



**SAN FRANCISCO PUBLIC UTILITIES COMMISSION**  
OFFICE OF THE GENERAL MANAGER  
1155 Market St., 11th Floor, San Francisco, CA 94103 • Tel. (415) 554-1600 • Fax (415) 554-3161 • TTY (415) 554.3488



**DATE:** September 30, 2008

**TO:** Interested Parties

**FROM:** Ed Harrington, General Manager *Ed Harrington*

**SUBJECT:** SFPUC staff recommendation for WSIP adoption

**GAVIN NEWSOM**  
MAYOR

**ANN MOLLER CAEN**  
PRESIDENT

**F.X. CROWLEY**  
VICE PRESIDENT

**FRANCESCA VIETOR**  
COMMISSIONER

**ED HARRINGTON**  
GENERAL MANAGER

Please find attached the San Francisco Public Utilities Commission (SFPUC) staff's recommendation for adoption of the proposed Water System Improvement Program (WSIP). The SFPUC staff is providing this to you to consider as you review the Final Programmatic Environmental Impact Report (PEIR) for the WSIP. The SFPUC will formally consider the staff recommendation and adoption of the WSIP following certification of the PEIR by the San Francisco Planning Commission on or about October 30, 2008.

Attachment



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ED HARRINGTON  
GENERAL MANAGER

**DATE:** September 30, 2008

**TO:** Ann Moller Caen, SFPUC President  
F.X. Crowley, SFPUC Commissioner  
Francesca Vietor, SFPUC Commissioner

**FROM:**   
Ed Harrington, General Manager

**SUBJECT:** Staff Recommendation for WSIP Adoption

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***Recommendation***

Staff recommends that the San Francisco Public Utilities Commission (SFPUC) adopt the Phased Water System Improvement Program (WSIP) Variant based on the determinations and findings of the Final Programmatic Environmental Impact Report (FPEIR) for the WSIP and other policy considerations.

***Description***

In March 2008, SFPUC staff requested the San Francisco Planning Department to consider a variation of the WSIP called the Phased WSIP Variant. The SFPUC identified this Variant in order to consider a program scenario that involves *full implementation of all proposed WSIP facility improvement projects* to insure that the public health, seismic safety and delivery reliability goals are achieved as soon possible *but phased implementation of a water supply program to meet projected water purchases through 2030*. Deferring the 2030 water supply element of the WSIP until 2018 would allow the SFPUC and its wholesale customers to focus first on implementing additional local recycled water, groundwater and demand management actions while minimizing additional diversions from the Tuolumne River. Under the Phased WSIP Variant, the SFPUC would establish an interim mid-term planning horizon – 2018. If the SFPUC adopts this Variant, it would make a decision about future water supply to its customers through 2018 only, and would defer a decision regarding long-term water supply until after 2018 in light of then-current information and updated analysis. All non-water supply related WSIP goals and level of service objectives would be achieved under this Variant and all individual WSIP facility improvement projects proposed in the original WSIP would be constructed.

Under the Phased WSIP Variant, the SFPUC would construct and operate all the regional water system WSIP facility projects while (1) limiting water sales to an average annual of 265 million gallons per day (mgd) from the watersheds through 2018; and (2) improving water supply reliability to meet the goals and objectives of the WSIP including no greater than 20 percent rationing in any one year of a drought. The Phased WSIP Variant would not provide water supply to meet 300 mgd average

annual water sales in 2030 as proposed under the WSIP. Rather, the SFPUC would supply no more than 265 mgd from the watersheds through 2018, and the SFPUC and wholesale customers would collectively develop 20 mgd in conservation, recycled water, and groundwater to meet or offset the regional water system purchase request of 285 mgd in 2018. This 20 mgd of conservation, recycled water, and groundwater includes development of 10 mgd of conservation, recycled water and groundwater in San Francisco as proposed under the WSIP and 10 mgd of conservation, recycled water and groundwater developed by the wholesale customers, which is in addition to 15 mgd of conservation, recycled water and groundwater already assumed by the wholesale customers in preparing their regional water system purchase requests. The SFPUC would also implement the delivery and drought reliability elements of the WSIP, which would increase average annual diversions from the Tuolumne River by about 2 mgd over existing base-year conditions.

Before 2018, the SFPUC would engage in a new planning process to re-evaluate water system demands and water supply options. As part of the process, the San Francisco would conduct additional environmental studies and CEQA review as appropriate to address the SFPUC's recommendation regarding water supply and proposed water system deliveries after 2018.

### ***Background***

The Water System Improvement Program (WSIP) is a multi-billion dollar, multi-year capital program to upgrade the San Francisco's regional and local drinking water systems. The program will deliver improvements that enhance the San Francisco's ability to provide reliable, affordable, high quality drinking water to its 27 wholesale customers and regional retail customers in Alameda, Santa Clara, and San Mateo Counties, and to 800,000 retail customers in San Francisco, in an environmentally sustainable manner.

Propositions A and E, passed in November 2002 by San Francisco voters, approved financing for San Francisco's portion of the water system improvements. Assembly Bill No. 1823 (AB 1823), the Wholesale Regional Water System Security and Reliability Act, also approved in 2002, required the City and County of San Francisco to adopt a capital improvement program designed to restore and improve the regional water system and to review and update the program as necessary.

### ***Program Need***

The need for the WSIP is predicated on the basic mission of the SFPUC, which is in part:

To serve San Francisco and its Bay Area customers with reliable, high-quality and affordable water, while maximizing benefits from power operations and responsibly managing the resources to its care (SFPUC, 2002)

There are numerous factors contributing to the need for a comprehensive, systemwide program such as the WSIP. In order to continue to reliably meet this mission in the future, the SFPUC must plan for future needs as well as address existing, known

deficiencies. The proposed program addresses these needs and deficiencies, including:

- *Ageing Infrastructure.* The SFPUC regional water system is old. Many of its components were built in the 1800s and early 1900s; parts of the regional water system were built using now-outdated construction materials and/or methods and are currently in need of major repair. As the system ages, its reliability decreases and the risk of failure increases.
- *Exposure to Seismic and Other Hazards.* The 167-mile-long system crosses five active earthquake faults. Many of the SFPUC regional water system components are located on or in the immediate vicinity of major earthquake faults. Due to the age of the system, many facilities do not meet modern seismic standards. To protect public safety, the California Department of Water Resources, Division of Safety of Dams has imposed operating restrictions on Calaveras and Crystal Springs Reservoirs, reducing the local storage capacity and impairing normal system operations; this storage capacity needs to be restored.
- *Maintain Water Quality.* The regional water system currently meets or exceeds existing water quality standards. However, system upgrades are needed to improve the SFPUC's ability to continue to maintain compliance with current water quality standards and to meet anticipated future water quality standards under a range of operating conditions, including such events as a major earthquake, without reducing system reliability.
- *Improve Asset Management and Delivery Reliability.* In order to implement a feasible asset management program in the future that will provide continuous maintenance and repairs to facilities, the regional water system requires redundancy (i.e., backup) of some critical facilities necessary to meeting day-to-day customer water supply needs. Without adequate redundancy of critical facilities, the SFPUC has limited operational flexibility in the event of an emergency or a system failure, as well as constraints on conducting adequate system inspection and maintenance.
- *Meet Customer Water Demands.* Water demand among SFPUC customers is predicted to increase over the next 25 years. Additional supplies are needed to satisfy current demand in drought years and projected 2030 demand in all years. The experience of the last 150 years of record as well as recent studies on California's climate show the region is susceptible to droughts. Two of the most severe droughts occurred during the past 30 years. The regional water system currently has insufficient water supply to meet customer demand during a prolonged drought, and this situation will worsen in the future.

To address these challenges to the reliability of the regional water system, the SFPUC must replace or upgrade numerous components of the system and add some new components—thus the need for the WSIP and its associated facility improvement projects.

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Program Goals and Objectives

The WSIP goals and objectives were developed based on a planning horizon through 2030. The SFPUC selected the year 2030 because published population projections generally do not extend beyond 20 to 25 years, and the agency determined the 2030 forecasts to be the most reasonably foreseeable future condition. The goals and objectives are founded on two fundamental principles pertaining to the existing regional water system: (1) maintaining a clean, unfiltered water source from the Hetch Hetchy system, and (2) maintaining a gravity-driven system.

The overall goals of the WSIP for the regional water system are to:

- Maintain high-quality water and a gravity-driven system
- Reduce vulnerability to earthquakes
- Increase delivery reliability
- Meet customer water supply needs
- Enhance sustainability
- Achieve a cost-effective, fully operational system

To further these program goals, the WSIP includes objectives that address regional water system performance. The following table presents these objectives as they relate to the WSIP goals. The system performance objectives describe and, in many cases, more specifically quantify, what the regional water system proposes to achieve under the WSIP, and thereby guide the water supply actions, facility improvements, operations, and maintenance requirements included in the WSIP.

**WSIP GOALS AND OBJECTIVES**

| <b>Program Goal</b>                                                 | <b>System Performance Objective</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Quality –<br><i>maintain high water quality</i>               | <ul style="list-style-type: none"> <li>• Design improvements to meet current and foreseeable future federal and state water quality requirements.</li> <li>• Provide clean, unfiltered water originating from Hetch Hetchy Reservoir and filtered water from local watersheds.</li> <li>• Continue to implement watershed protection measures.</li> </ul>                                                                                                                                                                                                                                                                                                                                                               |
| Seismic Reliability –<br><i>reduce vulnerability to earthquakes</i> | <ul style="list-style-type: none"> <li>• Design improvements to meet current seismic standards.</li> <li>• Deliver basic service to the three regions in the service area (East/ South Bay, Peninsula, and San Francisco) within 24 hours after a major earthquake. Basic service is defined as average winter-month usage, and the performance objective for the regional system is 215 mgd. The performance objective is to provide delivery to at least 70 percent of the turnouts in each region, with 96, 37, and 82 mgd delivered to the East/South Bay, Peninsula, and San Francisco, respectively.</li> <li>• Restore facilities to meet average-day demand within 30 days after a major earthquake.</li> </ul> |

| Program Goal                                                                                           | System Performance Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Delivery Reliability – increase delivery reliability and improve ability to maintain the system</i> | <ul style="list-style-type: none"> <li>• Provide operational flexibility to allow planned maintenance shutdown of individual facilities without interrupting customer service.</li> <li>• Provide operational flexibility to minimize the risk of service interruption due to unplanned facility upsets or outages.</li> <li>• Provide operational flexibility and system capacity to replenish local reservoirs as needed.</li> <li>• Meet the estimated average annual demand of 300 mgd for 2030 under the conditions of one planned shutdown of a major facility for maintenance concurrent with one unplanned facility outage due to a natural disaster, emergency, or facility failure/upset.</li> </ul> |
| <i>Water Supply – meet customer water needs in non-drought and drought periods</i>                     | <ul style="list-style-type: none"> <li>• Meet average annual water purchase requirements of 300 mgd from retail and wholesale customers during non-drought years for system demands through 2030.</li> <li>• Meet dry-year delivery needs through 2030 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts.</li> <li>• Diversify water supply options during non-drought and drought periods.</li> <li>• Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers.</li> </ul>                                                                                                  |
| <i>Sustainability – enhance sustainability in all system activities</i>                                | <ul style="list-style-type: none"> <li>• Manage natural resources and physical systems to protect watershed ecosystems.</li> <li>• Meet, at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat.</li> <li>• Manage natural resources and physical systems to protect public health and safety.</li> </ul>                                                                                                                                                                                                                                                                                                                                                    |
| <i>Cost-effectiveness – achieve a cost-effective, fully operational system</i>                         | <ul style="list-style-type: none"> <li>• Ensure cost-effective use of funds.</li> <li>• Maintain gravity-driven system.</li> <li>• Implement regular inspection and maintenance program for all facilities.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

***The Phased WSIP Variant***

The Phased WSIP Variant achieves the original WSIP goals and objectives as outlined above with one exception: the Phased WSIP Variant does not propose to meet the projected wholesale and retail needs for 300 mgd water purchases in 2030. Instead, the Variant establishes an interim mid-term planning horizon of 2018, and focuses on meeting the projected wholesale and retail purchase needs through 2018 only. Any decision regarding long-term water supply beyond the interim planning horizon would be deferred until 2018 based on additional information and updated analysis.

As described in the FPEIR, purchases in 2018 are projected to be 285 mgd (this includes 15 mgd of conservation, recycled water, and groundwater already factored in the purchase requests for the wholesale customers). The Phased WSIP Variant would meet only 265 mgd of retail and wholesale customer purchases from the SFPUC watersheds, and meet or offset the remaining 20 mgd through conservation, recycled

water, and groundwater in the retail and wholesale service areas. Ten mgd of this would be met, as proposed under the WSIP, through conservation, recycled water, and groundwater projects in San Francisco. The FPEIR analyzed the following three options to meet the remaining 10 mgd:

- The SFPUC, wholesale customers and BAWSCA partner to develop an additional 10 mgd in local conservation, recycled water, and groundwater in the service area; or
- BAWSCA and the wholesale customers develop an additional 10 mgd in local conservation, recycled water, and groundwater within the wholesale customer service area independent of the SFPUC; or
- Individual wholesale customers develop 10 mgd of additional conservation, recycled water, and groundwater on their own within their individual service area.

The SFPUC and BAWSCA staff have worked together to ensure demand in 2018 is met. The following describes total demand in the regional water system service area in 2018 and the proposal for meeting demand.

Total demand in the regional water system service area is projected to be 417.4 mgd in 2018. As presented in the table below, plumbing code savings, coupled with the use of other sources by retail and wholesale customers, result in purchases from the regional water system of 299.2 mgd in 2018 (91 mgd retail; 208.2 mgd wholesale). The wholesale customers assumed 15 mgd of conservation, recycled water and groundwater in preparing the purchase requests to be analyzed in the PEIR. Thus, total purchase requests, as considered in the FPEIR, from the regional water system in 2018 are estimated at 284.2 mgd (91 mgd retail; 193.2 mgd wholesale).<sup>1</sup> In an effort to limit sales from the SFPUC watersheds to 265 mgd, additional development of conservation, groundwater, and recycled water in the service area is necessary to reduce total purchases from the regional water system even further.

Ten mgd of conservation, recycled water and groundwater is planned under the proposed WSIP in the retail service area by 2018, while an additional 10 mgd of conservation, recycled water, and groundwater is proposed to be developed in the wholesale service area. As presented in the table below, the development of a total of 35 mgd of conservation, recycled water, and groundwater in the service area, within the next decade, will reduce demand on the Tuolumne River and local watersheds, bringing the projected total regional water system purchases down to 264.2 in 2018 (81 mgd retail; 183.2 wholesale, including 9 mgd for the cities of San Jose and Santa Clara).

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<sup>1</sup> The FPEIR uses rounded values in developing purchase requests from the regional water system. In 2018, purchase requests in the FPEIR are estimated at 285 mgd (91 mgd retail; 194 mgd wholesale).

**2018 Demand and Projected Purchases from the Regional Water System (all numbers in MGD)**

|                                                                                                                                                 | <b>Retail</b> | <b>Wholesale</b> | <b>Total</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|--------------|
| Total Demand (including Plumbing Code Savings)                                                                                                  | 98.8          | 318.6            | 417.4        |
| - minus plumbing code savings                                                                                                                   | 6.8           | 16.7             | 23.5         |
| - minus base use of other sources <sup>2</sup>                                                                                                  | 1.0           | 84.5             | 85.5         |
| - minus additional supply from other sources <sup>2</sup>                                                                                       | --            | 9.2              | 9.2          |
| <b>Total Regional Water System Purchases Before Conservation/Recycled Water/Groundwater</b>                                                     | <b>91.0</b>   | <b>208.2</b>     | <b>299.2</b> |
| - minus planned conservation, groundwater, recycled water reflected in Regional Water System purchase requests (increase from 2002-2018)        | --            | 15.0             | 15.0         |
| <b>Total Regional Water System Purchase Request</b>                                                                                             | <b>91.0</b>   | <b>193.2</b>     | <b>284.2</b> |
| - minus additional conservation, groundwater, recycled water not reflected in Regional Water System Purchase requests (increase from 2002-2018) | 10.0          | 10.0             | 20.0         |
| <b>Total Purchases from Regional Water System after Conservation/Recycled Water/Groundwater After Recommended SFPUC Action on WSIP</b>          | <b>81.0</b>   | <b>183.2</b>     | <b>264.2</b> |
| <b>Total Conservation/Recycled Water/Groundwater</b>                                                                                            | <b>10.0</b>   | <b>25.0</b>      | <b>35.0</b>  |

The Phased WSIP Variant includes the following key program elements:

- Full implementation of all WSIP facility improvement projects.
- Water supply delivery to regional water system customers through 2018 only of 265 mgd average annual target delivery originating from the watersheds. This includes 183.2 mgd for the wholesale customers (including 9 mgd for the cities of San Jose and Santa Clara), and 81 mgd for the retail customers.
- Water supply sources include: 265 mgd average annual from the Tuolumne River and local watersheds plus 20 mgd of conservation, recycled water and groundwater developed within the service area (10 mgd retail; 10 mgd wholesale; in addition 15 mgd of conservation, recycled water and groundwater assumed as part of the wholesale customers purchase requests).
- Dry-year water transfers coupled with the Westside Groundwater Basin Conjunctive Use Project.
- Re-evaluation of 2030 demand projections, potential regional water system purchase requests, and water supply options by 2018 and a separate SFPUC decision in 2018 regarding regional water system water deliveries after 2018.
- Financial incentives to limit water sales to an average annual of 265 mgd from the watersheds.

To summarize, the SFPUC will deliver 265 mgd from the SFPUC watersheds. By limiting sales to 265 mgd average annual from the watersheds, the SFPUC will not increase average annual Tuolumne River diversions from base-year conditions to meet non-drought year needs. To meet the delivery reliability goals of the WSIP,

<sup>2</sup> Examples of other sources include State Water Project water, Santa Clara Valley Water District supplies, groundwater, and local surface water.

including drought reliability, the SFPUC would need to divert an additional 2 mgd average annual from the Tuolumne River. As part of adoption of this program, the SFPUC will implement the mitigation measures identified for this Variant in the FPEIR.

The SFPUC must maintain water deliveries to all its customers for the protection of public health and safety. Therefore, the SFPUC will develop financial incentives to limit water sales to an average annual of 265 mgd from the watersheds through 2018. Additionally, in the event that sales to all its customers exceed 265 mgd average annual prior to the implementation of the conservation, recycled water and groundwater projects, the SFPUC would implement the applicable mitigation measures set forth in the FPEIR.

***Summary***

To accomplish all of its objectives, the SFPUC must move forward with the WSIP facilities as proposed to improve seismic and water delivery reliability, meet current and future water quality regulations, provide for additional regional water system conveyance for maintenance, and meet water supply reliability goals. Like all water utilities, the SFPUC must consider current needs as well as possible future changes and unplanned outages, and design a system that achieves a balance among the numerous objectives, functions and risks a water supply must face. Approval of the Phased WSIP Variant will allow the SFPUC to accomplish these many goals.

