTRODUCTION

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## BACKGROUND

The United States government enacted the Raker Act in 1913. This act granted to the City and County of San Francisco certain rights of way and the use of public lands in California to, among other things, construct, operate, and maintain dams, reservoirs, and other structures for conveying water for domestic uses. Under this act, San Francisco obtained the right to build the Hetch Hetchy Reservoir in Yosemite National Park to supply the city and county with drinking water. San Francisco began receiving water from the reservoir in 1934.

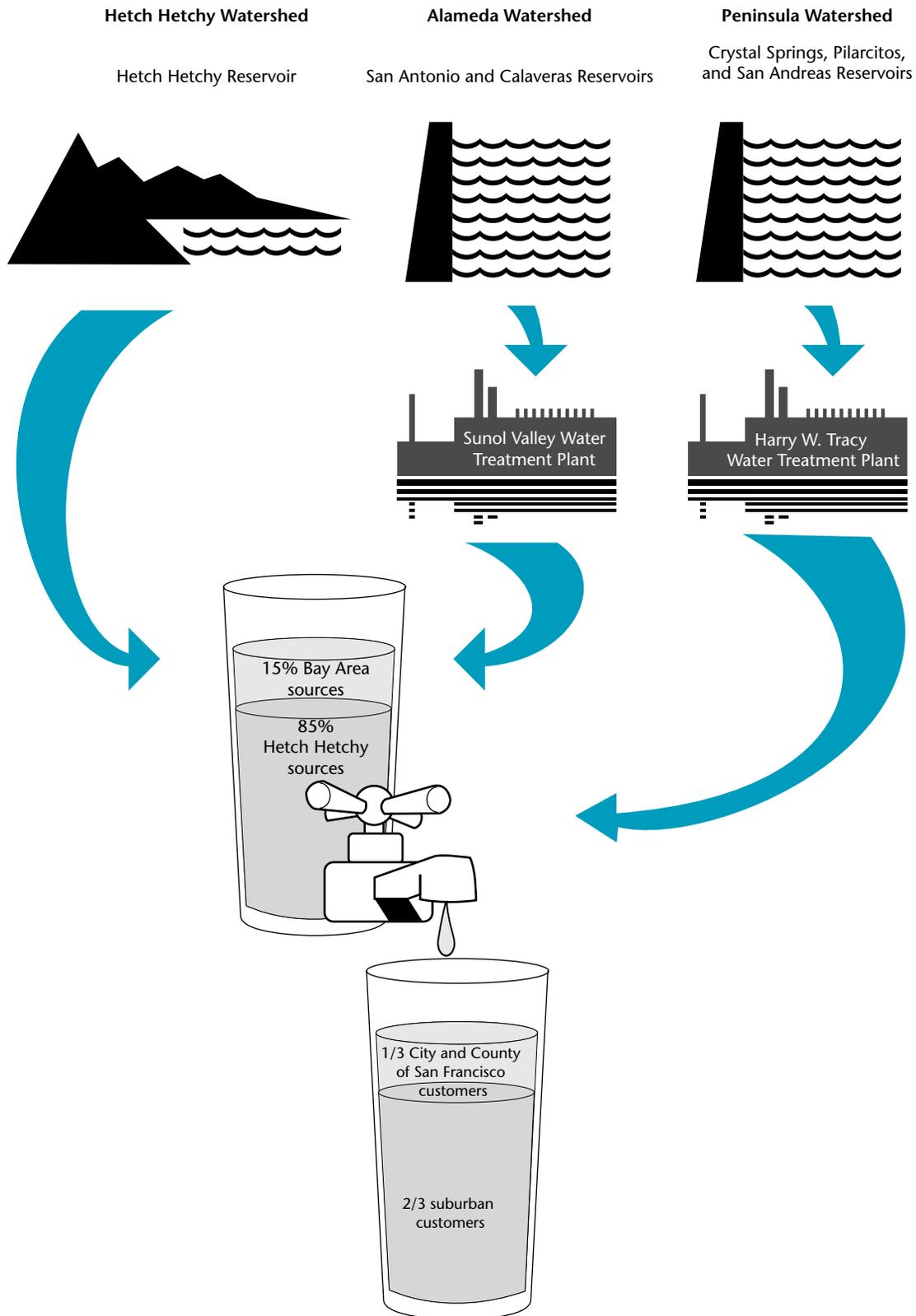
The San Francisco Public Utilities Commission (commission) is part of the City and County of San Francisco. Its mission is to supply its customers with reliable, high-quality, and affordable water while responsibly managing the human, physical, and natural resources entrusted to its care. The commission provides retail drinking water to 770,000 San Francisco customers and wholesale water to delivery agencies serving 1.6 million customers in Alameda, Santa Clara, and San Mateo counties. The Hetch Hetchy Reservoir provides 85 percent of the commission's drinking water, while five Bay Area reservoirs in the Alameda and Peninsula watersheds provide the remaining 15 percent. Figure 1 depicts the sources and distribution of water for the commission's customers. The commission reports that it delivers a daily average of about 260 million gallons of water to its customers.

## THE COMMISSION'S ORGANIZATIONAL STRUCTURE

The mayor of San Francisco appoints five commissioners to four-year terms to govern the commission. The mayor also appoints the commission's general manager. The commission

**FIGURE 1**

**An Overview of the San Francisco Public Utilities Commission's Water System**



has about 1,700 employees and an annual budget of about \$400 million. The principal operation and support units within the commission include:

- **Bureau of finance**, which coordinates the development and monitoring of the commission's annual operating and capital project budgets, issues financial statements and revenue bonds, and establishes retail and wholesale water rates.
- **Bureau of personnel and training**, which maintains employee files, conducts examinations, manages the grievance and discipline process, and ensures compliance with employment laws and regulations.
- **Utilities engineering bureau**, which provides the commission with engineering and project management services, designs the construction or repair of facilities to meet operating needs, and assesses the condition of commission facilities and recommends necessary repairs and improvements.
- **Bureau of systems planning, environment and compliance**, which provides medium- and long-range planning for the commission and monitors the commission's compliance with environmental laws and regulations.

The Appendix contains an abbreviated organizational chart showing the placement of these bureaus within the commission and the key water distribution units.

### **Key Water Distribution Units**

Three divisions within the commission bear primary responsibility for the delivery of water to its customers: Hetch Hetchy Water and Power, Water Supply and Treatment, and City Distribution. The Hetch Hetchy Water and Power Division collects and stores drinking water from watersheds in Yosemite National Park and the Stanislaus National Forest and transports it from the mountains and across the San Joaquin Valley. This division operates five dams and reservoirs, four hydroelectric plants, and more than 180 miles of tunnels and pipelines. Water from the Hetch Hetchy Reservoir is so pure that it is exempt

from state and federal filtration requirements. However, the commission does treat the water with chlorine before providing it to its customers.

The Water Supply and Treatment Division takes responsibility for the drinking water at the Tesla Portal on the east side of the Coast Ranges in San Joaquin County. From there, it transports the water through about 40 miles of tunnels and 228 miles of pipelines to the commission's San Francisco and suburban customers. Along the way, the Water Supply and Treatment Division adds treated water from reservoirs in Bay Area watersheds. This division operates and manages five reservoirs, two water treatment plants, and five pump stations, among other facilities.

The City Distribution Division operates and maintains the drinking water system within the City and County of San Francisco, including 12 reservoirs, 14 water tanks, 22 pump stations, approximately 1,240 miles of pipelines, and more than 15,500 shutoff valves. On an average day, it delivers about 80 million gallons of water to its San Francisco customers. The map in Figure 2 depicts the commission's water delivery system.

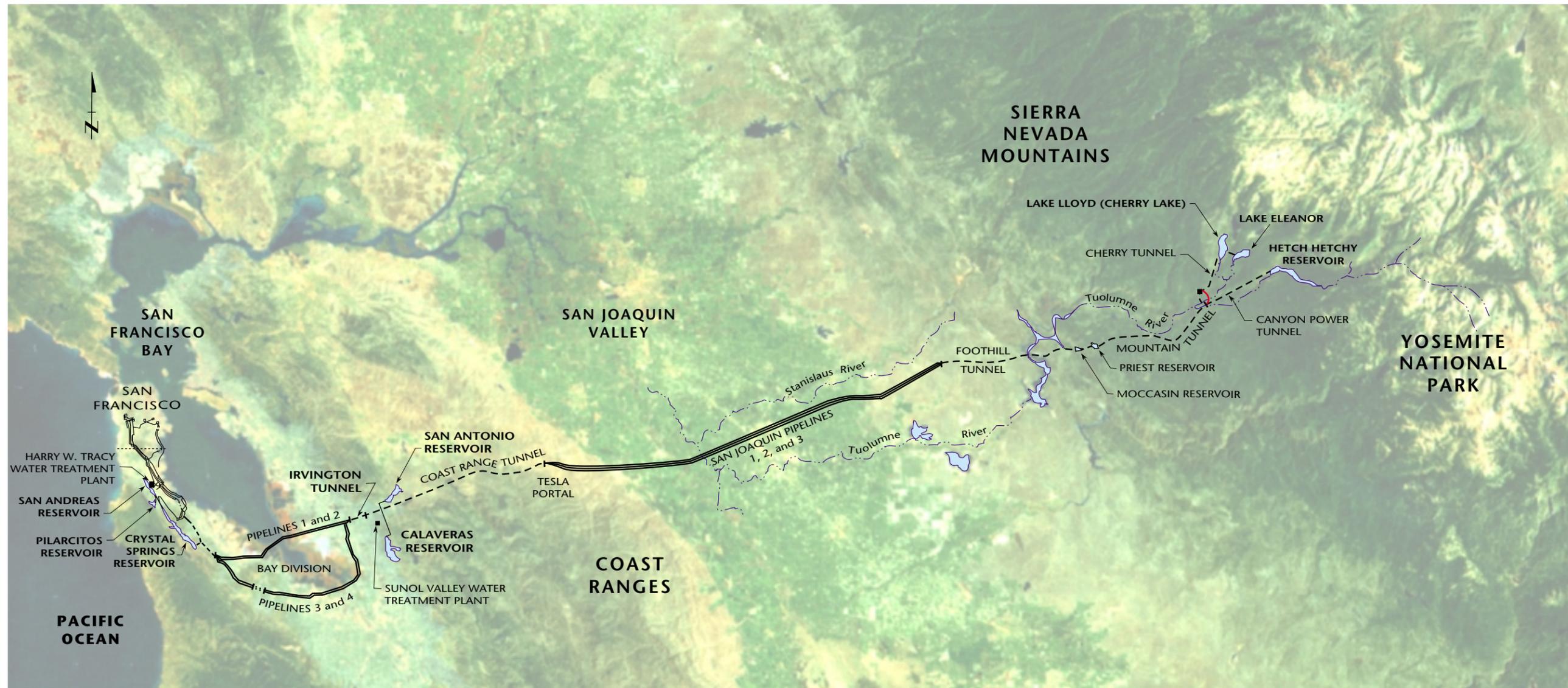
## **THE COMMISSION'S SUBURBAN CUSTOMERS**

In addition to providing retail water to its San Francisco customers, the commission provides retail water to a few other customers and wholesale water to 28 water delivery agencies. The commission refers to these purchasers collectively as suburban customers. The commission's retail customers outside San Francisco include Stanford University and Lawrence Livermore National Laboratory. The water delivery agencies include cities, water districts, and a private water supplier.

Suburban wholesale customers are located on the San Francisco peninsula and in the South and East Bay. They include the cities of Hayward, Santa Clara, San Jose, and Daly City; the California Water Service Company, which serves South San Francisco and San Mateo; the Alameda County Water District; and the Coastside County Water District, which serves the Half Moon Bay area. These customers are responsible for operating and maintaining their own local distribution systems.

FIGURE 2

The San Francisco Public Utilities Commission's Water Delivery System Stretches From the Sierra Nevada Mountains to the Pacific Ocean

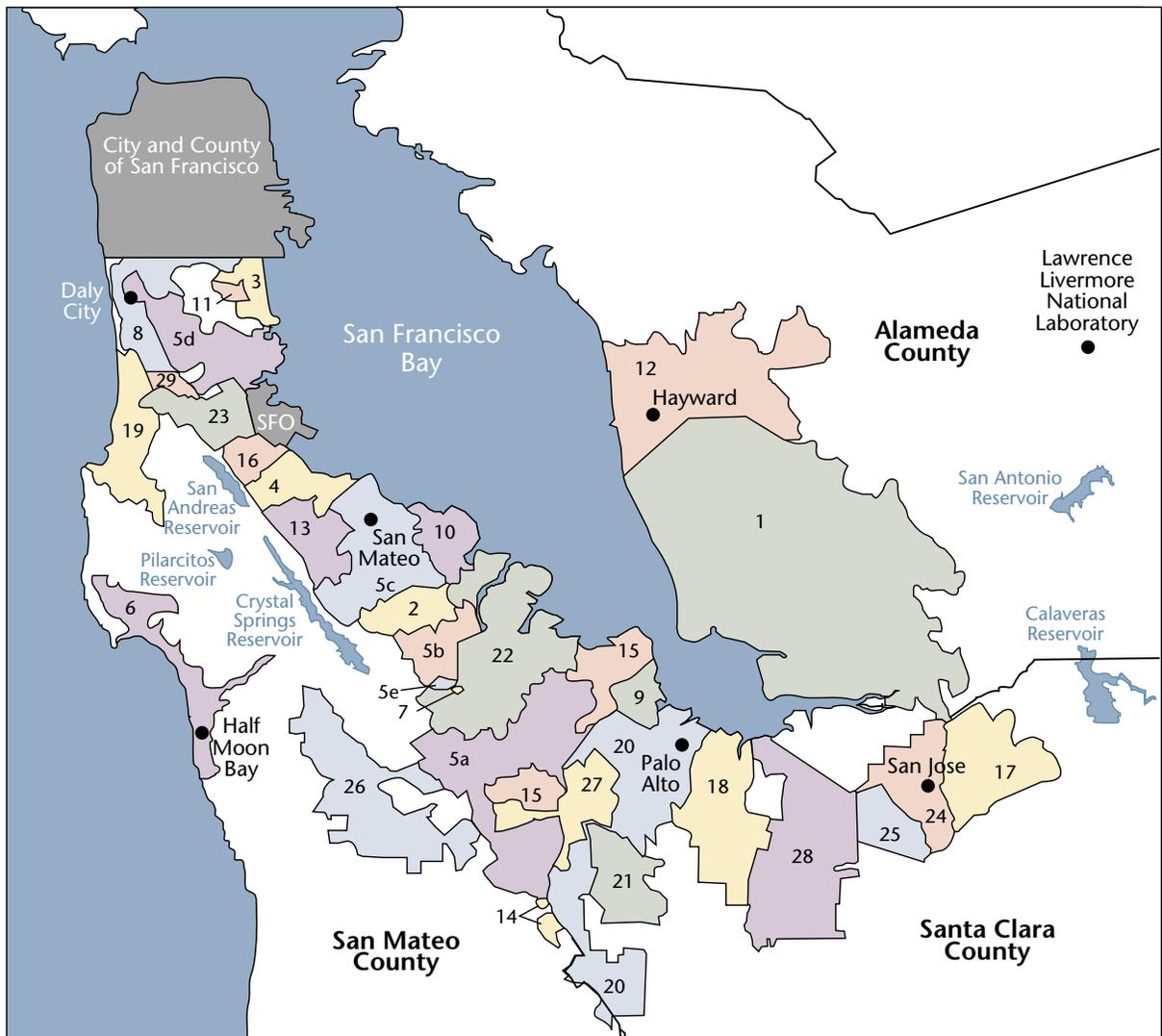


Source: San Francisco Public Utilities Commission

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**FIGURE 3**

**Member Agencies of the Bay Area Water Users Association**



Agency No.	Agency Name	Agency No.	Agency Name
1	Alameda County Water District	12	City of Hayward
2	Belmont County Water District	13	Town of Hillsborough
3	City of Brisbane	14	Los Trancos County Water District
4	City of Burlingame	15	City of Menlo Park
5a	Bear Gulch - Cal Water Service Co.	16	City of Millbrae
5b	City of San Carlos - Cal Water Service Co.	17	City of Milpitas
5c	City of San Mateo - Cal Water Service Co.	18	City of Mountain View
5d	City of South San Francisco - Cal Water Service Co.	19	North Coast County Water District
5e	Palomar County Water District #3 - Cal Water Service Co.	20	City of Palo Alto
6	Coastside County Water District	21	Purissima Hills Water District
7	Cordilleras Mutual Water Association	22	City of Redwood City
8	City of Daly City	23	City of San Bruno
9	East Palo Alto Water District	24	City of San Jose
10	Estero Municipal Improvement District	25	City of Santa Clara
11	Guadalupe Valley Municipal Improvement District	26	Skyline County Water District
		27	Stanford University
		28	City of Sunnyvale
		29	Westborough Water District

Source: San Francisco Public Utilities Commission and the Bay Area Water Users Association.

Note: Lawrence Livermore National Laboratory is an associate member of the Bay Area Water Users Association.

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In 1958, the commission's suburban customers formed the Bay Area Water Users Association (BAWUA) to represent their collective interests in working with the commission. The BAWUA administers contractual matters on behalf of its members, works closely with commission staff and management, and participates with commission personnel on studies. The map in Figure 3 shows the location of those suburban customers who are members of the BAWUA.

The commission's suburban customers receive approximately two-thirds of the water provided by the water delivery system; they count on the system for dependable and reliable service. Most of the 28 suburban wholesale customers typically receive all or a large portion of their water from the commission. Twenty-three of these customers receive at least 80 percent of their drinking water from the commission. Although some suburban customers have access to limited quantities of water from alternate sources (such as well water that must be treated before delivery), 10 do not have such options. These 10 customers include Brisbane, Hillsborough, and San Mateo. If the commission's system were unable to provide water to these customers, they would have to rely on their own local storage capacities. Suburban customers without sufficient storage capacities or alternate water sources would face severe water shortages until measures such as trucking in bottled water could be taken.

According to the commission, it meets the water needs of:

- 100 percent of its San Francisco customers.
- 91 percent of its San Mateo County customers.
- 58 percent of its Santa Clara County customers.
- 44 percent of its Alameda County customers.

## THE COMMISSION'S FUNDING SOURCES

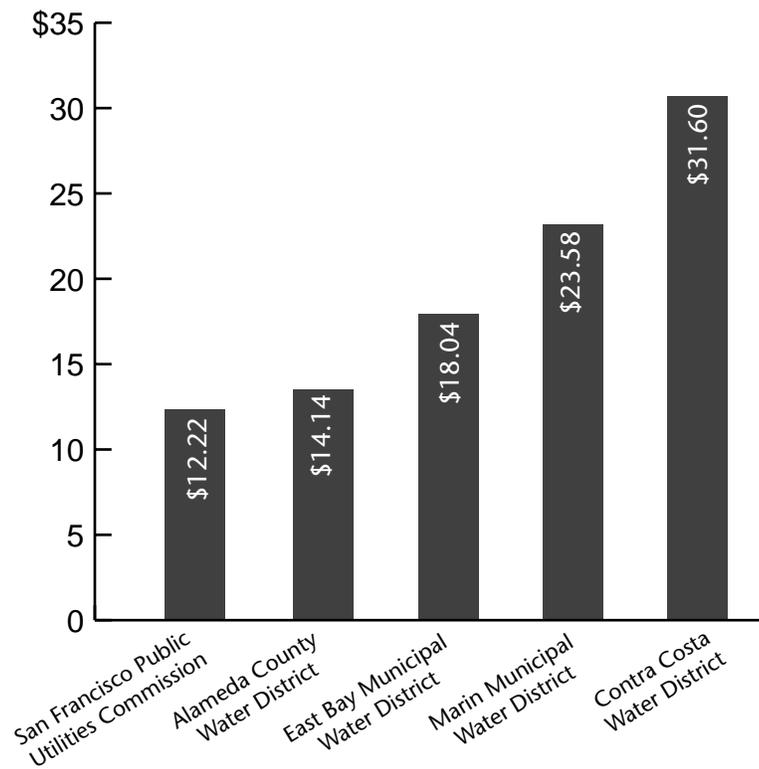
As a self-supporting operation of San Francisco, the water delivery system is expected to pay its own way. The revenue generated from water sales is the primary source of annual funding for the commission's water delivery system. The commission's final budget for fiscal year 1999-2000 indicates that 76 percent of the funds to operate the City Distribution and Water Supply and Treatment divisions will come from retail rates charged to San Francisco customers and wholesale rates charged to suburban customers.<sup>1</sup> An agreement between the suburban customers and the commission establishes the method for calculating the

<sup>1</sup> The commission anticipates that the remaining funds for these two divisions will come from unspent prior-year money (16 percent) and other miscellaneous sources (8 percent), such as rents and interest income.

suburban rates. Generally, because the suburban customers use about two-thirds of the commission's water, they pay about two-thirds of the costs of operating and maintaining the water delivery system.

**FIGURE 4**

**Comparison of Average Monthly Water Charges of Some Single-Family Residences in the Bay Area**



Source: San Francisco Public Utilities Commission's November 1999 Draft Water Enterprise Long-Range Financial Report

The commission reports that its customers have among the Bay Area's lowest water rates. Figure 4 compares the average monthly water charges for some single-family residences served by the commission with the average charges paid by residential customers of other Bay Area water suppliers.

Regarding the Hetch Hetchy Water and Power Division, the commission's fiscal year 1999-2000 final budget shows that 92 percent of its revenue will come from a transfer from the other two water-related divisions and the sale of power and energy.<sup>2</sup>

### **Funding of Capital Projects**

The commission uses proceeds from bond sales to fund most of its nonrecurring capital projects. Generally, the commission must receive approval from San Francisco's voters before selling bonds. Two types of bonds do not need voter approval—water revenue bonds for reconstruction and replacement of existing facilities or for complying with state and federal law, and bonds issued to reduce the commission's payments for existing debt. Although they do not require San Francisco voters' approval, bonds for reconstruction and replacement of existing facilities or for complying with state and federal law must be approved by a three-fourths vote of the San Francisco Board of Supervisors. The commission has \$238 million outstanding in these two types of bonds. They were issued in 1991, 1992, and 1996. In 1997, San Francisco's voters approved \$147 million in bonds to improve water quality and \$157 million in bonds to improve system reliability and seismic safety.

In 1998, San Francisco's voters passed a proposition that prevents the commission from raising their water rates until July 1, 2006, except for certain purposes. Those purposes include generating funds to retire the 1997 bonds or to pay for future voter-approved bonds. The rate freeze also can be suspended if San Francisco's mayor declares an emergency. This proposition essentially requires the commission to seek voter approval from its San Francisco customers for any debt it would incur that would be retired by rate increases.

### **SCOPE AND METHODOLOGY**

The Joint Legislative Audit Committee asked the Bureau of State Audits to evaluate the methods the commission is employing to ensure an adequate, long-term, and reliable water supply for its Bay Area customers.

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<sup>2</sup>The commission anticipates that the remaining funds for this division will come from unspent prior-year money (6 percent) and other miscellaneous sources (2 percent), such as interest income.

Regarding its efforts to plan a reliable water delivery system and to ensure an adequate supply of water, we reviewed the commission's efforts to develop its facilities reliability study and its water supply master plan. Specifically, we determined the current status of these tasks, whether the commission began working on these tasks without unnecessary delay, and whether the commission completed the tasks promptly.

To evaluate the commission's progress in identifying, initiating, and completing needed capital projects, we reviewed the commission's capital improvement plans for its water-related divisions, project operations manual, long-range financial report, contracting procedures, project monitoring reports, and the training given to project managers. In addition, we interviewed key managers, project managers, engineers, and other staff. However, because the commission did not maintain adequate records, we were unable to determine how long the commission took to complete capital projects or whether the length of time was appropriate.

To assess the adequacy of the preventive maintenance procedures of the Hetch Hetchy Water and Power Division and the Water Supply and Treatment Division, we examined how they operated their preventive maintenance systems. We also reviewed a 1994 report by San Francisco's budget analyst criticizing the preventive maintenance system of the Water Supply and Treatment Division. Finally, we assessed whether the commission's new automated preventive maintenance system will address the faults within the old system. ■

# AUDIT RESULTS

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## ***It Is Uncertain Whether the Actions of the Public Utilities Commission Will Improve the Water Delivery System's Reliability***

### SUMMARY

The San Francisco Public Utilities Commission (commission) has been slow to assess the ability of its water delivery system to survive catastrophic events such as earthquakes, floods, or fires and to identify additional water sources. Delays in performing these studies have led to delays in improving the water system. The commission also has made slow progress in completing capital projects aimed at improving system reliability for reasons that include insufficient staff to manage the projects and operational inefficiencies in its contracting and project monitoring procedures. Although the commission has several plans to improve its water delivery system, it is too soon to determine whether they will succeed because most are still in development.

### **PARTS OF THE WATER DELIVERY SYSTEM ARE VULNERABLE TO FAILURE**

Nearly 2.4 million customers in the City and County of San Francisco and in Alameda, San Mateo, and Santa Clara counties rely on the commission for their drinking water. The commission uses an aging system of dams, reservoirs, tunnels, pipelines, pumps, and valves to move the water to and throughout the Bay Area. Portions of the water delivery system are in dire need of repair or replacement; some parts of it are nearly 75 years old. For example, two of the four pipelines that carry water from the East Bay to the South Bay and the San Francisco peninsula are more than 70 years old. The commission states that no major work has been done on these two pipelines since their construction. These pipelines are above ground on wooden trestles in Bay marshlands. The commission considers them extremely vulnerable to failure, especially because they cross the Hayward Fault many times. The commission knows that its system needs rehabilitation and estimates that it will cost more than \$3 billion to complete about 200 capital improvement or replacement projects.

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***The commission estimates it will cost more than \$3 billion to complete about 200 capital improvement or replacement projects.***

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## THE COMMISSION IS SLOW TO UPGRADE ITS WATER SYSTEM

Some customers, uneasy about the possibility of lengthy interruptions in service, have expressed concerns regarding the commission's slow pace in completing the capital projects necessary to ensure a reliable water delivery system. They believe that such slowness increases the risk that portions of the water delivery system may fail due to age and deterioration or may not survive a natural disaster such as an earthquake. Further, they fear that the system may not be able to deliver enough water to accommodate growth or to compensate for droughts.

### The Commission Has Been Slow to Assess Its System's Weaknesses

The commission has been slow to assess the ability of its water delivery system to survive catastrophic events and to identify additional sources of water. Delays in conducting these studies consequently contribute to delays in improving system reliability.

The commission recognizes that some portions of its water delivery system are susceptible to failure. Components of the system suffer wear and tear, exposure, corrosion, and other deteriorating effects. Older segments are nearing the end of their expected lives and must be rehabilitated or replaced soon. However, the commission's rate of rehabilitation or replacement has not kept pace with the aging process.

Since at least mid-1993, staff members also have raised concerns about the ability of portions of the water delivery system to survive a major earthquake. The system crosses or is near several active faults. Although much of the commission's water delivery system escaped serious damage from the Loma Prieta earthquake in October 1989, the commission later observed that some sections "showed signs of distress." Further, it knows that some system components were not designed to meet modern seismic standards. Given the aging, the deterioration the water delivery system has experienced in the last 10 years, and the risks posed by earthquakes, the commission should have acted earlier to identify significant weaknesses in its system.

It was not until 1994 that the commission, in collaboration with the Bay Area Water Users Association that represents its suburban customers, embarked on its first comprehensive review of

*Some components of the system were not designed to withstand major earthquakes.*

the system's reliability. In January 2000, the commission released a report that represents the second phase of its three-phase study.<sup>3</sup> Aimed at describing the nature of the threats the system faces from catastrophes such as earthquakes, floods, and fires, the report, prepared by a consultant, recommends 19 improvements that are urgently needed to address critical weak links in the commission's system. These improvements include strengthening pipelines that cross the Hayward Fault, increasing the treatment capacity of one water treatment plant, and installing isolation or shutoff valves to prevent water losses.

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*Improvements necessary to address critical weak links in the system include strengthening pipelines that cross the Hayward Fault and increasing the capacity of one of its water treatment plants.*

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This review took only seven months to complete. However, its startup was delayed until December 1998, almost three years after the first phase of the study was completed, because the commission did not consider it a priority and thus did not promptly assign staff to manage the project. Contracting problems that were beyond its control also contributed to the delay. The commission modified the scope of the project and reissued its request for proposals because the costs proposed by vendors responding to its original request were too high. Also, one vendor selected to work on the project had trouble complying with all the contract requirements.

The third and final phase of the facilities reliability study will include a more detailed analysis of the system's reliability. As part of this phase, the commission's consultant will develop, evaluate, and prioritize alternatives for improving the water delivery system, including capital projects that address the system's weak links and problem areas. The manager of this project expects this phase of the study to be completed within 18 months after the consultant receives a notice to proceed. The manager also believes the commission will issue a request for proposals for this project by March 2000 and start the contract by October 2000.

### **Creation of a Comprehensive Water Supply Master Plan Has Been Slow**

The commission also should have developed its comprehensive water supply master plan earlier. This plan, also a joint effort with the Bay Area Water Users Association, has taken several

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<sup>3</sup> During the first phase of this study, completed in January 1996, the commission assessed the vulnerability of individual facilities, relying on information from its staff members who were familiar with the facilities' condition. The commission created a list of critical facilities ranked in order of importance to water delivery.

years to develop. Its purpose is to ensure that the commission will continue to provide its customers with a reliable supply of high-quality water. The plan will estimate the amount of water necessary to meet future demand and recommend methods for acquiring additional water supplies. Delays in identifying and agreeing on sources from which to acquire additional water may lead to delays in actually acquiring the water, especially if the commission must implement capital improvements to move the newly acquired water to the Bay Area.

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*Despite knowing since 1994 that it would need to identify additional water supplies, the commission did not actively start work on the water supply master plan until 1996.*

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Droughts in the late 1970s and the one ending in 1992 revealed that the commission could provide only 242 million gallons of water per day during drought conditions rather than its previous assumption of 300 million gallons per day. Because average water demands during the summer exceed 300 million gallons per day and demands from suburban customers are expected to continue to grow, additional supplies will be necessary.

Although the commission knew by 1994 that it would need to identify additional water supplies, information provided by its staff shows that it did not actively start working on the water supply master plan until early 1996. Phase 1 tasks, completed by September 1997, included establishing basic planning assumptions and characterizing existing commission water supplies. Phase 2, a preview of which was provided during a public meeting of the commission in November 1999, will estimate that the commission will need an additional 67 million to 71 million gallons of water per day by 2030 to meet customer demands. It also will review alternatives for increasing the water supply, such as using groundwater or recycled water or buying water rights held by others. If the commission opts to purchase water rights, it may need to construct new facilities or upgrade existing ones to move this water to the Bay Area.

The staff member responsible for developing the plan states that progress on the water supply master plan was impaired by a lengthy process to select a consultant to work on the first phase of the master plan and by an inability to obtain funding to create the plan. The steering committee overseeing the development of the master plan anticipates completing the work in March 2000, nearly eight years after the last major drought, and presenting its recommendations to the commissioners the following month.

## OPERATIONAL DEFICIENCIES HINDER PROGRESS

The commission also appears slow to complete capital projects. Although it did not provide us with sufficient information regarding its completion of capital projects, such as the total number of capital projects funded or the start and completion date of most of its projects, the commission did tell us that during the past 10 years it has completed 54 capital projects at a cost of about \$270 million. On average, the commission completed about five capital projects and spent \$27 million annually. Given the size, complexity, age, and declining condition of the commission's water delivery system, this project completion rate appears to be low.

Several factors contribute to the commission's inability to complete capital projects more quickly. The commission believes that insufficient staffing to manage the projects is a major factor. Other deficiencies are inefficient contracting procedures, outdated project operations procedures, weak project monitoring, and inadequate project management training.

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*The slow pace of project completion interferes with the commission's ability to recoup costs from its suburban customers.*

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When the commission does not complete capital projects promptly, it exposes the water delivery system to failure during a natural disaster. Further, the slow pace of project completion interferes with the commission's ability to begin recouping the projects' costs from suburban customers. An agreement with the suburban customers specifies that the commission generally cannot raise rates to help pay for a capital project until it has been in service for one year, so delays in completing those projects increase the time that the commission must finance the project itself.

### A Staff Shortage Contributes to Project Delays

The commission's former general manager stated that a shortage of qualified personnel to manage projects has led to delays in past and current project schedules. As we discussed earlier, the lack of someone to manage the facilities reliability study contributed to the commission's delay in starting the second phase. The former general manager explained that the staffing shortages existed because it took nearly three years for engineering examinations to be given and certified through San Francisco's civil service system, and permanent positions could not be offered during that time. Further, when the commission attempted to

obtain temporary help, its professional services contracts were scrutinized by the labor unions and the commissioners, creating additional delays in obtaining engineers.

The commission has taken some measures to address its staff shortages. For instance, the manager of its bureau of personnel and training states that she has made great strides in improving the commission's personnel practices by increasing the number of personnel staff and providing them with training on San Francisco's personnel processes. The commission also has suggested improvements to the hiring procedures for engineers used by San Francisco's department of human resources. It also has received approval for several contracts that will supplement its engineering staff.

We were unable to substantiate the claim that a shortage of project managers exists because the commission did not provide all the data we requested. Nevertheless, the commission must continue to seek ways to ensure that it has adequate staff to complete its projects.

### **Contracting Procedures Are Inconsistent**

Contracting is critical to the execution of the commission's projects. It requires compliance with numerous regulations and approval processes, as well as involvement with a number of agencies within and outside San Francisco. The impact on a capital project can be exceedingly disruptive if the complex requirements of contracting are not met.

As early as May 1997, a consultant hired by the commission reported that the commission's contracting process was inefficient. Specifically, the consultant found that it took 6 to 12 months to complete the contracting process, beginning with the request for proposal development and ending with the awarding of the contract. This was twice as long as the process used by San Francisco's Department of Public Works. The consultant noted that problems with the decision-making process contributed to delays in the contracting process. For example, the commission did not have a structure and process to deal with problems, and there were no written policies, guidelines, or standards for tasks critical to decision making, such as defining the scope of work, choosing selection criteria, and negotiating contracts. The consultant also noted that the commission's

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*A May 1997 report prepared by its consultant highlights inefficiencies in the commission's contracting practices.*

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contracting procedures were confusing, with contracting functions scattered throughout many of its departments, and were not overseen by any central body.

The commission has begun to address the concerns raised by its consultant. For instance, in May 1999 it established a policy that clarifies its expectations and approval process for professional service contracting. In addition, in September 1999 the contracting unit within the utilities engineering bureau was centralized. This unit has since tripled its staff and, among other things, is producing weekly reports of outstanding issues, developing contract procedures, and instituting a process to resolve contract protests promptly.

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*The commission's project operations manual is outdated. In fact, the manual has received few updates since it was developed in 1988.*

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Finally, the commission has submitted a budget proposal for fiscal year 2000-01 requesting the creation of a commissionwide contracting unit and the addition of more staff to expedite the internal handling of contracts. Although the commission has begun to address inefficiencies in its contracting process, it will continue to experience difficulties until its actions are finalized. Some commission staff members told us that the contracting process is still slow, adding unnecessarily to the time required to complete projects.

### **Steps for Completing Projects Lack Uniformity**

The commission could improve its management of capital projects by updating its project operations procedures. These procedures provide a guideline for consistent performance by commission staff; some of them, however, are outdated and are no longer used. Implementing common procedures will enhance the consistency, coordination, and effectiveness of the commission's operations.

The commission lacks current project operations procedures. Many staff members told us that the project operations manual is outdated and that many forms and templates in the manual, such as those for contracting and procurement, are no longer used. In fact, the manual has received few updates since it was developed in 1988.

The commission is updating the project operations manual and expects the final version to be completed by June 2000. Until then, project managers will be left to rely upon their own expertise to complete capital projects. Although some project managers and teams can succeed in this type of environment, it

is important for the commission to ensure that its staff members are following similar procedures. Creating common procedures and expectations will increase the overall consistency, coordination, and effectiveness of its operations.

### **Oversight Requires Better Tracking Systems**

The absence of an effective tracking system to monitor the progress of capital projects and the completion of preventive maintenance makes it difficult, if not impossible, for management to ensure that commission staff complete the numerous capital projects and preventive maintenance requirements on time.

The commission did not use a formal tracking system to monitor the status of its capital projects from 1995, when it abandoned its previous system, until February 1999, when it again began using a system to track capital project milestones. During that time, project managers were left to monitor their projects using their own systems, potentially leading to inconsistencies in how and what information was tracked. The manager of the capital program management division was unable to explain why it took so long to start using the new system. This system, which establishes estimated dates for project initiation, and the completion of major steps such as planning, design, and construction, should assist commission staff in monitoring capital projects to ensure that project schedules are met and that any delays are addressed quickly.

The commission also does not have an adequate method for tracking preventive maintenance. Routine preventive maintenance is essential for ensuring that existing water delivery system components last as long as possible. In 1994, San Francisco's budget analyst criticized the Water Supply and Treatment Division for performing "practically no preventive maintenance" on some facilities, thereby causing those facilities to deteriorate more rapidly than if they had received proper maintenance. The analyst stated that the primary reason for the lack of maintenance was that staff members within the Water Supply and Treatment Division were not fully implementing the division's automated maintenance management system.

More than five years later, we find that division staff still are not using the automated system's tracking component because some of its managers have been reluctant to spend the time required to develop a complete list of equipment and the preventive

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*Although an automated system exists, commission staff use manual systems, such as logbooks and card files, to track preventive maintenance.*

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maintenance requirements. Instead, staff are using manual systems, such as entering data in logbooks and card files, to track preventive maintenance. As a result, commission management may have difficulty assessing whether staff members are performing required preventive maintenance on time.

The commission is in the midst of implementing a new automated system to, among other things, track preventive maintenance requirements. If used properly, this system should resolve these concerns, making the commission better able to identify and schedule preventive maintenance for its pipelines, valves, and pumps. According to one of its information systems' managers, the commission's implementation of the new system for the Water Supply and Treatment Division is nearly complete. He also expects implementation of the new system to be completed by mid-February 2000 for the Hetch Hetchy Water and Power Division. The manager expects implementation of the new system at the City Distribution Division to start by March 2000.

### **Project Managers Receive Little Training**

Ongoing development is crucial for ensuring that commission staff members stay abreast of industry changes and that they improve their technical expertise. However, the commission does not routinely provide formal training to its project managers.

Although project managers typically receive on-the-job training, the commission does not have a formal program to train them. In fact, the commission has not provided formal project management training in the past 10 years. Some project managers use their own techniques to manage projects, so the commission cannot control or ensure the adequacy of the on-the-job training its new employees receive. Formal, ongoing training would ensure that staff members develop and improve their technical proficiency and project leadership abilities.

One reason the commission cites for the lack of formal training for project managers is insufficient staff to plan or coordinate the training. Its bureau of personnel and training did not have a training officer until last year. One manager told us that shortages of professional staff have made it difficult to divert staff from projects to receive formal training. The commission is planning to develop a program to train project managers on how to handle all phases of a project. In the meantime,

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*The commission has not provided formal project management training in the past 10 years.*

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however, the commission must ensure that its professional staff, including project managers, receive some formal training to improve their skills, especially in light of the huge capital improvement program it faces.

## UNCERTAINTIES REMAIN

The commission acknowledges that it lacks the tools to streamline capital project development or to control such a large capital improvement program. It also acknowledges that it needs standard procedures for project management and design protocols and needs to expedite its contracting procedures. It has undertaken many projects and actions, in addition to those already mentioned, to address these deficiencies. However, because many of these plans or actions are not yet finalized, the commission's ability to ensure a sufficient, long-term, and reliable water supply remains uncertain.

### A Management Consultant Would Bring Needed Expertise

Recognizing that its water delivery system has significant weaknesses that will require large-scale improvements, the commission is obtaining approval to contract for the services of a program management consultant. The consultant is expected to provide program management services and specialized technical expertise to manage workload peaks and to provide a staff development program. For example, the proposed program manager would perform services such as designing a capital program framework document, organizing the overall capital program, and developing a long-term implementation plan. Other proposed services include designing performance measures, providing a project management information system, devising protocols to expedite contracting and procurement, and developing a public information program to engender public confidence in the commission's long-range plans. This last item is important to build voter confidence and gain approval for the financing of its capital improvements. Basically, the commission is counting on the program management consultant to perform a major overhaul of its engineering and construction operations so it can implement the capital improvements necessary to ensure system reliability.

However, the commissioners and the San Francisco Board of Supervisors must approve this contract, and it remains unclear whether they will do so. The commissioners' vote on the contract

*The commission is counting on a consultant to perform a major overhaul of its engineering and construction operations.*

is not expected to occur before May 2000; the board of supervisors' vote would occur after that. At the board of supervisors' request, San Francisco's budget analyst is reviewing the proposed contract to determine whether contracting out management functions will save money or result in increased or decreased oversight of expenditures, and whether it will provide other benefits over commission management of the capital improvement program. Should the commissioners or the board of supervisors opt not to approve the contract, commission staff may be ill equipped to handle such a large, complex capital improvement program.

### **Capital Improvement Plans Are Not Complete**

The commission's staff and its consultant have developed capital improvement plans for each of its water-related divisions, but the commission has not adopted them. Further, the commission has not integrated these plans to obtain an accurate picture of the entire system's needs. Without formal adoption and integration of these plans, we are concerned that other issues could divert the commission's attention from its goal of improving the reliability of the water delivery system by focusing on the most critical projects. Finally, the commission has yet to develop a staffing plan for completing its capital improvement program. Until this plan is complete, the commission cannot ensure it has enough staff to complete its capital improvement plan on schedule.

The commission developed the capital improvement plans to evaluate and prioritize the capital projects necessary to improve each of its three drinking water-related divisions: Hetch Hetchy Water and Power, Water Supply and Treatment, and City Distribution. Generally, it based these plans on information supplied by the operating divisions and by staff from other support bureaus such as utilities engineering and systems planning, environment and compliance. The commission has grouped its projects under several categories such as aging infrastructure, water supply reliability, seismic vulnerability, system deficiencies, operational efficiency, and regulatory compliance. To prioritize these projects, the commission developed criteria to evaluate the relative value of needed improvements. As shown in the following table, the 1999 plans include 174 water-related capital projects with estimated costs of more than \$2.7 billion.

**TABLE**

**Water-Related Capital Projects Identified in 1999**

<b>Division</b>	<b>Number of Capital Projects</b>	<b>Total Estimated Cost (In Millions)</b>	<b>Average Estimated Cost per Project (In Millions)</b>
Hetch Hetchy Water and Power	28	\$ 143	\$ 5.11
Water Supply and Treatment	90	1,637	18.19
City Distribution	56	953	17.02
<b>Total</b>	<b>174</b>	<b>\$2,733</b>	<b>\$15.70</b>

Source: San Francisco Public Utilities Commission 1999 Capital Improvement Plans.

Although the average project cost is about \$16 million, seven major projects make up approximately 41 percent, or nearly \$1.1 billion, of the total capital program costs. Five of these projects, such as the improvements proposed for the Sunol Valley Water Treatment Plant and the replacement of prestressed concrete pipelines, are within the Water Supply and Treatment Division. The other two major projects, the water main replacement program and the seismic upgrades to city reservoirs, are within the City Distribution Division.

The capital improvement plan for the Hetch Hetchy Water and Power Division remains incomplete because it lacks cost estimates for some of the water-related projects.<sup>4</sup> This is significant because the Hetch Hetchy Reservoir supplies about 85 percent of the commission’s water. According to one of its managers, the commission expects to finalize these estimates by March 2000. We also found that the commission is continually identifying new projects and adjusting its cost estimates. For example, its most recent cost estimate, excluding missing estimates for the projects discussed earlier, is more than \$3 billion.

The commission has yet to develop a formal comprehensive plan to outline its staffing requirements to implement its capital projects. This is critical because, as we discussed earlier, shortages of engineering staff have contributed to previous project delays. The commission states that its proposed program management

<sup>4</sup> The plan for the Hetch Hetchy Water and Power Division also includes power-related capital projects.

*The commission’s proposed consultant would develop a comprehensive plan to identify the staffing necessary to implement the capital improvement plan.*

consultant will develop this plan. However, as we already have noted, the commission or the board of supervisors may not approve this contract. If this occurs, the commission must ensure that it develops this staffing plan itself.

### **The Commission's Long-Range Financial Planning Is Incomplete**

One of the commission's primary challenges is funding its large-scale capital improvement plans. The commission developed a long-range financial report to assess financing options for its capital projects within the Water Supply and Treatment and City Distribution divisions. However, its financial report, prepared by a consultant, relies heavily on the commission's ability to obtain voter approval for revenue bonds and does not adequately address contingencies should San Francisco's voters reject future bond measures.

*The commission's financial report places heavy reliance on revenue bonds that require voter approval and does not adequately address options if voters reject such bond measures.*

The January 2000 financial report for the Water Supply and Treatment Division and the City Distribution Division analyzes the funding of recommended capital projects and briefly discusses alternative financing methods. It also includes estimates of the timing and magnitude of possible water rate increases and future revenue bond issues, using the estimated costs of the capital projects identified in the current capital improvement plans.

Its consultant believes the commission has the financial capability to implement the capital improvement plan for the two divisions. However, the consultant also states that the time period for implementation might be too short because the commission is anticipating that spending levels for capital projects will be three to four times that of recent levels. For this reason, the consultant recommends that the commission consider extending the scheduling of the capital projects over a term closer to 25 years, which exceeds the commission's 15-year schedule for completing most of its capital projects. However, the commission told us that it disagrees with this recommendation because it recognizes the need to complete the projects sooner rather than later.

Additionally, the consultant places significant emphasis on the commission's ability to fund its capital program using voter-approved revenue bonds and fails to adequately address the options the commission would have if voters do not approve its bond measures. This is important given the fact that, based on recent voter turnouts, fewer than 100,000 voters in

San Francisco could deny the commission's future bond measures. Ultimately, they control the fate of the financing future of the commission's capital improvement plans and the delivery of water to 2.4 million customers in four Bay Area counties. Should the voters reject future bond measures, the commission will be forced to rely on other methods that could result in a slower completion pace for its capital projects, which in turn will delay improving the water delivery system.

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*Although creating a joint powers authority may provide an alternative to issuing bonds, it may also be problematic.*

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One alternative financing method the consultant mentioned was the creation of a joint powers authority. A joint powers authority could be set up between the public entities comprising the commission's San Francisco and suburban customers. The governing board of this authority could then authorize the issuance of non-voter-approved bonds. These bonds would not be approved by its San Francisco customers, so the terms of the 1998 proposition would prevent the commission, until July 1, 2006, from raising their water rates to retire the bonds. The authority would have to rely on the suburban customers to retire the bonds unless San Francisco's voters authorize increases in their water rates. So the creation of a joint powers authority may provide an alternative to issuing voter-approved bonds, but it also may be problematic.

The consultant provided no information about how the commission and its customers would go about setting up a joint powers authority. Creating such an authority may be time-consuming because it would require approval by the governing bodies of each suburban water agency. There is no certainty that each governing body would approve the creation of the authority.

Finally, although the consultant believes the capital improvement plan is within the commission's financial capability, the interest rates used in the projections were based on current economic conditions. Changes in these rates could affect the commission's ability to accomplish this plan. The commission contends that staff of its bureau of finance, along with a financial adviser, will monitor market fluctuations for warning signs and will adjust the projections as necessary.

#### ***Financing Options for Hetch Hetchy Projects Remain Unclear***

Although the long-range financial report is complete for the Water Supply and Treatment Division and City Distribution Division, the long-range financial report for the Hetch Hetchy

Water and Power Division is still being developed. As a result, although the commission has identified many capital projects needed to upgrade its water delivery system, its plans remain incomplete regarding exactly how it will fund these projects. According to commission staff, recent changes in revenue and expenditure projections for this division resulted in delays in completing this report. Therefore, the commission does not expect this financial report to be completed until February 2000.

The responsibility for using these financial reports and developing and adopting a true long-range financial plan to finance its capital improvement program ultimately lies with the commission. Therefore, the commission must act quickly to complete its financial plan and ensure that it has sufficient funding to complete its capital improvement plans. Until this financial plan has been completed and adopted, we will be unable to determine whether it is adequate or whether the commission is committed to implementing its capital improvement plans.

### **Executive Vacancies and Turnover Present a Unique Opportunity**

Final factors leading to our uncertainty about whether the commission will improve its water delivery system are the turnover at the executive level and the time it will take to fill these positions. As we indicated earlier, the commission faces significant challenges in the near future, including the need to implement a huge capital improvement program and to obtain additional water supplies. Without strong, consistent, and effective leaders, the chances that the commission will meet these challenges diminish greatly.

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*Significant challenges in the near future require strong, consistent, and effective leadership.*

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The commission recently has experienced turnover among some of its executive positions. For instance, from December 1995 through December 1998, the position of manager of the utilities engineering bureau was filled by three different people and was vacant for a total of 13 months. The current manager's tenure is 14 months. This position leads more than 100 employees responsible for the efficient performance of the commission's capital improvement projects. The utilities engineering bureau provides engineering services to the commission, including assessment of facilities; recommendations for repairs and improvements; and design, construction, or repair of facilities. A vacancy in this position contributed to the nearly three-year gap between the end of the first phase and the start of the second phase of the facilities reliability study.

The recent retirements of the general manager and the assistant general manager for operations also present a challenge to the commission. According to the commission's former general manager, it can take 6 to 12 months to fill these positions. On the other hand, these vacancies also present an opportunity to build a management team that will provide the strong leadership and expertise necessary to implement a cohesive capital improvement program and meet the other enormous challenges the commission faces.

## RECOMMENDATIONS

To ensure that the commission follows through on plans that it is developing or that it has recently developed, it should report annually to the Legislature for the next five years. The reports should include descriptions of the progress the commission has made in implementing each of its plans and the accomplishments it has achieved. The commission also should provide these reports to the Bay Area Water Users Association.

To improve the reliability of its water delivery system, the commission should continue to finalize, adopt, implement, monitor, and as necessary revise the plans and actions it has in progress. Specifically, it should:

- Complete its facilities reliability study and the water supply master plan.
- Continue pursuing ways to attract and retain qualified engineering staff.
- Continue its efforts to improve its contracting procedures and to train staff to understand the new procedures. It also should establish a commissionwide contracting unit.
- Continue updating the manual its staff members are supposed to use for guidance during planning, design, or construction of capital projects and ensure that applicable employees receive training and understand the new procedures.
- Complete the implementation of its new automated maintenance management system at all three water-related divisions.

The commission also should train its staff on this new system and ensure that they use it consistently and properly.

- Develop and implement a formal training program for project managers and ensure that project managers receive adequate training while this program is being developed.
- Complete and adopt a long-range financial plan for the three water-related divisions. It also should continue to monitor and adjust this plan as necessary. The plan should include more detailed descriptions of the steps the commission will take if the voters fail to approve the bonds or if economic conditions change.
- Be prepared to take alternative action if the commissioners or the board of supervisors decide not to approve the contract for its program management consultant. For example, it should develop a formal comprehensive plan that outlines the staffing requirements necessary to complete its capital improvement program without a program management contract.
- Integrate the capital improvement plans for the three water-related divisions into one cohesive plan and seek formal approval from the commissioners.
- Complete the missing cost and schedule estimates for the Hetch Hetchy Water and Power Division's capital improvement plan.
- Given the extent and complexity of the challenges it faces in the near future, the commission should seize the opportunity to appoint to leadership positions individuals who have efficiently and effectively implemented large-scale capital improvement programs. Further, it should take measures to ensure that it fills available positions promptly.

We conducted this review under the authority vested in the California State Auditor by Section 8543 et seq. of the California Government Code and according to generally accepted government auditing standards. We limited our review to those areas specified in the audit scope section of this report.

Respectfully submitted,

A handwritten signature in black ink that reads "Mary P Noble". The signature is written in a cursive, slightly slanted style.

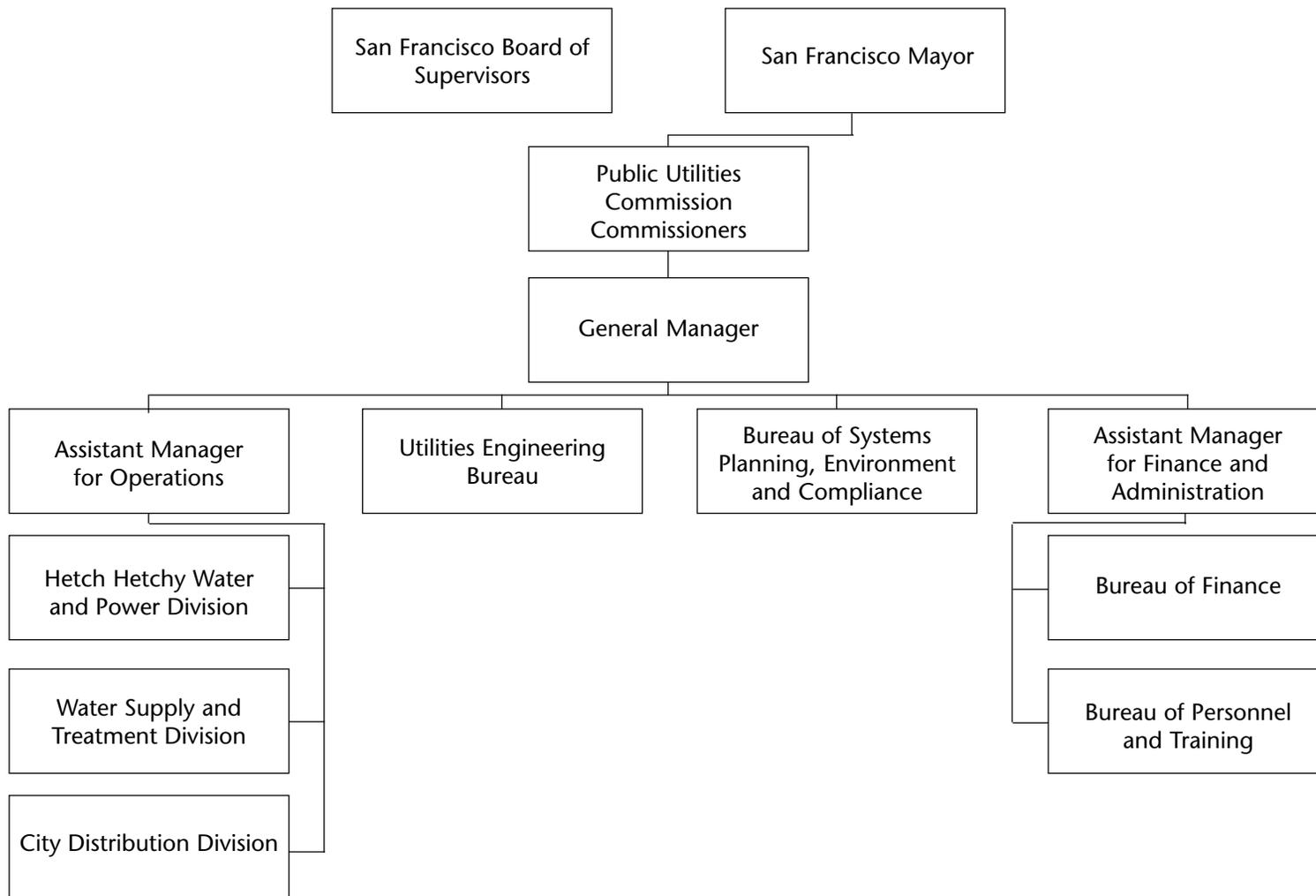
MARY P. NOBLE  
Acting State Auditor

Date: February 17, 2000

Staff: Joanne Quarles, CPA, Audit Principal  
Dale A. Carlson, CGFM  
Tyler Covey, CPA, CMA  
Fernando Valenzuela

# APPENDIX

## Abbreviated Organizational Chart for the San Francisco Public Utilities Commission



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*Agency's comments provided as text only.*

City and County of San Francisco  
Public Utilities Commission  
1155 Market Street, 4th Floor  
San Francisco, CA 94103

February 10, 2000

Mary P. Noble  
Acting State Auditor  
Bureau of State Audits  
555 Capitol Mall, Suite 300  
Sacramento, California 95814

Dear Ms. Noble:

Thank you for this opportunity to respond to the report from the Bureau of State Audits on the Water Delivery System of the San Francisco Public Utilities Commission.

The San Francisco Public Utilities Commission (SFPUC) is pleased to note that the Bureau of State Audits acknowledges and supports our on-going efforts to implement improvements to the water delivery system serving 2.4 million residents of the San Francisco Bay Area. Planning for a \$3.5 billion long-range capital improvement program is near completion. A total of \$567 million has already been appropriated to specific projects in this program and \$350 million has been spent on these projects. The Bureau of State Audits report validates our own conviction that the San Francisco Public Utilities Commission is on the right track.

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During the decade of the 1990's, the SFPUC faced immediate and long-range challenges. The 1989 Loma Prieta Earthquake increased concerns about seismic reliability. A seven-year drought extended through 1995 raising concerns about supply sufficiency. When the drought ended in 1995 major storms overwhelmed one of the water system's two treatment plants.

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In response to these challenges, the SFPUC appropriated nearly \$400 million during the 1990's for capital improvement projects to address specific seismic, reliability and water quality issues. Planning for a long-range capital improvement program also began in 1994 when the San Francisco Municipal Railway was established as an

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\*California State Auditor's comments begin on page 43.

independent agency and the SFPUC was reorganized as a utility focusing exclusively on water and power issues. Within two years (in 1996), the first ten-year capital improvement plan for the water system was completed. This plan identified approximately \$2 billion in needed improvements. This plan has been updated annually and now contains projects with costs totaling approximately \$3.5 billion. In 1995 the first phase of a system reliability study was produced. In 1996 a bond issue was approved which provided \$68 million in repair and renovation funds for the water system. In 1997 the San Francisco voters approved \$304 million in water revenue bonds to address water quality and system reliability needs identified in the capital improvement plan. Throughout this time, the SFPUC was able to meet its responsibility to provide high quality potable water to all of its customers while at the same time planning for expanded capacity and increased reliability to meet future demands and to protect against anticipated seismic events.

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The Bureau of State Audits report addresses the ability of the SFPUC to complete its capital improvement program for the water system. In the early 1990's the SFPUC completed four major projects which substantially improved quality of the water supply and the reliability of the water delivery system. These projects included major improvements to the Harry Tracy Water Treatment Plant, replacement of the Calaveras Pipeline, improvements to the San Antonio Pump Station and major renovations to San Andreas Pipeline #3. Spending on capital projects during the 1990's totaled approximately \$350 million. In the 1999-2000 fiscal year, the SFPUC appropriated \$145 million for capital improvements to its water system and an additional \$131 million is included in the capital improvement budget for fiscal year 2000-01. This level of funding demonstrates the commitment of the SFPUC to address the capital needs of the water system.

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The Bureau of State Audits report makes twelve specific recommendations. The SFPUC's responses to these recommendations are as follows:

**Recommendation #1 - regular reporting on progress and accomplishments.** The report recommends that the SFPUC submit annual reports to the Legislature and its suburban customers on its plans, progress and accomplishments.

SFPUC Response: The SFPUC will provide an annual report to the Legislature and our suburban customers on its capital improvement plans, progress and accomplishments. The SFPUC meets with our suburban customer agencies on a regular basis. Suburban Advisory Group (SAG) meetings are held with all customer agencies each year. Suburban Representatives meetings (five customer agencies plus the general manager of the Bay Area Water Users Association) are held at least quarterly. The SFPUC will continue to convene these meetings to discuss issues of mutual concern including its plans and accomplishments regarding the implementation of the capital improvement program for the water delivery system.

**Recommendation #2 - facilities reliability study and water supply master plan.** The report recommends that the SFPUC complete its facilities reliability study and water supply master plan.

SFPUC Response: The Water Supply Master Plan is near completion and is scheduled to be released next month (March 2000). The first phase of a system reliability plan was completed in 1995. The second phase of the Reliability Study was completed in 1999 and released in January 2000. Phase three of the reliability study is due to be completed in approximately two years. Over \$25 million has already been appropriated for projects identified in the Reliability Study and an additional \$32 million is included for these projects in the SFPUC capital budget for FY 2000-01 to address priority needs.

**Recommendation #3 - engineering staff.** The report recommends that the SFPUC continue to pursue ways to attract and retain qualified engineering staff.

SFPUC Response: The SFPUC personnel unit was increased in 1998 by twelve positions (a growth of approximately thirty percent) to promote additional hiring. This investment has enabled the SFPUC to increase staffing in its engineering bureau by over sixty percent (from 97 to 157) in the past year. This effort continues with the ultimate goal of a staffing level of 237 which is the estimated number of staff needed to implement the capital improvement program. In addition to increased staff resources, the SFPUC has developed a program management consultant contract to provide additional staff expertise and training with the goal of improving staff capabilities, productivity and retention.

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**Recommendation #4 - contracting procedures.** The report recommends that the SFPUC improve its contracting procedures and establish a department-wide contracting unit.

SFPUC Response: The SFPUC began revising its contracting procedures in 1997. New standards for financial reporting and auditing were introduced in 1997. Consultant contract language was standardized in 1998. Revisions to construction contract procedures are now being completed. The size of the contract administration unit was doubled this year with the addition of six new staff members. Members of the contract administration staff are being trained on new contracting procedures as they are revised. Reports are now being produced which give the status of all SFPUC contracts on a weekly basis. Additional staff members are included in next year's budget so that a department-wide contracting unit can be in place by July 1.

**Recommendation #5 - contracting manual.** The report recommends that the SFPUC continue updating its contracting procedures manual.

SFPUC Response: The SFPUC revised and updated its contracting manual for consultant services contracts in 1998. Revised construction contracting procedures are now being incorporated in a new project operations manual to be completed in July 2000. Related training is being provided to the contract administration staff

and project managers in the engineering bureau. This training will be undertaken on a department-wide basis in the next six months.

**Recommendation #6 - maintenance management system.** The report recommends that the SFPUC complete the implementation of its new automated maintenance management system and train staff on use of the system.

SFPUC Response: The SFPUC identified the need for a new automated maintenance management system in late 1995. The addition of the San Francisco Cleanwater Program to the SFPUC in 1996 introduced new needs for the proposed maintenance management system. Selection of a new system which met all the needs of the SFPUC was completed in 1998. Implementation of the new automated maintenance management system began in 1999 and will be completed by the end of June 2000. Staff training in maintenance management continues to be provided.

**Recommendation #7 - training for project managers.** The report recommends that the SFPUC implement a formal training program for project managers and to ensure adequate interim training while this formal training program is being developed.

- ④ SFPUC Response: The new program management contract, scheduled to be operational by summer 2000, contains a major training module for project managers. A formal project management training program is also being developed by the SFPUC. Pending commencement of the program management contract and completion of the new formal training program, informal training is being provided by existing SFPUC managers and consultants. Project managers are also being sent to training programs offered by outside providers such as the University of California - Extension.
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**Recommendation #8 - long-range financial plans.** The report recommends that the SFPUC complete and adopt long-range financial plans for the water delivery system and that these plans include financing alternatives.

SFPUC Response: In January 2000, the SFPUC released a long-range financial report for the water system. Another report is due this year for the Hetch Hetchy Project which supplies water to the water system. These reports will provide the basis for the development of long-range financial plans which will support the capital improvement program for the water system. The long-range plans are scheduled to be completed before the end of the year.

**Recommendation #9 - program management.** The report recommends that the SFPUC develop an alternative plan for the management of its capital improvement program if the proposed consultant contract is not approved.

SFPUC Response: A consultant services contract to enhance the capital program management capabilities of the SFPUC is scheduled to be presented to the commission in the next few months. This proposed contract is the product of over a year of preparation including many public hearings and intense scrutiny by the city attorney, the city's Human Rights Commission and representatives of the city's labor organizations. The Public Utilities Commission has unanimously supported the development of this contract to supplement and enhance the existing capabilities of the SFPUC to implement the long-range capital improvement program for the water system. The Commission fully expects to have this contract in place by the summer of this year.

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**Recommendation #10 - comprehensive capital improvement program.** The report recommends that the SFPUC integrate its capital improvement plans into a comprehensive capital improvement program and seek formal approval of this program from the commission.

SFPUC Response: The SFPUC began its long-range capital improvement planning in 1994. In 1996 the first ten-year plan for the water delivery system was produced. That plan has been updated annually. The capital improvement program for the water system is complemented by a long-range capital improvement plan which has been developed for the Hetch Hetchy Project (which supplies water to the water delivery system). These two plans are coordinated in the capital improvement program for the SFPUC which is approved by the commission annually as part of the normal budget process.

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**Recommendation #11 - cost and schedule estimates.** The report recommends that cost estimates and schedules be completed for all Hetch Hetchy capital improvement projects.

SFPUC Response: The long-range capital improvement plan for Hetch Hetchy includes sixty-four separate projects. Cost estimates and project schedules have been developed for fifty-three of these projects. Cost estimates and schedules for the remaining eleven projects are now being developed and will be completed by the end of this year.

**Recommendation #12 - leadership positions.** The report recommends that SFPUC leadership positions be filled with individuals who have successful track records in implementing large-scale capital improvement programs.

SFPUC Response: The general manager of the SFPUC retired effective January 27, 2000 after seven years in that position and more than 18 years with the SFPUC. He was widely respected in the water utility industry and was a leader in statewide planning for water rights. An industry-wide national search for a new general manager has been initiated. While this search is underway, the Commission has

appointed a widely-respected interim general manager with over twenty years of experience in the water utility industry. Other senior level positions are being filled on an expedited basis to ensure that the new general manager has a team in place with the expertise necessary to implement the long-range capital improvement program that has been developed for the water delivery system.

①

We are pleased to note that the Bureau of State Audits has endorsed the direction that the SFPUC has taken in our unwavering commitment to the reliable delivery of the highest quality water possible to our customers. We appreciate the support that your staff has given to our efforts.

Sincerely yours,

*(Signed by: John Mullane)*

John Mullane  
General Manager

# COMMENTS

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## **California State Auditor's Comments on the Response From the San Francisco Public Utilities Commission**

To provide clarity and perspective, we are commenting on the response to our audit report from the San Francisco Public Utilities Commission (commission). The numbers below correspond to those we have placed in the commission's response.

- ① While the commission is correct in saying that we acknowledge its efforts to improve its water delivery system, it is a stretch for it to conclude that we support or endorse the specific direction it is taking. Our review identified numerous weaknesses in the commission's operation of its water delivery system. Many of its efforts to correct these weaknesses have just recently been implemented or are still in development. Thus, as we state in our report, it is too soon to determine whether the commission's efforts will successfully improve the water delivery system.
- ② The commission incorrectly states that a seven-year drought lasted through 1995. Numerous sources, including those provided by the commission, show that a six-year drought in California lasted from 1987 through 1992. Therefore, we stand by our conclusion that the commission should have started identifying alternate water supplies earlier than 1996.
- ③ The commission states that spending on capital projects during the 1990s totaled about \$350 million. The \$270 million figure we report on page 21 refers to the amount the commission reported spending on capital projects it completed during the 1990s.
- ④ Although the commission fully expects to have its program management consultant contract in place by summer 2000, it is only prudent that it have a backup plan. As we state on page 27 of our report, the City and County of San Francisco's budget analyst is reviewing the proposed contract. Should the

commissioners or board of supervisors not approve the contract, commission staff may be ill equipped to handle such a large, complex capital improvement program on their own.

- ⑤ The commission offered no evidence that project managers received training from programs offered by outside sources. Moreover, it was not until August 1999 that the City and County of San Francisco notified employees that they could participate in an extension program offered by the University of California, Berkeley.
- ⑥ In our view, the commission's approval of annual appropriations for capital projects is not sufficient. Capital projects can take up to 15 years to complete. It is essential that the commissioners review and approve an integrated long-range plan, thus demonstrating their commitment to supporting the entire capital improvement program. As we state in our report, the most recent capital improvement plans for the three water-related divisions include about 200 capital projects with estimated costs totaling more than \$3 billion. Further, an integrated, long-range capital improvement plan can assist the commissioners in identifying the more critical projects to fund in the annual budget process.

cc: Members of the Legislature  
Office of the Lieutenant Governor  
Attorney General  
State Controller  
Legislative Analyst  
Assembly Office of Research  
Senate Office of Research  
Assembly Majority/Minority Consultants  
Senate Majority/Minority Consultants  
Capitol Press Corps