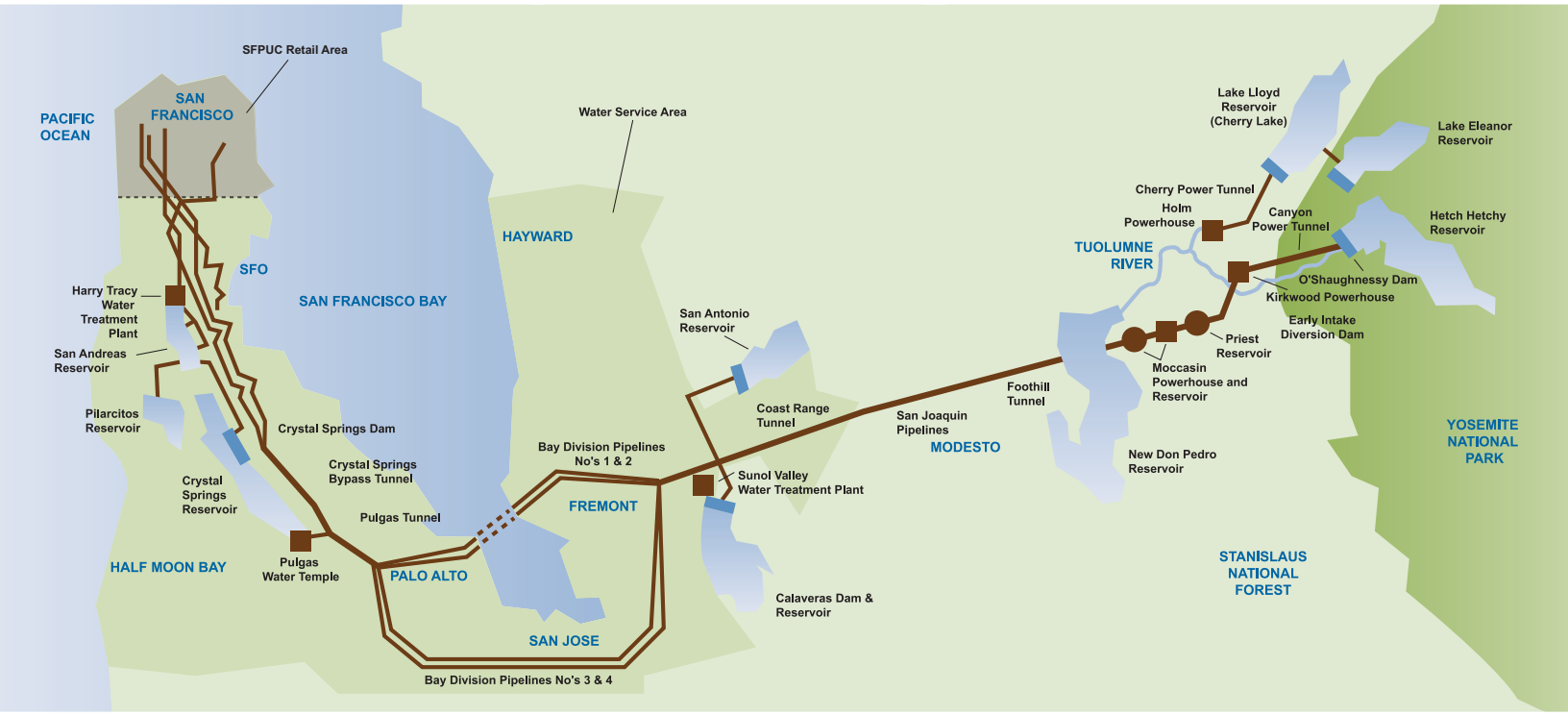
2010 Urban Water Management Plan

for the City and County of San Francisco

APPENDICES

Prepared by: The San Francisco Public Utilities Commission

June 2011



San Francisco Water Power Sewer

Services of the San Francisco Public Utilities Commission

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Appendix A

California Urban Water Management Planning Act of 1983 (Last revised: 2009)

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CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

WATER CODE
SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact

on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

WATER CODE
SECTION 10611-10617

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city

and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

WATER CODE
SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water

supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

WATER CODE SECTION 10630-10634

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single dry water year.

(C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.
(2) A schedule of implementation for all water demand management measures proposed or described in the plan.
(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:
(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
(2) Include a cost-benefit analysis, identifying total benefits and total costs.
(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California,"

dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall

determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of

the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic

sequence for the agency's water supply.
(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
(6) Penalties or charges for excessive use, where applicable.
(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(8) A draft water shortage contingency resolution or ordinance.
(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:
(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's

service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

WATER CODE SECTION 10635

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

WATER CODE
SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section

10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

WATER CODE
SECTION 10650-10656

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the

"Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

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Appendix B

Evidence of Compliance with Outreach Requirements

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Summary Table of SFPUC Compliance with Public Notification Elements of the Urban Water Management Plan Act

June 14, 2011

Code Section	Code Requirement	Summary of Actions Taken	Related Attached Documentation
Water Code Section 10620	Notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes.	• March 11, 2011 letter sent to City agencies, wholesale customers of the SFPUC Regional Water System, large retail customers (e.g., SFO), large regional water agencies (e.g. EBMUD), and the Bay Area Water Supply Conservation Agency (BAWSCA). • April 27, 2011 email regarding availability of Public Draft sent to parties listed above.	Attachment A: ○ Example of 3/11/11 letter ○ Example of 4/27/11 email ○ Recipient list for cited letters
Water Code Section 10642	Encourage the active involvement of diverse social, cultural and economic elements of the population within the service area prior to and during the preparation of the plan.	• Web postings on 2010 UWMP update • Notification of Public Hearing in local community newspapers (run May 9, 2011 and May 16, 2011)	Attachment B: ○ Copy of online posting ○ Copy of ads run in local papers in Chinese and Spanish ○ Declaration of ad publication
Water Code Section 10642	Prior to the required hearing publish the notice of time and place of hearing within the jurisdiction of the supplier pursuant to Section 6066 of the Gov't Code.	• Notification of Public Hearing in local newspapers meeting requirements of Section 6066 of the Gov't Code (run May 9, 2011 and May 16, 2011)	Attachment B: ○ Copy of ads run in local papers ○ Declaration of ad publication
Water Code Section 10642	Prior to the required hearing provide notice of time and place of hearing to any city or county within which the supplier provides water.	• March 11, 2011 and April 27, 2011 letters sent to City agencies, wholesale customers of the SFPUC Regional Water System, large retail customers (SFO), large regional water agencies (e.g. EBMUD), and the Bay Area Water Supply Conservation Agency (BAWSCA).	Attachment A: ○ Example of 3/11/11 letter ○ Example of 4/27/11 letter
Water Code Section 10642	Prior to adoption - make the plan available for public inspection	• Public Draft posted on www.sfwater.org • Copy hand delivered to Main Library branch.	Attachment C: ○ Transmittal letter to Public Library dated 4/26/11 ○ Copy of web posting of Public Draft (see Attachment B)

Code Section	Code Requirement	Summary of Actions Taken	Related Attached Documentation
Water Code Section 10642	Prior to adoption, hold a public hearing	• Public Hearing held on 5/27/11 during the meeting of the San Francisco Public Utilities Commission.	Attachment D: ○ Copy of SFPUC Agenda of 5/24/11; Item #10 is Public Hearing
Water Code Section 10642	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	• Plan adopted (as amended) on 6/14/11	*(On file with the SFPUC):* ○ Resolution to Adopt the UWMP
Water Code Section 10644(a)	Within 30 days of plan adoption, submit a copy to DWR.	• Letter of transmittal to DWR	*(On file with the SFPUC):* ○ Copy of transmittal letter to DWR
Water Code Section 10644(a)	Within 30 days of plan adoption, submit a copy to the CA State Library within 30 days	• Copy of adopted 2010 UWMP mailed to CA State Library	*(On file with the SFPUC):* ○ Copy of transmittal letter to CA State Library
Water Code Section 10644(a)	Within 30 days of plan adoption, submit a copy to any city or county within which the supplier provides water.	• Copy of adopted 2010 UWMP mailed to all wholesale customers of the SFPUC Regional Water System	*(On file with the SFPUC):* ○ Example of letter

Note: Along with the letters sent to provide notice of the pending UWMP revision, availability of the Public Draft and date of public hearing, and availability of Final Draft, email notifications were also sent to a large distribution list of parties known by the SFPUC to be interested in water supply planning issues.

ATTACHMENT A

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

1145 Market St., 4th Floor, San Francisco, CA 94103 • Tel. (415) 554-3271 • Fax (415) 554-3161 • TTY (415) 934-5770

March 10, 2011

Subject: Notice of Urban Water Management Plan 2010 Update, City and County of San Francisco and Public Hearing

The Urban Water Management Planning Act (Water Code Section 10610 – 10657) requires the City and County of San Francisco to update its Urban Water Management Plan (UWMP). We are reviewing our current UWMP, which was last updated in 2005, and will be considering revisions to it. The UWMP will include county-wide demand projections to the year 2035, compare available water supplies to meet demands and present water demand management measures to reduce long-term water demand. Additionally, the UWMP update will include a discussion of the conservation requirement set forth in Senate Bill 7 (SBx7-7) as passed in November 2009. SBx7-7 mandates a statewide 20% reduction in per capita water use by 2020. The updated UWMP will include a quantification of the SFPUC's water use reduction targets and plan for meeting these objectives. We invite your agency's participation in this process.

Proposed revisions to our UWMP will be available for public review and comment from April 27, 2011 to May 27, 2011. The Draft 2010 UWMP update will be available on the SFPUC website at www.sfwater.org (enter "UWMP" in the site Search field located in the upper right hand corner of the homepage). A copy of the document will also be available for review at the San Francisco Public Library:

San Francisco Public Library
Gov't Information Center, 5th floor
100 Larkin Street
San Francisco, CA 94102
(415) 557-4400

Notice of Public Hearing

A public hearing will be held on May 24, 2011 to allow interested members of the public to participate in the review process for the UWMP, including the SBx7-7 conservation requirement. The hearing will be held at the Commission meeting which begins at 1:30 p.m. in City Hall, Room 400, 1 Dr. Carlton B. Goodlett Place, San Francisco, California. All interested parties are invited to attend the public hearing and present their views. Persons who are unable to attend the public hearing may also submit to the City, by the time the proceedings begin, written comments regarding the subject of the hearing. These comments will be brought to the attention of the Commission and will become part of the official public record. Written comments can be sent to Mike Housh, Commission Secretary, San Francisco Public Utilities Commission, 1155 Market Street 11th Floor, San Francisco, CA 94103.

In the meantime, if you have any questions about our UWMP, or the process for updating it, please contact:

Ms. Molly Petrick
San Francisco Public Utilities Commission
1145 Market Street, 4th Floor
San Francisco, CA 94103
(415) 934-5767
MPetrick@sfwater.org

Sincerely,

Paula Kehoe
Director of Water Resources

From: Suzanne Gautier
To: Jennifer Clary
Cc:
Date: Wed, 27 Apr 2011 10:25:49 -0700
Subject: **Draft Urban Water Management Plan - Public Hearing Scheduled for May 24, 2011**

The Draft 2010 Urban Water Management Plan (UWMP) for the City and County of San Francisco, prepared by the San Francisco Public Utilities Commission (SFPUC), is now available for review and comment. This Draft 2010 UWMP update includes county-wide demand projections to the year 2035, compares available water supplies to meet demands and presents water demand management measures to reduce long-term water demand. Additionally, the UWMP update includes a discussion of the conservation requirement set forth in Senate Bill 7 (SBx7-7) as passed in November 2009 mandating a statewide 20% reduction in per capita water use by 2020. The updated UWMP includes a quantification of the SFPUC's water use reduction targets and plan for meeting these objectives.

The Draft 2010 UWMP update can be viewed or printed from the SFPUC website www.sfwater.org (enter "UWMP" in the site Search field located in the upper right hand corner of the homepage).
A copy of the document is also available for review at the following location:

San Francisco Public Library
Gov't Information Center, 5th floor
100 Larkin Street
(415) 557-4400

The public review and comment period for this document begins on Wednesday, April 27, 2011 and ends close of business Friday, May 27, 2011. Please send any comments or questions to:

Molly Petrick
San Francisco Public Utilities Commission
MPetrick@sfwater.org

A public hearing will be held on May 24, 2011 to allow interested members of the public to participate in the review process for this document, including the SBx7-7 conservation requirement. The hearing will be held at the Commission meetings which begin at 1:30 p.m. in City Hall, Room 400, 1 Dr. Carlton B. Goodlett Place, San Francisco, California.

Recipient List: Notice of UWMP 2010 Update (sent March 11, 2011)

#	Organization2	Contact
1	California Water Service Company	Darin Duncan
2	Mid-Peninsula Water District	Paul Regan
3	Mid-Peninsula Water District	Jeanette Kalabolas
4	City of Brisbane	Jerry Flanagan
5	City of Brisbane	Randy Breault
6	City of Brisbane	Clayton Holstine
7	City of Burlingame	Syed Murtuza
8	City of Burlingame	Jim Nantell
9	City of Burlingame	George J. Bagdon
10	City of Santa Clara	Robin Saunders
11	Contra Costa Water District	Jerry Brown
12	Marin Municipal Water District	Paul Helliker
13	Coastside County Water District	David Dickson
14	City of Daly City	Patricia Martel
15	Department of Water and Wastewater Resou	Patrick Sweetland
16	Westlake Community Center	
17	Westlake Library	
18	City of East Palo Alto	Alvin D. James
19	East Palo Alto Water District	Anthony Docto
20	City of Foster City	Ray Towne
21	Estero Municipal Improvement District	Jim Hardy
22	Alameda County Water District	Walt Wadlow
23	Alameda County Water District	Paul Piraino
24	Groveland Community Service	Shane Warner
25	City of Hayward	Robert A. Bauman
26	City of Hayward	Robert Bauman
27	City of Hayward	Alex Ameri
28	Town of Hillsborough	Martha DeBry
29	Town of Hillsborough	Cyrus Kianpour
30	Town of Hillsborough	Anthony Constantouros
31	Purissima Hills Water District	Patrick Walter
32	Purissima Hills Water District	Phil Witt
33	City of Menlo Park	David Boesch
34	City of Menlo Park	Kent Steffens
35	Ctiy of Menlo Park	Ruben Nino
36	City of Millbrae	Marcia L. Raines
37	City of Millbrae	Ron Popp
38	City of Milpitas	Kathleen Phalen
39	City of Milpitas	Greg Armendariz
40	City of Milpitas	Thomas Williams
41	City of Mountain View	Kevin C. Duggan
42	City of Mountain View	Cathy Lazarus
43	City of Mountain View	Linda Forsberg
44	Calif State Coastal Conservancy	Patrycja Bossak
45	East Bay Municipal Utility District	Alexander Coate
46	North Coast County Water District	Kevin O'Connell
47	North Coast County Water District	Cari Lemke
48	City of Palo Alto	Glenn Roberts

Recipient List: Notice of UWMP 2010 Update (sent March 11, 2011)

#	Organization2	Contact
49	City of Palo Alto	Nicolas Procos
50	City of Palo Alto	Jane Ratchye
51	Castlewood Country Club	
52	Zone 7 Water Agency	Dale Myers
53	Los Trancos County Water District	Stanley R. Gage
54	City of Redwood City	Ed Everett
55	City of Redwood City	Justin Ezell
56	City of Redwood City	Peter Ingram
57	Cal. State Seismic Safety Commission	Fred Turner
58	California State Assembly, AD12	Fiona Ma
59	California Waterfowl Association	David Golden
60	City of San Bruno	Connie Jackson
61	American True / True Youth	Ward Latimer
62	Arc Ecology	Sy Allen
63	Bayview Hunters Point Cmmunity	Karen Pierce
64	Bayview Merchants Association	Al Norman
65	CA Native Plant Soc.-YB Chpt	Randy Zebell
66	California Dragon Boat Association	Brian Danforth
67	California Dragon Boat Association	Hans Wu
68	Citizens' Advisory Committee	Winchell Hayward
69	City and County of San Francisco	Joanne Hayes-White
70	City and County of San Francisco	John Rahaim
71	City and County of San Francisco	Dennis Herrera
72	City College of San Francisco	Robert Gabriner
73	Coalition for a Better Wastewater Soluti	Jeff Marmer
74	Coalition For San Francisco Neighborhood	Joan Girardot
75	Dolphin Swimming & Boating Club	Gary Ehrsam
76	Friends of Islais Creek	Robin Chiang
77	Friends of Ocean Beach	Lara Trupelli
78	Friends of Stern Grove and Pine Lake	Dylan Hayes
79	GG Heights Neighborhood Assoc	Frank Noto
80	GG Heights Neighborhood Assoc.	Dick Allen
81	GIS Services, Towill Inc.	Brian K. Young
82	Golden Gate Audubon Society	Craig Spriggs
83	Golden Gate Restaurant Association	Kevin Westlye
84	Greater West Portal Neighborhood Assoc.	Bud Wilson
85	Greater West Portal Neighborhood Associa	
86	Lake Merced Hill	Joan Cooper
87	Lake Shore Acres Improvement Club	Jim Stark
88	Lake Shore Acres Improvement Club	Flora Zagorites
89	Lakewood Tenants Association	Mona Cereghino
90	Mayor's Office of Neighborhood Services	David Gutierrez
91	MWH Americas	Sandy Lawson
92	National Park Service GGNRA	Richard Weideman
93	Neighborhood Parks Council	Meredith Thomas
94	Olympic Club and Country Club	Dennis Bouey
95	Olympic Club Rifle Team	Stephen Goth
96	Olympic Club Rifle Team	Alex Takaoka

Recipient List: Notice of UWMP 2010 Update (sent March 11, 2011)

#	Organization2	Contact
97	OMI-NIA	Eloise Banks
98	Pacific Rod & Gun Club	Ed Figone
99	Pacific Rowing Club	Eric Martinez
100	PAR	Ray Holland
101	Parkmerced	Pauletta Burroughs
102	Planning Association of the Richmond (PA	Ron Miguel
103	Plumbers Union Local 38	Larry Mazzola Jr.
104	Port of San Francisco	Monique Moyer
105	Presidio Trust	Mark Hurley
106	Public Transportation Contract Complianc	Alberta O. Grant
107	Rec & Park- West Sunset Playground	
108	Rec & Park-JP Murphy Playground	
109	Rec & Park-Sunset Rec Center	
110	San Francisco Beautiful	Marcie Keever
111	San Francisco Board of Supervisors	Carmen Chu
112	San Francisco Board of Supervisors	Malia Cohen
113	San Francisco Board of Supervisors	David Chiu
114	San Francisco Board of Supervisors	Sean Elsbernd
115	San Francisco Board of Supervisors	Ross Mirkarimi
116	San Francisco Board of Supervisors	Mark Farrell
117	San Francisco Board of Supervisors	John Avalos
118	San Francisco Board of Supervisors	David Campos
119	San Francisco Board of Supervisors	Eric Mar
120	San Francisco Board of Supervisors	Jane Kim
121	San Francisco Board of Supervisors	Scott Wiener
122	San Francisco Democratic Central Committ	Leslie Katz
123	San Francisco Department of Public Healt	Barbara Garcia
124	San Francisco Department of Public Works	Edward Reiskin
125	San Francisco International Airport	John Martin
126	San Francisco Parks Trust	Amy Jean Boebel
127	San Francisco Public Library	Luis Herrera
128	San Francisco Public Library, Merced Bra	
129	San Francisco Recreation and Park Dept.	Phil Ginsburg
130	San Francisco Redevelopment Agency	Fred Blackwell
131	San Francisco Redevelopment Agency	Gaynell Armstrong
132	San Francisco Republican Central Committ	Mike Denunzio
133	San Francisco Rifle Association	Maurice Milam
134	San Francisco Small Business Network	Pat Christensen
135	San Francisco State University	Ryszard Dziadur
136	San Francisco State University	Ryszard Dziadur
137	San Francisco State University	Barbara Holzman
138	San Francisco Tomorrow	Dennis Antenore
139	San Francisco Tomorrow	Jennifer Clary
140	Save our Richmond Environment	Owen Brady
141	SF Airport	Jon Ballesteros
142	SF Bay Guardian	Bruce Bruggmann
143	SF Chamber of Commerce	Roberta Achtenberg
144	SF Council of District Merchants	Stephen Cornell

Recipient List: Notice of UWMP 2010 Update (sent March 11, 2011)

#	Organization2	Contact
145	SF Redevelopment Commission	Dar Singh
146	SF Republican Central Committee	Chris Bowman
147	SF SAFE	Michael Wong
148	SF State	Erik Elder
149	SF State	Erik Elder
150	SF Zoo	John Biale
151	SFPL- Ortega Branch	Pat Dimmick
152	SFPL- Parkside Branch	Jane Hudson
153	Sierra Club	Becky Evans
154	Sierra Club	Howard Strassner
155	Sierra Club	Ruth Gravanis
156	Small Business Commission	Regina Dick-Endrizzi
157	Small Merchant/Business Network	Cliff Waldeck/Syndi Seed
158	South End Rowing Club	Diane Davis
159	South End Rowing Club	Leslie Steele
160	Southeast Community Facility	Toye Moses
161	SPEAK	Marc Duffet
162	SPUR	Dick Morten
163	Sunset Beacon/Richmond Review	Carol Dimmick
164	Sunset District Neighborhood Coalition	
165	Sunset Neighborhood Beacon Center	
166	Sunset Parkside Edu. & Action Committee	Carolyn Gates
167	Sunset Residents Association	Johnson Kwong
168	Sunset Youth Services	Dawn Steukle
169	Sunshine Ordinance Task Force	David Pilpel
170	Taraval Parkside Merchants Association	Scott Hauge
171	The Villas Park Merced	Margarita Gonzalez
172	The Villas Park Merced	Mary Ann Nielsen
173	Tuolumne River Trust	Peter Drekmeier
174	Tuolumne River Trust	Jessie Raeder
175	U.S. EPA Region 9	Jacqueline Ann
176	UCSF Rowing Club	Mary Allen
177	Urban Resource Systems	Isabel Wade
178	West of Twin Peaks Central Council	Barbara Chionsini
179	West of Twin Peaks Central Council	Rae Doyle
180	West of Twin Peaks Observer	Phyllis Sherman
181	Westwood Park Association	Greg Clinton
200	California Trout	Mondy Lariz
201	California Water Service Co.	Rob Guzzetta
202	California Water Service Co.	Robert Guzzetta
203	California Water Service Company	Peter Nelson
204	City of San Jose	Mansour Nasser
205	Santa Clara Valley Water Dist.	Beau Goldie
206	BAWSCA	Rosalie O'Mahony
207	BAWSCA	Tom Piccolotti
208	BAWSCA	Chris Reynolds
209	BAWSCA	John H. Weed
210	BAWSCA	Art Jensen

Recipient List: Notice of UWMP 2010 Update (sent March 11, 2011)

#	Organization2	Contact
211	BAWSCA	John Ummel
212	BAWSCA	Nicole Sandkulla
213	City of San Mateo	Rajeev Batra
214	BAWSCA	Patricia Mahan
215	City of Santa Clara	Jennifer Sparacino
216	City of Santa Clara	Alan Kurotori
217	Committee to Save Lake Merced	Kristin Cadagan
218	BAWSCA	Robert Craig
219	Westborough Water District	Darryl Barrow
220	Stanford University	Mike Goff
221	Stanford University	Marty Laporte
222	City of Sunnyvale	James Craig
223	City of Sunnyvale	Marvin Rose
224	Sunol Valley Golf Club	
225	Turlock Irrigation District	Robert Nees
226	Olympic Club	Robert Maddow
227	Olympic Golf Club	Bob Maddow
228	City of East Palo Alto	M.L. Gordon
229	City of Hayward	David Fran
230	City of San Bruno	Mark Reinhardt
231	City of San Jose	Debra Figone
232	Consultant	Peter Young
233	Cordilleras Water District	Richard Thall
234	Lawrence Livermore Lab	Ellen Raber
235	Restore Hetch Hetchy	Jerry Meral
236	San Francisco Neighborhood Parks Council	Rachel Russell
237	SF Department of Building Inspections	Vivian Day
238	SF Sheriff' Office	Michael Hennessey
239	Sunset District Neighborhood Coalition	Susan Suval
240	Westborough Water District	Darryl Barrow

ATTACHMENT B

SAN FRANCISCO Public Utilities Commission

Urban Water Management Plan

The Draft 2010 Urban Water Management Plan (UWMP) for the City and County of San Francisco, prepared by the San Francisco Public Utilities Commission (SFPUC), is now available for review and comment. This Draft 2010 UWMP update includes county-wide demand projections to the year 2035, compares available water supplies to meet demands and presents water demand management measures to reduce long-term water demand. Additionally, the UWMP update includes a discussion of the conservation requirement set forth in Senate Bill 7 (SBx7-7) as passed in November 2009 mandating a statewide 20% reduction in per capita water use by 2020. The updated UWMP includes a quantification of the SFPUC's water use reduction targets and plan for meeting these objectives.

The Draft 2010 UWMP update can be viewed or printed from the attachments below. A copy of the document is available for review at the following location:

San Francisco Public Library
Government Information Center, 5th Floor
100 Larkin Street
(415) 557-4400

The public review and comment period for this document begins on Wednesday, April 27, 2011 and ends close of business Friday, May 27, 2011. Please send any comments or questions to

Molly Petrick
San Francisco Public Utilities Commission
MPetrick@sfwater.org

A public hearing will be held on May 24, 2011 to allow interested members of the public to participate in the review process for this document, including the SBx7-7 conservation requirement. The hearing will be held at the Commission meetings which begin at 1:30 p.m. in City Hall, Room 400, 1 Dr. Carlton B. Goodlett Place, San Francisco, California.

Attachments:

Draft - 2010 Urban Water Management Plan (1 MB)
Draft - 2010 Urban Water Management Plan Appendices (2.3 MB)

On December 13, 2005, the SFPUC adopted the 2005 Urban Water Management Plan for the City and County of San Francisco. A Public Draft of the document was released in October 2005 and a Public Hearing was held on November 9, 2005.

2005 Urban Water Management Plan (1.1 MB)
2005 UWMP Appendices A-G (3.5 MB)
2005 UWMP Errata Sheet (89 KB)

ATTACHMENT B

Location:
http://sfwater.org/mto_main.cfm/MC_ID/13/MSC_ID/165/MTO_ID/286

ATTACHMENT B

NOTICE OF PUBLIC HEARING
TO CONSIDER THE DRAFT 2010 URBAN WATER MANAGEMENT PLAN
FOR THE CITY AND COUNTY OF SAN FRANCISCO

Notice is hereby given that the San Francisco Public Utilities Commission (SFPUC) will conduct a public hearing to consider the Draft 2010 Urban Water Management Plan (UWMP), including the SBx7-7 conservation requirement, on Tuesday, May 24, 2011 at the Commission meeting which begins at 1:30 p.m. in City Hall, Room 400, 1 Dr. Carlton B. Goodlett Place, SF, CA.

All interested parties are invited to attend the public hearing and present their views. Persons who are unable to attend the public hearing may also submit to the City, by the time the proceedings begin, written comments regarding the subject of the hearing. These comments will be brought to the attention of the Commission and will become part of the official public record. Written comments can be sent to Mike Housh, Commission Secretary, SFPUC, 1155 Market St., 11th Floor, SF, CA 94103.

The Draft 2010 UWMP update can be viewed or printed from the SFPUC website at www.sfwater.org (enter "UWMP" in the site Search field located in the upper right hand corner of the homepage). A copy of the document is also available for review at the SF Public Library, Government Information Center, 5th Floor (100 Larkin Street, S.F., CA).

For more information, please call 415 554-3289
or email feedback@sfwater.org

Notificación es dado que la Comisión de Servicios Públicos de San Francisco (SFPUC) tendrá un audiencia publica para considerar el borrador del plan de administración urbano de agua (UWMP), incluso la exigencia de conservación SBx7-7, el martes, 24 de mayo de 2011 en la reunión de la Comisión que comienza a las 13h30 en el Ayuntamiento, Cuarto 400, 1Dr. Carlton B. Goodlett Place, SF, CA.

Para más información, llame a 415-554-3289 o por correo electrónico en feedback@sfwater.org

考慮採納三藩市城市水利管理草案公聽會通知

公告：三藩市水利局委員將在5月24日的例會上考慮是否採納三藩市城市管理草案和SBx7 -7省水法令。公聽會將會在下午1:30開始，地址在市政廳 400號房,City Hall, #1 Dr. Carlton B. Goodlett Place, Room 400, San Francisco, CA。

有關草案詳情請洽：415 554-3289，或電郵：feedback@sfwater.org

CNS#2096865

← as posted in SFChronicle 5.9.2011 & 5.16.2011

ATTACHMENT B

DECLARATION OF PUBLICATION OF
SAN FRANCISCO CHRONICLE

Lori Gomez

Declares that:
The annexed advertisement has been regularly published In the

SAN FRANCISCO CHRONICLE

Which is an was at all times herein mentioned established as newspaper of general circulation in the City and County of San Francisco, State of California, as the term is defined by Section 6000 of the Government Code

SAN FRANCISCO CHRONICLE

(Name of Newspaper)

901 Mission Street

San Francisco, CA 94103

From 5/9/11

To 5/16/11

Namely on 5/9 5/16 2011

(Dates of Publication)

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 5/25/11

At San Francisco, California

NOTICE OF PUBLIC HEARING
TO CONSIDER THE DRAFT 2010 URBAN WATER MANAGEMENT PLAN
FOR THE CITY AND COUNTY OF SAN FRANCISCO

Notice is hereby given that the San Francisco Public Utilities Commission (SFPUC) will conduct a public hearing to consider the Draft 2010 Urban Water Management Plan (UWMP), including the SBx7-7 conservation requirement, on Tuesday, May 24, 2011 at the Commission meeting which begins at 1:30 p.m. in City Hall, Room 400, 1 Dr. Carlton B. Goodlett Place, SF, CA.

All interested parties are invited to attend the public hearing and present their views. Persons who are unable to attend the public hearing may also submit to the City, by the time the proceedings begin, written comments regarding the subject of the hearing. These comments will be brought to the attention of the Commission and will become part of the official public record. Written comments can be sent to Mike Housh, Commission Secretary, SFPUC, 1155 Market St., 11th Floor, SF, CA 94103.

The Draft 2010 UWMP update can be viewed or printed from the SFPUC website at www.sfwater.org (enter "UWMP" in the site Search field located in the upper right hand corner of the homepage). A copy of the document is also available for review at the SF Public Library, Government Information Center, 5th Floor (100 Larkin Street, S.F., CA).

For more information, please call 415 554-3289 or email feedback@sfwater.org

Notificación es dado que la Comisión de Servicios Públicos de San Francisco (SFPUC) tendrá un audiencia publica para considerar el borrador del plan de administración urbano de agua (UWMP), incluso la exigencia de conservación SBx7-7, el martes, 24 de mayo de 2011 en la reunión de la Comisión que comienza a las 13h30 en el Ayuntamiento, Cuarto 400, 1Dr. Carlton B. Goodlett Place, SF, CA.

Para más información, llame a 415-554-3289 o por correo electrónico en feedback@sfwater.org

考慮採納三藩市城市水利管理草案公聽會通知

公告：三藩市水利局委員將在5月24日的例會上考慮是否採納三藩市城市管理草案和SBx7 -7省水法令。公聽會將會在下午1:30開始，地址在市政廳 400號房,City Hall, #1 Dr. Carlton B. Goodlett Place, Room 400, San Francisco, CA。

有關草案詳情請洽：415 554-3289. 或電郵: feedback@sfwater.org

CNS#2096865

A00000221093 5

Transmittal Letter

Date:	April 27, 2011		
To:	San Francisco Public Library	**From:**	Alyson Watson
Address:	Government Information Center 5th Floor 100 Larkin St. San Francisco, CA 94102	**Project No.:**	0092-008.26 Task 1
Subject:	SFPUC 2010 Urban Water Management Plan – Public Review Draft		

The following items are:

☐ Requested ☑ Attached ☐ Sent Separately Via

Copies:	Description:
2	San Francisco Public Utilities Commission 2010 Urban Water Management Plan – Public Review Draft

This information is submitted:

☐ At your request ☑ For your action

☐ For your approval ☐ For your files

☐ For your review ☐ For your information

General Remarks:

Please find enclosed two copies of the Public Review Draft of the San Francisco Public Utilities Commision's 2010 Urban Water Management Plan. We would appreciate it if you could make these copies available for public review from April 27, 2011 through May 27, 2011 in the Government Information Center on the 5th Floor. Please contact me with any questions you may have.

Best regards,

Alyson Watson
RMC Water and Environment
(415)404-6442
awatson@rmcwater.com

ATTACHMENT D

SAN FRANCISCO Public Utilities Commission

5/24/2011 San Francisco Public Utilities Commission Agenda

Published: 05/20/2011 | Updated: 05/20/2011
Published By: Commission

AGENDA
REGULAR MEETING

Tuesday, May 24, 2011
1:30 P.M.
City Hall, Room 400
1 Dr. Carlton B. Goodlett Place

COMMISSIONERS

Francesca Vietor, President
Anson B. Moran, Vice President
Ann Moller Caen, Commisssioner
Art Torres, Commissioner
Vince Courtney, Commissioner

DEPARTMENTS AND ENTERPRISES

Water Enterprise
Wastewater Enterprise
Power Enterprise
Infrastructure
Business Services
External Affairs

Edwin M. Lee
MAYOR

Ed Harrington
GENERAL MANAGER

Michael Housh
SECRETARY

Disability Access

The Public Utilities Commission meeting will be held in Room 400, City Hall, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA. The Commission meeting room is wheelchair accessible. The closest accessible BART station is the Civic Center Station at United Nations Plaza and Market Street. Accessible MUNI lines serving this location are: #47 Van Ness, and #71 Haight/Noriega and the F Line to Market and Van Ness and the Metro Stations at Van Ness and Market and at Civic Center. For information about MUNI accessible services call (415) 923-6142. There is accessible curbside parking adjacent to City Hall on Grove Street and Van Ness Avenue and in the vicinity of the Veterans Building at 401 Van Ness Avenue adjacent to Davies Hall and the War Memorial Complex.

City Hall is accessible to persons using wheelchairs and other disabilities. The Polk Street/Carlton B. Goodlett entrance is accessible via a ramp and a wheelchair lift. The other three entrances are accessible via ramps. Assistive listening devices are available and meetings are open captioned in the hearing room and closed captioned on SFGTV. Materials in alternative formats, American Sign Language interpreters, and other accomocations will be made available upon request. Please contact Michael Housh, Commission Secretary, at (415) 554-3165 or by Email **mhoush@sfwater.org** to make arrangements for any of these services. Providing at leaast 48 hours notice prior to the meeting will help to ensure availability.

In order to assist the City's efforts to accommodate persons with severe allergies, environmental illnesses, multiple chemical sensitivity or related disabilities, attendees at public meetings are

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reminded that other attendees may be sensitive to various chemical based products. Please help the City accommodate these individuals. Individuals with chemical sensitivity or related disabilities should call our accessibility hotline at (415) 554-6060.

Know your rights under the Sunshine Ordinance
(Chapter 67 of the San Francisco Administrative Code)

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils, and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review. For more information on your rights under the Sunshine Ordinance or to report a violation of the ordinance, contact the Sunshine Ordinance Task Force, City Hall, Room 409, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102-4683 at Phone No.: (415) 554-7724; Fax No.: (415) 554-7854; E-mail: sotf@sfgov.org. Copies of the Sunshine Ordinance can be obtained from the Clerk of the Sunshine Task Force, the San Francisco Public Library and on the City's website at www.sfgov.org

The ringing of and use of cell phones, pagers and similar sound-producing electronic devices are prohibited at this meeting. Please be advised that the Chair may order the removal from the meeting room of any person(s) responsible for the ringing or use of a cell phone, pager, or other similar sound-producing electronic devices.

Lobbyist Registration and Reporting Requirements

Individuals and entities that influence or attempt to influence local legislative or administrative action may be required by the San Francisco Lobbyist Ordinance [SF Campaign & Governmental Conduct §Code 2.100] to register and report lobbyist activity. For more information about the Lobbyist Ordinance, please contact the San Francisco Ethics Commission at 30 Van Ness Avenue, Suite 3900, San Francisco, CA 94102; telephone (415) 581-2300; fax (415) 581-2317; web site at **www.sfgov.org/ethics.**

ORDER OF BUSINESS:

1. Call to Order

2. Roll Call

3. Approval of Minutes

    a) Minutes of the May 6, 2011 Special Joint Meeting

4. Public Comments

Members of the public may address the Commission on matters that are within the Commission's jurisdiction and are not on today's agenda.

5. Communications

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a) Letter Summary

b) Advance Calendar

c) Staff Reports (*written reports sent to the Commissioners*)

1. WSIP Construction Change Order Update (Jan-March 2011) (*Labonte*)

6. Other Commission Business

7. Report of the General Manager

a) WSIP Quarterly Update Report (*Labonte*)

8. Bay Area Water Supply & Conservation Agency (BAWSCA) General Manager's Report *(Jensen)*

a) BAWSCA Update Report

THE FOLLOWING MATTERS BEFORE THE PUBLIC UTILITIES COMMISSION ARE RECOMMENDED FOR ACTION AS STATED BY THE GENERAL MANAGER OF PUBLIC UTILITIES AND CITY ATTORNEY WHERE APPLICABLE.

Explanatory documents provided to the Commission in connection with this agenda are available for public inspection and copying at the Office of the Commission Secretary, 1155 Market Street, 11th Floor, San Francisco, CA 94103, Telephone: (415) 554-3165, Fax: (415) 554-3424.

CONSENT CALENDAR

9. All matters listed hereunder constitute a Consent Calendar, are considered to be routine by the San Francisco Public Utilities Commission, and will be acted upon by a single vote of the Commission. There will be no separate discussion of these items unless a member of the Commission or the public so requests, in which event the matter will be removed from the Consent Calendar and considered as a separate item.

a) **Approve** the selection and **award** of Infrastructure Operating Budget-funded As-needed Engineering Design Services to Kennedy/Jenks Consultants-Water Resources Engineering, JV (KJ-WRE) (CS-128A), MWH/Tuan and Robinson Structural Engineers Inc., JV (MWH-TRSE) (CS-128B), and URS Corporation (URS) (CS-128C), to provide specialized engineering design services on an as-needed basis; and **authorize** the General Manager of the San Francisco Public Utilities Commission to negotiate and execute professional services agreements with KJ-WRE, MWH-TRSE and URS each for an amount not-to-exceed $3,000,000 and each with a term of five years. (*Kelly)*

b) **Approve** Amendment No.1 to Power Enterprise-funded Agreement No. CS-134, Street Light Asset Survey Services, with AGS, Inc. to continue to identify, quantify, catalogue, and locate cobra head street lights as well as other electrical related assets within San Francisco; and **authorize** the General Manager of the San Francisco Public Utilities Commission to execute this amendment, increasing the agreement duration by one year, for a total agreement duration of two years. No additional funds are being requested under this

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amendment. (*Hale*)

c) **Accept** work performed by Shaw Pipeline, Inc. for Water Enterprise Local Water Repair and Replacement (R&R) Program-funded Contract No. WD-2561, 8" Ductile Iron Main (DIM) Installation in Laguna Street from Clay to Jackson, Broadway to Union and Greenwich to Bay Streets; **approve** Modification No. 4 (Final), to reconcile the final contract amount with the actual quantities of labor and materials required to complete the project, decreasing the contract by $76,705, for a total contract amount of $1,402,240, with a total contract duration of 240 consecutive calendar days; and **authorize** final payment, in the amount of $70,587, to the Contractor, Shaw Pipeline, Inc. (*Ritchie*)

d) **Accept** work performed by Ranger Pipelines Inc. for Water Enterprise, Water System Improvement Program-funded Contract No. WD-2589, SCADA System Phase II to install flow and pressure monitoring devices on water mains within the City of San Francisco as well as install communication panels at existing pressure regulating valve sites in the Peninsula; **approve** Modification No. 10 (Final), with a time extension of 62 consecutive calendar days to complete the installation of power and phone lines for a total contract duration of 442 consecutive calendar days and with a final contract amount of $2,169,927; and **authorize** final payment, in the amount of $15,635 to the contractor. (*Kelly*)

e) **Accept** work performed by NTK Construction, Inc., for Water Enterprise, Water System Improvement Program-funded Contract No. WD-2597, Lawrence Livermore and Phase II Thomas Shaft Improvement Project; **approve** Modification No. 9 (Final) to address for unanticipated conditions encountered during facility testing and start-up, increasing the contract by $67,784, for a total contract amount of $3,440,719 and extend it by 162 consecutive calendar days, for a total contract duration of 563 consecutive calendar days; and **authorize** final payment, to the contractor in the amount of $186,625. (*Labonte*)

f) **Approve** the plans and specifications, and **award** Wastewater Enterprise Capital Improvement Program-funded (CIP) Contract No. WW-515, Southeast Plant Northside Facility Reliability Upgrades Phase I, to upgrade various mechanical and electrical systems, and for the repair of areas with concrete corrosion, in the amount of $7,847,000 to the lowest, qualified, responsible, and responsive bidder, Cal State Constructors. (*Moala*)

g) **Approve** the plans and specifications, and **award** Wastewater Enterprise, Capital Improvement Program (CIP) **-** funded Contract No. WW-519, Channel Pump Station Odor Control and Facility Improvement Phase III, to correct electrical and mechanical system deficiencies, and improve system reliability and facility operational safety, in the amount of $4,048,000; to the lowest, qualified, responsible, and responsive bidder, NTK Construction, Inc. (*Moala*)

PUBLIC HEARING

(Persons who are unable to attend the public hearings may submit to the City, by the time the proceedings begin, written comments regarding the subject of the hearing. These comments will be brought to the attention of the Commission and will become a part of the official public record. Written comments can be sent to Michael Housh, Commission Secretary, San Francisco Public Utilities Commission, 1155 Market Street, 11th Floor, San Francisco, California, 94103).

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10. Public Hearing - Staff presentation and discussion of the Draft 2010 Urban Water Management Plan (UWMP) for the City and County of San Francisco. The Commission will consider approval of the UWMP at the June 14, 2011 Commission meeting. (*Ritchie*)

REGULAR BUSINESS

11. Discussion and possible action to **authorize** the General Manager of the San Francisco Public Utilities Commission (SFPUC) to execute on behalf of the City and County of San Francisco, a Memorandum of Agreement with East Bay Municipal Utility District (EBMUD), Contra Costa Water District (CCWD), Santa Clara Valley Water District (SCVWD), and Alameda County Flood Control and Water Conservation District - Zone 7 (Zone 7) for an amount not to exceed $200,000 (SFPUC share over an estimated duration of 18 months) to conduct Site Specific Analysis to further develop the Bay Area Regional Desalination Project. The proposed Site Specific Analysis will provide information necessary to proceed with Project design, permitting, and environmental review. (*Ritchie)*

12. Discussion and possible action to **approve** the plans and specifications, and **award** Water Enterprise Water System Improvement Program-funded Contract No. WD-2551, Calaveras Dam Replacement Project, in the amount of $259,571,850 to the lowest, qualified, responsible and responsive bidder, Dragados-USA, Inc./Flatiron West, Inc./Sukut Construction, Inc., Joint Venture, to construct a new earth and rock-fill dam to replace the existing Calaveras Dam in Alameda County, and perform project- related work in Santa Clara County. (*Labonte*)

13**.** Discussion and possible action to **approve** additional increases to the cost and schedule contract contingencies in the amount of $339,000 and by 186 consecutive calendar days for Water Enterprise, Water System Improvement Program (WSIP) funded Construction Contract No. HH-914R - Roselle Crossover Improvements; and authorize the General Manager to consider, and if appropriate, to approve future modifications to the contract amount and duration for a total contract amount of $3,498,693 and 705 consecutive calendar days.

The increased contingencies are needed to fund unexpected cost overruns and provide time extensions related to the repairs to City-furnished valves, revisions to correct conflicts between new and existing electrical, mechanical and controls equipment, and provide proper drainage, weather proofing of building and additional fencing. The funds for the requested increased cost contingency are available as part of the remaining amount held in reserve for continuing pipelines rehabilitation in Project CUW37302, Rehabilitation of Existing San Joaquin Pipelines. (*Labonte*)

14. Discussion and possible action to **approve** increases to the existing contract cost and schedule contingency threshold (10%) in the amount of $3,700,000 and 45 consecutive calendar days for Water Enterprise, Water System Improvement Program (WSIP) funded Construction Contract No. HH-935A - San Joaquin Pipeline (SJPL) System – Crossovers; and **authorize** the General Manager to consider, and if appropriate, to approve modifications to the contract amount and duration for a total contract up to $16,596,199 and 621 consecutive calendar days.

The increased contingencies are needed to fund cost overruns and time extensions resulting from necessary modifications to steel reinforcement of fabricated pipes and bypass piping around valves, extra work required due to unanticipated conditions encountered during excavation, and extra work required by shutdown schedule re-sequencing. The project team has identified a number of potential change orders that will require future modifications. The contract value is still well under

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the project budget due to the $5.7 million savings realized by the awarded contract amount. (*Labonte*)

15. Discussion and possible action to **approve** Modification No. 9 to Water Enterprise, Water System Improvement Program (WSIP)-funded Contract No. WD-2556, Baden and San Pedro Valve Lot Improvements, with JMB Construction, Inc., with a time extension of 229 consecutive calendar days for a total contract duration of 997 consecutive calendar days. The time extension is to complete the removal, repair, delivery, installation, testing and start-up of the damaged Generator (G2) enclosure and its related electrical appurtenances. The requested time extension is greater than 10% of the original contract duration. (*Labonte)*

CLOSED SESSION

16. Public comments on matters to be discussed in Closed Session.

17. Motion on whether to assert the attorney-client privilege regarding the matters listed below as Conference with Legal Counsel.

THE PUBLIC UTILITIES COMMISSION WILL GO INTO CLOSED SESSION TO DISCUSS THE FOLLOWING ITEMS:

18. Threat to Public Services or Facilities – Pursuant to California Government Code Section 54957 and San Francisco Administrative Code Section 67.10(a). (*Ambrose*)

Consultation with: Agency Chief of Security concerning security of S.F.P.U.C. Water and Power Systems.

FOLLOWING THE CLOSED SESSION, THE PUBLIC UTILITIES COMMISSION WILL RECONVENE IN OPEN SESSION.

19. Announcement following Closed Session.

20. Motion regarding whether to disclose the discussions during Closed Session.0

21. Other New Business

ADJOURNMENT

Location:
http://sfwater.org/detail.cfm/MC_ID/18/MSC_ID/113/MTO_ID/340/C_ID/5498

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Appendix C

Resolution to Adopt the 2010 Urban Water Management Plan

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PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO. **11-0089**

WHEREAS, The Urban Water Management Planning Act of 1983, amended through 2010, (the Act) requires that an urban water supplier serving 3,000 customers or 3,000 acre-feet per year must prepare an Urban Water Management Plan (Plan) update every five years beginning in 1985; and

WHEREAS, The SFPUC, in compliance with the Act, has prepared a 2010 update to its Plan; and

WHEREAS, The preparation of the Plan update has been coordinated with the City's wholesale water customers and other public agencies to the extent practicable, and staff has encouraged the active involvement of diverse social, cultural and economic elements of the population within the SFPUC's retail water service area during preparation of the Plan; and

WHEREAS, On May 24, 2011, a Draft Plan was presented to the Commission and a Public Hearing was held during the Commission meeting in order to receive public comment on the Draft Plan; and

WHEREAS, Minor revisions to the Draft Plan have been made based on public comments received at the Public Hearing and during the public comment period of April 27, 2011 through May 27, 2011; and

WHEREAS, Preparation and adoption of Urban Watershed Management Plans pursuant to the provisions of Section 10652 of the State Water Code is a statutory exemption under CEQA Guidelines Section 15282(v); and

WHEREAS, A Final 2010 Urban Water Management Plan update is today presented to the Commission for consideration; now, therefore, be it

RESOLVED, That this Commission has reviewed and considered the Final 2010 Plan update, and hereby adopts the Plan.

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of June 14, 2011

Secretary, Public Utilities Commission

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Appendix D

SFPUC Retail Demand Model Update and Calibration Technical Memorandum

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POLICY ANALYSIS FOR THE PUBLIC AND PRIVATE SECTORS
M.CUBED

5358 MILES AVENUE
OAKLAND, CA 94618
PH: 510-547-4369
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MITCHELL@MCUBED-ECON.COM

Date: April 21, 2011

From: David Mitchell

To: RMC

Technical Memorandum: SFPUC Retail Demand Model Update and Calibration

1 TM OVERVIEW

This technical memorandum (TM) describes updates made to the SFPUC Retail Demand Model, model calibration, and demand projections with and without SFPUC conservation programming. Model background and the need to update the model are described in Section 2. Updates to the structure of the model, projections of population, housing, and employment, specification of conservation programs, codes, and ordinances, and model calibration are described in Section 3. Updated projections of retail demands, conservation program water savings, conservation program expenditure, and conservation program unit costs are presented in Section 4. This TM only addresses the model update process, assumptions, and results. The Conservation Implementation Plan, which is being prepared as a separate document, will provide more detailed information on proposed conservation programs, costs, and expected water savings.

2 BACKGROUND

The SFPUC Retail Demand Model was originally developed in 2004 and used by SFPUC to forecast in-city retail water demands through 2030 with and without conservation programs. The original specification of the model and the data used to implement it are described in the 2004 report "City and County of San Francisco Retail Water Demands and Conservation Potential."[1] The model includes modules to estimate and forecast water use for single-family, multi-family, and non-residential in-city retail customer

[1] "City and County of San Francisco Retail Water Demands and Conservation Potential," prepared for San Francisco Public Utilities Commission Planning Bureau by Margaret A. Hannaford, P.E. and Hydroconsult, Inc., November 2004; "SFPUC City and County of San Francisco, Retail Water Demands and Conservation Potential Errata Sheet," prepared by Margaret A. Hannaford, August 28, 2005.

sectors. In addition the model estimates changes in retail demands due to codes and ordinances affecting water fixture efficiency and water use behavior.

SFPUC retained RMC to update the model and use it to prepare new in-city retail demand forecasts with and without conservation. The following elements of the model were the primary targets for the update:

- Population, Housing, and Employment Projections – The model uses projections of population, housing, and employment to forecast residential and non-residential retail water demands. SFPUC wished to update these projections so that they matched current forecasts from ABAG, California Department of Finance, and the City.
- Unaccounted Water Loss – The original model specification double counts water losses due to customer meter under-registration, causing the model to overestimate in-city retail demands (see Attachment 2). Unaccounted-for-Water represents unbilled authorized consumption (including metered high pressure fire fighting consumption, unmetered main flushing, street cleaning and dust control and low pressure fire hydrant use) and unbilled unauthorized consumption (including water lost to the system through all types of leaks, breaks and overflows). These losses are assumed to be approximately 6.9% of total in-city demand. Meter under-registration is also considered unbilled unauthorized consumption and is captured in the demand calculations for each billing sector. It is assumed that meter under-registration is 2.2% of residential demand and 2.1% of non-residential demand. Total loss in the City due to meter under-registration, unbilled authorized consumption and unbilled unauthorized consumption is approximately 9.0% of in-city demand.
- Codes and Ordinances – The original model needed updating to incorporate current and anticipated codes and ordinances impacting retail water demand, including the City's 2009 Retrofit on Resale (ROR) ordinance, the phase-in of high-efficiency toilet standards under AB 715, California Energy Commission's (CEC) proposed efficiency standards for residential clothes washers, and California's and the City's green building standards.
- Conservation Program Specification – The conservation program specifications in the original model were out of date and did not accurately reflect the mix of conservation programs and technologies SFPUC expects to implement over the next 10 to 20 years. Additionally, the assumptions of program water savings, implementation costs, and activity levels needed to be revised.
- Model Structure – A number of changes to the model's structure were required to make water savings and device inventory and saturation calculations more transparent.
- Forecast Period – The model was extended to forecast through 2035 in order to support SFPUC UWMP demand projections.
- Financial Assumptions – discount rate and inflation assumptions and the derivation of conservation program unit costs of saved water were updated to

conform to those currently being used by SFPUC for long-range water supply planning.

3 MODEL UPDATE

3.1 File Structure

The update maintained the basic file structure of the original model. The model consists of five linked Excel workbooks, whose file names are identical to the original model, except that each file name ends with "_v2.xls" to distinguish it from the original file. The five workbook files are the following:

Master_v2.xls – This workbook is used to:

- Specify costs, savings, and production assumptions of conservation programs and code/ordinance requirements;
- Specify other common assumptions used throughout the model, such as interest and inflation rate assumptions;
- Define conservation program portfolios or "packages";
- Summarize economic measures of expected performance, including unit cost of water savings and benefit-cost ratio for both individual programs and program portfolios.

RetailConservation_v2.xls – This workbook is used to:

- Specify service area population, housing, and employment assumptions and projections;
- Generate projections of SFPUC retail water demands with and without conservation programs;
- Break down SFPUC retail water demand projections by customer class and residential end use (The model includes 4 retail demand classes – single-family, multi-family, non-residential, and other); and
- Calibrate the model.

1-RSFConsMeas_v2.xls – This workbook is used to:

- Calculate expected water savings for conservation programs, codes, and ordinances affecting single-family water demands;
- Calculate unit costs of water savings for conservation programs and ordinances affecting single-family water demands; and
- Summarize projected single-family water demands for 2005 to 2030 with and without conservation.

2-RMFConsMeas_v2.xls – This workbook is used to:

- Calculate expected water savings for conservation programs, codes, and ordinances affecting multi-family water demands;

- Calculate unit costs of water savings for conservation programs and ordinances affecting multi-family water demands; and
- Summarize projected multi-family water demands for 2005 to 2030 with and without conservation.

3-NRConsMeas_v2.xls – This workbook is used to:

- Calculate expected water savings for conservation programs, codes, and ordinances affecting non-residential water demands;
- Calculate unit costs of water savings for conservation programs and ordinances affecting non-residential water demands; and
- Summarize projected non-residential water demands for 2005 to 2030 with and without conservation.

It is best to have all five workbooks open when working with the model to ensure that all formulas and links are updated correctly when model inputs are changed.

3.2 Population, Housing, and Employment Projection Update

Population, housing, and employment projections used in the model to forecast future retail demands were updated to reflect current projections. The forecast period was extended from 2030 to 2035 in order to support SFPUC UWMP demand projections.

3.2.1 Population Projection Update

Forecasted household population for 2000, 2005, and 2010 were updated with Department of Finance E-5 Housing and Population Estimates, dated May 2010. The 2030 population estimate was taken from the Citywide Projections, dated July 2009. Household populations for 2015, 2020, and 2025 were interpolated using the 2010 and 2030 projections. The 2035 projection of population is based on the 2035 forecast of housing units assuming average persons per household are unchanged between 2030 and 2035.

The model's original and updated population projections are shown in Table 1. As shown in this table, the percent change in population projections continues to increase with time; updated 2030 projections are about 7.9 percent greater than what was used in the original model.

Table 1
SFPUC Retail Demand Model Updated Population Projection

Year	Original	Updated[1]	% Change
2000	756,976	756,976	0.0%
2005	772,470	787,033	1.9%
2010	787,965	835,021	6.0%
2015	803,459	854,755	6.4%
2020	818,954	874,956	6.8%
2025	834,448	895,633	7.3%
2030	849,942	916,800	7.9%
2035	N/A	941,263	N/A

[1]Updated population estimates for 2000 thru 2010 are from Department of Finance's E-5 Housing and Population Estimates, dated May 2010. The 2030 population estimate is from the Citywide Projections, dated July 2009. Household populations for 2015, 2020, and 2025 were interpolated using the 2010 and 2030 projections. The 2035 projection of population is based on the 2035 forecast of housing units assuming average persons per household are unchanged between 2030 and 2035.

3.2.2 Household Projection Update

The projected total number of housing units for 2000, 2005, and 2010 were updated with Department of Finance E-5 Housing and Population Estimates, dated May 2010. The 2030 housing unit estimate was taken from the Citywide Projections, dated July 2009. Housing unit projections for 2015, 2020, and 2025 were interpolated using the 2010 and 2030 projections. The 2035 projection of total housing units is taken from ABAG's Projections 2009.

Single family housing units in 2000 and 2010 were set equal to the number of single family residential accounts for those years. Single family housing units for other years were interpolated using the average rate of single family account growth from 1990 to 2010.[2] The number of multi family housing units was imputed as the difference between the projection of total housing units and single family housing units.

The model's original and updated projections for total, single, and multi family housing units are shown in Table 2, Table 3, and Table 4. As shown in Table 2, the percent change in total housing units continue to increase with time, with 2030 total housing unit projections being about 8 percent higher than the original model projections. The number of single family households projected for 2030 increased by 4 percent (see

[2] Single family accounts grew at an average annual rate of 0.24% between 1990 and 2010.

Table 3) and the number of multi-family household projected for 2030 increased by 9.7 percent (See Table 4).

Table 2
SFPUC Retail Demand Model Updated Total Housing Unit Projection

Year	Original	Updated[1]	% Change
2000	329,703	329,700	0.0%
2005	337,005	338,024	0.3%
2010	344,306	350,758	1.9%
2015	351,608	363,213	3.3%
2020	358,909	376,109	4.8%
2025	366,211	389,463	6.4%
2030	373,513	403,292	8.0%
2035	N/A	415,000	N/A

[1] Projected total number of housing units for 2000, 2005, and 2010 were updated with Department of Finance E-5 Housing and Population Estimates, dated May 2010. The 2030 housing unit estimate was taken from the Citywide Projections, dated July 2009. Housing unit projections for 2015, 2020, and 2025 were interpolated using the 2010 and 2030 projections. The 2035 projection of total housing units is taken from ABAG's Projections 2009.

Table 3
SFPUC Retail Demand Model Updated Single Family Housing Unit Projection

Year	Original	Updated[1]	% Change
2000	108,255	108,255	0.0%
2005	109,985	109,500	-0.4%
2010	111,410	110,759	-0.6%
2015	111,725	112,109	0.3%
2020	111,745	113,475	1.5%
2025	111,765	114,857	2.8%
2030	111,785	116,257	4.0%
2035	N/A	117,674	N/A

[1]Updated single family housing unit projection for 2000 and 2010 are from SFPUC single family account data. Single family housing unit projections for other years were interpolated using the average rate of single family account growth from 1990 to 2010.

Table 4
SFPUC Retail Demand Model Updated Multi Family Housing Unit Projection

Year	Original	Updated[1]	% Change
2000	221,448	221,445	0.0%
2005	227,020	228,524	0.7%
2010	232,896	239,999	3.0%
2015	239,883	251,104	4.7%
2020	247,164	262,634	6.3%
2025	254,446	274,606	7.9%
2030	261,728	287,035	9.7%
2035	N/A	297,326	N/A

[1]Updated multi family housing units were imputed as the difference between the projection of total housing units and single family housing units.

3.2.3 Persons Per Household Projection Update

Projected persons per household for single and multi family housing units were derived from Census 2000 data and then scaled so that household population computed by multiplying the number of housing units by persons per household equaled the updated population projection in Table 1. Projected persons per household were assumed to be the same in 2030 and 2035.

The model's original and updated persons per household projections for single and multi family housing units are shown in Table 5 and Table 6. As shown in Table 5, single family persons per household increased from 2.7 in the original model to about 3.1 in the updated model. As shown in Table 6, multi-family persons per household *decreased* from 2.1 in the original model to about 2.0 persons per household in the updated model.

Table 5
SFPUC Retail Demand Model Updated Single Family Persons Per Household Projection

Year	Original	Updated[1]	% Change
2000	2.7	3.0	11.3%
2005	2.7	3.1	13.1%
2010	2.7	3.2	16.2%
2015	2.7	3.1	15.2%
2020	2.7	3.1	14.3%
2025	2.7	3.1	13.3%
2030	2.7	3.1	12.4%
2035	N/A	3.1	N/A

[1]Updated persons per household projection derived from Census 2000 data and then scaled so that household population computed by multiplying the number of housing units by persons per household equaled the updated population projection in Table 1. Projected persons per household were assumed to be the same in 2030 and 2035.

Table 6
SFPUC Retail Demand Model Updated Multi Family Persons Per Household Projection

Year	Original	Updated[1]	% Change
2000	2.1	1.9	-7.2%
2005	2.1	2.0	-5.7%
2010	2.1	2.0	-3.1%
2015	2.1	2.0	-3.9%
2020	2.1	2.0	-4.7%
2025	2.1	2.0	-5.5%
2030	2.1	2.0	-6.3%
2035	N/A	2.0	N/A

[1] Updated persons per household projection derived from Census 2000 data and then scaled so that household population computed by multiplying the number of housing units by persons per household equaled the updated population projection in Table 1. Projected persons per household were assumed to be the same in 2030 and 2035.

3.2.4 Employment Projection Update

The model's 2010 employment projection is based on EDD employment estimates for City of San Francisco. Projections for 2015 through 2035 were updated to reflect

ABAG's 2009 and draft 2011 employment projections for San Francisco. Total employment levels are based on ABAG's draft 2011 projections while sector shares are based on ABAG's 2009 projections. This was necessary because the draft 2011 projections are not yet available by sector.

The model's original and updated employment projections are shown in Table 7. As shown in this table, current and future employment projections are consistently lower than what the original model included.

Table 7
SFPUC Retail Demand Model Updated Employment Projection

Year	Original	Updated[1]	% Change
2000	634,430	642,500	1.3%
2005	656,480	553,090	-15.7%
2010	690,420	544,056	-21.2%
2015	719,810	569,720	-20.9%
2020	745,600	599,060	-19.7%
2025	770,500	631,790	-18.0%
2030	795,400	665,030	-16.4%
2035	N/A	698,790	N/A

[1] 2010 employment updated to match EDD employment estimates for City of San Francisco. Projections for 2015 through 2035 were updated to reflect ABAG's 2009 and draft 2011 employment projections for San Francisco. Total employment levels are based on ABAG's draft 2011 projections while sector shares are based on ABAG's 2009 projections.

3.2.5 GED Projection Update

The model estimates baseline non-residential water demand as the product of projected employment and average gallons per employee-day (GED) for nine commercial and industrial sectors. The original model's commercial and industrial sectors were based on how ABAG classified employment at the time the model was developed. ABAG's 2009 projections reclassified employment in some sectors, combining the wholesale sector with manufacturing and adding a new Information sector. GED estimates for the new Information sector were not available. Therefore, the GED for this new sector was set to the average GED for the other sectors, 40.9.

The model's original and updated GED estimates are shown in Table 8.

Table 8
SFPUC Retail Demand Model Updated GED Estimates

Employment Sector	Original GED	Updated GED[1]
Agric., Mining	93.8	93.8
Construction	19.1	19.1
Manufacturing	80.1	80.1
Transportation	22.8	22.8
Wholesale	58.7	Not In Model
Information	Not In Model	40.9
Retail Trade	53.9	53.9
F.I.R.E.	18.3	18.3
Services	55.8	55.8
Government	18.3	18.3

[1] GED for Information sector set to the average GED for the other sectors. GEDs for other sectors are the same as in the original model.

3.3 Code/Ordinance Update

The model was updated to account for expected water savings resulting from the following state/city codes and ordinances:

- *AB 715 and California 2010 Green Building Standards Code (Cal Green)* – These requirements prohibit the sale or installation of non high-efficiency toilets (HETs) and urinals starting in 2014. The model assumes that toilets replaced naturally or in response to city ordinances will convert to ULFTs prior to 2014 and HETs thereafter. Similarly, the model assumes that urinals replaced naturally or in response to city ordinances will convert to 1.0 gpf urinals prior to 2014 and 0.5 gpf urinals thereafter.
- *City Retrofit-On-Resale Ordinance* – Starting in 2009, this city ordinance requires replacement of non-ULFT/HET toilets and urinals in residential properties upon resale and replacement of non-ULFT/HET toilets and urinals in commercial properties not later than 2017. Because of AB 715 and Cal Green, the model assumes toilets will convert to ULFTs prior to 2014 and HETs thereafter, and urinals will convert to 1.0 gpf prior to 2014 and 0.5 gpf thereafter.[3] The model

[3] The ordinance also requires the replacement of showerheads with flow rates greater than 2.5 gpm and faucet aerators with flow rates greater than 2.2 gpm. Studies of residential water use in San Francisco have estimated average flow rates for showerheads and faucets below these thresholds. Ordinance

does not assume complete retrofit of toilets and urinals in commercial properties by 2017. Rather, it assumes replacement rates of 4 percent a year in commercial properties, similar to current rates of natural replacement of commercial plumbing fixtures.[4]

- *CEC Clothes Washer Water Efficiency Standards* – CEC has proposed a statewide water efficiency standard for clothes washers of 8.5 WF effective January 1, 2007, and 6.0 WF effective January 1, 2010.[5] However, the federal government has acted to block implementation of the standards, which have yet to take effect. The years in which the standards are assumed to take effect are specified in the "Master_v2.xls" workbook. For the preliminary model run, discussed below, they were set to 2010 (8.5 WF) and 2015 (6.0 WF).

Two ordinances affecting landscape water use were not directly modeled. These were the City's Green Landscaping Ordinance and the Water Efficient Landscape Ordinance. The former is intended to support the use of landscape for screening and greening front setback areas. While the ordinance is designed to encourage responsible water use through "climate appropriate" plantings, lack of implementation data make its potential impact on water demand impossible to predict at this time. San Francisco also recently adopted new requirements for new or modified landscape projects over 1,000 square feet. The ordinance requires that landscape projects be installed, constructed, operated, and maintained in accordance with rules adopted by SCPUC that establish a water budget for outdoor water consumption. As with the Green Landscaping Ordinance, data limitations prevented inclusion of this ordinance in the demand model. Because landscape water use is very small relative to the City's overall retail water demand, excluding these two ordinances from the model is not expected to significantly impact its results.

3.4 Conservation Program Update

The model update included reorganizing and adding to the set of conservation programs in the model. In some cases, the way in which the model tracks plumbing fixture inventories and calculates conservation program water savings was also updated.

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requirements for showerheads and aerators are not expected generate significant incremental water savings and therefore are not modeled directly.

[4] This results in an expected compliance rate of approximately 70 percent by 2017.

[5] WF stands for Water Factor, which measures water use per washer cycle per cubic foot of capacity. Thus an 8.5 WF efficiency standard means that washers cannot exceed 8.5 gallons of water per cycle per cubic foot of capacity, or about 25 gallons per load for a typical washer with 3 cubic feet of capacity.

3.4.1 Single Family Residential Programs

The updated model includes seven different categories of single family residential conservation programs. The original programs and subsequent changes made in the model update are summarized in Table 9.

Table 9
Single Family Residential Conservation Programs Included in SFPUC Demand Model

Program Category	Programs Included	Updated Model Functionality
RSF-1 Clothes Washers	Rebate programs for CEE Tier 1, 2, and 3 washers, plus discontinued rebate program for 8.5 WF washers.	Added rebate programs for Tier 2 and 3 washers. Added CEC washer efficiency standards to model.
RSF-2 Single Family Toilets	Rebate, voucher, and direct install programs for ULFT and HET toilets	Added rebate, voucher, and direct install programs for HETs. Added AB 715 requirements. Updated Retrofit on Resale (ROR) savings calculation to reflect current ordinance requirements.
RSF-3 Public Information	Public outreach and school education programs	Model no longer assigns direct water savings to this program. Instead, it is assumes savings associated with public information are subsumed in the savings estimates of the other programs.
RSF-4 Leak Detection	Residential leak detection and response assistance programs	Unchanged
RSF-5 Surveys	Residential indoor/outdoor surveys/audits	Unchanged
RSF-6 Showerheads	Showerhead distribution/installation programs	Added give-away and direct installation programs for 1.5 gpm showerheads. Added direct installation program for 1.5 gpm showerheads.
RSF-7 Dishwashers	Rebate programs for residential dishwashers	Unchanged

3.4.2 Multi Family Residential Programs

The updated model includes six different categories of multi family residential conservation programs. These programs and changes made during this model update are summarized in Table 10.

Table 10
Multi Family Residential Conservation Programs Included in SFPUC Demand Model

Program Category	Programs Included	Updated Model Functionality
RMF-1 Clothes Washers	Rebate programs for CEE Tier 1, 2, and 3 washers, plus discontinued rebate program for 8.5 WF washers.	Added rebate programs for CEE Tier 2 and 3 washers. Added CEC washer efficiency standards to model.
RMF-2 Multi Family Toilets	Rebate, voucher, and direct install programs for ULFT and HET toilets	Added rebate, voucher, and direct install programs for HETs. Added AB 715 requirements. Updated ROR savings calculation to reflect current ordinance requirements. Costs and savings calculated separately for tank and flushometer toilets
RMF-3 Submetering-Existing	Incentives for submetering existing multi family buildings	Unchanged
RMF-4 Submetering-Existing	Incentives for submetering new multi family buildings	Unchanged
RMF-5 Surveys	Residential indoor/outdoor surveys/audits	Unchanged
RMF-6 Showerheads	Showerhead distribution/installation programs	Added give-away and direct installation programs for 1.5 gpm showerheads. Added direct installation program for 1.5 gpm showerheads.

3.4.3 Non-Residential Programs

The updated model includes 21 different categories of non-residential conservation programs. These programs and changes made as part of this model update are summarized in Table 11.[6]

[6] Program numbering for non-residential programs follows the numbering in the original SFPUC demand model and therefore is not sequential.

Table 11
Non-Residential Conservation Programs Included in SFPUC Demand Model

Program Category	Programs Included	Updated Model Functionality
NR-1 Landscape Audits	Site surveys for large landscape customers	Unchanged
NR-3 Landscape Grants	Customized grants for large landscape efficiency improvements	Updated calculation of water savings
NR-4 CII Audits	Staff and consultant audits of CII facilities	Updated model to separately calculate water savings and program expenditure for staff and consultant audits
NR-5 CII Urinals	CII urinal rebate, voucher, and direct install programs	Added rebate, voucher, and direct install programs for 0.5 gpf and 0.25 gpf urinals. Added AB 715 and Cal Green requirements.
NR-6 CII Toilets	CII toilet rebate, voucher, and direct install programs	Added rebate, voucher, and direct install programs for HETs. Added AB 715 requirements. Costs and savings calculated separately for tank and flushometer toilets.
NR-7 Innovative Incentives – Existing CII	Customized incentives for efficiency improvements to existing CII water uses	Unchanged
NR-8 Innovative Incentives – New CII	Customized incentives for efficiency improvements to new CII water uses	Unchanged
NR-11 Hospital Audits	Hospital water efficiency audit programs	Unchanged
NR-12 Coin Laundries	Rebate programs for CEE Tier 1, 2, and 3 washers, plus discontinued rebate program for 8.5 WF washers.	Added rebate programs for CEE Tier 2 and 3 washers. Added CEC washer efficiency standards to model.
NR-13 School Audits	School/University indoor water efficiency audit programs	Unchanged
NR-14 School Toilets	School/University toilet rebate, voucher, and direct install programs	Added rebate, voucher, and direct install programs for HETs. Added AB 715 requirements. Costs and savings calculated separately for tank and flushometer toilets.
NR-15 School Landscape Audits	School/University outdoor water efficiency audit programs	Unchanged
NR-16 School Artificial Turf Incentives	Customized incentives for replacement of school turf with artificial turf	Unchanged
NR-18/19 Spray Rinse Valve Distribution	Spray rinse valve distribution to restaurants, groceries, and flower shops	Unchanged

Table 11
Non-Residential Conservation Programs Included in SFPUC Demand Model

Program Category	Programs Included	Updated Model Functionality
NR-19a Food Steamer Incentives	Rebate programs for high-efficiency food steamers	Unchanged
NR-20 Cooling Tower Incentives	Financial incentives for cooling tower efficiency improvements	Unchanged
NR-21 City Landscape Efficiency	Grant program for upgrading city landscape systems	Unchanged
NR-22 Water Broom Rebates	Rebate programs for water brooms	Unchanged
NR-23 Hotel Audits	Hotel audit programs	Unchanged
NR-24 Hotel WAVE	EPA-sponsored hotel water use efficiency program (note: program has been discontinued)	Unchanged
NR-25 Hotel Toilets	Hotel toilet rebate, voucher, and direct install programs	Added rebate, voucher, and direct install programs for HETs. Added AB 715 requirements. Costs and savings calculated separately for tank and flushometer toilets.

3.4.4 Program Water Savings and Cost Assumptions

Updated program water savings and cost assumptions for single family residential, multi family residential, and non residential conservation programs included in the model are summarized in Table 12, Table 13, and Table 14. Dollar amounts in these tables are in 2010 dollars. The model requires cost inputs to be expressed in 2005 dollars. Therefore these values were converted to 2005 dollars before they were input into the model.

Table 12
Updated Cost and Savings Assumptions for Single Family Residential Programs

Program Measure	Original Assumption	Updated Assumption	Basis for Update
RSF-1 SF 8.5 WF Rebate	NA	NA	Program no longer offered by SFPUC
RSF-1 SF CEE Tier 1 (WF 6.0) Rebate (a)	NA	NA	Program no longer offered by SFPUC
RSF-1 SF CEE Tier 1 (WF 6.0) Rebate (b)	NA	NA	Program no longer offered by SFPUC
RSF-1 SF CEE Tier 2 (WF 4.5) Rebate	Not In Original Model	$75: Incentive $10: Admin	Changed incentive to $75 based on current proposal Changed admin cost to 13% which translates to current level of $10
RSF-1 SF CEE Tier 3 (WF 4.0) Rebate	Not In Original Model	$75: Incentive $10: Admin	Replicated SF CEE Tier 2 (WF 4.5) Rebate
RSF-2 SF HET Rebate	$100: Incentive $30: Admin $100: Customer	$100: Incentive $66: Admin $100: Customer	Changed admin cost to 66% or current internal cost of $66 Changed customer costs to $100
RSF-2 SF HET Voucher	See above	$214: Incentive $0: Admin $100: Customer	Changed incentive cost to $214 to reflect current rate being charged by the vendor implementing the voucher program Incentive includes vendor admin fees Changed customer cost to $100 to reflect price of installation
RSF-2 SF Direct Install	Not in Original	$632: Utility $45: Admin	Used current cost of $632 for outsourced install fee Changed admin cost to 7% or approximately $45 Changed customer cost to $100
RSF-2 SF ULFT Rebate	NA	NA	No longer available
RSF-2 SF Retrofit on Resale	$10: Utility $2: Admin $65: Customer	$0: Utility $0: Admin $200: Customer	Eliminated costs with understanding that costs are not incurred by PUC Increased customer costs to $200 based on $100 for product and $100 for installation
RSF-3 Public Information	$2: Utility	$2: Utility	Did not change
RSF-4 Leak Detection/Repair	NA	NA	Not implemented Changed measure life to 2 years
RSF-5 Water Surveys	$50: Utility $13: Admin $15: Customer	$250: Utility $0: Admin $50: Customer	Increased utility costs to $250 based on current utility costs Reduced measure life to 2 years based on results from surveys done in early 1990sIncreased customer one-time fixed costs to $50 based

Table 12
Updated Cost and Savings Assumptions for Single Family Residential Programs

Program Measure	Original Assumption	Updated Assumption	Basis for Update
			upon making some repairs and/or upgrades to achieve savings Admin costs now included in utility cost.
RSF-6 SF 1.75 gpm showerheads – give away	NA	NA	No longer available
RSF-6 SF 1.75 gpm showerheads – direct install	NA	NA	No longer available
RSF-6 SF 1.5 gpm showerheads – give away	$15: Utility $0: Admin $10: Customer	$15: Utility $0: Admin $0: Customer	Removed customer costs – assumes customer self installs and has no associated costs
RSF-6 SF 1.5 gpm showerheads – direct install	NA	$15: Utility $0: Admin $0: Customer	Removed customer costs - assumes labor is absorbed in survey costs.
RSF-7 SF Dishwasher	NA	NA	Not implemented

Table 13 **Updated Cost and Savings Assumptions for Multi Family Residential Programs**			
Program Measure	**Original Assumption**	**Updated Assumption**	**Basis for Update**
RMF-1 MF 8.5 WF Rebate	NA	NA	Program no longer offered by SFPUC
RMF-1 MF CEE Tier 1 (WF 6.0) Rebate (a)	NA	NA	Program no longer offered by SFPUC
RMF-1 MF CEE Tier 1 (WF 6.0) Rebate (b)	NA	NA	Program no longer offered by SFPUC
RMF-1 MF CEE Tier 2 (WF 4.5) Rebate	NA	$75: Incentive $10: Admin	Changed incentive to $75 based on current proposal Changed admin cost to 13% which translates to current level of $10
RMF-1 MF CEE Tier 3 (WF 4.0) Rebate	Not in Original	$75: Incentive $10: Admin	Replicated MF CEE Tier 2 (WF 4.5) Rebate
RMF-2 MF HET Rebate - Tank	$100: Incentive $25: Admin $100: Customer	$100: Incentive $35: Admin $100: Customer	Changed admin cost to current internal cost of $35, or 35% of incentive cost.
RMF-2 MF HET Rebate - Flushometer	Not in Original	$300: Incentive $35: Admin $250: Customer	Increased incentive cost to $300 to cover high cost of product and make all flush valves – toilets or urinals, in multi-family or commercial properties Changed admin cost to $35 based upon SFPUC internal costs Changed customer cost to $250 based on an average product and installation cost of $550
RMF-2 MF HET Voucher - Tank	Not in Original	$214: Incentive $0: Admin $100: Customer	Changed incentive cost to $214 to reflect current rate being charged by the vendor implementing the voucher program Incentive includes vendor admin fees Changed customer cost to $100 to reflect price of installation
RMF-2 MF HET Voucher - Flushometer	Not in Original	$367: Incentive $0: Admin $250: Customer	Changed incentive cost to $350 to reflect current rate being charged by the vendor implementing the voucher program Incentive includes vendor admin fees Changed customer cost to $250 to reflect price of installation
RMF-2 MF Direct Install – Tank	Not in Original	$531: Utility $45: Admin $0: Customer	Used current cost of $531 for outsourced install fee for MF tank toilets Changed admin cost to 8% or approximately $45
RMF-2 MF Direct Install – Flushometer	Not in Original	$931: Utility	Used current cost of $931 for outsourced install fee for MF

Table 13
Updated Cost and Savings Assumptions for Multi Family Residential Programs

Program Measure	Original Assumption	Updated Assumption	Basis for Update
		$45: Admin $0: Customer	flushometer toilets Changed admin cost to 5% or approximately $45
RMF-2 MF ULFT Rebate – Tank	NA	NA	Program no longer offered by SFPUC
RMF-2 MF ULFT Rebate – Flushometer	NA	NA	Program no longer offered by SFPUC
RMF-2 MF Retrofit on Resale	$10: Utility $2: Admin $65: Customer	$0: Utility $0: Admin $0: Customer	Eliminated costs with understanding that costs are not incurred by PUC
RMF-3 Submetering Retrofit Incentive	$1,000: Utility $250: Admin $60 per year: Customer	$725: Utility $72.50: Admin $500 Fixed: Customer plus $60 per year: Customer	Changed utility costs to $725 and customer costs to $500 based upon National Submetering and Allocation Billing Program Study (2004) Changed admin to 10%
RMF-4 Submetering Reqt. For New Units	$10: Utility $1: Admin $60 per year: Customer	NA	Eliminated costs with understanding that costs are not incurred by PUC
RMF-5 MF Surveys	Not in Original	$362 per Account: Utility $0: Admin $50: Customer	Changed utility cost to $362 to reflect actual costs, including admin. Based upon contractor fees of $50 per unit multiplied by the average number of units in MF sites Changed customer one-time fixed costs to $50 based upon making some repairs and/or upgrades to achieve savings Downgraded savings to 10%
RMF-6 MF 1.75 gpm showerheads – give away	NA	NA	Program no longer offered by SFPUC
RMF-6 MF 1.75 gpm showerheads – direct install	NA	NA	Program no longer offered by SFPUC
RMF-6 MF 1.5 gpm showerheads – give away	$15: Utility $4: Admin $5: Customer	$15: Utility $0: Admin $0: Customer	Removed customer costs – assumes customer self installs and has not associated costs.

Table 13
Updated Cost and Savings Assumptions for Multi Family Residential Programs

Program Measure	Original Assumption	Updated Assumption	Basis for Update
RMF-6 MF 1.5 gpm showerheads – direct install	Not in Original	$15: Utility $: Admin $0: Customer	Removed customer costs - assumes labor is absorbed in survey costs.

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
NR-1 Landscape Audits	$800: Utility $240: Admin $200: Customer	$1,000: Utility $0: Admin $100: Customer	Increased utility cost to $1,000 based upon current market rates Reduced measure life to 5 years Eliminated admin costs Decreased customer one-time fixed costs to $100 based upon making some repairs and/or upgrades to achieve savings
NR-3 Landscape Grants	Not in Original	$271,719: Utility $8,151: Admin $35,000: Customer	Based upon SFPUC current Grant Program statistics
NR-4 SFPUC Staff Water Audits	Not in Original	$328: Utility $0: Admin $0: Customer	Based upon SFPUC internal costs. Utility cost includes admin.
NR-4 Consultant Water Audits	$4,000: Utility $1,000: Admin $2,000: Customer	$10,000: Consultant $0: Admin $0: Customer	Based upon SFPUC current Consultant water audits
NR-5 CII Urinal 0.5 gpf Rebate	Not in Original	$300: Incentive $36: Admin $500: Customer	Increased incentive cost to $300 to cover high cost of product and make all flush valves – toilets or urinals, in multi-family or commercial properties Changed admin cost to $36 based upon SFPUC internal costs Changed customer one-time fixed cost to $500 based upon $400 product costs and $400 install costs

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
NR-5 CII Urinal 0.5 gpf Voucher	See Above	See Above	Replicated CII Urinal 0.5 gpf Rebate
NR-5 CII Urinal 0.5 gpf Direct Install	Not in Original ($200 for ULF)	$1,000: Utility $40: Admin $0: Customer	Used install cost of $1,000 based upon current market rates with an additional $200 to cover for union rates
NR-5 CII Urinal 0.25 gpf Rebate	Not in Original	$300: Incentive $36: Admin $500: Customer	Eliminated zero consumption urinals Replicated CII Urinal 0.5 Rebate
NR-5 CII Urinal 0.25 gpf Voucher	See Above	See Above	Replicated CII Urinal 0.25 gpf Rebate and/or Voucher
NR-5 CII Urinal 0.25 gpf Direct Install	Not in Original	$1,000: Utility $40: Admin $0: Customer	Replicated CII Urinal 0.5 gpd Direct Install
NR-6 CII HET Rebate - Tank	Not in Original ($60 for ULFT)	$200: Incentive $36: Admin $75: Customer	Changed incentive to $200 to reflect average incentive for commercial sites. Tank type incentives will typically be $100-$200 while valve type incentives will be $300. Changed customer costs to $75 Changed admin cost to current internal cost of $36
NR-6 CII HET Rebate - Flushometer	Not in Original	$200: Incentive $36: Admin $185: Customer	Changed incentive to $200 to reflect average incentive for commercial sites. Tank type incentives will typically be $100-$200 while valve type incentives will be $300. Changed customer costs to $185 Changed admin cost to current internal cost of $36
NR-6 CII HET Voucher - Tank	See Above	See Above	Replicated CII HET Rebate – Tank
NR-6 CII HET Voucher - Flushometer	See Above	See Above	Replicated CII HET Rebate – Flushometer
NR-6 CII Direct Install – Tank	Not in Original	$692: Utility $45: Admin $0: Customer	Used current cost of $692 for outsourced install fee for MF tank toilets Changed admin cost to 7% or approximately $45
NR-6 CII Direct Install – Flushometer	Not in Original	$920: Utility $45: Admin $0: Customer	Used current cost of $920 for outsourced install fee for MF flushometer toilets Changed admin cost to 5% or approximately $45
NR-6 CII ULFT Rebate – Tank	NA	NA	Program no longer offered by SFPUC

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
NR-6 CII ULFT Rebate – Flushometer	NA	NA	Program no longer offered by SFPUC
NR-6 CII Retrofit on Resale	$10: Utility $2: Admin $150: Customer	NA	Not in new model
NR-7 Large Innovative Retrofits Incentive	$2,700: Utility $4,000: Consultant $2,700: Admin $50,000: Customer	$153,666: Utility $1,536: Admin $150,000: Customer	Used numbers from the Water Saver Program includes audits and incentives including average savings of 14,730 gpd
NR-8 Large New Project Incentives	NA	NA	Same as Large Innovative Project Retrofits but for new construction Program no longer offered by SFPUC
NR-11 Audits-Hospital	$2,300: Utility $575: Admin $5,000: Customer	$3,000: Utility $300: Admin $300: Customer	Changed audit costs to $3,000 based upon current market rates Reduced measure life to 2 years Increased customer one-time fixed costs to $300 based upon making some repairs and/or upgrades to achieve savings Changed admin costs to 10%
NR-12 Coin-Op 8.5 WF Rebate	NA	NA	Program no longer offered by SFPUC
NR-12 Coin-Op CEE Tier 1 (WF 6.0) Rebate (a)	NA	NA	Program no longer offered by SFPUC
NR-12 Coin-Op CEE Tier 1 (WF 6.0) Rebate (b)	NA	NA	Program no longer offered by SFPUC
NR-12 Coin-Op CEE Tier 2 (WF 4.5) Rebate	Not In Original	$75: Incentive $10: Admin	Changed incentive to $75 based on current proposal Changed admin cost to 13% which translates to current level of $10
NR-12 Coin-Op CEE Tier 3 (WF 4.0) Rebate	Not in Original	$75: Incentive $10: Admin	Changed incentive to $75 based on current proposal Changed admin cost to 13% which translates to current level of $10
NR-13 Audits-Schools/Universities	$1,000: Utility $150: Admin $2,000: Customer	$3,000: Utility $300: Admin $450: Customer	Changed audit costs to $3,000 based upon current market rates Reduced measure life to 2 years Decreased customer one-time fixed costs to $300 based upon making some repairs and/or upgrades to achieve savings Changed admin costs to 15%
NR-14 SCH HET Rebate - Tank	$400: Incentive $120: Admin $100: Customer	$265: Incentive $66: Admin $0: Customer	Changed incentive to proposed incentive of $265 Changed customer costs to $0 which assumes customer can procure product and installation cost of $165

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
			Changed admin cost to 40% or current internal cost of $66
NR-14 SCH HET Rebate - Flushometer	$400: Incentive $120: Admin $100: Customer	$530: Incentive $66: Admin $0: Customer	Changed incentive to proposed incentive of $530 Changed customer costs to $0 which assumes customer can procure product and installation cost of $530 Changed admin cost to 40% or current internal cost of $66
NR-14 SCH HET Voucher - Tank	See Above	See Above	Replicated CII HET Rebate – Tank
NR-14 SCH HET Voucher - Flushometer	See Above	See Above	Replicated CII HET Rebate – Flushometer
NR-14 SCH Direct Install – Tank	Not in Original	$692: Utility $45: Admin $0: Customer	Used current cost of $692 for outsourced install fee for MF tank toilets Changed admin cost to 7% or approximately $45
NR-14 SCH Direct Install – Flushometer		$920: Utility $45: Admin $0: Customer	Used current cost of $920 for outsourced install fee for MF flushometer toilets Changed admin cost to 5% or approximately $45
NR-14 SCH ULFT Rebate – Tank	NA	NA	Program no longer offered by SFPUC
NR-14 SCH ULFT Rebate – Flushometer	NA	NA	Program no longer offered by SFPUC
NR-15 Audits-Schools/University Landscaping	$1,000: Utility $150: Admin $2,000: Customer	$800: Utility $80: Admin $100: Customer	Increased costs to $800 based upon current market costs Reduced measure life to 2 years Reduced savings to 10% Changed admin to 10% Increased customer one-time fixed costs to $100 based upon making some repairs and/or upgrades to achieve savings
NR-16 School/University Artificial Turf	NA	NA	Program no longer offered by SFPUC
NR-18 Low Flow Sprayers-Grocery Flower	$130: Utility $20: Admin $75: Customer	$140: Utility $0: Admin $0: Customer	Changed cost to $140 to reflect current SFPUC costs and assumes self installed Reduced savings to 60 gpd based upon current CUWCC studies and assumes 50% install rate
NR-19 Low Flow Sprayers-Restaurants	$130: Utility $20: Admin $75: Customer	$140: Utility $0: Admin $0: Customer	Replicated Low Flow Sprayers-Grocery Flower Program
NR-19a Steamers-Restaurants	$300: Utility	$300: Utility	Reduced incentive to $300 based upon incentive offered by other

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
	$45: Admin -$300: Customer	$30: Admin $0: Customer	utilities Changed admin cost to 10% or $30 Changed customer cost to $0 because currently the product costs the same as a standard steamer
NR-20 Cooling Towers	NA	NA	Program no longer offered by SFPUC
NR-21 City/PUC Landscape	$800: Utility $240: Admin $200: Customer	$800: Utility $80: Admin $100: Customer	Reduced measure life to 2 years Changed savings to 10% Changed admin to 10% Decreased customer one-time fixed costs to $100 based upon making some repairs and/or upgrades to achieve savings
NR-22 Water Broom	NA	NA	Not implemented
NR-23 Audits-Hotels/Motels	$3,000: Utility $750: Admin $2,000: Customer	$3,000: Utility $300: Admin $300: Customer	Reduced measure life to 2 years Changed savings to 10% Decreased customer one-time fixed costs to $300 based upon making some repairs and/or upgrades to achieve savings Changed admin costs to 10%
NR-24 WAVE Program	NA	NA	Program no longer offered by SFPUC
NR-25 HTL HET Rebate - Tank	Not in Original	$165: Incentive $66: Admin $0: Customer	Changed incentive to proposed incentive of $165 Changed customer costs to $0 which assumes customer can procure product and installation cost of $165 Changed admin cost to 40% or current internal cost of $66
NR-25 HTL HET Rebate - Flushometer	Not in Original	$165: Incentive $66: Admin $185: Customer	Changed incentive to proposed incentive of $165 Changed customer costs to $185 based upon bulk purchasing of tank flushometer toilet for $200 and paying $150 for installation Changed admin cost to current internal cost of $66
NR-25 HTL HET Voucher - Tank	Not in Original	See Above	Replicated CII HET Rebate – Tank
NR-25 HTL HET Voucher - Flushometer	Not in Original	See Above	Replicated CII HET Rebate – Flushometer
NR-25 HTL Direct Install – Tank	Not in Original	$692: Utility $45: Admin $0: Customer	Used current cost of $692 for outsourced install fee for MF tank toilets Changed admin cost to 7% or approximately $45

Table 14
Updated Cost and Savings Assumptions for Non Residential Programs

Program	Original Assumption	Updated Assumption	Basis for Update
NR-25 HTL Direct Install – Flushometer	Not in Original	$920: Utility $45: Admin $0: Customer	Used current cost of $920 for outsourced install fee for MF flushometer toilets Changed admin cost to 5% or approximately $45
NR-25 HTL ULFT Rebate – Tank	Not in Original	NA	Program no longer offered by SFPUC
HTL ULFT Rebate – Flushometer	Not in Original	NA	Program no longer offered by SFPUC

3.4.5 Model Calibration

The updated model was calibrated to actual customer class demands (with meter correction)[7] for 2000 and 2005. Table 15 shows the percentage difference between actual and predicted demands in each year. In 2000, the model slightly under predicted multi family demand and over predicted non-residential demand. The model closely tracked single family demand in both calibration years. Other demands, which consist of Builders and Contractors (B&C) and Docks and Shipping (D&S) customers, are fixed in the model at their historic average of 0.2 mgd, and are not adjusted as part of model calibration. Overall, the updated model closely tracks actual demands in 2000 and 2005. It is within about 2 percent of actual retail demand in 2000 and within about 1 percent of actual retail demand in 2005.

Table 15
SFPUC Model Calibration

Demand Class	Actual (mgd)	Model (mgd)	% Difference
Year: 2000			
Single Family	19.4	19.3	-0.5%
Multi Family	29.4	28.6	-2.7%
Non-Residential	28.1	30.9	+9.9%
Other*	0.3	0.2	-33.3%
Retail Demand	***77.2***	***79.0***	***+2.3%***
Year: 2005			
Single Family	18.8	18.7	-0.5%
Multi Family	28.3	28.4	+0.4%
Non-Residential	25.3	25.9	+2.4%
Other*	0.2	0.2	+0.0%
Retail Demand	***72.6***	***73.2***	***+0.8%***
*Other (B&C, D&S): Builders and Contractors, Docks and Shipping.			

The calibrated model over predicts 2010 retail demand by about 7 percent. This over prediction was expected for three reasons. First, the very wet spring and cool summer California experienced in 2010 depressed urban water demand across the state. Second, 2008 and 2009 were both dry and households and businesses were encouraged to conserve water, and while rainfall returned to normal or above normal in 2010, conservation messaging continued through most of the year. Third, the sharp economic decline which started in 2008 pushed down commercial and industrial demands. While the model does a good job of capturing employment-related changes in demand, it may not be picking up changes in the residential sector related to the home foreclosure crisis.

[7] SFPUC estimates that residential retail meters under-read consumption by 2.2 percent on average while non-residential meters under-read by about 2.1 percent. Metered sales were therefore increased accordingly to estimate actual water demand.

This is not cause for concern about the model's calibration. The model is calibrated to long-term weather and economic conditions and is not going to precisely mirror temporary perturbations in demand caused by unusual weather or economic circumstances.

4 MODEL RESULTS

4.1 In-City Demand Projections

In-city retail water demand projections are summarized in Tables 16 and 17. Table 16 shows projected demands in five year increments between 2005 and 2035. Table 17 shows projected demands in two years increments between 2010 and 2020.

Three projections are presented in the tables:

1. Baseline demands excluding plumbing efficiency codes and SFPUC conservation programs.
2. Baseline demands adjusted for plumbing efficiency codes but excluding SFPUC conservation programs.
3. Demands adjusted for plumbing efficiency codes and including SFPUC conservation programs

Separate demands are estimated for single-family, multi-family, non-residential, and "other" customer segments.[8] Additionally, system losses are estimated at 6.9% of the adjusted baseline demand.[9]

4.1.1 Baseline In-City Demands Excluding Plumbing Efficiency Codes and SFPUC Conservation Programs

This projection is generated by turning off all the plumbing efficiency codes and conservation programs in the model. It provides a reference demand from which the impact of plumbing efficiency codes can be measured. Demand under this projection is driven by population and employment growth only. Residential end use efficiency and water use per employee-day estimates are fixed at initial model levels. The result is projected demand assuming no changes in water use efficiency over time. Under this projection, total in-city retail demand is projected to increase from 80.2 mgd in 2005 to 96.8 mgd in 2035, an increase of 20.7%. The fluctuations in per capita demand under this projection are caused by variation in the employment forecast.

4.1.2 Adjusted Baseline In-City Demands Including Plumbing Efficiency Codes

The effects of plumbing efficiency codes over time are shown in the second demand projection. This projection shows expected in-city retail demands given projected population and

[8] Other demands consist of demands from the Builders & Contractors (B&S) and Docks & Shipping (D&S) customer accounts.

[9] System losses do not include meter under-registration losses, which are included in the customer demands.

employment growth, codes and ordinances, but not implementation of SFPUC conservation programs. Under the adjusted baseline demand projection:

- Single-family residential demand decreases by approximately 15% between 2005 and 2035. The reduction is driven by increased water use efficiency of toilets, clothes washers, and showerheads coupled with very limited growth in the number of single-family residential accounts.
- Multi-family residential demands do not change significantly over the forecast period. While per capita demand falls as a result of code effects, this is offset by projected growth in the number of multi-family residential customers.
- Non-residential demands are projected to increase by 17% between 2005 and 2035. The increase is driven by projected increases in employment. While water use per employee is expected to decrease by 14% over the forecast period, total employment is projected to increase by 26%.
- Overall, adjusted baseline in-city retail demand is projected to increase from 78.0 mgd in 2005 to 79.7 mgd in 2035, an increase of 1.7 mgd, or 2.2%.
- The impact of plumbing efficiency codes is measured as the difference between the unadjusted and adjusted baseline demand projections. Code savings are 10.9 mgd by 2020 and 17.1 mgd by 2035.

Under the original model specification, baseline retail demands were 82.5 mgd in 2020 and 83.8 mgd in 2030.[10] However, this included double counting water losses associated with customer meter under-registration. After correcting for the double counting, baseline demands under the original model specification are 80.8 mgd and 82.1 mgd in 2020 and 2030, respectively. Using the updated model, baseline demands adjusted for codes are 77.1 mgd and 78.2 mgd in 2020 and 2030, respectively. The reduction in projected demands is primarily a consequence of the lower employment forecast in the updated model.

4.1.3 In-City Demand Including SFPUC Conservation Programs

This projection includes actual and projected conservation program implementation for the period 2005 to 2035. The conservation programs, program durations, and annual levels of activity used to generate the projection are summarized in Table 18. Program durations and annual levels of activity were provided by SFPUC staff. Conservation programs are assumed to operate through 2035 with the exception of single-family toilet programs, non-residential toilet and urinal programs, and single-family washer rebate programs, which end earlier because full market penetration is realized.

The impact of SFPUC conservation programs is measured as the difference between this projection and the adjusted baseline projection. Conservation program water savings over the forecast period are as follows:

[10] These values are taken from Table 13 in "City and County of San Francisco Retail Water Demands and Conservation Potential."

- Single-family demands are reduced by 2.0 mgd by 2020 and by 1.8 mgd by 2035.[11]
- Multi-family demands are reduced by 1.7 mgd by 2020 and by 2.2 mgd by 2035.
- Non-residential demands are reduced by 1.7 mgd by 2020 and by 2.0 mgd by 2035.
- Total conservation program water savings in 2020 are 5.4 mgd in 2020 and 6.0 mgd in 2035.

Updated conservation programs water savings are approximately 30% higher in 2020 and 35% higher in 2030 than under the original model specification. The difference reflects changes in the mix, duration, and level of implementation of conservation programs in the updated model.

4.1.4 In-City Retail Water Sales

Projected in-city retail water sales with and without SFPUC conservation programs for the period 2010 to 2030 are shown in Table 19 and Table 20. Retail sales are calculated as total projected demands less system losses and meter under-registration. Together, system losses and meter under-registration are approximately 9 to 10% of retail demand. Thus, projected sales are about 90 to 91% of projected retail demand.

4.2 Total Retail Demand Projections

Total retail demands are the sum of the following demands:

- In-city retail demand, including system losses
- Other retail customer demands, including SFO, the US Navy, and other suburban/municipal accounts.
- Groveland Community Services District
- Lawrence Livermore Laboratory
- City irrigation demand served by groundwater, including irrigation at Golden Gate Park, Great Highway Median, SF Zoo
- Castlewood & Sunol Golf Course demands served by groundwater

The projections of total retail demands for the period 2010 to 2035 with and without SFPUC conservation are shown in Table 21 and Table 22. In-city retail demands are estimated with the demand model. The projections for the other categories of retail demand were provided by SFPUC and are based on historic deliveries.

[11] The reduction in active program water savings is a consequence of ending single-family toilet and washer programs prior to 2035 due to market saturation. Overall savings – the sum of code and program savings – between 2020 and 2035 increases, however, from 5.4 to 6.8 mgd.

Table 16
SFPUC In-City Retail Demand Projection: 2005 – 2035
(mgd)

Single Family In-City Retail Demand	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Baseline Demand without Codes or SFPUC Conservation Programs	**19.6**	**20.3**	**20.4**	**20.5**	**20.5**	**20.6**	**20.9**
Less Savings from Codes	*0.9*	*1.6*	*2.5*	*3.4*	*4.1*	*4.6*	*5.0*
Adjusted Baseline Demand	**18.7**	**18.7**	**17.9**	**17.1**	**16.5**	**16.0**	**15.8**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.0*	*0.6*	*1.5*	*2.0*	*2.2*	*2.1*	*1.8*
Demand with Codes & SFPUC Conservation Programs	**18.7**	**18.1**	**16.4**	**15.1**	**14.3**	**14.0**	**14.0**
Savings from Codes & SFPUC Conservation Programs	*0.9*	*2.2*	*4.0*	*5.4*	*6.3*	*6.7*	*6.8*
Multi Family In-City Retail Demand							
Baseline Demand without Codes or SFPUC Conservation Programs	**29.7**	**32.0**	**33.1**	**34.3**	**35.5**	**36.8**	**38.1**
Less Savings from Codes	*1.3*	*2.6*	*4.2*	*5.9*	*7.3*	*8.5*	*9.5*
Adjusted Baseline Demand	**28.4**	**29.3**	**28.9**	**28.4**	**28.2**	**28.3**	**28.6**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.0*	*0.2*	*1.2*	*1.7*	*2.0*	*2.1*	*2.2*
Demand with Codes & SFPUC Conservation Programs	**28.4**	**29.2**	**27.8**	**26.7**	**26.2**	**26.2**	**26.4**
Savings from Codes & SFPUC Conservation Programs	*1.3*	*2.8*	*5.4*	*7.6*	*9.3*	*10.6*	*11.7*
Non Residential In-City Retail Demand							
Baseline Demand without Codes or SFPUC Conservation Programs	**25.7**	**25.3**	**26.7**	**28.1**	**29.5**	**31.0**	**32.5**
Less Savings from Codes	*0.1*	*0.6*	*1.1*	*1.6*	*2.0*	*2.3*	*2.6*
Adjusted Baseline Demand	**25.6**	**24.6**	**25.6**	**26.5**	**27.5**	**28.7**	**29.9**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.0*	*0.7*	*1.4*	*1.7*	*1.9*	*2.0*	*2.0*
Demand with Codes & SFPUC Conservation Programs	**25.6**	**24.0**	**24.3**	**24.8**	**25.5**	**26.7**	**27.9**
Savings from Codes & SFPUC Conservation Programs	*0.1*	*1.3*	*2.5*	*3.3*	*3.9*	*4.3*	*4.6*
Other (mgd)							
Builders & Contractors, Docks & Shipping	0.2	0.2	0.2	0.2	0.2	0.2	0.2
System Losses Excluding Meter Under-Registration[1]							
Calculated as % of Adjusted Baseline Demand	5.0	5.0	5.0	4.9	5.0	5.0	5.1
Total In-City Retail Demand							
Baseline Demand without Codes or SFPUC Conservation Programs	**80.2**	**82.7**	**85.5**	**88.0**	**90.7**	**93.7**	**96.8**
Less Savings from Codes	*2.2*	*4.9*	*7.8*	*10.9*	*13.4*	*15.4*	*17.1*
Adjusted Baseline Demand	**78.0**	**77.9**	**77.7**	**77.1**	**77.3**	**78.2**	**79.7**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.0*	*1.4*	*4.1*	*5.4*	*6.1*	*6.2*	*6.0*
Demand with Codes & SFPUC Conservation Programs	**78.0**	**76.4**	**73.6**	**71.7**	**71.2**	**72.1**	**73.7**
Savings from Codes & SFPUC Conservation Programs	*2.3*	*6.3*	*11.8*	*16.3*	*19.5*	*21.6*	*23.1*
Per Capita Demand (Gal/Day/Person)							
Baseline Demand without Codes or SFPUC Conservation	102	99	100	101	101	102	103
Baseline Demand Adjusted for Codes Only	99	93	91	88	86	85	85
Baseline Demand Adjusted for Codes and SFPUC Conservation	99	92	86	82	80	79	78

[1] Meter under-registration losses are included in the retail demands for residential and non-residential sectors. Meter under-registration losses estimated at 2.2% of residential and 2.1% of non-residential sector demands. System losses excluding meter under-registration estimated at 6.86% of sector demand of the "codes only" demand projection.

Table 17
SFPUC In-City Retail Demand Projections: 2010 – 2020
(mgd)

Single Family In-City Retail Demand	**2010**	**2012**	**2014**	**2016**	**2018**	**2020**
Baseline Demand without Codes or SFPUC Conservation Programs	**20.1**	**20.3**	**20.3**	**20.4**	**20.4**	**20.4**
Less Savings from Codes	*1.5*	*1.8*	*2.1*	*2.5*	*2.8*	*3.2*
Adjusted Baseline Demand	**18.7**	**18.5**	**18.2**	**17.9**	**17.6**	**17.2**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.6*	*1.1*	*1.5*	*1.8*	*2.0*	*2.2*
Demand with Codes & SFPUC Conservation Programs	**18.1**	**17.4**	**16.7**	**16.1**	**15.6**	**15.1**
Savings from Codes & SFPUC Conservation Programs	*2.1*	*2.9*	*3.6*	*4.2*	*4.8*	*5.3*
Multi Family In-City Retail Demand						
Baseline Demand without Codes or SFPUC Conservation Programs	**31.5**	**32.2**	**32.7**	**33.1**	**33.6**	**34.1**
Less Savings from Codes	*2.4*	*2.9*	*3.6*	*4.2*	*4.9*	*5.6*
Adjusted Baseline Demand	**29.2**	**29.3**	**29.1**	**28.9**	**28.7**	**28.5**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.0*	*0.6*	*1.0*	*1.4*	*1.6*	*1.8*
Demand with Codes & SFPUC Conservation Programs	**29.2**	**28.6**	**28.0**	**27.6**	**27.1**	**26.7**
Savings from Codes & SFPUC Conservation Programs	*2.3*	*3.6*	*4.6*	*5.6*	*6.5*	*7.4*
Non Residential In-City Retail Demand						
Baseline Demand without Codes or SFPUC Conservation Programs	**25.3**	**25.6**	**26.1**	**26.7**	**27.3**	**27.8**
Less Savings from Codes	*0.5*	*0.7*	*0.9*	*1.1*	*1.3*	*1.5*
Adjusted Baseline Demand	**24.8**	**24.8**	**25.2**	**25.6**	**26.0**	**26.3**
Less Savings from 2005-30 SFPUC Conservation Programs	*0.9*	*0.8*	*1.0*	*1.3*	*1.4*	*1.5*
Demand with Codes & SFPUC Conservation Programs	**24.0**	**24.1**	**24.2**	**24.4**	**24.6**	**24.8**
Savings from Codes & SFPUC Conservation Programs	*1.4*	*1.5*	*2.0*	*2.4*	*2.7*	*3.1*
Other						
Builders & Contractors, Docks & Shipping	0.2	0.2	0.2	0.2	0.2	0.2
System Losses Excluding Meter Under-Registration[1]						
Calculated as % of Adjusted Baseline Demand	5.0	5.0	5.0	5.0	5.0	5.0
Total In-City Retail Demand						
Baseline Demand without Codes or SFPUC Conservation Programs	**82.2**	**83.3**	**84.4**	**85.5**	**86.5**	**87.5**
Less Savings from Codes	*4.3*	*5.4*	*6.6*	*7.8*	*9.0*	*10.3*
Adjusted Baseline Demand	**77.9**	**77.8**	**77.8**	**77.7**	**77.5**	**77.2**
Less Savings from 2005-30 SFPUC Conservation Programs	*1.5*	*2.5*	*3.6*	*4.4*	*5.0*	*5.5*
Demand with Codes & SFPUC Conservation Programs	**76.4**	**75.3**	**74.2**	**73.3**	**72.5**	**71.8**
Savings from Codes & SFPUC Conservation Programs	*5.8*	*8.0*	*10.2*	*12.2*	*14.0*	*15.8*
Per Capita Demand (Gal/Day/Person)						
Baseline Demand without Codes or SFPUC Conservation Programs	98	99	99	100	100	100
Adjusted Baseline Demand	93	92	91	90	89	88
Demand with Codes & SFPUC Conservation Programs	92	89	87	85	84	82

[1]Meter under-registration losses are included in the retail demands for residential and non-residential sectors. Meter under-registration losses estimated at 2.2% of residential and 2.1% of non-residential sector demands. System losses excluding meter under-registration estimated at 6.86% of sector demand of the "codes only" demand projection.

Table 18
Conservation Program Durations and Activity Levels Used to Generate Conservation Demand Projection

			Program Start Year	Program End Year	Program Length	Units Per Year
RESIDENTIAL SINGLE FAMILY (1-RSFConsMeas.xls)						
RSF-1	d	SF CEE Tier 2 (WF 4.5) Rebate	2010	2011	2	4,240
RSF-1	e	SF CEE Tier 3 (WF 4.0) Rebate	2011	2030	20	5,300
RSF-2	a	SF HET Rebate	2011	2025	15	1,600
RSF-2	c	SF HET Direct Install	2011	2025	15	2,000
RSF-2	e	SF Retrofit on Resale[1]	2009	2035	27	3.2%
RSF-3	a	Public Information	2005	2035	31	NA
RSF-5	a	Water Surveys[1]	2011	2035	25	2.0%
RSF-6	c	SF 1.5 gpm showerheads - give away	2011	2035	25	1,000
RSF-6	d	SF 1.5 gpm showerheads - direct install	2011	2035	25	2,400
RESIDENTIAL MULTI FAMILY (1-RMFConsMeas.xls)						
RMF-1	d	MF CEE Tier 2 (WF 4.5) Rebate	2010	2011	2	480
RMF-1	e	MF CEE Tier 3 (WF 4.0) Rebate	2011	2035	25	600
RMF-2	a	MF HET Rebate - Tank	2011	2035	25	1,300
RMF-2	b	MF HET Rebate - Flushometer	2011	2035	25	100
RMF-2	c	MF HET Voucher - Tank	2011	2035	25	1,000
RMF-2	d	MF HET Voucher - Flushometer	2011	2035	25	1,000
RMF-2	e	MF HET Direct Install - Tank	2011	2035	25	300
RMF-2	f	MF HET Direct Install - Flushometer	2011	2035	25	200
RMF-2	i	MF Retrofit on Resale[1]	2009	2035	27	1.1%
RMF-5	a	Water Surveys	2011	2035	25	
RMF-6	c	MF 1.5 gpm showerheads - give away	2011	2035	25	1,500
RMF-6	d	MF 1.5 gpm showerheads - direct install	2011	2035	25	500
NON-RESIDENTIAL MEASURES (3-NRConsMeas.xls)						
NR-1	a	Lscape-Audits[2]	2011	2035	25	5.0%
NR-3	a	Lscape-Grants	2011	2035	25	4
NR-4	a	SFPUC Staff Water Audits[3]	2011	2035	25	1.0%
NR-4	b	Consultant Water Audits	2011	2035	25	7
NR-5	a	CII Urinal 0.5 gpf Rebate	2011	2034	24	200
NR-5	d	CII Urinal 0.25 gpf Rebate	2011	2035	25	100
NR-6	a	CII HET Rebate - Tank	2011	2027	17	1,500
NR-6	b	CII HET Rebate - Flushometer	2011	2033	23	400
NR-7	a	Large Innovative Retrofit Incentives	2011	2035	25	1
NR-12	d	Coin-Op CEE Tier 2 (WF 4.5) Rebate	2011	2012	2	54
NR-12	e	Coin-Op CEE Tier 3 (WF 4.0) Rebate	2011	2035	25	60
NR-19	a	Low Flow Sprayers-Restaurants	2011	2035	25	60

[1] Percent of residential housing units.
[2] Percent of accounts with large landscapes.
[3] Percent of CII accounts.

Table 19
SFPUC In-City Retail Sales Projection Without SFPUC Conservation
(mgd)

In-City Retail Demand	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Single Family Demand Projection	18.7	17.9	17.1	16.5	16.0	15.8
Less Meter Under-Registration[1]	*0.6*	*0.6*	*0.6*	*0.5*	*0.5*	*0.5*
Single Family Sales Projection	**18.1**	**17.3**	**16.5**	**15.9**	**15.5**	**15.3**
Multi Family Demand Projection	29.3	28.9	28.4	28.2	28.3	28.6
Less Meter Under-Registration[1]	*1.0*	*1.0*	*0.9*	*0.9*	*0.9*	*0.9*
Multi Family Sales Projection	**28.4**	**28.0**	**27.4**	**27.3**	**27.4**	**27.7**
Non Residential Demand Projection	24.6	25.6	26.5	27.5	28.7	29.9
Less Meter Under-Registration[1]	*0.8*	*0.8*	*0.9*	*0.9*	*0.9*	*1.0*
Non Residential Sales Projection	**23.8**	**24.8**	**25.6**	**26.5**	**27.7**	**28.9**
Other Sales (D&C, B&S)[2]	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
In-City Retail Sales Projection	**70.5**	**70.3**	**69.8**	**70.0**	**70.8**	**72.1**
Meter Under-Registration[1]	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.5*
Other System Losses[3]	*5.0*	*5.0*	*4.9*	*5.0*	*5.0*	*5.1*
Total In-City Retail Demand	**77.9**	**77.7**	**77.1**	**77.3**	**78.2**	**79.7**

[1] Meter under-registration losses estimated at 2.2% of residential and 2.1% of non-residential sector demands.

[2] Docks & Shipping (D&C), Buliders & Contractors (B&C)

[3] Other system losses exluding meter under-registration estimated at 6.86% of sector demand of the "codes only" demand projection.

Table 20
SFPUC In-City Retail Sales Projection With SFPUC Conservation
(mgd)

In-City Retail Demand	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Single Family Demand Projection	18.1	16.4	15.1	14.3	14.0	14.0
Less Meter Under-Registration[1]	*0.6*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
Single Family Sales Projection	**17.5**	**15.8**	**14.6**	**13.8**	**13.5**	**13.6**
Multi Family Demand Projection	29.2	27.8	26.7	26.2	26.2	26.4
Less Meter Under-Registration[1]	*1.0*	*0.9*	*0.9*	*0.9*	*0.9*	*0.9*
Multi Family Sales Projection	**28.2**	**26.8**	**25.8**	**25.4**	**25.3**	**25.5**
Non Residential Demand Projection	24.0	24.3	24.8	25.5	26.7	27.9
Less Meter Under-Registration[1]	*0.8*	*0.8*	*0.8*	*0.8*	*0.9*	*0.9*
Non Residential Sales Projection	**23.2**	**23.5**	**23.9**	**24.7**	**25.8**	**27.0**
Other Sales (D&C, B&S)[2]	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
In-City Retail Sales Projection	**69.1**	**66.4**	**64.6**	**64.1**	**64.8**	**66.3**
Meter Under-Registration[1]	*2.3*	*2.3*	*2.2*	*2.2*	*2.2*	*2.3*
Other System Losses[3]	*5.0*	*5.0*	*4.9*	*5.0*	*5.0*	*5.1*
Total In-City Retail Demand	**76.4**	**73.6**	**71.7**	**71.2**	**72.1**	**73.7**

[1] Meter under-registration losses estimated at 2.2% of residential and 2.1% of non-residential sector demands.

[2] Docks & Shipping (D&C), Builders & Contractors (B&C)

[3] Other system losses excluding meter under-registration estimated at 6.86% of sector demand of the "codes only" demand projection.

Table 21
SFPUC Total Retail Demands Without SFPUC Conservation
(mgd)

	2010	2015	2020	2025	2030	2035
In-City Retail Demands						
Single Family[1]	18.7	17.9	17.1	16.5	16.0	15.8
Multi Family[1]	29.3	28.9	28.4	28.2	28.3	28.6
Non Residential[1]	24.6	25.6	26.5	27.5	28.7	29.9
Other In-City Sales (D&C, B&S)[2]	0.2	0.2	0.2	0.2	0.2	0.2
In-City Subtotal	***72.9***	***72.7***	***72.2***	***72.4***	***73.2***	***74.6***
Unaccounted-for System Losses[3]	*5.0*	*5.0*	*4.9*	*5.0*	*5.0*	*5.1*
Total In-City Retail Demand[4]	**77.9**	**77.7**	**77.1**	**77.3**	**78.2**	**79.7**
Other Retail Customers						
Other Retail Demands[5]	3.8	3.8	3.8	3.8	3.8	3.8
Groveland Community Services District	0.4	0.4	0.4	0.4	0.4	0.4
Lawrence Livermore Laboratory	0.8	0.8	0.8	0.8	0.8	0.8
Total Other Retail Demand	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
Total Retail RWS Watershed Demand	**82.9**	**82.7**	**82.1**	**82.3**	**83.2**	**84.7**
Groundwater Demand						
City Irrigation Demand[6]	1.5	1.5	1.5	1.5	1.5	1.5
Castlewood & Sunol Golf Course Demand[7]	0.7	0.7	0.7	0.7	0.7	0.7
Total Groundwater Demand	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
Total Retail RWS Demand	**85.1**	**84.9**	**84.3**	**84.5**	**85.4**	**86.9**

[1] Includes the impact of water savings due to water efficiency codes and ordinances.
[2] Docks & Shipping (D&S), Builders & Contractors (B&S)
[3] Unaccounted-for system losses estimated at 6.9% of total in-city demand, excluding SFPUC conservation program savings.
[4] Actual in-city use in FY 09/10 was 71.4 mgd.
[5] US Navy, SFO, and other suburban/municipal accounts. Does not include groundwater at Sunol and Castlewood. Demands are based on average use from 2000-2010.
[6] City irrigation at Golden Gate Park, Great Highway Median, and SF Zoo.

Table 22
SFPUC Total Retail Demands With SFPUC Conservation
(mgd)

	2010	2015	2020	2025	2030	2035
In-City Retail Demands						
Single Family[1]	18.1	16.4	15.1	14.3	14.0	14.0
Multi Family[1]	29.2	27.8	26.7	26.2	26.2	26.4
Non Residential[1]	24.0	24.3	24.8	25.5	26.7	27.9
Other In-City Sales (D&C, B&S)[2]	0.2	0.2	0.2	0.2	0.2	0.2
In-City Subtotal	***71.4***	***68.6***	***66.8***	***66.3***	***67.0***	***68.6***
Unaccounted-for System Losses[3]	*5.0*	*5.0*	*4.9*	*5.0*	*5.0*	*5.1*
Total In-City Retail Demand[4]	**76.4**	**73.6**	**71.7**	**71.2**	**72.1**	**73.7**
Other Retail Customers						
Other Retail Demands[5]	3.8	3.8	3.8	3.8	3.8	3.8
Groveland Community Services District	0.4	0.4	0.4	0.4	0.4	0.4
Lawrence Livermore Laboratory	0.8	0.8	0.8	0.8	0.8	0.8
Total Other Retail Demand	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
Total Retail RWS Watershed Demand	**81.4**	**78.6**	**76.7**	**76.2**	**77.1**	**78.7**
Groundwater Demand						
City Irrigation Demand[6]	1.5	1.5	1.5	1.5	1.5	1.5
Castlewood & Sunol Golf Course Demand[7]	0.7	0.7	0.7	0.7	0.7	0.7
Total Groundwater Demand	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
Total Retail RWS Demand	**83.6**	**80.8**	**78.9**	**78.4**	**79.3**	**80.9**

[1] Includes the impact of water savings due to water efficiency codes and ordinances and SFPUC conservation programs.
[2] Docks & Shipping (D&S), Builders & Contractors (B&S)
[3] Unaccounted-for system losses estimated at 6.9% of total in-city demand, excluding SFPUC conservation program savings.
[4] Actual in-city use in FY 09/10 was 71.4 mgd.
[5] US Navy, SFO, and other suburban/municipal accounts. Does not include groundwater at Sunol and Castlewood. Demands are based on average use from 2000-2010.
[6] City irrigation at Golden Gate Park, Great Highway Median, and SF Zoo.

4.3 Program Water Savings

Water savings for single family, multi family, and non residential conservation programs are summarized in Tables 23 thru 25. The values shown in these tables are net of expected savings from state/federal plumbing codes and building standards. They are the savings directly attributable to SFPUC retail conservation programs. As noted earlier, conservation programs are assumed to operate through 2035 with the exception of single-family toilet programs, non-residential toilet and urinal programs, and single-family washer rebate programs, which end earlier because full market penetration is realized.

Table 23
Single Family Retail Conservation Program Water Savings
(AF/Yr)

Program Category		2005	2010	2015	2020	2025	2030	2035
RSF-1	Clothes Washer Rebates	0	417	917	1,078	1,141	1,158	983
RSF-2	HET Rebates/Direct Install/ROR	0	227	737	1,052	1,206	975	795
RSF-5	Home Water Surveys	0	2	7	7	7	7	7
RSF-6	Showerhead Distribution/Direct Install	0	40	95	149	202	253	307
Total Savings		0	687	1,756	2,285	2,555	2,393	2,092
% of Adjusted Baseline Demand		0.0%	3.3%	8.8%	11.9%	13.8%	13.3%	11.8%

Table 24
Multi Family Retail Conservation Program Water Savings
(AF/Yr)

Program Category		2005	2010	2015	2020	2025	2030	2035
RSF-1	Clothes Washer Rebates	0	4	685	977	1,118	1,185	1,226
RSF-2	HET Rebates/Direct Install/ROR	0	179	571	835	1,003	1,100	1,153
RSF-5	Home Water Surveys	0	0	5	5	5	5	5
RSF-6	Showerhead Distribution/Direct Install	0	5	31	56	80	104	129
Total Savings		0	189	1,292	1,873	2,205	2,394	2,513
% of Adjusted Baseline Demand		0.0%	0.6%	*4.0%*	*5.9%*	*7.0%*	*7.6%*	*7.8%*

Table 25
Non Residential Retail Conservation Program Water Savings
(AF/Yr)

Program Category		2005	2010	2015	2020	2025	2030	2035
NR-1	Landscape Audits	0	17	84	84	84	84	84
NR-3	Landscape Grants	0	58	203	290	290	290	290
NR-4	CII Water Audits	0	141	287	292	297	302	307
NR-5	Urinal Rebates	0	10	64	98	122	140	145
NR-6	HET Rebates	0	176	406	574	709	701	601
NR-7	Innovative Retrofit Incentives	0	0	82	165	247	330	412
NR-11	Hospital Audits	2	0	0	0	0	0	0
NR-12	Coin-Op Clothes Washer Rebates	21	391	400	343	301	271	252
NR-13	School Audits	0	2	0	0	0	0	0
NR-19	Pre-Rinse Spray Valves	10	10	20	30	40	50	60
NR-21a	City/PUC Landscape Grants	1	0	0	0	0	0	0
Total Savings		35	805	1,547	1,876	2,091	2,168	2,152
% of Adjusted Baseline Demand		0.1%	3.0%	5.6%	6.6%	7.1%	7.0%	6.7%

4.4 Program Unit Cost of Water Savings

The present value of SFPUC retail conservation program expenditures and the unit costs of program water savings are summarized in Table 26. Present value and unit cost calculations assume a nominal discount rate of 5% and a long-term inflation rate of 3%.

The updated model uses two alternative methods for calculating unit cost of water savings. The first method, which follows the original model, divides the present value of program costs by cumulative water savings. This method understates the actual unit cost of water savings. It was included in the model update and is shown in Table 24 to provide continuity with the original model. The second method, which provides an accurate estimate of the cost of program water savings, divides the present value of program costs by the discounted cumulative water savings. This is equivalent to dividing the annualized cost of a program by its annualized water savings (see Attachment 1), which is how SFPUC calculates unit costs for other water supply investments. The discussion of unit costs that follows is based on the latter method for calculating unit cost.

The average unit cost of water savings across all programs is $860/AF. Unit costs for single family programs average $1,009/AF. Unit costs for multi family programs average $609/AF. Unit costs for non-residential programs average $952/AF.

Unit costs are not calculated directly for public information and residential survey programs. These programs generate water savings primarily in conjunction with the other conservation programs, particularly plumbing fixture replacement programs, and the water savings are captured primarily through these programs. Costs for public information and residential survey programs, however, are incorporated into the average unit costs for single- and multi-family programs. This is why the average unit cost for single-family programs exceeds the highest unit cost of single-family programs listed in Table 26.

Table 26
Estimated Program Unit Costs by Customer Class[1]

ID	Program Name	Cum. Savings (Thou. AF)	SFPUC PV Cost (Thou. $)	PV/ Savings[2] ($/AF)	Unit Cost[3] ($/AF)
Single Family Programs					
RSF-1	Washer Rebates	26.7	$10,433	$391	$498
RSF-2	HET Rebates/Direct Install/ROR	35.5	$22,084	$622	$911
RSF-3	Public Information[4]	N/A	$3,411	N/A	N/A
RSF-5	Residential Surveys[5]	0.2	$11,963	N/A	N/A
RSF-6	Showerhead Replacement	4.6	$1,291	$282	$378
RSF - Total[6]		**66.9**	**$49,182**	**$735**	**$1,009**
Multi Family Programs					
ID	Program Name	Cum. Savings (Thou. AF)	SFPUC PV Cost (Thou. $)	PV/ Savings[1] ($/AF)	Unit Cost[2] ($/AF)
RMF-1	Washer Rebates	24.0	$1,045	$44	$58
RMF-2	HET Rebates/Direct Install/ROR	40.1	$23,486	$586	$911
RMF-5	Residential Surveys[7]	0.1	$2,428	N/A	N/A
RMF-6	Showerhead Replacement	1.8	$620	$353	$482
RMF - Total[8]		**66.0**	**$27,579**	**$418**	**$609**
Non-Residential Programs					
ID	Program Name	Cum. Savings (Thou. AF)	SFPUC PV Cost (Thou. $)	PV/ Savings[1] ($/AF)	Unit Cost[2] ($/AF)
NR-1	Landscape-Audits	2.0	$1,933	$956	$1,228
NR-3	Landscape-Grants	6.5	$24,272	$3,715	$4,826
NR-4a	SFPUC Staff Water Audits	3.0	$1,155	$387	$464
NR-4b	Consultant Water Audits	4.9	$1,487	$301	$384
NR-5	CII Urinal Rebates	4.8	$1,799	$377	$588
NR-6	HET Rebates/Direct Install	24.0	$8,041	$335	$501
NR-7	Large Innovative Retrofit Incentives	5.4	$3,051	$569	$784
NR-11	Audits-Hospitals	0.0	$4	$756	$693
NR-12	Coin-Op Washer Rebates	9.2	$239	$26	$31
NR-13	Audits-Schools/Universities	0.0	$24	$6,083	$6,141
NR-19	Low Flow Sprayers-Restaurants	1.0	$209	$220	$289
NR-21a	City/PUC Landscape	0.0	$2	$864	$792
NR - Total		**51.6**	**$42,217**	**$819**	**$952**
All Programs		**193.7**	**$118,978**	**$614**	**$860**

[1]Cumulative savings, present value cost, and unit costs inclusive of historical program activity occurring between 2005 and 2010 and projected activity occurring between 2010 and 2035.
[2]Present value of program costs divided by cumulative program water savings.
[3]Annualized program costs divided by annualized program water savings.
[4]Savings from public information assumed to be included in savings estimates of other programs.
[5]Single-family surveys support plumbing fixture rebate programs. Savings mostly counted in those programs.
[6]Unit cost for combined single-family programs incorporates costs for public information and single-family surveys.
[7]Multi-family surveys support plumbing fixture rebate programs. Savings mostly counted in those programs.
[8]Unit cost for combined multi-family programs incorporates costs for multi-family surveys.

4.5 Annual Program Expenditure

Projected annual program expenditures for the period 2011 to 2035 are summarized in Table 27. Expenditures are listed in nominal dollars and assume program costs escalate at 3% per year. The drop in program expenditures starting in 2026 reflects the discontinuation of single-family and non-residential toilet replacement programs, which reach full market penetration in 2025.

Table 27
Projected SFPUC Conservation Program Expenditures: 2011-2035[1]
($000, nominal dollars[2])

Year	Residential		Non-Residential	Total
	Single Family	Multi Family		
2011	$2,525	$1,428	$2,095	$6,047
2012	$2,557	$1,428	$2,151	$6,136
2013	$2,635	$1,472	$2,203	$6,311
2014	$2,716	$1,517	$2,263	$6,496
2015	$2,799	$1,564	$2,324	$6,687
2016	$2,885	$1,612	$2,387	$6,884
2017	$2,973	$1,662	$2,453	$7,088
2018	$3,065	$1,713	$2,520	$7,298
2019	$3,159	$1,766	$2,590	$7,514
2020	$3,256	$1,820	$2,662	$7,737
2021	$3,356	$1,876	$2,736	$7,968
2022	$3,459	$1,934	$2,812	$8,205
2023	$3,565	$1,994	$2,891	$8,450
2024	$3,675	$2,055	$2,973	$8,703
2025	$2,983	$2,119	$3,057	$8,158
2026	$1,305	$2,184	$3,144	$6,632
2027	$1,347	$2,251	$3,233	$6,831
2028	$1,390	$2,321	$2,725	$6,436
2029	$1,435	$2,392	$2,802	$6,630
2030	$1,481	$2,466	$2,882	$6,829
2031	$1,430	$2,542	$2,964	$6,936
2032	$1,476	$2,620	$2,856	$6,952
2033	$1,524	$2,700	$2,937	$7,162
2034	$1,573	$2,783	$2,830	$7,187
2035	$1,624	$2,869	$2,912	$7,405

[1]Draft program plan as of 01-05-2011.
[2]Program costs escalated at 3% per year.

Attachment 1

SFPUC Retail Demand Model Unit Cost Derivation

This attachment shows the mathematical derivation of unit cost used in the model and provides a simple example illustrating it.

Define the following variables:

Y_t = program yield (e.g. savings) in year t

C_t = program cost in year t

T = program cost recovery period

r = cost of capital

U = Unit cost of project yield

To fully recover the present value of the program, the unit cost of program yield U must satisfy the following equation:

(1) $$\sum_{t=1}^{T} \frac{C_t}{(1+r)^t} = \sum_{t=1}^{T} \frac{UY_t}{(1+r)^t}$$

Because U is constant, equation (1) can be rearranged and solved for U:

(2) $$U = \frac{\sum_{t=1}^{T} \frac{C_t}{(1+r)^T}}{\sum_{t=1}^{T} \frac{Y_t}{(1+r)^T}}$$

Let PV_C equal the present value cost of the program (i.e. the numerator in equation 2). Let C be the annualized cost of the program, which is given by:

(3) $$C = PV_C \left[\frac{r}{\left(1 - \frac{1}{(1+r)^T}\right)} \right]$$

Similary, let PV_Y equal the present value yield of the program (i.e. the denominator in equation 2). The annualized yield of the program, Y, is:

(4) $$Y = PV_Y \left[\frac{r}{\left(1 - \frac{1}{(1+r)^T}\right)} \right]$$

Dividing equation (3) by equation (4) gives:

(5) $$\frac{C}{Y} = \frac{PV_C \left[\frac{r}{\left(1 - \frac{1}{(1+r)^T}\right)} \right]}{PV_Y \left[\frac{r}{\left(1 - \frac{1}{(1+r)^T}\right)} \right]} = \frac{PV_C}{PV_Y} = \frac{\sum_{t=1}^{T} \frac{C_t}{(1+r)^T}}{\sum_{t=1}^{T} \frac{Y_t}{(1+r)^T}} = U$$

Equation (5) and equation (2) show that calculating unit cost by dividing the annualized cost of the program by the annualized yield is mathematically equivalent to dividing the present value cost of the program by the present value yield of the program. Both formulations result in the unit cost that will fully recover the present value cost of the program.

Unit Cost Calculation Example

The following simple example illustrates the unit cost calculation and demonstrates that it results in a unit cost that fully recovers the present value cost of the conservation measure. For this example, it is assumed that the real cost of capital (i.e. the project discount rate) is 3%.

Assume a conservation program to replace toilets has a per toilet cost of $400. This program incurs this cost in the year a toilet is replaced. Replaced toilets save, on average, 13,000 gallons of water per year. However, over time these toilets eventually would have been replaced by the plumbing code. Past studies have indicated that roughly 4% of the existing stock of non-efficient toilets is replaced each year with efficient toilets because of the plumbing code. This effectively means that the water savings attributed to the program decays at a rate of 4% per year. The following table shows the projected costs and water savings over 30 years from replacing one toilet. In the year the toilet is installed only half the annual water savings are

counted because the month the toilet was replaced is assumed to be unknown. Therefore, the mid-point of the year is used.

In the following table, the present value of annual program cost is calculated in column (5) and the present value of annual saved water is calculated in column (6). The sum of column (5) divided by the sum of column (6) yields the unit cost, per equation (2).

Column (7) is the product of column (4) – annual saved water – and the calculated unit cost. Column (8) is the present value of column (7). The sum of column (8) is exactly $400, thus showing that the calculated unit cost fully recovers the present value cost of the program.

Example Unit Cost Calculation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Toilets Replaced	Program Cost	Water Saved (af/yr)	Pres. Val. Col (3)	Pres. Val. Col (4)	Col (4) X Unit Cost	Pres. Val. Col (7)
0	1	$400	0.0230	$400.00	0.0230	$18.27	$18.27
1			0.0383	$0.00	0.0372	$30.40	$29.52
2			0.0368	$0.00	0.0347	$29.19	$27.51
3			0.0353	$0.00	0.0323	$28.02	$25.64
4			0.0339	$0.00	0.0301	$26.90	$23.90
5			0.0325	$0.00	0.0281	$25.82	$22.27
6			0.0312	$0.00	0.0262	$24.79	$20.76
7			0.0300	$0.00	0.0244	$23.80	$19.35
8			0.0288	$0.00	0.0227	$22.85	$18.03
9			0.0276	$0.00	0.0212	$21.93	$16.81
10			0.0265	$0.00	0.0197	$21.05	$15.67
11			0.0255	$0.00	0.0184	$20.21	$14.60
12			0.0244	$0.00	0.0171	$19.40	$13.61
13			0.0235	$0.00	0.0160	$18.63	$12.68
14			0.0225	$0.00	0.0149	$17.88	$11.82
15			0.0216	$0.00	0.0139	$17.17	$11.02
16			0.0208	$0.00	0.0129	$16.48	$10.27
17			0.0199	$0.00	0.0121	$15.82	$9.57
18			0.0191	$0.00	0.0112	$15.19	$8.92
19			0.0184	$0.00	0.0105	$14.58	$8.32
20			0.0176	$0.00	0.0098	$14.00	$7.75
21			0.0169	$0.00	0.0091	$13.44	$7.22
22			0.0163	$0.00	0.0085	$12.90	$6.73
23			0.0156	$0.00	0.0079	$12.38	$6.27
24			0.0150	$0.00	0.0074	$11.89	$5.85
25			0.0144	$0.00	0.0069	$11.41	$5.45
26			0.0138	$0.00	0.0064	$10.96	$5.08
27			0.0133	$0.00	0.0060	$10.52	$4.74
28			0.0127	$0.00	0.0056	$10.10	$4.41
29			0.0122	$0.00	0.0052	$9.69	$4.11
30			0.0117	$0.00	0.0048	$9.31	$3.83
			Sum:	**$400.00**	**0.5039**		**$400.00**
			Unit Cost ($/AF):	**$793.78**			

Attachment 2

Original SFPUC Retail Demand Model

Double Counting of Water Losses Due to Meter Under-Registration

This attachment explains how the original retail demand model double counted meter under-registration in the demand projections.

- Total in-city retail water production is the sum of in-city retail demands and in-city system losses.
- Under the original model specification, in-city retail demands are the sum of water end uses in the single-family, multi-family, and non-residential customer segments.
- The sum of these end uses, in turn, is equal to metered water sales plus unregistered water delivery due to meter under-registration error.
- Under the original model specification, system losses are equal to physical water losses due to leaks, breaks, fire flow, and system flushing plus unregistered water delivery due to meter under-registration error.
- Thus the original model specification, which sums in-city retail demands and system losses, double counts water losses due to meter under-registration error.
- SFPUC estimates total system losses of 9.0%, of which roughly 2.1% are attributed to meter under-registration error. Thus, under the original model specification, approximately 23% (2.1/9.0) of the system loss estimate is already counted within the retail demand estimate.

The following equations demonstrate this algebraically.

Define the following variables:

T = total in-city retail water production, including system losses

R = in-city retail demands

L_T = in-city system losses, including losses due to meter under-registration

L_M = in-city system losses due to meter under-registration

L_O = in-city system losses from other sources

S = metered retail sales

E = end uses of water by retail customers

Under the original model specification, total in-city retail water production, including system losses are defined as in equation (1):

(1) $T = R + L_T = R + L_M + L_O$

The original model specification defines in-city retail demands as in equation (2):

(2) $R = E$

End uses of water by retail customers, E, must equal metered retail sales plus losses due to meter under-registration, as in equation (3):

(3) $E = S + L_M$

Substituting equation (3) into (2) and (2) into (1) gives:

(4) $T = S + 2L_M + L_O$

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Appendix E

Summary of San Francisco's Response to 1987-92 Drought Experience

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Summary of San Francisco's Response to 1987-92 Drought Experience

Background:

The 1987-92 six year drought provides an example of how the near-term drought management process works in times when the operational capabilities of Hetch Hetchy and other water supplies available to the SFPUC are taxed to a point that forces drastic actions to avoid running out of water. By the sixth year of that drought period, many of the programs and actions identified in San Francisco's current Retail Water Shortage Allocation Plan (adopted in December 2001) had been implemented. The following describes some of the major actions that occurred.

Demand Reductions:

The extended drought forced San Francisco to adopt a mandatory rationing program, enforced by stiff excess use charges and the threat of shut-off for continued violations of water use prohibitions. Mandatory rationing was in effect May of 1988 through May of 1989, re-instituted in May of 1990, and continued until March of 1993. A Water Shortage Emergency Resolution was passed by the SFPUC on April 28, 1988 declaring these rationing periods (Resolution No. 88-0155). A copy of this resolution can be found at the end of this appendix.

The SFPUC's water rationing program was one of the toughest in the state and the most stringent imposed by any major urban water supply agency. Although the specifics of the program varied over time, the basic outline of the mandatory rationing program was to achieve a 25 percent reduction to 1987 (pre-drought) consumption (system-wide), with water allocations set on an account-by-account basis.

To provide a strong incentive for customers to use no more water than their allotment, the SFPUC adopted a rate structure that incorporated excess use charges. Any customer that used less water than its allotment was charged the normal rate per unit of water consumption, while any customer who used more than its allotment was charged a multiple of the normal rate for every unit of consumption above its allotment. As of January 1, 1992 (the last year of the rationing program), the rate structure shown in the table below applied to SFPUC customers.

Excess Use Charges	
If Water Consumption Is (Over Allotment)	Excess Use Charge Will Be (Times Normal Rate)
Up to 10%	2
10.01 - 20%	8
20.01% or over	10

In the event that water was used in excess of the customer's specified allotment, the SFPUC could, after one written warning, install a flow restrictor on the customer's service line. The charge to install and remove the restricting device is shown in the table below. If a customer continued to consume water in excess of its allotment, the SFPUC had the authority to discontinue the customer's water service and require the customer to bear the cost for the re-connection of water service.

Fee For Installing Flow Restricting Devices	
Meter Size	Installation/Removal Cost
to 1” 1” to 2” 3” and larger	$95 $149 Actual cost

In addition to pricing disincentives for excess water use, numerous water use restrictions were adopted and enforced. San Francisco retail customers were required to comply with the following water use prohibitions and restrictions:

- Water waste, including but not limited to, any flooding or runoff into the street or gutters, was prohibited.
- Hoses could not be used to clean sidewalks, driveways, patios, plazas, homes, businesses, parking lots, roofs, awnings or other hard surfaces areas.
- Hoses used for any purpose had to have positive shutoff valves.
- Restaurants served water to customers only upon request.
- Potable water was not to be used to clean, fill or maintain levels in decorative fountains.
- Use of additional water was not allowed for new landscaping or expansion of existing facilities unless low water use landscaping designs and irrigation systems were employed.
- Water service connections for new construction were granted only if water saving fixtures or devices were incorporated into the plumbing system.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes was prohibited.
- Irrigation of lawns, play fields, parks, golf courses, cemeteries, and landscaping of any type with potable water would be reduced by at least the amount specified for outside use in the adopted rationing plan.
- Verified water waste as determined by the Water Department would serve as prima facie evidence that the allocation assigned to the water account is excessive; therefore, the allocation was subject to review and possible reduction, including termination of service.
- Water used for all cooling purposes was to be recycled.
- The use of groundwater and/or reclaimed water for irrigation of golf courses, median strips, and similar turf areas was strongly encouraged.
- The use of groundwater and/or reclaimed water for street sweepers/washers was strongly encouraged.

In addition to water use prohibitions and directives specifically responsive to the drought, the SFPUC coincidentally was implementing long-term conservation programs, which also lowered water demands during the drought period (refer to the Demand Management discussion). Following the drought, several of the measures described above were adopted by San Francisco into permanent, on-going programs.

Water Management:

In addition to effecting reductions to water demands, the SFPUC also employed water management activities to control the severity of water shortages to its customers.

During the drought and for the first time in history, the SFPUC utilized a Delta supply within its system. The SFPUC imported water from the Delta through use of State Water Project South Bay Aqueduct facilities. The sources of water transferred included transfers via the California Emergency Water Bank, Placer County and the Modesto Irrigation District. The waters were diverted from the South Bay Aqueduct into the SFPUC's San Antonio Reservoir and then treated and integrated into SFPUC's water distribution system.

The amount of water actually delivered to the SFPUC was constrained due to numerous factors including the lack of willing sellers, allocation procedures, lack of priority in use of the State transmission facilities, storage constraints in San Antonio Reservoir, and water treatment constraints within the SFPUC's system. The total water that was imported into the SFPUC's system amounted to a maximum of approximately 31,000 acre-feet in one year, and in total for the drought period amounted to 59,000 acre-feet.

The importation of additional water into the SFPUC's system allowed the continuation of a 25 percent system-wide rationing program as compared to a potentially higher level of rationing had the transfers not occurred.

System Response and Effects:

The system-wide goal of reducing water use by 25 percent was achieved. However, the reduction was not accomplished without cost or hardship.

To achieve its annual 25 percent system-wide rationing goal, the SFPUC targeted a reduction of indoor consumption by 10 percent and outdoor consumption by 60 percent.

Due to the nature of the allocation formula for water allotments and the level of system-wide reduction goals, instances occurred where individual users or wholesale water customers were burdened with up to twice the system-wide average in delivery reductions.

Some of the costs incurred by individuals, property owners and renters include:

- The cost of installing low-flow toilets, retrofit kits for toilets and showerheads, and special low-water use landscaping and irrigation systems
- The financial losses resulting from loss of lawns, plants and trees due to the 60 percent reduction in water available for irrigation
- The cost of excess use charges ($12,300,000 in excess use charges was billed to retail accounts in fiscal year 1991-92 alone)

The ability of SFPUC's retail customers to achieve a 25 percent reduction in the future is highly unlikely due to the "hardening" of water demands that occurred during and subsequent to the drought. The rationing programs implemented by San Francisco during the 1987-92 drought were measured by comparison to calendar year 1987 water deliveries, i.e., pre-drought conditions.

During the 1987-92 drought San Francisco's retail and wholesale water customers implemented numerous conservation measures that have led to permanent per capita water usage savings. San Francisco's current

water demand is likely hardened as compared to the 1987 level of water demand. This situation leads to a conclusion that comparable rationing goals (e.g., up to 25 percent reduction) would be more difficult to achieve since the drought, and would require measures in excess of those implemented during the 1987-92 drought to achieve a comparable percentage of delivery reduction.

As the level of rationing increases, the economic and societal impacts become more severe. The SFPUC has first hand experience in attempting to employ rationing to levels, which are intolerable to citizens and businesses.

In 1991, water storage had deteriorated and the SFPUC was forced to immediately adopt a 45 percent system-wide rationing plan. It was proposed the reduction would be achieved through a 33 percent reduction to inside water use and a 90 percent reduction to outside water use.

San Francisco's plan for meeting its rationing goal included the following minimum and maximum criteria:

- *Maximum Allocation for Single and Multi-family Residences.* No single-family residence shall receive an allocation of more than 300 gallons per day: no multi-family residence shall receive an allocation of more than 150 gallons per day times the number of living units in the building.

- *Minimum Allocation for All Residential Accounts.* A minimum of 50 gallons per day per documented resident will be allowed. However, a minimum allocation will not be approved to increase an allocation above current usage absent a documented change in circumstances.

- *Irrigation Services.* Accounts classified for irrigation only will be reduced by 90 percent.

- *Commercial/Industrial Allocations.* Commercial and industrial allocations will be reduced by 32 percent. Hospitals and other health care facilities may be subject to lesser restrictions subject to verification that all conservation measures are in place; such approval shall require an on-site conservation inspection.

- *Allocations for New Accounts.* Initial allocations will be established at 50 gallons per day. These allocations will be re-evaluated after customers have installed retrofit kits provided by the San Francisco Water Department. After verification of installation, allocations will be calculated on the basis of the number of documented residents within a household, or, in the case of commercial or industrial customers, on the basis of business data supplied to the Department.

Additional water use restrictions and prohibitions were enforced:

- The washing of all automobiles, motorcycles, RVS, trucks, transit vehicles, trailers, boats, trains and airplanes was prohibited outside of a commercial washing facility.

- Exceptions to the above use restriction were windows on all vehicles and such commercial or safety vehicles requiring cleaning for health and safety reasons.

- Water used for all cooling purposes or for commercial car washes had to be recycled.

- The use of potable water on golf courses was limited to the irrigation of putting greens. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.

- The filling of new swimming pools, spas, hot tubs or the draining and refilling of existing pools, etc., was prohibited; topping off was allowed to the extent that the designated allocation was not exceeded.
- The irrigation of median strips with potable water was prohibited. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.
- The use of potable water for street sweepers/washers was prohibited. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.

Public and commercial response to 45 percent rationing was overwhelmingly negative. During the first weeks after notification of the program, SFPUC received over 2,000 appeal letters per day. In the month before rationing was returned to 25 percent, 19,000 appeals, 12,000 telephone calls, and 1,500 walk-in complaints occurred.

Both the allocation levels and new prohibitions required to meet this level of rationing would have had a devastating effect on commercial enterprises. Some water uses would have simply been prohibited. Simply put, rationing had been taken to a level that was considered intolerable to citizens and had become economically disastrous.

RESOLUTION No. 88-0155

WHEREAS, The San Francisco Water Department obtains water from the reservoirs operated by the Hetch Hetchy Water and Power and from local Bay Area reservoirs; and

WHEREAS, Due to critically low supplies of water within the reservoirs and anticipated low levels of inflow into the reservoirs, such that unless consumption is decreased there may be insufficient water supplies for human consumption, sanitation and fire protection; and

WHEREAS, Decreases in water consumption may be accomplished by reducing allocations to the Water Department's wholesale customers and by imposing water use restrictions on the Water Department's retail customers, as set forth in the Water Rationing Rules and Regulations, issued on April 21, 1988 and attached hereto as Water Rationing Rules and Regulations; and

WHEREAS, This Commission recognizes the need to declare a Water Shortage Emergency (Water Code Sec. 350, et. seq.) due to critically low water supplies now available, and the need for a reduction in water use by the San Francisco Water Department's Suburban Wholesale Customers; and

WHEREAS, This Commission recognizes the need to adopt a Water Conservation Program (Water Code Sec. 375, et. seq.) due to the critically low water supplies now available, and the need for a reduction in water use by the San Francisco Water Department's retail customers; and

WHEREAS, The City of San Jose is, by Resolution 85-0256, a temporary and interruptible wholesale customer of the Water Department, and the Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and certain Suburban Purchasers in San Mateo County, Santa Clara County and Alameda County (Settlement Agreement) requires action by the Commission to interrupt service to the City of San Jose (Section 8.17); and

WHEREAS, The City of Santa Clara is, by Resolution 85-0257, a temporary and interruptible wholesale customer of the Water Department, and the Settlement Agreement requires action by the Commission to interrupt service to the City of Santa Clara (Section 8.17); and

WHEREAS, Additional funding in the amount of $648,780 for FY 1988/89 has been identified by the Water Department for implementation of a mandatory water rationing program; and

WHEREAS, on April 21, 1988, the Water Department submitted to this Commission a Water Conservation Program; and

WHEREAS, The Conservation Program shall cease to exist in whole or in part at such time as the Commission finds that the supply of water available to the Water Department's service area has been replenished or augmented so that there are sufficient supplies to meet the needs of the Water Department's customers without the continued implementation of these measures; and

0019I

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of APRIL 28 1988

Dorothea A. Baldridge
Secretary, Public Utilities Commission

PUBLIC UTILITIES COMMISSION
CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION No. 88-0155

WHEREAS, The recommended Water Conservation Program has received wide-spread public distribution; and

WHEREAS, Members of the public have been given an opportunity to, and have expressed their views on the recommended Water Conservation Program in a public hearing; now, therefore be it

RESOLVED, That this Commission declares a Water Shortage Emergency; and

BE IT FURTHER RESOLVED, That this Commission adopts a Water Conservation Program; and

BE IT FURTHER RESOLVED, That this Commission approves the Water Conservation Program dated April 21, 1988 as amended April 28, 1988, and directs that it be placed in force on May 1, 1988; and

BE IT FURTHER RESOLVED, That it is not the Commission's intention to interrupt water service to the cities of San Jose and/or Santa Clara; however, pursuant to its obligation under the Settlement Agreement and Master Water Sales Contract this Commission authorizes the General Manager of the Water Department to interrupt water service to the cities of San Jose and/or Santa Clara if necessary to achieve the required water saving, however, prior to actual interruption of service to either the City of San Jose or Santa Clara, the General Manager of the Water Department shall report to the Commission the need for interruption and receive affirmation from the Commission prior to institution of the interruption; and the Commission further directs the General Manager of the Water Department to mitigate the effect of the interruptions to the extent possible and consistent with the needs of San Francisco's permanent customers; and

BE IT FURTHER RESOLVED, That this Commission hereby authorizes the additional budget needs to be added to the Water Department's Conservation Programmatic Budget, thus amending the Water Department's budget request for FY 1988/89; and

BE IT FURTHER RESOLVED, That this Commission hereby designates Tuesday, May 24, 1988 as the date for a public hearing by the Public Utilities Commission for considering proposals for rate increases and additional charges for water service and water supplied by the San Francisco Water Department to retail customers; and

BE IT FURTHER RESOLVED, That this Commission hereby designates Tuesday, May 24, 1988 as the date for a public hearing by the Public Utilities Commission for considering proposals for rate structure adjustments for water service and water supplied by the San Francisco Water Department to wholesale customers; and

BE IT FURTHER RESOLVED, That the revenue requirements and an analysis of the rate increases, rate structure adjustments and additional charges be made available for public inspection and review beginning Monday, May 16, 1988 in Room 287, City Hall, San Francisco.

0019f

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of APRIL 28 1988

Lorraine A. Boldridge
Secretary, Public Utilities Commission

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Appendix F

Retail Water Shortage Allocation Plan

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RETAIL WATER SHORTAGE ALLOCATION PLAN

December 11, 2001

Table of Contents

I. Introduction

A. Purpose and Need for Retail Water Shortage Allocation Plan

The intent of the Retail Water Shortage Allocation Plan (Plan) is to provide the San Francisco Public Utilities Commission (SFPUC) with a guidance tool to be used for allocating water amongst the City and County San Francisco retail customers ("retail customers") in the event of a water shortage due to drought. Additionally, the Plan provides retail customers with a framework for understanding how the SFPUC intends to allocate water resources during times of water shortage due to drought. The expectation is that this Plan can help retail customers better anticipate how their individual water supply will be affected during a drought.

The need for this Plan has come about as a result of a series of actions and experiences including the SFPUC's adoption of the Interim Water Shortage Allocation Plan and the drought of 1987-1992. At the time of the 1987-1992 drought, the SFPUC, in the absence of a drought plan, reacted to the drought by adopting a short-term approach for allocating water resources amongst both retail and wholesale customers. This Plan in combination with the Interim Water Shortage Allocation Plan puts in place a long-term plan for responding to levels of water shortage due drought. The following sections describe these actions and experiences in more detail.

1. Interim Water Shortage Allocation Plan

In October 2000, the SFPUC adopted an Interim Water Shortage Allocation Plan (IWSAP) that provides a method and process by which the SFPUC intends to allocate water resources between its collective retail customers and wholesale customers during system-wide water shortages of up to 20 percent resulting from drought. The IWSAP was subsequently adopted by all 29 wholesale customers between October 2000 and June 2001 thereby officially activating the allocation method and process outlined in the IWASP.

The allocation method adopted in the IWSAP relies on a percentage decrease of inside and outside water use and provides a notification schedule for informing customers of an upcoming drought. The IWSAP also outlines a structure for water transfers between the retail and wholesale customers. Finally, the IWSAP identifies an enforcement process for ensuring that the allocations are adhered to through the application of excess use charges.

This Retail Plan is consistent with the IWSAP in its methodology, schedule and enforcement process.

2. Past Drought Experience

The SFPUC, along with the entire State of California, experienced a significant drought from 1987 to 1992. During this time the SFPUC experienced system-wide shortages of 25 to nearly 45 percent. In response to the drought, the SFPUC instituted mandatory rationing which required retail customers to reduce indoor and outdoor consumption based on specified allocations for those use types. As the drought progressed, SFPUC

retail customers were required to reduce total consumption by 14 percent, up to approximately 32 percent. If customers consumed beyond their allotted amount they were faced with excess use charges. For the most part, customers were able to reduce their indoor use through installation of water-conserving devices such as low-flow toilets, showerheads and faucet aerators.

The Customer Service Bureau of the SFPUC created a short-term rationing unit to implement the drought program. The rationing unit's primary responsibility was to enforce mandatory rationing and manage the allocation and appeal process. Throughout the drought, the rationing unit received 131,000 requests for modified allocations. In general, allocations were modified on the basis of increased occupancy, medical exemptions, allowances for past conservation, increased business, and other miscellaneous reasons. Modifications were based on a per capita allotment.

The rationing unit also performed audits on those customers who consumed water beyond their allocations. This was done in an effort to identify the presence of leaks or other system failures that resulted in excess use.

B. Long-term Conservation Programs and Existing Demand Reduction Policies/Ordinances

1. Long-term Conservation Programs

In 1986, prior to the 1987-1992 drought, the SFPUC established a long-term conservation program. A conservation administrator was hired to implement the program. The programs, at that time, included public information and education; a conservation device retrofit program; landscape water audit program; and a low-use landscaping program. During the drought the long-term conservation program continued.

In 1991, the SFPUC elevated its long-term conservation program when it became a signatory to the *Memorandum of Understanding Regarding Urban Water Conservation in California.* This MOU outlined water-conserving Best Management Practices (BMPs) that all signatories agreed to implement. Today's BMPs include:

- Interior and Exterior Water Audits and Incentive for Single Family Residential and Multi-family Residential Customers
- Residential Plumbing Retrofit
- System Water Audits, Leak Detection and Repair
- Metering with Commodity rates for all New Connections and Retrofit of Existing Connections
- Large Landscape Conservation Programs and Incentives
- Horizontal Axis Washer Rebate Programs
- Public Information
- School Education Programs
- Commercial, Industrial and Institutional Water Conservation
- Wholesale Agency Assistance Programs
- Conservation Pricing
- Conservation Coordinator
- Water Waste Prohibition

- Residential Ultra Low Flush Toilet Replacement Programs

Through the implementation of the long-term conservation program, the SFPUC retail residential customers have reduced their per capita per day (pcpd) demand by 12 gallons. That is, prior to the 1987-1992 drought per capita residential demand was at 73 gallons per capita per day (gpcpd) while current demand is at 61 gpcd. Approximately 95 percent of SFPUC retail customers have signed affidavits confirming that they have installed water-conserving devices in their homes to eliminate water waste. Such devices include low flush toilets, faucet aerators and low flow showerheads.

2. Existing Demand Reduction Policies/Ordinances

In addition to the long-term conservation programs in place, the SFPUC and Board of Supervisors have implemented several demand reduction policies and ordinances that encourage the reduction of potable water use. These policies and ordinances range from requiring installation of conservation devices at the time of residential resale to development of groundwater and recycled water sources. The following summarizes measures adopted through 2001.

Water Conservation Ordinances

Ordinance 392-90: Water Conservation Fixtures in New and Renovated Buildings [1]. This ordinance changed San Francisco plumbing codes to require all new buildings (and all buildings in which the water drainage system is substantially altered modified or renovated) to install/retrofit toilets and urinals with fixtures using no more than 1.6 gallons per flush and 1 gallon per flush, respectively.

Ordinance 185-91 and *Ordinance 346-91: Plumbing Fixture Retrofit in Multi-family Residential Buildings and Single-Family Residential Buildings*[2]. Collectively these ordinances require water conservation device retrofits within multi-family and single-family residential buildings upon sale, transfer of title, or major improvement to a dwelling. The ordinance also required all applicable fixtures within multi-family residential units to be retrofitted within three years subsequent to the effective date of the ordinances (by the end of 1994).

Retrofit requirements include:

- Installation of Showerheads with a capacity not exceeding 2.5 gallons per minute;
- Installation of aerators attached to sinks and basins where possible; and
- Installation of flush reducers, flow restrictors, volume reducers, or toilets with a capacity not exceeding 3.5 gallons per flush.

Ordinance 359-91: Plumbing Fixture Retrofit of Commercial Buildings, including Tourist Hotels and Motels[3]. This ordinance required the same plumbing retrofit requirements for commercial buildings, including tourist hotels and motels as was required for single and multi-family residential buildings. Compliance of this ordinance was also required by 1994.

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[1] San Francisco Plumbing Code sections 905 and 1001.1

[2] San Francisco Housing Code, Chapter 12A, Section 12A01-12A14

[3] San Francisco Building Code, Chapter 53B, Sections 53B01-53B15

Ordinance 92-91(as amended by Ordinance 192-00): Water Use for Landscaping in New Developments[4]. This ordinance requires particular water-conserving landscape strategies be employed for any new commercial, governmental or residential (two or more units) building on a lot exceeding 3,500 square feet or with a landscaping area of more than 1,000 square feet. The specific requirements of the ordinance include:

- Total area devoted to turf grass; decorative water use and water intensive planting must be limited to 15% of the parcel area. The limitation does not apply to children's play areas, public recreation areas or other such areas;
- Strips of turf less than 8 feet wide are prohibited;
- Water intensive plants must be grouped together and must be irrigated on a separate cycle from turf grass;
- Slopes exceeding 10% adjacent to the hardscape cannot consist of turf grass;
- All large areas must have separately metered irrigation systems;
- Valves and circuits shall be separated based on water use and must be set to operate between 5 p.m. and 10 a.m.; and
- A soil analysis must be done on the soil used for the landscape. A report specifying how the soil deficiencies will be meet must accompany the application for the meter.

Ordinance 148-99: Plumbing Retrofit of Municipal Buildings[5]. This ordinance requires all municipal buildings to replace their water-inefficient toilets with 1.6 gallons per flush toilets and showerheads with 1.5 gallons per minute showerheads by June 6, 2005.

Recycled Water Ordinances

Ordinances 390-91 and *391-91(as amended by Ordinance 393-94): Mandatory Use of Reclaimed Water*[6]. These ordinances require the development of a Recycled Water Master Plan including the designation of recycled (or reclaimed) water use areas within San Francisco and requires the installation of dual plumbing systems within the recycled water use areas for the following situations:

- New or remodeled buildings and all subdivisions (except condominium conversions) with a total area of 40,000 square feet or more; and
- New and existing irrigated areas of 1,000 square feet or more.

Ordinance 175-91: Mandatory Use of Non-Potable Water for Soil Compaction and Dust Control[7]. This ordinance requires the use of non-potable water for soil compaction and dust control during construction and demolition projects.

[4] San Francisco Administrative Code, Chapter 63, 63-63.11
[5] San Francisco Administrative Code, Chapter 82, Section 4.
[6] San Francisco Public Works Code, Article 22, Sections 1200-1210
[7] San Francisco Public Works Code, Article 21, Sections 1100-1107

Water Waste Prohibitions

The Customer Service Bureau currently enforces several water waste prohibitions through a complaint/inspection process. The following prohibitions are subject to that process:

- Water waste, including but not limited to, any flooding or runoff into the street or gutters is prohibited;
- Hoses used for any purpose must have positive shut-off valves;
- Restaurants shall serve water to customers only upon request; and
- Water used for all cooling purposes and commercial car washes must be recycled.

3. Relationship between Future Demand Reductions and Existing Long-term Conservation Programs

The SFPUC retail customers are facing a hardened demand as a result of long-term conservation programs and installation of water-conserving devices during the 1987-92 drought. As a result of these factors, residential demand has been reduced by 12 gallons per capita per day (gpcpd) since pre-drought demand levels. In addition, approximately 95 percent of residential customers have signed affidavits attesting to the fact that they have installed low-flush toilets, faucet aerators and low-flow showerheads. Furthermore, the SFPUC's consistent implementation of BMPs for water conservation, as identified above, has resulted in hardened demand for commercial, industrial and institutional customers.

This hardened demand means that reducing demand during future droughts will be challenging. As mentioned previously, during the 1987-92 drought there was an opportunity to reduce demand by installing low-flush toilets, faucet aerators and low-flow showerheads. That opportunity has been significantly reduced. This means that during the next drought demand reduction will most likely come from changing the frequency in which water-consuming devices are used. For example, reducing the number of times the toilet is flushed or running the washing machine less frequently.

Despite the challenge, there is a need for the SFPUC to adopt a plan to be implemented during droughts that will result in reducing water delivery from the SFPUC reservoir system. This includes adopting a water shortage allocation plan, the principal objective of this Retail Plan.

C. Components of the Plan

The Retail Plan consists of two primary sections: (1) Declaring a water shortage and (2) Allocation method and process. The former section describes the process for identifying and declaring a water shortage due to drought. The latter section describes the process of allocating water amongst retail customers during a drought, the process of appealing those allocations and enforcement of allocations.

II. Process for Declaring Shortage

A. Timing and Assessment of Water System Conditions

The SFPUC water supply system relies on precipitation and snowmelt stored in its reservoirs from one year to the next. It is this "carry-over" storage that the SFPUC relies on to be able to meet wholesale and retail demand. Because of the importance of "carry-over" storage, the water supply condition of the SFPUC system is constantly monitored and evaluated. Look-ahead forecasts are updated as a year's hydrology and operations change. Generally in early winter of any year, SFPUC staff can begin providing a forecast of water supply conditions for the upcoming year based on known and anticipated winter and spring precipitation and snowpack. The annual precipitation, snowmelt, and "carry-over" storage together constitute the SFPUC's reservoir storage condition. Using data for each of these factors, SFPUC staff is able to determine whether the reservoir system will be capable of serving full deliveries to the SFPUC customers.

Consistent with the Interim Water Shortage Allocation Plan, if the SFPUC reservoir system appears incapable of meeting system-wide demand due to drought, the SFPUC is expected to declare a water shortage by March 31 of that drought year. The General Manager, or designee, is responsible for declaring such a shortage.

B. Delivery Reduction Levels

To aid in balancing the SFPUC supplies with demands during drought, the SFPUC has developed a general protocol that links anticipated total[8] reservoir storage conditions to suggested delivery reductions. The SFPUC total reservoir system has the capacity to store up to 1,627,000 acre-feet. In relation to this storage capacity and a current system-wide demand of 260 million gallons per day (mgd), when it appears the total system storage will not reach above approximately 1,000,000 acre-feet at the end of the spring-summer snowmelt, the SFPUC may begin to evaluate whether the reservoir system will be capable of serving full deliveries to its customers.[9] If the reservoir system is determined incapable of serving full deliveries to SFPUC customers, the SFPUC may impose a level of delivery reduction. As anticipated reservoir storage becomes more depleted during drought, a greater level of delivery reduction may be required. There are three stages of water delivery reduction that correspond to the SFPUC protocol. The three stages are:

(1) Stage 1 – requires system-wide demand reduction of 5 to 10 percent. This stage results in a voluntary rationing request of customers. At this stage, it is likely that retail water customers will be alerted to the status of water supply conditions and reminded of water use prohibitions as well as informed of any incentives and programs available to reduce water demand (i.e. acceleration of long-term conservation programs such as toilet rebate programs, leak detection audits, and the like)

[8] "total reservoir storage" includes all system reservoirs (Lloyd, Eleanor, Hetch Hetchy, San Anotonio, Calaveras, Crystal Springs, Pilarcitos, and San Andreas) and the water bank at New Don Pedro Reservoir.
[9] This reduction point is subject to change as total system-wide demand increases over time.

(2) Stage 2 – requires system-wide demand reduction of 11 to 20 percent. This stage results in mandatory rationing programs. In addition to implementing Stage 1 actions, all customers will receive an allocation of water. Any use beyond that allocation will become subject to excess use charges, installation of flow restrictor devices or shut-off of water. The latter two consequences may also be imposed if water waste prohibitions are violated.

(3) Stage 3 – requires system-wide demand reduction of 20 percent or greater. This stage results in mandatory rationing programs and results in the same actions identified under Stage 2 with further reduced allocations.

C. Initiation of Delivery Reduction Program

Prior to the initiation of any of water delivery reductions, whether it be initial implementation of reduced delivery or increasing the severity of water shortage, the SFPUC will outline the water supply situation, proposed water use reduction objectives, alternatives to water use reductions, methods to calculate water use allocations and adjustments, compliance methodology and enforcement measures, and budget considerations at a regularly scheduled Commission meeting for public input. The meeting will be advertised and the public will be invited to comment on the SFPUC's intent to reduce deliveries in accordance with the requirements of California Water Code Section 6066 of the Government Code.

Revenue and Expenditure Impacts During Water Shortages. The SFPUC uses a uniform volume charge. As a result, as sales decrease revenues are lost on a per unit basis. Because the marginal cost of water production is miniscule, as production is reduced the cost of service remains the same. Therefore, during a water shortage, as occurred during the 1987-92 drought, the SFPUC may need to raise water rates to make up for lost revenue due to less water use. The SFPUC retail rates, however, are frozen until 2006 due to Proposition H. As a result, retail rates cannot be adjusted to make up for revenue shortfalls unless voters repeal the Proposition or the Mayor declares an emergency as provided for in the City's Charter. The SFPUC does maintain an unappropriated fund balance that can be used to offset the effects of revenue shortfall. Budget considerations will be discussed at the time a drought is declared and revisited as the drought progresses.

III. Allocation Method and Process

A. Types of Allocation Methods

In the event of a mandatory rationing program, the SFPUC must adopt a system for allocating water amongst its retail customers. During the 1987-1992 drought four allocation methods were considered. They were the inside/outside or seasonal allocation method, the per capita allocation method, the uniform allocation method, and the percentage allocation method. The following provides of a description of each method and potential advantages or disadvantages of applying each method.

Inside/Outside allocation method. The Inside/Outside method, also referred to as seasonal method, applies a percent reduction to both indoor and outdoor use. To determine an individual's allocation, a base year is used and reductions are made to both inside and outside usage. Winter usage is identified as typically reflecting inside use. The average of the winter months (November, December, January, February) of the base year is used as the baseline for determining inside use for all 12 months. Usage in excess of the baseline is considered outside use. The monthly or bi-monthly inside/outside allocation is a composite of the inside use and the outside use reduced by their respective percentages. This method distributes water equitably and has been proven effective in achieving prior system-wide consumption goals. However, because this method reduces water allocations for all customers regardless of their current use, there is concern that water users consuming very low amounts of water will be affected disproportionately.

Per capita allocation method. The per capita allocation method applies a fixed amount of daily water for each resident. The allocation method requires that each residential occupant receives a fixed daily amount of water. To implement this method a census of the service area is required. Conducting a census is highly time consuming and the response to the survey is often statistically low and inaccurate. The method does not allow for differences in dwelling type, existing landscaping needs or special individual circumstances. A per capita allocation would prove unworkable with commercial and industrial customers and would require a different method for determining allocations.

Uniform allocation method. The uniform allocation method applies a fixed daily amount per dwelling unit for all residential customers. This method does not distribute water equitably to all customers, especially since it does not take into considerations the number of individuals living in the dwelling unit. As in the per capita plan, this method would prove unworkable for commercial and industrial customers.

Percentage allocation method. The method requires water allocation to be based on a straight percent reduction of past use. As an example to achieve a specified reduction goal, all customers would be allotted a percentage of the amount used in each billing period in the base year. The method requires a much greater reduction in inside use and could cause hardship on residential and commercial customers.

B. Preferred Allocation Method: Inside/Outside Method

During the 1987-92 drought the Inside/Outside method was implemented because it was found to be the most fair and reasonable method amongst the alternatives. At that time for those customers that appealed their allocations a per capita allocation was applied to the account.[10]

The Inside/Outside method will be applied to allocating water amongst retail customers during a water shortage due to drought. The allocation method will be applied to all accounts using more than 3 units of water per two-month billing period. A percentage reduction of inside and outside use will be applied to all accounts using more than 3 units of water during a two-month billing period. The appropriate percentage reductions to inside and outside use will be determined by the General Manager, or designee. The per capita allocation method will be used for customers who appeal their allotments. The formula will be similar in structure to that used during the 1987-92 drought. The General Manager, or designee, will determine at the time of the drought the number of gallons per capita per day to be used for the per capita method.

C. Allocation Process

As discussed previously, if the SFPUC anticipates that the reservoir system will be incapable of serving full deliveries to its customers, the SFPUC will announce a drought by March 31st. Consistent with the Interim Water Shortage Allocation Plan, the SFPUC will inform its retail customers of a water shortage by March 31st. The SFPUC will determine water allocations for each retail customer account using the Inside/Outside allocation method. Average winter and summer use factored into the Inside/Outside methodology will be based on water use for each retail customer from the previous year. For drought periods covering consecutive years, allocations will be based on water use for the last year prior to the drought declaration. The SFPUC will provide water use allocations to all retail customers by May 1st of the drought year. The water use allocations will become effective July 1st.

D. Appeal Process

On or before May 1st, retail customers will be notified of their reduced water allocations. Each retail customer will have the opportunity to appeal the allocation based on increased occupancy, medical exemptions, increased business, or other miscellaneous reasons. The SFPUC will provide retail customers with instructions on how to file appeals at the time the customers are notified of the water use allocations. The SFPUC will also inform customers of the methodology to be used in modifying allocations if they are granted.

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[10] For illustration purposes the following describes how the per capita method was applied to appeals. The per capita allocation was calculated based on the number of occupants and a formula of 63 gpcpd for the first occupant, 55 gpcpd for the second occupant and 50 gpcpd for each additional occupant with a maximum total of 498 gpd per dwelling unit. As the 1987-92 drought worsened, the per capita allocation was based on the number of occupants and a formula of 50 gpcpd and a maximum total of 300 gpd for single family residences. It is important to note that at the time of the drought the average residential use was 74 gpcpd. Current average demand is 61 gpcpd.

E. Enforcement

The primary methods of enforcing mandatory rationing include excess use charges; installation of flow restrictors and/or shut-off of water.

During the 1987-92 drought excess use charges were applied as follows:

- If a customer consumed up to 10% over their allotment they would be charged 2 times the normal rate;
- If a customer consumed 10.01% to 20% over their allotment they would be charged 8 times the normal rate; and
- If a customer consumed 20.01% or over their allotment they would be charges 10 times the normal rate.

In the event of mandatory rationing, the SFPUC will impose excess use charges similar to those described above. The General Manager, or designee, will inform retail customers of the multiplier rate that will be applied for determining excess use charges. The SFPUC will also offer an audit at the first run-over of the allocation to determine if there are any leaks. In some cases, excess use charges may be reversed if leaks are found and repaired immediately.

In the event that water is used in excess of the customer's specified allotment, the SFPUC could, after one written warning, install a flow restrictor on the customer's service line. The customer may be charged to install and remove the flow restrictor, as was done in the 1987-92 drought. The General Manager, or designee, will determine the relevant charge at the time of the drought. If a customer continues to consume water in excess of its allotment, the SFPUC has the authority to discontinue the customer's water service and require the customer to bear the cost for the re-connection of water service.

The Landlord Pass-through Ordinance[11] allows landlords to pass up to 50 percent of excess use charges on to their tenants under the following conditions:

(a) the landlord must provide written certification that permanently-installed retrofit devices to reduce water use in toilet flushing or low-flow toilets (1.6 gallons per flush), low flow showerheads (no more than 2.5 gallons per minute), and faucet aerators (where installation is physically feasible);
(b) the landlord provides written certification that there are no none plumbing leaks in the building and that any reported leaks have been fixed; and
(c) the landlord provides a copy of the water bill for the period in which the penalty was charged.

Under mandatory rationing, the SFPUC will also specify waste water prohibitions that if violated may result in installation of a flow restrictor and shut-off of water, if the violation continues.

[11] San Francisco Administrative Code Section 37.3

All or some of the following water waste prohibitions may be enforced during a drought. The General Manager, or designee, will declare and inform customers of all water waste prohibitions at the time of a drought.

Water Waste Prohibitions

- Water waste, including but not limited to, any flooding or runoff into the street or gutters, shall be prohibited.

- Hoses shall not be used to clean sidewalks, driveways, patios, plazas, homes, businesses, parking lots, roofs, awnings or other hard surfaces areas.

- Hoses used for any purpose shall have positive shutoff valves.

- Restaurants shall serve water to customers only upon request.

- Potable water shall not to be used to clean, fill or maintain levels in decorative fountains.

- Use of additional water shall not be allowed for new landscaping or expansion of existing facilities unless low water use landscaping designs and irrigation systems are employed.

- Water service connections for new construction shall be granted only if water saving fixtures or devices are incorporated into the plumbing system.

- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes shall be prohibited.

- Irrigation of lawns, play fields, parks, golf courses, cemeteries, and landscaping of any type with potable water shall be reduced by at least the amount specified for outside use in the adopted rationing plan.

- Verified water waste as determined by the Water Department would serve as prima facie evidence that the allocation assigned to the water account is excessive; therefore, the allocation shall be subject to review and possible reduction, including termination of service.

- Water used for all cooling purposes shall be recycled.

- The use of groundwater and/or reclaimed water for irrigation of golf courses, median strips, and similar turf areas shall be strongly encouraged.

- The use of groundwater and/or reclaimed water for street sweepers/washers shall be strongly encouraged.

- The washing of all automobiles, motorcycles, RVS, trucks, transit vehicles, trailers, boats, trains and airplanes shall be prohibited outside of a commercial washing facility.

- Exceptions to the above use restriction will apply to windows on all vehicles and such commercial or safety vehicles requiring cleaning for health and safety reasons.

- Water used for all cooling purposes or for commercial car washes shall be recycled.

- The use of potable water on golf courses shall be limited to the irrigation of putting greens. The use of groundwater and reclaimed water shall be permitted when approved by the Department of Health.

- The filling of new swimming pools, spas, hot tubs or the draining and refilling of existing pools, etc., shall be prohibited; topping off shall be allowed to the extent that the designated allocation is not exceeded.

- The irrigation of median strips with potable water shall be prohibited. The use of groundwater and reclaimed water shall be permitted when approved by the Department of Health.

- The use of potable water for street sweepers/washers shall be prohibited. The use of groundwater and reclaimed water shall be permitted when approved by the Department of Health.

Appendix G

Water Shortage Allocation Plan

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WATER SHORTAGE ALLOCATION PLAN

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Wholesale Customers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Wholesale Customers which has been adopted by the Wholesale Customers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan was adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract and has been updated to correspond to the terminology used in the June 2009 Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County ("Agreement").

SECTION 1. SHORTAGE CONDITIONS

1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3.

1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Wholesale Customers and by Retail Customers (as those terms are used in the Agreement) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.

1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.

1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Wholesale Customers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.

1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

SECTION 2. SHORTAGE ALLOCATIONS

2.1. Annual Allocations between the SFPUC and the Wholesale Customers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Wholesale Customers as follows:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The water allocated to the SFPUC shall correspond to the total allocation for all Retail Customers.

2.2 Annual Allocations among the Wholesale Customers. The annual water supply allocated to the Wholesale Customers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Wholesale Customers, as described in Section 3.11(C) of the Agreement. In any year for which the methodology must be applied, the Bay Area Water Supply and Conservation Agency ("BAWSCA") will calculate each Wholesale Customer's individual percentage share of the amount of water allocated to the Wholesale Customers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWSCA will deliver to the SFPUC General Manager a list, signed by the President of BAWSCA's Board of Directors and its General Manager, showing each Wholesale Customer together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Wholesale Customers. The SFPUC shall allocate water to each Wholesale Customer, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan. If BAWSCA or all Wholesale Customers do not provide the SFPUC with individual allocations, the SFPUC may make a final allocation decision after first meeting and discussing allocations with BAWSCA and the Wholesale Customers.

The methodology adopted by the Wholesale Customers utilizes the rolling average of each individual Wholesale Customer's purchases from the SFPUC during the three immediately

preceding Supply Years. The SFPUC agrees to provide BAWSCA by November 1 of each year a list showing the amount of water purchased by each Wholesale Customer during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Wholesale Customers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Wholesale Customers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Wholesale Customers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Wholesale Customers or Retail Customers. Following these discussions, the Tier 1 water allocations set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Wholesale Customers. If the SFPUC and Wholesale Customers meet and cannot agree on an appropriate Tier 1 allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 3.11(C) of the Agreement will apply, unless (2) all of the Wholesale Customers direct in writing that a Tier 2 allocation methodology agreed to by them be used to apportion the water to be made available to the Wholesale Customers collectively, in lieu of the provisions of Section 3.11(C).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of Tier 1 water allocated to the Wholesale Customers collectively pursuant to Section 2.1. The SFPUC General Manager, using the Tier 2 allocation percentages shown on the list delivered by BAWSCA pursuant to Section 2.2, will calculate each Wholesale Customer's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Wholesale Customer with a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Wholesale Customer may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual Tier 2 shortage allocation over the course of the succeeding Supply Year. If a Wholesale Customer does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly Wholesale Customer water budgets will be derived from annual Tier 2 allocations for purposes of accounting for excess use. Monthly Wholesale Customer water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and

transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Wholesale Customers, and between any Wholesale Customers, will be permitted using the same procedure as that for transfers of banked water set forth in Section 3.4. The SFPUC and BAWSCA shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 3.05 of the Agreement. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

SECTION 3. SHORTAGE WATER BANKING

3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Wholesale Customer during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Wholesale Customer will be included with the SFPUC's monthly water bills.

3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.

3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.

3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).

3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SFPUC and any Wholesale Customer, and among the Wholesale Customers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferor's water bank account. The transferring parties must notify the SFPUC and BAWSCA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC.

If the SFPUC incurs extraordinary costs in implementing transfers, it will give written notice to the transferring parties within ten (10) business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Agreement and shall be subject to the disclosure and auditing requirements in the Agreement. In the case of transfers between Wholesale Customers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Wholesale Customers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Wholesale Customer, the SFPUC's share of any extraordinary transfer costs shall not be added to the Wholesale Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 3.05 of the Agreement.

SECTION 4. WHOLESALE EXCESS USE CHARGES

4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 6.03 of the Agreement. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs. The same excess use charge multipliers shall apply to the Wholesale Customers and all Retail Customers. The excess use charge multipliers apply only to the charges for water delivered at the rate in effect at the time the excess use occurred.

4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Wholesale Customer's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.

4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Wholesale Customer with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Wholesale Customers with net excess use will be paid according to the calendar in Section 6. The SFPUC may dedicate excess use charges paid by Wholesale Customers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Wholesale Customers. Excess use charges paid by the Wholesale Customers constitute Wholesale Customer revenue and shall be included within the SFPUC's annual Wholesale Revenue Requirement calculation.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California.

5.3. Effect on Agreement. This Plan describes the method for allocating water between the SFPUC and the collective Wholesale Customers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Wholesale Customers in accordance with directions provided by the Wholesale Customers through BAWSCA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Wholesale Customers. The provisions of this Plan are intended to implement Section 3.11(C) of the Agreement and do not affect, change or modify any other section, term or condition of the Agreement.

5.4. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Wholesale Customers when no water shortage emergency exists.

5.5. Termination. This Plan shall expire at the end of the Term of the Agreement.. The SFPUC and the Wholesale Customers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

SECTION 6. ALLOCATION CALENDAR

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

6.1.1

In All Years	Target Dates
1. SFPUC delivers list of annual purchases by each Wholesale Customer during the immediately preceding Supply Year	November 1
2. SFPUC meets with the Wholesale Customers and presents water supply forecast for the following Supply Year	February
3. SFPUC issues initial estimate of available water supply	February 1
4. SFPUC announces potential first year of drought (if applicable)	February 1
5. SFPUC and Wholesale Customers meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
6. SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
7. SFPUC issues final estimate of available water supply	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.
8. SFPUC determines amount of water available to Wholesale Customers collectively	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.

In Drought Years	Target Dates
9. SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	April 15-31
10. SFPUC declares the need for a voluntary or mandatory response	April 15-31
11. BAWSCA submits calculation to SFPUC of individual Wholesale Customers' percentage shares of water allocated to Wholesale Customers collectively	April 15- 31
12. SFPUC determines individual shortage allocations, based on BAWSCA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule)	April 25—May 10
13. Wholesale Customers submit alternative monthly water budgets (optional)	May 8-May 24
14. Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	June 1
15. Monthly water budgets become effective	July 1
16. Excess use charges indicated on monthly Suburban bills	August 1 (of the beginning year) through June 30 (of the succeeding year)
17. Excess use charges paid by Wholesale Customers for prior year	August of the succeeding year

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Appendix H

Sample Water Shortage Contingency Resolution

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SAMPLE WATER SHORTAGE CONTINGENCY RESOLUTION

PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO. _____

WHEREAS, The San Francisco Public Utilities Commission (SFPUC) obtains water from the Hetch Hetchy Water and Power project and local Bay Area reservoirs; and

WHEREAS, The SFPUC has determined that a shortage condition exists because the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year beginning July 1; and

WHEREAS, In 2000 the SFPUC and Suburban Purchases adopted an Interim Water Shortage Allocation Plan (IWSAP or "Tier One Plan") and an Interim Water Shortage Allocation Plan Among Suburban Purchasers ("Tier Two Plan"); and

WHEREAS, The Tier One Plan describes the method for allocating water between the SFPUC and the Suburban (wholesale) Purchasers collectively during shortages caused by drought; and

WHEREAS, The Tier Two Plan describes the method for allocating the water made available by the SFPUC during shortages caused by drought among the Suburban Purchasers (individually), when the SFPUC determines that a system-wide water shortage due to drought exists; and

WHEREAS, In 2001 the SFPUC adopted a Retail Water Shortage Allocation Plan (RWSAP) as a guidance tool to be used for allocating water amongst Retail customers in the event of a water shortage due to drought; and

WHEREAS, The RWSAP details a three-stage program of action to be taken to reduce Retail water use during drought, with Stage 1 consisting of voluntary measures, Stage 2 of mandatory measures and Stage 3 of more severe mandatory measures; and

WHEREAS, Depending on the level of water demand and the desired objective for water use reduction, one, two or all three stages of the RWSAP may be required; and

WHEREAS, Staff has made the final determination of available water supply required by the Tier One Plan with the SFPUC's suburban (wholesale) water customers, including, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, and an allowance for carryover storage; and

WHEREAS, The SFPUC has determined that the available water supply is insufficient and that unless water consumption is decreased there may be insufficient water supplies for human consumption, sanitation and fire protection needs; and

WHEREAS, Decreases in water consumption may be achieved by voluntary or mandatory conservation measures by Retail and Wholesale water customers; and

WHEREAS, Decreases in water consumption may be achieved by implementing the voluntary and/or mandatory shortage allocation provisions of the Tier One Plan and the RWSAP; and

WHEREAS, Staff has, in accordance with Section II.C of the RWSAP, presented the water supply situation and other required information at a regularly scheduled Commission meeting for public input, and advertised this the meeting in accordance with the requirements of California Water Code Section 6066 of the Government Code; now, therefore be it

RESOLVED, That the SFPUC declares a Water Shortage Emergency pursuant to sections 350 et. seq. of the California Water Code; and be it further

RESOLVED, That the SFPUC directs staff to determine the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1 of the Tier One Plan, and to allocate the available water supply among individual wholesale water customers based on information received from the Bay Area Water Supply and Conservation Agency in accordance with Section 2.2 of the Tier One Plan, and the Section 2 of the Tier Two Plan; and be it further

RESOLVED, That the SFPUC directs staff to take all other necessary steps to implement the Tier One Plan, including but not limited to provisions related to establishment of monthly water budgets and the creation of water shortage bank accounts; and be it further

RESOLVED, That the SFPUC directs staff to take all necessary steps to implement the RWSAP, including Stage 1, Stage 2 and/or Stage 3 measures, as required to meet water use reduction goals based on reduced water supplies from the Regional Water System; and be it further

FURTHER RESOLVED ***[for mandatory rationing stages only]***, That, in accordance with the IWSAP ("Tier One Plan") Section 4.1 and the RWSAP Section II.B, the SFPUC adopts the following schedule of excess use charges applicable to its suburban (Wholesale) and Retail customers:

If Water Purchases Exceed the Shortage Allocation by:	**The Excess Use Charge Multiplier is:**
Up to 10.00%	2
10.01% to 20.00%	8
20.01% or more	10

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of _____

_____

Secretary, Public Utilities Commission

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2010 Urban Water Management Plan

for the City and County of San Francisco

APPENDICES

Prepared by: The San Francisco Public Utilities Commission

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission