MEMORANDUM OF UNDERSTANDING

REGARDING

URBAN WATER CONSERVATION

IN CALIFORNIA

As Amended June 13, 2007

MEMORANDUM OF UNDERSTANDING REGARDING URBAN WATER CONSERVATION IN CALIFORNIA

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MEMORANDUM OF UNDERSTANDING
REGARDING
URBAN WATER CONSERVATION
IN CALIFORNIA

The **Memorandum of Understanding Regarding Urban Water Conservation in California** (MOU) is made and entered into on the dates set forth below among the undersigned parties (signatories). The signatories represent urban water suppliers, public advocacy organizations and other interested groups as defined in Section 1.3 of this MOU.

ADOPTED
September 1991

AMENDED
February 10, 1993
March 9, 1994
September 30, 1997
April 8, 1998
December 9, 1998
September 16, 1999
September 21, 2000
March 14, 2001
December 11, 2002
March 10, 2004
March 9, 2005
March 14, 2007
June 13, 2007

Note: *The MOU was substantially revised on September 30, 1997. Subsequent revisions are indicated accordingly throughout the MOU.*

RECITALS

A. The signatories to this MOU recognize that California's economy, quality of life and environment depend in large part upon the water resources of the State. The signatories also recognize the need to provide reliable urban water supplies and to protect the environment. Increasing demands for urban, agricultural and environmental water uses call for conservation and the elimination of waste as important elements in the overall management of water resources. Many organizations and groups in California have an interest in urban water conservation, and this MOU is intended to gain much needed consensus on a complex issue.

B. The urban water conservation practices included in this MOU (referred to as "Best Management Practices" or "BMPs") are intended to reduce long-term urban demands from what they would have been without implementation of these practices and are in addition to programs which may be instituted during occasional water supply shortages.

C. The combination of BMPs and urban growth, unless properly accounted for in water management planning, could make reductions in urban demands during short-term emergencies such as droughts or earthquakes more difficult to achieve. However, notwithstanding such difficulties, the signatory water suppliers will carry out the urban water conservation BMP process as described in this MOU.

D. The signatories recognize that means other than urban water conservation may be needed to provide long-term reliability for urban water suppliers and long-term protection of the environment. However, the signatories may have differing views on what additional measures might be appropriate to provide for these needs. Accordingly, this MOU is not intended to address these issues.

E. A major benefit of this MOU is to conserve water which could be used for the protection of streams, wetlands and estuaries and/or urban water supply reliability. This MOU leaves to other forums the issue of how conserved water will be used.

F. It is the intent of this MOU that individual signatory water suppliers (1) develop comprehensive conservation BMP programs using sound economic criteria and (2) consider water conservation on an equal basis with other water management options.

G. It is recognized that present urban water use throughout the State varies according to many factors including, but not limited to, climate, types of housing and landscaping, amounts and kinds of commercial, industrial and recreational development, and the extent to which conservation measures have already been implemented. It is further recognized that many of the BMPs identified in Exhibit 1 to this MOU have already been implemented in some areas and that even with broader employment of BMPs, future urban water use will continue to vary from area to area. Therefore, this MOU is not intended to establish uniform per capita water use allotments throughout the urban areas of the State. This MOU is also not intended to limit the amount or types of conservation a water supplier can pursue or to limit a water supplier's more rapid implementation of BMPs.

H. It is recognized that projections of future water demand should include estimates of anticipated demand reductions due to changes in the real price of water.

TERMS

Amended March 9, 2005; Amended April 8, 1998

SECTION 1. DEFINITIONS

For purposes of this MOU, the following definitions apply:

1.1 **Best Management Practices.** A Best Management Practice ("BMP") means a policy, program, practice, rule, regulation or ordinance or the use of devices, equipment or facilities which meets either of the following criteria:

(a) An established and generally accepted practice among water suppliers that results in more efficient use or conservation of water;

(b) A practice for which sufficient data are available from existing water conservation projects to indicate that significant conservation or conservation related benefits can be achieved; that the practice is technically and economically reasonable and not environmentally or socially unacceptable; and that the practice is not otherwise unreasonable for most water suppliers to carry out.

Although the term "Best Management Practices" has been used in various statutes and regulations, the definitions and interpretations of that term in those statutes and regulations do not apply to this MOU. The term "Best Management Practices" or "BMPs" has an independent and special meaning in this MOU and is to be applied for purposes of this MOU only as defined above.

1.2 **Implementation.** "Implementation" means achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in the descriptions of the various BMPs and to satisfy the commitment by the signatories to use good faith efforts to optimize savings from implementing BMPs as described in Section 4.4 of this MOU. Section B of Exhibit 1 to this MOU establishes the schedule for initial implementation of BMPs.

1.3 **Signatory Groups.** For purposes of this MOU, signatories will be divided into three groups as follows:

(a) Group 1 will consist of water suppliers. A "water supplier" is defined as any entity, including a city, which delivers or supplies water for urban use at the wholesale or retail level.

(b) Group 2 will consist of public advocacy organizations. A "public advocacy organization" is defined as a non profit organization:

(i) whose primary function is not the representation of trade, industrial, or utility entities, and

(ii) whose prime mission is the protection of the environment or who has a clear interest in advancing the BMP process.

(c) Group 3 will consist of other interested groups. "Other interested groups" is defined as any other group which does not fall into one of the two groups above.

1.4 **California Urban Water Conservation Council.** The California Urban Water Conservation Council or "Council" will have responsibility for monitoring the implementation of this MOU and will be comprised of signatories to this MOU grouped according to the definitions in Section 1.3 above. The duties of the Council are set forth in Section 6 and in Exhibit 2 to this MOU.

SECTION 2. PURPOSES

2.1 **This MOU has Two Primary Purposes:**

(1) to expedite implementation of reasonable water conservation measures in urban areas; and

(2) pursuant to Section 5 of this MOU, to establish assumptions for use in calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures. Estimates of reliable savings are the water conservation savings which can be achieved with a high degree of confidence in a given service area. The signatories have agreed upon the initial assumptions to be used in calculating estimates of reliable savings. These assumptions are included in Exhibit 1 to this MOU. It is probable that average savings achieved by water suppliers will exceed the estimates of reliable savings.

SECTION 3. LIMITS TO APPLICABILITY OF MOU

3.1 **Relationship Between Water Suppliers.** No rights, obligations or authorities between wholesale suppliers, retail agencies, cities or other water suppliers are created or expanded by this MOU. Moreover, wholesale water suppliers are not obligated to implement BMPs at the retail customer level except within their own retail service area, if any.

3.2 **Agriculture.** This MOU is intended to apply only to the delivery of water for domestic, municipal and industrial uses. This MOU is not intended to apply directly or indirectly to the use of water for irrigated agriculture.

3.3 **Reclamation.** The signatory water suppliers support the reclamation and reuse of wastewater wherever technically and economically reasonable and not environmentally or socially unacceptable, and agree to prepare feasibility studies on water reclamation for their respective service areas. However, this MOU does not apply to that aspect of water management, except where the use of reclaimed water may otherwise qualify as a BMP as defined above.

3.4 **Land Use Planning.** This MOU does not deal with the question of growth management. However, each signatory water supplier will inform all relevant land planning agencies at least annually of the impacts that planning decisions involving projected growth would have upon the reliability of its water supplies for the water supplier's service area and other areas being considered for annexation.

3.5 **Use of Conserved Water.** A major benefit of this MOU is to conserve water which could be used for the protection of streams, wetlands and estuaries and/or urban water supply reliability. This MOU leaves to other forums the issue of how conserved water will be used.

SECTION 4. IMPLEMENTATION OF BEST MANAGEMENT PRACTICES

4.1 **The Best Management Practices List, Schedule of Implementation and Assumptions.** Exhibit 1 to this MOU contains:

(a) In Section A: A list identifying those practices which the signatories believe presently meet the definition of a BMP as set forth in Section 1.1 of this MOU.

(b) In Section B: A schedule for implementing the BMPs to be followed by signatory water suppliers unless exempted under Section 4.5 of this MOU or an alternative schedule is prepared pursuant to Section 4.6 of this MOU.

(c) In Section C: Coverage requirements for implementing BMPs. Coverage requirements are the expected level of implementation necessary to achieve full implementation of BMPs. Coverage requirements may be expressed either in terms of activity levels by water suppliers or as water savings achieved.

(d) In Section D: Reporting Requirements for Documenting BMP Implementation. These requirements vary by BMP, are considered the minimum record keeping and reporting requirements for water suppliers to document BMP implementation levels, and will provide the basic data used evaluate BMP implementation progress by water suppliers.

(e) In Section E: Criteria to determine BMP implementation status of water suppliers. These criteria will be used to evaluate BMP implementation progress. Evaluation criteria vary by BMP, and are derived from the implementation guidelines and schedules presented in Sections A, B, and C.

(f) In Section F: Assumptions for use in developing estimates of reliable savings from the implementation of BMPs. Estimates of reliable savings are the water conservation savings which can be achieved with a high degree of confidence in a given service area. The estimate of reliable savings for each BMP depends upon the nature of the BMP and upon the amount of data available to evaluate potential savings. For some BMPs (e.g., public information) estimates of reliable savings may never be generated. For others, additional data may lead to significant changes in the estimate of reliable savings. It is probable that average savings achieved by water suppliers will exceed the estimates of reliable savings.

(g) In Section G: A list of "Potential Best Management Practices" ("PBMPs"). PBMPs are possible conservation practices which have not been promoted to the BMP list.

4.2 **Initial BMPs, PBMPs, Schedules, and Estimates of Reliable Savings.** The initial position of conservation practices on the BMP and PBMP lists, the initial schedule of implementation and study for the BMP list, the initial schedule of study for the PBMP list, and the initial estimates of reliable savings represent compromises by the signatories to move the process

forward both for purposes of the present Bay/Delta proceedings as defined in Section 5 and to promote water conservation generally. The signatories agree that as more and better data are collected in the future, the lists, the schedules, and the estimates of reliable savings will be refined and revised based upon the most objective criteria available. However, the signatories agree that the measures included as initial BMPs in Section A of Exhibit 1 are economically justified on a statewide basis.

4.3 **Future Revision of BMPs, PBMPs, Schedules, and Estimates of Reliable Savings.** After the beginning of the initial term of the MOU as provided in Section 7.1, the California Urban Water Conservation Council ("Council") will, pursuant to Section 6 of this MOU and Exhibit 2, alter the composition of the BMP and PBMP lists, redefine individual BMPs, alter the schedules of implementation, and update the assumptions of reliable savings as more data becomes available. This dynamic BMP assessment process includes the following specific commitments:

(a) The assumptions of reliable savings will be updated at least every 3 years.

(b) The economic reasonableness of a BMP or PBMP will be assessed by the Council using the economic principles in Sections 3 and 4 of Exhibit 3.

(c) A BMP will be removed from the BMP list if, after review of data developed during implementation, the Council determines that the BMP cannot be made economically reasonable or determines that the BMP otherwise fails to conform to the definition of BMPs in Section 1.1.

(d) A PBMP will be moved to the BMP list and assigned a schedule of implementation if, after review of data developed during research, and/or demonstration projects, the Council determines that the PBMP is economically reasonable and otherwise conforms to the definition of BMPs in Section 1.1.

[Note: In 1997, the Council substantially revised the BMP list, definitions, and schedules contained in Exhibit 1. These revisions were adopted by the Council September 30, 1997.]

4.4 **Good Faith Effort.** While specific BMPs and results may differ because of varying local conditions among the areas served by the signatory water suppliers, a good faith effort to implement BMPs will be required of all signatory water suppliers. The following are included within the meaning of "good faith effort to implement BMPs":

(a) The proactive use by a signatory water supplier of legal authorities and administrative prerogatives available to the water supplier as necessary and reasonable for the implementation of BMPs.

(b) Where implementation of a particular BMP is not within the legal authority of a signatory water supplier, encouraging timely implementation of the BMP by other entities that have the legal authority to carry out the BMP within that water supplier's service area pursuant to existing legal authority. This encouragement may include, but is not limited to, financial incentives as appropriate.

(c) Cooperating with and encouraging cooperation between other water suppliers and other relevant entities whenever possible and within existing legal authority to promote the implementation of BMPS.

(d) Optimizing savings from implementing BMPs.

(e) For each signatory water supplier and all signatory public advocacy organizations, encouraging the removal of institutional barriers to the implementation of BMPs within that water supplier's service area. Examples of good faith efforts to remove institutional barriers include formal presentations and/or written requests to entities requesting approval of, or amendment to, local ordinances, administrative policies or legislation which will promote BMP implementation.

4.5 **Exemptions.** *As Amended on March 9, 2005.* A signatory water supplier will be exempt from the implementation of specific BMPs for as long as the supplier substantiates each reporting period that based upon then prevailing local conditions, one or more of the following findings applies:

(a) A full cost-benefit analysis, performed in accordance with the principles set forth in Exhibit 3, demonstrates that either the program (i) would not be cost-effective overall when total program benefits and costs are considered; OR (ii) would not be cost-effective to the individual water supplier even after the water supplier has made a good faith effort to share costs with other program beneficiaries.

(b) Adequate funds are not and cannot reasonably be made available from sources accessible to the water supplier including funds from other entities. However, this exemption cannot be used if a new, less cost-effective water management option would be implemented instead of the BMP for which the water supplier is seeking this exemption.

(c) Implementation of the BMP is (i) not within the legal authority of the water supplier; and (ii) the water supplier has made a good faith effort to work with other entities that have the legal authority to carry out the BMP; and (iii) the water supplier has made a good faith effort to work with other relevant entities to encourage the removal of institutional barriers to the implementation of BMPs within its service area.

4.6 **Schedule of Implementation.** *As Amended on March 9, 2005.* The schedule of implementation for BMPs is set forth in Section B of Exhibit 1 to this MOU. However, it is recognized by the signatories that deviations from this schedule by water suppliers may be necessary. Therefore, a water supplier may modify, to the minimum extent necessary, the schedule for implementation of BMPs if the water supplier substantiates one or more of the following findings:

(a) That after a good faith effort to implement the BMP within the time prescribed, implementation is not feasible pursuant to the schedule. However, implementation of this BMP is still required as soon as feasible within the initial term of this MOU as defined in Section 7.1.

(b) That implementation of one or more BMPs prior to other BMPs will have a more positive effect on conservation or water supplies than will adherence to the schedule.

(c) That implementation of one or more Potential BMPs or other conservation measures prior to one or more BMPs will have a more positive effect on conservation or water supplies than will adherence to the schedule.

(d) That the BMP was not implemented previously because the water supplier was exempt from its implementation as provided for in Section 4.5 above during prior years of required activity. When a water supplier has been exempt from implementing a BMP in the past, but is subsequently no longer exempt, the water supplier shall receive an extension of time to implement the BMP. The extension of time shall be equal to 100% of the time period for which fully documented exemptions were submitted to the Council, not to exceed the time allotted for completing the activities set forth within the BMP itself.

SECTION 5. BAY/DELTA PROCEEDINGS

[Note: The following section was adopted with the initial MOU and has been retained in subsequent revisions. The “present proceedings” refers to the State Water Resources Control Board water rights process then underway to implement new Bay-Delta flow and export standards. As of the date this note was adopted (April 8, 1998), proceedings to implement updated standards are still underway. Therefore, the joint recommendations of the signatories to the SWRCB contained in this letter continue to apply.]

5.1 **Use of MOU for Bay/Delta Proceedings.** The BMPs, the estimates of reliable savings and the processes established by this MOU are agreed to by the signatories for purposes of the present proceedings on the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Bay/Delta") and in order to move the water conservation process forward. "Present Bay/Delta proceedings" is intended to mean those Bay/Delta proceedings presently underway and those conducted until a final water rights decision is reached by the State Water Resources Control Board ("State Board"). The willingness of the signatories to enter into this MOU for purposes of the present Bay/Delta proceedings in no way limits the signatories' ability to propose different conservation practices, different estimates of savings, or different processes in a forum other than the present Bay/Delta proceedings, or for non-urban water suppliers or for other water management issues. By signing this MOU, public advocacy organization signatories are not agreeing to use the initial assumptions of reliable conservation savings in proceedings other than the present Bay/Delta proceedings. The signatories may present other assumptions of reliable conservation savings for non-signatory water suppliers in the present Bay/Delta proceedings, provided that such assumptions could not have adverse impacts upon the water supplies of any signatory water supplier. Furthermore, the signatories retain the right to advocate any particular level of protection for the Bay/Delta Estuary, including levels of freshwater flows, and do not necessarily agree on population projections for California. This MOU is not intended to address any authority or obligation of the State Board to establish freshwater flow protections or set water quality objectives for the Estuary, or to address any authority of the Environmental Protection Agency.

5.2 **Recommendations for Bay/Delta Proceedings.** The signatories will make the following recommendations to the State Board in conjunction with the present Bay/Delta proceedings and to the EPA to the extent the EPA concerns itself with the proceedings:

(a) That for purposes of the present Bay/Delta proceedings, implementation of the BMP process set forth in this MOU represents a sufficient long-term water conservation program by the signatory water suppliers, recognizing that additional programs may be required during occasional water supply shortages;

(b) That for purposes of the present Bay/Delta proceedings only, the State Board and EPA should base their estimates of future urban water conservation savings on the implementation of all of the BMPs included in Section A of Exhibit 1 to this MOU for the entire service area of the signatory water suppliers and only on those BMPs, except for (I) the conservation potential for water supplied by urban agencies for agricultural purposes, or (ii) in cases where higher levels of conservation have been mandated;.

(c) That for the purposes of the present Bay/Delta proceedings, the State Board and EPA should make their estimates of future urban water conservation savings by employing the reliable savings assumptions associated with those BMPs set forth in Section C of Exhibit 1 to this MOU;

(d) That the State Board should include a policy statement in the water rights phase of the Bay/Delta proceedings supporting the BMP process described in this MOU and that the BMP process should be considered in any documents prepared by the State Board pursuant to the California Environmental Quality Act as part of the present Bay/Delta proceedings.

5.3 **Letter to State Board.** Within 30 days of signing this MOU, each signatory will jointly or individually convey the principles set forth in Sections 5.1 and 5.2 above by sending a letter to the State Board, copied to the EPA, in the form attached to this MOU as Exhibit 4.

5.4 **Withdrawal from MOU.** If during the present Bay/Delta proceedings, the State Board or EPA uses future urban water conservation savings that are inconsistent with the use of BMPs as provided in this MOU, any signatory shall have the right to withdraw from the MOU by providing written notice to the Council as described in Section 7.4(a)(I) below.

SECTION 6. CALIFORNIA URBAN WATER CONSERVATION COUNCIL

6.1 **Organization.** The California Urban Water Conservation Council ("Council") will be comprised of all signatories to this MOU grouped according to the definition in Section 1. The signatories agree to the necessary organization and duties of the Council as specified in Exhibit 2 to this MOU. Within 30 days of the effective date of this MOU, the Council will hold its first meeting.

6.2 **BMP Implementation Reports.** The signatory water suppliers will submit standardized reports every other year to the Council providing sufficient information to inform the Council on the progress being made towards implementing the BMP process. The Council will make

annual reports to the State Board. An outline for the Council's annual report to the State Board is attached as Exhibit 5 to this MOU.

SECTION 7. GENERAL PROVISIONS

7.1 **Initial Term of MOU.** The initial term of this MOU shall be for a period of 10 years. This initial term shall commence on September 1, 1991.

7.2 **Signatories.** Signatories shall consist of three groups: water suppliers, public advocacy organizations and other interested groups, arranged according to the definition in Section 1.3. Such arrangement will be made by a Council membership committee comprised of three representatives from the water suppliers' group and three representatives from the public advocacy organizations' group.

7.3 **Renewal of MOU.** The MOU shall be automatically renewed after the initial term of 10 years on an annual basis as to all signatories unless a signatory withdraws as described below in Section 7.4.

7.4 **Withdrawal from MOU.** Signatories to the MOU may withdraw from the MOU in three separate ways as described in sections (a), (b) and 8 below.

(a) **Withdrawal prior to expiration of initial term.** Before the expiration of the initial term of 10 years, a signatory may withdraw by providing written notice to the Council declaring its intent to withdraw. This written notice must include a substantiated finding that one of the two provisions (i) or (ii) below applies:

(i) During the present Bay/Delta proceedings, the State Board or EPA used future urban water conservation savings that are inconsistent with the use of BMPs as provided in this MOU; OR

(ii) After a period of 5 years from the commencement of the initial term of the MOU:

(1) Specific signatory water suppliers representing more than 10 percent of the population included within the combined service areas of the signatory water suppliers have failed to act in good faith pursuant to Section 4.4 of the MOU; and

(2) The signatory wishing to withdraw has attached findings to its past two annual reports to the Council beginning no earlier than the fourth annual report identifying these same signatory water suppliers and giving evidence based upon the information required to be submitted in the annual reports to the Council to support the allegations of failure to act in good faith; and

(3) The State Board has failed to require conservation efforts by the specific water suppliers adequate to satisfy the requirements of this MOU; and

(4) Discussions between the signatory wishing to withdraw and the specific signatories named have failed to satisfy the objections of the signatory wishing to withdraw.

After a signatory declares an intent to withdraw under Section 7.4(a), the MOU shall remain in effect as to that signatory for 180 days.

(b) **Withdrawal after expiration of initial term.** After the initial term of 10 years, any signatory may declare its intent to withdraw from the MOU unconditionally by providing written notice to the Council. After a signatory has declared its intent to withdraw as provided in this section, the MOU will remain in effect as to that signatory for 180 days.

(c) **Immediate withdrawal.** Any signatory who does not sign a modification to the MOU requiring a 2/3 vote as described in Exhibit 2 of this MOU may withdraw from the MOU by providing written notice to the Council. The withdrawing signatory's duties under this MOU will be terminated effective immediately upon providing such written notice.

If a signatory withdraws from the MOU under any of the above methods, the MOU shall remain in effect as to all other signatories.

7.5 **Additional Parties.** Additional parties may sign the MOU after September 1, 1991 by providing written notice to and upon approval by the Council. Additional parties will be assigned by the Council to one of the three signatory groups defined in Section 1.3 before entry into the Council. All additional signatory water suppliers shall be subject to the schedule of implementation provided in Exhibit 1.

7.6 **Legal Authority.** Nothing in this MOU is intended to give any signatory, agency, entity or organization expansion of any existing authority. No organization formed pursuant to this MOU has authority beyond that specified in this MOU.

7.7 **Non-Contractual Agreement.** This MOU is intended to embody general principles agreed upon between and among the signatories and is not intended to create contractual relationships, rights, obligations, duties or remedies in a court of law between or among the signatories.

7.8 **Modifications.** The signatories agree that this writing constitutes the entire understanding between and among the signatories. The general manager, chief executive officer or executive director of each signatory or their designee shall have the authority to vote on any modifications to this MOU and its exhibits. Any modifications to the MOU itself and to its exhibits shall be made by the Council as described in Exhibit 2.

EXHIBIT 1. BMP DEFINITIONS, SCHEDULES AND REQUIREMENTS

Formatted as Approved on March 9, 2005; Amended re: Base Year on September 21, 2000

This Exhibit contains Best Management Practices (BMPs) that signatory water suppliers commit to implementing. Suppliers' water needs estimates will be adjusted to reflect estimates of reliable savings from this category of BMPs. For some BMPs, no estimate of savings is made.

It is recognized by all parties that a single implementation method for a BMP would not be appropriate for all water suppliers. In fact, it is likely that as the process moves forward, water suppliers will find new implementation methods even more effective than those described. Any implementation method used should be at least as effective as the methods described below.

Best Management Practices will be implemented by signatory water suppliers according to the schedule set forth in Section B of each BMP's definition. These schedules set forth the latest dates by which implementation of BMPs will be underway. It is recognized that some signatories are already implementing some BMPs, and that these schedules do not prohibit signatories from implementing BMPs sooner than required.

"Implementation" means achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in Section A of each BMP's definition, and to satisfy the commitment by the signatories to use good faith efforts to optimize savings from implementing BMPs as described in Section 4.4 of the MOU. BMPs will be implemented at a level of effort projected to achieve at least the coverages specified in Section C of each BMP's definition, and in accordance with each BMP's implementation schedule.

Section D of each BMP definition contains the minimum record keeping and reporting requirements for agencies to document BMP implementation levels and efforts, and will be used to guide Council development of BMP implementation report forms and database.

The evaluation criteria presented in Section E of each BMP definition shall be used to evaluate compliance with the implementation definitions, schedules, and coverage requirements specified in Sections A, B, and C of each BMP definition.

Section F of each BMP definition contains the assumptions of reliable savings to be used in accordance with Sections 5.1 and 5.2 of the MOU.

1. WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

A. Implementation

Implementation shall consist of at least the following actions:

1) Develop and implement a strategy targeting and marketing water use surveys to single-family residential and multi-family residential customers.

2) Directly contact via letter or telephone not less than 20% of single-family residential customers and 20% of multi-family residential customers each reporting period.

3) Surveys shall include indoor and outdoor components, and at minimum shall have the following elements:

   Indoor

   a) Check for leaks, including toilets, faucets, and meter check

   b) Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, as necessary

   c) Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary

   Outdoor

   d) Check irrigation system and timers

   e) Review or develop customer irrigation schedule

   Recommended but not required

   f) Measure currently landscaped area

   g) Measure total irrigable area

4) Provide customer with evaluation results and water saving recommendations; leave information packet with customer.

5) Track surveys offered, surveys completed, survey results, and survey costs.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the year following the year the agency signed or became subject to the MOU.

3) Agencies shall develop and implement a strategy targeting and marketing water use surveys to single-family residential and multi-family residential customers by the end of the first reporting period following the date implementation was to commence.

4) The coverage requirement for this BMP, as specified in Section C of this Exhibit, shall be realized within 10 years of the date implementation was to commence.

C. Coverage Requirements

1) Not less than 15% of single-family residential accounts to receive water use surveys within 10 years of the date implementation was to commence. For the purposes of calculating coverage, 15% of single-family residential accounts means the number of accounts equal to 15% of single-family accounts in 1997 or the year the agency signed the MOU, whichever is later.

2) Not less than 15% of multi-family residential units to receive water use surveys within 10 years of the date implementation was to commence. For the purposes of calculating coverage, 15% of multi-family residential units means the number of units equal to 15% of multi-family units in 1997 or the year the agency signed the MOU, whichever is later.

D. Requirements for Documenting BMP Implementation

1) Number of single-family residential accounts in service area.

2) Number of multi-family residential accounts in service area.

3) Number of single-family residential surveys offered during reporting period.

4) Number of single-family residential surveys completed during reporting period.

5) Number of multi-family residential surveys offered during reporting period.

6) Number of multi-family residential surveys completed during reporting period.

E. Criteria to Determine BMP Implementation Status

1) Agency has developed and implemented a strategy targeting and marketing water use surveys to single-family residential and multi-family residential customers by the end of the first reporting period following the date implementation was to commence.

2) Agency has directly contacted not less than 20% of single-family residential accounts and 20% of multi-family residential units during period being reported.

3) Agency is on schedule to complete surveys for 15% of single-family residential accounts and 15% of multi-family units within 10 years of the date implementation was to commence. Agencies will receive credit against the coverage requirement for previously completed residential water use surveys according to the following schedule∗:

	% Credit
Before 1990	0.0%
1990	12.5%
1991	25.0%
1992	37.5%
1993	50.0%
1994	62.5%
1995	75.0%
1996	87.5%
1997	100.0%

4) Agencies will be considered on track if the percent of single-family accounts and the percent of multi-family accounts receiving water use surveys equals or exceeds the following: 1.5% by end of first reporting period following date implementation to commence; 3.6% by end of second reporting period; 6.3% by end of third reporting period; 9.6% by end of fourth reporting period; and 13.5% by end of fifth reporting period.

∗ ∗ In its study "What is the Reliable Yield from Residential Home Water Survey Programs: The Experience of LADWP" (AWWA Conf. Proceedings, 1995), A & N Technical Services, Inc., found that the average level of savings from home water surveys decreased over time, reaching about 50% of initial yield by the fourth year following the survey, on average. The above decay schedule used for crediting past surveys utilizes these findings to recognize and account for the limited persistence of water savings over time from home water use surveys

F. Water Savings Assumptions

	Pre-1980 Construction	Post-1980 Construction
Low-flow showerhead retrofit	7.2 gcd	2.9 gcd
Toilet retrofit (five year life)	1.3 gcd	0.0 gcd
Leak repair	0.5 gcd	0.5 gcd
Landscape survey (outdoor use reduction)	10%	10%

2. RESIDENTIAL PLUMBING RETROFIT

A. Implementation

Implementation shall consist of at least the following actions:

1) Identify single-family and multi-family residences constructed prior to 1992. Develop a targeting and marketing strategy to distribute or directly install high-quality, low-flow showerheads (rated 2.5 gpm or less), toilet displacement devices (as needed), toilet flappers (as needed) and faucet aerators (rated 2.2 gpm or less) as practical to residences requiring them.

2) Maintain distribution and/or direct installation programs so that devices are distributed to not less than 10% of single-family connections and multi-family units each reporting period, or require through enforceable ordinance the replacement of high-flow showerheads and other water using fixtures with their low-flow counterparts, until it can be demonstrated in accordance with Section E of this Exhibit that 75% of single-family residences and 75% of multi-family units are fitted with high-quality, low-flow showerheads.

3) Track the type and number of retrofits completed, devices distributed, and program costs.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the year following the year the agency signed or became subject to the MOU.

3) Agencies shall develop and implement a strategy targeting the distribution and/or installation of high-quality, low-flow plumbing devices to single-family residential and multi-family residential customers by the end of the first reporting period following the date implementation was to commence.

4) An agency may elect to discontinue its device distribution programs without filing a formal budget or cost-effectiveness exemption when it can demonstrate that 75% of its single-family residences and 75% of its multi-family units constructed prior to 1992 are fitted with high-quality, low-flow showerheads.

C. Coverage Requirements

1) Plumbing device distribution and installation programs to be maintained at a level sufficient to distribute high-quality, low-flow showerheads to not less than 10% of single-family residences and 10% of multi-family units constructed prior to 1992 each reporting period; or the enactment of an enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts.

2) Plumbing device distribution and installation programs to be operated until it can be demonstrated in accordance with Section E of this Exhibit that 75% of single-family residences and 75% of multi-family units are fitted with high-quality, low-flow showerheads.

D. Requirements for Documenting BMP Implementation

1) The target population of pre-1992 single-family residences and multi-family units to be provided showerheads and other water saving devices.

2) The number of showerhead retrofit kits distributed during previous reporting period.

3) The number of device retrofits completed during the previous reporting period.

4) The estimated percentage of pre-1992 single-family residences and multi-family units in service area fitted with low-flow showerheads.

E. Criteria to Determine BMP Implementation Status

1) Agency has developed and implemented a strategy targeting and marketing water use surveys to single-family residential and multi-family residential customers by the end of the first reporting period following the date implementation was to commence.

2) Agency has tracked the type and number of retrofits completed, devices distributed, and program costs.

3) Agency EITHER

   a) has distributed or directly installed high-quality, low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family residences and 10% of multi-family units constructed prior to 1992 during the reporting period; and/or has enacted an ordinance requiring the replacement of high-flow shower-heads and other water use fixtures with their low-flow counterparts.

OR

b) can demonstrate through customer surveys with 95% statistical confidence and a ±10% error that 75% of single-family residences and 75% of multi-family units constructed prior to 1992 are fitted with low-flow showerheads.

F. Water Savings Assumptions

	Pre-1980 Construction	Post-1980 Construction
Low-flow showerhead retrofit	7.2 gcd	2.9 gcd
Toilet retrofit (five year life)	1.3 gcd	0.0 gcd

3. SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR

A. Implementation

Implementation shall consist of at least the following actions:

1) Annually complete a prescreening system audit to determine the need for a fullscale system audit. The prescreening system audit shall be calculated as follows:

   a) Determine metered sales;

   b) Determine other system verifiable uses;

   c) Determine total supply into the system;

   d) Divide metered sales plus other verifiable uses by total supply into the system. If this quantity is less than 0.9, a fullscale system audit is indicated.

2) When indicated, agencies shall complete water audits of their distribution systems using methodology consistent with that described in AWWA's *Water Audit and Leak Detection Guidebook.*

3) Agencies shall advise customers whenever it appears possible that leaks exist on the customer's side of the meter; perform distribution system leak detection when warranted and cost-effective; and repair leaks when found.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

1) Agency shall maintain an active distribution system auditing program.

2) Agency shall repair identified leaks whenever cost-effective.

D. Requirements for Documenting BMP Implementation

1) Prescreening audit results and supporting documentation;

2) Maintain in-house records of audit results or the completed AWWA Audit Worksheets for each completed audit period.

E. Criteria to Determine BMP Implementation Status

1) Agency has annually completed a pre-screening distribution system audit.

2) Agency has conducted a full system audit consistent with methods described by AWWA's *Manual of Water Supply Practices, Water Audits and Leak Detection* whenever indicated by a pre-screening audit.

F. Water Savings Assumptions

Unaccounted water losses assumed to be no more than 10% of total water into the water supplier's system.

4. METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

Amended March 14, 2007

A. Implementation

For consistency with California Water Code (Section 525b), this BMP refers to potable water systems. A water meter is defined as a devise that measures the actual volume of water delivered to an account in conformance with the guidelines of the American Water Works Association. Implementation shall consist of at least the following actions:

1) Require meters for all new service connections.

2) Establish a program for retrofitting existing unmetered service connections.

3) Read meters and bill customers by volume of use.

   a) Establish and maintain billing intervals that are no greater than bi-monthly (every two months) for all customers.

   b) For each metered connection, perform at least five actual meter readings (including remotely sensed) per twelve month period.

4) Prepare a written plan, policy or program that includes:

   a) A census of all meters, by size, type, year installed, customer class served and manufacturer's warranty accuracy when new;

   b) A currently approved schedule of meter testing and repair, by size, type and customer class;

   c) A currently approved schedule of meter replacement, by size, type, and customer class; and

5) Identifying intra- and inter-agency disincentives or barriers to retrofitting mixed use commercial accounts with dedicated landscape meters, and conducting ~~a~~ feasibility study(s) to assess the merits of a program to provide incentives to switch mixed use accounts to dedicated landscape meters.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, shall:

a) Initiate volumetric billing for all metered customers no later than July 1, 2008; and

b) Complete meter installation for all connections no later than July 1, 2009.

2) Agencies signing the MOU after December 31, 1997, shall:

a) Initiate volumetric billing for all metered customers no later than July 1, 2008 or within one year of signing the MOU if later than July 1, 2008; and

b) Complete meter installation for all service connections no later than July 1, 2012 or within six years of signing MOU, but in no case later than one year prior to the requirements of state law.

3) For unmetered service areas newly acquired or newly operated by otherwise metered agencies, meter installation shall be completed in these service areas within six years of the acquisition or operational agreement.

4) A feasibility study examining incentive programs to move landscape water uses on mixed-use meters to dedicated landscape meters to be completed by the end of Year Four following the date implementation was to commence.

5) A written plan, policy or program to test, repair and replace meters [see Section A(4) above] shall be completed and submitted electronically by July 1, 2008 or within one year of signing the MOU if later than July 1, 2008, whichever is later.

C. Coverage Requirements

100% of existing unmetered accounts to be metered and billed by volume of use within above specified time periods. Service lines dedicated to fire suppression systems are exempt from this requirement.

D. Requirements for Documenting BMP Implementation

1) Confirmation that all new service connections are metered and are being billed by volume of use and provide:

a) Number of metered accounts;

b) Number of metered accounts read;

c) Number of metered accounts billed by volume of use;

d) Frequency of billing (i.e. six or twelve times per year) by type of metered customer (e.g. single family residential, multiple family residential, commercial, industrial, and landscape irrigation); and

e) Number of estimated bills per year by type of metered customer (e.g. single family residential, multiple family residential, commercial, industrial, and landscape irrigation) vs. actual meter readings.

2) Number of unmetered accounts in the service area. For the purposes of evaluation, this shall be defined as the baseline meter retrofit target, and shall be used to calculate the agency's minimum annual retrofit requirement.

3) Number of unmetered service connections retrofitted during the reporting period.

4) Estimated number of CII accounts with mixed-use meters.

5) Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.

E. Criteria to Determine BMP Implementation Status

1) Agency with existing unmetered service connections has completed a meter retrofit plan by the end of Year Two following the date implementation was to commence.

2) Agency has completed a feasibility study examining incentive programs to move landscape water uses on mixed-use meters to dedicated landscape meters by the end of Year Two following the date implementation was to commence.

3) Agency with existing unmetered service connections is on track to meter these connections during the schedule shown in Section B. An agency will be considered on track if the percent of unmetered accounts retrofitted with meters equals or exceeds the following:

Target Dates for "On Track" Compliance with BMP 4	
Percent of unmetered accounts retrofitted	**Agency signed the MOU prior to December 31, 1997**
10 percent	December 31. 2000
24 percent	December 31, 2002
42 percent	December 31, 2004

64 percent	December 31, 2006
90 percent	December 31, 2008
100 percent	July 1, 2009

Target Dates for "On Track" Compliance with BMP 4	
Percent of unmetered accounts retrofitted	**All agencies signing the MOU after 1997**
20 percent	December 31, 2004
40 percent	December 31, 2006
60 percent	December 31, 2008
80 percent	December 31, 2010
100 percent	July 1, 2012

4) Agency bills metered customers at least as often as bimonthly within four years.

5) Agency reads meters and bills metered customers using volumetric rates.

6) Agency has completed a written plan, policy or program to test, repair and replace meters.

F. Water Savings Assumptions

Assume meter retrofits and volumetric rates combined will result in a 20% reduction in demand for retrofitted accounts.

G. Commitment to Further Review

Within three years from the date this BMP revision is adopted, the CUWCC will complete an evaluation of the potential water use efficiency impacts and cost-effectiveness of the following for consideration as future BMP revision(s):

1) Criteria for meter testing, repair, replacement and accuracy;

2) Transition to installing automated meter reading (AMR) technologies; and

3) Transition to monthly billing schedules for all accounts.

5. LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

A. Implementation

Implementation shall consist of at least the following actions:

1) Customer Support, Education and Assistance

   a) Agencies shall provide non-residential customers with support and incentives to improve their landscape water use efficiency. This support shall include, but not be limited to, the following:

2) Accounts with Dedicated Irrigation Meters

   a) Identify accounts with dedicated irrigation meters and assign ETo-based water use budgets equal to no more than 100% of reference evapotranspiration per square foot of landscape area in accordance with the schedule given in Section B of this Exhibit.

   b) Provide notices each billing cycle to accounts with water use budgets showing the relationship between the budget and actual consumption in accordance with the schedule given in Section B of this Exhibit; agencies may choose not to notify customers whose use is less than their water use budget.

3) Commercial/Industrial/Institutional Accounts with Mixed-Use Meters or Not Metered

   a) Develop and implement a strategy targeting and marketing large landscape water use surveys to commercial/industrial/institutional (CII) accounts with mixed-use meters. Each reporting period, directly contact via letter or telephone not less than 20% of CII accounts with mixed-use meters and offer water use surveys. (Note: CII surveys that include both indoor and outdoor components can be credited against coverage requirements for both BMP 5 and BMP 9.)

   b) Unmetered service areas will actively market landscape surveys to existing accounts with large landscapes, or accounts with landscapes which have been determined by the purveyor not to be water efficient.

   c) Offer the following measures when cost-effective:

      i) Landscape water use analysis/surveys

      ii) Voluntary water use budgets

iii) Installation of dedicated landscape meters

iv) Training (multi-lingual where appropriate) in landscape maintenance, irrigation system maintenance, and irrigation system design.

v) Financial incentives to improve irrigation system efficiency such as loans, rebates, and grants for the purchase and/or installation of water efficient irrigation systems.

vi) Follow-up water use analyses/surveys consisting of a letter, phone call, or site visit where appropriate.

d) Survey elements will include: measurement of landscape area; measurement of total irrigable area; irrigation system check, and distribution uniformity analysis; review or develop irrigation schedules, as appropriate; provision of a customer survey report and information packet.

e) Track survey offers, acceptance, findings, devices installed, savings potential, and survey cost.

4) New or Change of Service Accounts

Provide information on climate-appropriate landscape design, efficient irrigation equipment/management to new customers and change-of-service customer accounts.

5) Recommended

a) Install climate appropriate water efficient landscaping at water agency facilities, and dual metering where appropriate.

b) Provide customer notices prior to the start of the irrigation season alerting them to check their irrigation systems and make repairs as necessary. Provide customer notices at the end of the irrigation season advising them to adjust their irrigation system timers and irrigation schedules.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1999.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the second year following the year the agency signed or became subject to the MOU.

3) Develop ETo-based water use budgets for all accounts with dedicated irrigation meters by the end of the second reporting period from the date implementation was to commence.

4) Develop and implement a plan to target and market landscape water use surveys to CII accounts with mixed-use meters by the end of the first reporting period from the date implementation was to commence.

5) Develop and implement a customer incentive program by the end of the first reporting period from the date implementation was to commence.

C. Coverage Requirements

1) ETo-based water use budgets developed for 90% of CII accounts with dedicated irrigation meters by the end of the second reporting period from the date implementation was to commence.

2) Not less than 20% of CII accounts with mixed-use meters contacted and offered landscape water use surveys each reporting period.

3) Irrigation water use surveys completed for not less than 15% of CII accounts with mixed-use meters within 10 years of the date implementation was to commence. (Note: CII surveys that include both indoor and outdoor components can be credited against coverage requirements for both BMP 5 and BMP 9.) For the purposes of calculating coverage, 15% of CII accounts means the number of accounts equal to 15% of CII accounts with mixed-use meters in 1997 or the year the agency signed the MOU, whichever is later.

D. Requirements for Documenting BMP Implementation

1) Dedicated Landscape Irrigation Accounts

   a) Agencies shall preserve water use records and budgets for customers with dedicated landscape irrigation accounts for a period of not less than two reporting periods. This information may be used by the Council to verify the agency's reporting on this BMP.

      i) Number of dedicated irrigation meter accounts.

      ii) Number of dedicated irrigation meter accounts with water budgets.

      iii) Aggregate water use for dedicated landscape accounts with budgets.

iv) Aggregate budgeted water use for dedicated landscape accounts with budgets.

2) Mixed Use Accounts

a) Number of mixed use accounts.

b) Number, type, and dollar value of incentives, rebates, and no, or low interest loans offered to, and received by, customers.

c) Number of surveys offered.

d) Number of surveys accepted.

e) Estimated annual water savings by customers receiving surveys and implementing recommendations.

E. Criteria to Determine BMP Implementation Status

1) Agency has developed water use budgets for 90% of accounts with dedicated irrigation meters by end of second reporting period from date implementation was to commence.

2) Agency has implemented irrigation water use survey program for CII accounts with mixed-use meters, and directly contacts and offers surveys to not less than 20% of accounts each reporting period. (A program to retrofit mixed-use accounts with dedicated landscape meters and assigning water use budgets, or a program giving mixed-use accounts ETo-based budgets for irrigation uses satisfies this criterion.)

3) Agency is on track to provide water use surveys to not less than 15% of CII accounts with mixed-use meters within 10 years of the date implementation was to commence. Agency may credit 100% of the number of landscape water use surveys for CII accounts with mixed-use meters completed prior to July 1, 1996, that have received a follow-up inspection against the coverage requirement; and 50% of surveys that have not received follow-up inspections. Agency may credit 100% of the number of landscape water use surveys completed for CII accounts with mixed-use meters after July 1, 1996 against the coverage requirement. (A program to retrofit mixed-use accounts with dedicated landscape accounts, or a program giving mixed-use accounts ETo-based budgets for irrigation uses satisfy this criterion.)

4) An agency will be considered on track if the percent of CII accounts with mixed-use meters receiving a landscape water use survey equals or exceeds the following: 1.5% by end of first reporting period following date implementation to

commence; 3.6% by end of second reporting period; 6.3% by end of third reporting period; 9.6% by end of fourth reporting period; and 13.5% by end of fifth reporting period. (A program to retrofit mixed-use accounts with dedicated landscape accounts, or a program giving mixed-use accounts ETo-based budgets for irrigation uses satisfy this criterion.)

5) Agency has implemented and is maintaining customer incentive program(s) for irrigation equipment retrofits.

F. Water Savings Assumptions

Assume landscape surveys will result in a 15% reduction in demand for landscape uses by surveyed accounts.

6. HIGH-EFFICIENCY CLOTHES WASHING MACHINE FINANCIAL INCENTIVE PROGRAMS

Amended March 10, 2004; Amended March 14, 2007

A. Implementation

Implementation shall consist of at least the following actions:

1) Until June 30, 2008, the water agency shall offer a financial incentive, if cost effective, for the purchase of high-efficiency clothes washing machines (HEWs) meeting a water factor value of 8.5 or less. The water agency shall receive credit for HEWs with water factors greater than 8.5 but not exceeding 9.5 until June 30, 2007.

2) Any financial incentive offered shall be not less than the marginal benefits of the water savings, reduced by the necessary expense of administering the incentive program. Incentive levels shall be calculated by using methods found in *A Guide to Customer Incentives for Water Conservation* prepared by Barakat and Chamberlain for the CUWA, CUWCC, and US EPA, February 1994. A water agency is not required to implement a financial incentive program if the maximum cost-effective financial incentive is less than $50.

The Council shall begin to review this BMP before July 1, 2007. This review shall determine appropriate agency implementation activities after June 30, 2008. The purpose of this review is to revise this BMP to account for potential Federal and State standards, the market share of HEWs with various water factors, further advances in washer efficiency, funding partner activities, and consumer participation.

B. Implementation Schedule

1) For Agencies signing the MOU prior to July 1, 2003, implementation shall commence no later than July 1, 2004.

2) For Agencies signing the MOU or becoming subject to the MOU after July 1, 2003, implementation shall commence no later than July 1 of the second year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Overview

The Council's objective is to transform the clothes washer market by increasing sales of HEWs. The Council anticipates this interim program will have a positive and

long-lasting effect on the market share of HEWs; thus decreasing the future efforts needed by the Council and its members to achieve water efficiency in this sector. The goal for this BMP is to at least triple the market share of HEWs purchased for use inside residential dwelling units, where no incentive program exists. For purposes of determining coverage requirements, the Council's estimates a non-incentive market share of HEWs at 12% of all clothes washing machine sales (derived from year 2000 Energy Star data). The coverage requirements are based upon the goal of increasing the market share of HEWs to thirty-six percent (36%) of all clothes washing machine sales.

Coverage Goal

The Council developed a Coverage Goal (CG) system to more easily determine coverage progress, and allow agencies to obtain additional credit for promoting the purchase of ultra high efficiency machines with water factor values of 6.0 or less. The CG is based on the total quantity of dwelling units (single-family and multi-family) in each agency's service territory. The Council chose to use the quantity of both single-family and multi-family dwelling units because US Census data on in-home clothes washing machines includes both types of dwelling units.
Agency determines its CG by the following calculation:

CG = Total Dwelling Units x 80% x 6.67% x 12% x 3 x 4

Where: CG = Coverage Goal
Dwelling Units = total SF and MF dwelling units in agency service territory
80% = percentage of all dwelling units with in-home clothes washers
6.67% = percentage of washers requiring replacement each year
12% = Average HEW market share when no incentives exist
3 = tripling non-incentive market share
4.0 = years of program activity from July 1, 2004 to June 30, 2008

Simplified Formula: CG = Total Dwelling Units x 0.0768

Agencies may request an adjusted CG where US Census data or other statistically valid surveys prove that less than 80% of all dwelling units (single-family and multi-family) in their service territory include a clothes washing machine. Agencies signing the MOU after July 1, 2003, shall use a prorated CG based on implementation period of less than 2.5 years.

Coverage Points

Agency shall earn points towards its Coverage Goal for the purchase and installation of HEWs in its service territory where agency provides a financial incentive. In efforts to transform the market place towards ultra-high efficiency washers, agency may earn additional points for HEWs with water factor values of 8.5 or less.

1) Agency shall earn 1 point for each HEW incentive issued between July 1, 2004 and June 30, 2007, which results in the purchase and installation of a HEW with a water factor value greater than 8.5 but not exceeding 9.5. No points shall be earned for these HEWs after June 30, 2007.

2) Agency shall earn 2 points for each HEW incentive issued on or after July 1, 2004 resulting in the purchase and installation of a HEW with a water factor value greater than 6.0 but not exceeding 8.5.

3) Agency shall earn 3 points for each HEW incentive issued on or after July 1, 2004 resulting in the purchase and installation of a HEW with a water factor value of 6.0 or less.

Past Credit Points

Agency shall have the option to receive points towards its Coverage Goal for past efforts (efforts prior to July 1, 2004) by one of the following methods of agency's choosing:

1) Agencies shall earn points according to point scale described above in "Coverage Points; 1, 2 and 3" for each HEW incentive issued before July 1, 2004, resulting from agency incentive program, where agency has documentation of participation. Agency shall not receive any credit for HEWs with water factors greater than 9.5. Agencies shall not receive credit for any HEW sales or installations where the agency did not materially and substantially participate in the incentive program.

   OR

2) Agencies shall earn 1 point for each HEW incentive issued before July 1, 2004, resulting from agency incentive program, where agency has documentation of participation. Agencies shall not receive credit for any HEW sales or installations where the agency did not materially and substantially participate in the incentive program.

D. Requirements for Documenting BMP Implementation

1) Agency shall provide documentation for all of the following items:

   a) The quantity of single-family and multi-family dwelling units in the agency service area and the calculated Coverage Goal.

   b) The quantity and value of financial incentives issued for HEWs with water factor values greater than 8.5, but not exceeding 9.5.

c) The quantity and value of financial incentives issued HEWs with water factor values greater than 6.0 but not exceeding 8.5.

d) The quantity and value of financial incentives issued for HEWs with water factors of 6.0 or less.

e) Average or estimated administration and overhead costs to operate the program.

f) To receive credit for past programs, agency shall provide: quantity and value of financial incentives, water factor values and date of incentives issued for high-efficiency clothes washers installed before July 1, 2004.

2) Agency shall retain records of each participant of the incentive program, including: name, address and telephone number of participant; water account number of building or dwelling unit; make and model of HEW purchased; water factor value; dollar amount of the agency's financial incentive; dollar amount of program partner's financial incentive (if applicable); and name of program partner(s).

E. Criteria to Determine BMP Implementation Status

Agency is offering a financial incentive to customers in its service territory for the purchase of high-efficiency clothes washing machines with water factors of 9.5 or less until June 30, 2007 and with water factors of 8.5 or less until June 30, 2008, and agency is meeting the coverage requirement as stated in this BMP.

Agency shall be considered on-track to meet its coverage requirements according to the following table:

Implementation Status Schedule	
Date	Percent of Points Earned Towards Coverage Goal
January 1, 2005	10%
July 1, 2005	30%
January 1, 2007	50%
July 1, 2007	67%
July 1, 2008	100%

Agencies signing the MOU after July 1, 2003, shall have a prorated Implementation Status Schedule, based on implementation period of less than 4.0 years.

F. Water Savings Assumptions

Gross water savings (gallons) from financial incentive programs that result in the purchase and installation of High Efficiency Washing Machines with water factors equal to or less than 9.5 shall be calculated using the following formula:

$$GWS = 14 \text{ yr.} \times \sum_i N_i \times (13.3 - i) \times 1{,}170 \ \frac{\text{gal.}}{\text{yr.}}$$

Where: N is the number of machines replaced.

i is the water factor, defined as less than 9.5 until June 30, 2007, and less than 8.5 until June 30, 2008.

13.3 is the Baseline WF for washers sold in 1994, as supplied to DOE by the Association of Home Appliance Manufacturers (AHAM).

14 yr. is the assumed average useful life of residential washers. (Based on information from the Bern Kansas study)

1,170 gallons/year is the average change in water use for a unit change in water factor. This value was developed by the California Energy Commission.

Net water savings (gallons) from financial incentive programs shall be calculated using the following formula:

***NWS* = *GWS* x (1 - *FR*),**

Where: FR is the estimated rate of free ridership for the BMP 6 financial incentive program.

7. PUBLIC INFORMATION PROGRAMS

A. Implementation

Implementation shall consist of at least the following actions:

1) Implement a public information program to promote water conservation and water conservation related benefits.

2) Program should include, but is not limited to, providing speakers to employees, community groups and the media; using paid and public service advertising; using bill inserts; providing information on customers' bills showing use in gallons per day for the last billing period compared to the same period the year before; providing public information to promote water conservation practices; and coordinating with other government agencies, industry groups, public interest groups, and the media.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Agencies shall maintain an active public information program to promote and educate customers about water conservation.

D. Requirements for Documenting BMP Implementation

1) Number of public speaking events relating to conservation during reporting period.

2) Number of media events relating to conservation during reporting period.

3) Number of paid or public service announcements relating to conservation produced or sponsored during reporting period.

4) Types of information relating to conservation provided to customers.

5) Annual budget for public information programs directly related to conservation.

E. Criteria to Determine BMP Implementation Status

Agency has implemented and is maintaining a public information program consistent with BMP 7's definition.

F. Water Savings Assumptions

Not quantified.

8. SCHOOL EDUCATION PROGRAMS

A. Implementation

Implementation shall consist of at least the following actions:

1) Implement a school education program to promote water conservation and water conservation related benefits.

2) Programs shall include working with school districts and private schools in the water suppliers' service area to provide instructional assistance, educational materials, and classroom presentations that identify urban, agricultural, and environmental issues and conditions in the local watershed. Education materials shall meet the state education framework requirements, and grade appropriate materials shall be distributed to grade levels K-3, 4-6, 7-8, and high school.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Agencies shall maintain an active school education program to educate students in the agency's service areas about water conservation and efficient water uses.

D. Requirements for Documenting BMP Implementation

1) Number of school presentations made during reporting period.

2) Number and type of curriculum materials developed and/or provided by water supplier, including confirmation that curriculum materials meet state education framework requirements and are grade-level appropriate.

3) Number of students reached.

4) Number of in-service presentations or teacher's workshops conducted during reporting period.

5) Annual budget for school education programs related to conservation.

E. Criteria to Determine BMP Implementation Status

Agency has implemented and is maintaining a school education program consistent with BMP 8's definition.

F. Water Savings Assumptions

Not quantified.

9. CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII) ACCOUNTS

Amended September 16, 1999

A. Implementation

Implementation shall consist of at least the following actions:

1) BOTH a) AND b)

a) CII Accounts

Identify and rank commercial, industrial, and institutional (CII) accounts (or customers if the agency chooses to aggregate accounts) according to water use. For purposes of this BMP, CII accounts are defined as follows:

Commercial Accounts: any water use that provides or distributes a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce. These do not include multi-family residences, agricultural users, or customers that fall within the industrial or institutional classifications.

Industrial Accounts: any water users that are primarily manufacturers or processors of materials as defined by the Standard Industrial Classifications (SIC) Code numbers 2000 through 3999.

Institutional Accounts: any water-using establishment dedicated to public service. This includes schools, courts, churches, hospitals, and government facilities. All facilities serving these functions are to be considered institutions regardless of ownership.

b) 3-Year Interim CII ULFT Program

Implementation shall consist of at least the following actions:

i) A program to accelerate replacement of existing high-water-using toilets with ultra-low- flush (1.6 gallons or less) toilets in commercial, industrial, and institutional facilities.

ii) Programs shall be at least as effective as facilitating toilet replacements over a 3-year implementation period, commencing July 1, 2001, sufficient to produce cumulative water savings over 10 years equal to 3% of Total Water Savings Potential, as defined by Exhibit 8 of this MOU.

iii) Annual reporting to the Council of all available information described in Section D, subsection 2 of this BMP. The Council shall develop and provide agencies with a concise reporting form by March 31, 2001.

iv) By July 1, 2004, a committee selected by the Steering Committee shall complete for submittal to the Steering Committee a written evaluation of the interim program, including an assessment of program designs, obstacles to implementation, program costs, estimated water savings, and cost-effectiveness. By August 2004, the Steering Committee will reconvene to review the evaluation and recommend to the Plenary the next course of action on BMP 9 targets for CII toilet replacement programs.

2) AND EITHER c) OR d)

c) CII Water-Use Survey and Customer Incentives Program

Implement a CII Water-Use Survey and Customer Incentives Program. Develop a customer targeting and marketing strategy to provide water use surveys and customer incentives to CII accounts such that 10% of each CII sector's accounts are surveyed within 10 years of the date implementation is to commence. Directly contact (via letter, telephone, or personal visit) and offer water use surveys and customer incentives to at least 10% of each CII sector on a repeating basis. Water use surveys must include a site visit, an evaluation of all water-using apparatus and processes, and a customer report identifying recommended efficiency measures, their expected payback period and available agency incentives. Within one year of a completed survey, follow-up via phone or site visit with customer regarding facility water use and water saving improvements. Track customer contacts, accounts (or customers) receiving surveys, follow-ups, and measures implemented. The method for crediting water use surveys completed prior to the revision of this BMP is described in Section E.

d) CII Conservation Performance Targets

Achieve a water use reduction in the CII sectors equaling or exceeding the CII Conservation Performance Target. Implement programs to achieve annual water use savings by CII accounts by an amount equal to 10% of the baseline use of CII accounts in the agency's service area over a ten-year period. The target amount of annual water use reduction in CII accounts is a static value calculated from the baseline amount of annual use. Baseline use is defined as the use by CII accounts in 1997. Water purveyors may justify to the Council the use of an alternative baseline year.

B. Implementation Schedule

1) For agencies signing the MOU prior to December 31, 1997, implementation other than CII ULFTs shall commence no later than July 1, 1999. Implementation of Section A (1)(b) --CII ULFTs -- shall commence July 1, 2001.

2) For agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation other than the 3-Year Interim CII ULFT Program shall commence no later than July 1 of the second year following the year the agency signed or became subject to the MOU. Implementation of Section A (1)(b) -- CII ULFTs -- shall commence July 1, 2001. Agencies signing the MOU or becoming subject to the MOU after July 1, 2001 shall not be subject to the Coverage Requirements set forth in Section C, subsection 1 -- 3-Year Interim CII ULFT Program.

3) The coverage requirement for this BMP, as specified in Section C of this Exhibit, with the exception of CII ULFTs, shall be realized within 10 years of the date implementation was to commence.

C. Coverage Requirements

1) 3-Year CII ULFT Program

   CII ULFT program water savings equal to 3% of Total Water Savings Potential, as defined by Exhibit 8 of this MOU, by July 1, 2004.

EITHER

2) CII Water Use Survey and Customer Incentives Program

   10% of each of the CII sector's accounts to accept a water use survey within 10 years of the date implementation is to commence. For the purposes of calculating coverage, 10% of CII accounts means the number of accounts equal to 10% of CII accounts in 1997 or the year the agency signed the MOU, whichever is later.

OR

3) CII Conservation Performance Targets

   Reduce annual water use by CII accounts by an amount equal to 10% of the annual baseline water use within 10 years of the date implementation is to commence, including savings resulting from implementation of Section A (1)(b) -- CII ULFTs.

D. Requirements for Documenting BMP Implementation

1) CII Accounts

   The number of accounts (or customers) and amount of water use within each of the CII sectors.

2) 3-Year Interim CII ULFT Replacement Program

   a) Customer participant information, including retail water utility account ID's, primary contact information, facility address, facility type, number of toilets being replaced, number of toilets in facility (if available), primary reasons for toilet replacement and program participation (if available).

   b) Number of CII ULFTs replaced or distributed by CII sub sector by year.

   c) Total program cost by year, including administration and overhead, labor (staff salaries and benefits), marketing, outside services, incentives, and implementation (agency installation, rebate, permitting and remedial costs), and any required evaluation and reporting by the Council. Costs for program development and program operation shall be reported separately.

   d) Total program budget by year.

   e) Program funding sources by year, including intra-agency funding mechanisms, inter-agency cost-sharing, and state/federal financial assistance sources.

   f) Description of program design and implementation, such as types of incentives, marketing, advertising methods and levels, customer targeting methods, customer contact methods, use of outside services (e.g., consultants or community-based organizations), and participant tracking and follow up.

   g) Description of program acceptance or resistance by customers, any obstacles to implementation, and other issues affecting program implementation or effectiveness.

   h) General assessment of program effectiveness.

AND EITHER 3) OR 4)

3) CII Water Use Survey and Customer Incentives Program

a) The number of CII accounts (or customers) offered water use surveys during the reporting period.

b) The number of new water use surveys completed during the reporting period.

c) The number of follow-ups completed during the reporting period.

d) The type and number of water saving recommendations implemented.

e) Agency's program budget and actual program expenditures.

4) CII Conservation Performance Target

The estimated reduction in annual water use for all CII accounts due to agency programs, interventions, and actions. Agencies must document how savings were realized and the method and calculations for estimating savings, including the savings resulting from agency-assisted CII ULFTs replacements under Section A (1)(b).

E. Criteria to Determine BMP Implementation Status

1) CII Accounts

Agency has identified and ranked by water use its CII accounts.

2) CII ULFTs

Agency is on schedule to meet the coverage requirement for Section A (1)(b) within 3 years of the start of implementation. An agency will be considered on track if by the end of the first year of implementation the 10-year cumulative water savings equals or exceeds 0.5% of Total Savings Potential; by the end of the second year of implementation the 10-year cumulative water savings equals 1.5% of Total Savings Potential; and by the end of the third year of implementation the 10-year cumulative water savings equals or exceeds 3.0% of Total Savings Potential.

During the 3-year interim implementation period, cumulative savings from CII ULFT replacement programs occurring prior to January 1, 2001, may not be applied towards the interim coverage requirement. However, cumulative savings from *all* previous agency CII ULFT replacement programs may be applied toward any long-term CII ULFT coverage requirement.

AND EITHER 3) OR 4) OR 5)

3) CII Water Use Survey and Customer Incentives Program

   a) Agency has developed and implemented a strategy targeting and marketing water use surveys to CII accounts (or customers) by the end of the first reporting period following the date implementation is to commence.

   b) Agency is on schedule to complete surveys for 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of the date implementation is to commence. Agencies may credit 50% of the number of surveys completed prior to July 1, 1996 that have not received follow-up verification of implementation, and 100% of the number of surveys completed prior to July 1, 1996 that have received a follow-up survey. Agencies may credit 100% of the number of surveys completed after July 1, 1996 against the coverage requirement.

   c) Agencies will be considered on track if the percent of CII accounts receiving a water use survey, in aggregate, equals or exceeds the following: 0.5% of the total number of surveys required by end of first reporting period following date implementation is to commence; 2.4% by end of second reporting period; 4.2% by end of third reporting period; 6.4% by end of fourth reporting period; and 9.0% by end of fifth reporting period.

4) CII Conservation Performance Targets

   a) Agency is on schedule to reduce water use by CII accounts by an amount equal to 10% of baseline use (as defined in Section A) for CII accounts within 10 years of the date implementation is to commence.

   b) Agencies will be considered on track if estimated savings as a percent of baseline water use equals or exceeds the following: 0.5% by end of first reporting period following date implementation is to commence; 2.4% by end of second reporting period; 4.2% by end of third reporting period; 6.4% by end of fourth reporting period; and 9.0% by end of fifth reporting period.

   c) Credited water savings must be realized through agency actions performed to increase water use efficiency within the CII sector. Agencies may credit 100% of estimated annual savings of interventions since 1991 that have been site verified, and 25% of estimated annual savings of interventions that have not been site verified.

   d) Agencies may claim the estimated savings for regulations, ordinances, or laws intended to increase water use efficiency by the CII sector, subject to the review and approval of the savings estimates by the Council. To avoid

double counting, agencies justifying savings on the basis of rate structure changes may not claim savings from any other actions undertaken by CII customers, third parties, or the agency.

5) Combined Targets

Agencies may choose different tracks for different CII sectors, and will be considered in compliance with this BMP if they are on track to meet each applicable coverage requirement for each sector. In addition, agencies may implement both tracks for a given CII sector, and will be considered in compliance with this BMP if the percent of surveys completed and the percent of water savings realized, when added together, equals or exceeds the applicable compliance requirement. For example, at the end of the second reporting cycle an agency would be considered on track to meet the coverage requirement if the percent of surveys completed and the percent of water savings achieved, when added together, equaled or exceeded 2.4%. Agencies may combine tracks only if they make a convincing demonstration that savings attributable to counted surveys are not also included in their estimate of water savings for meeting the water savings performance track.

F. Water Savings Assumptions

Commercial water reduction results from Best Management Practices such as Interior and Landscape Water Surveys, Plumbing Codes, and Other Factors (Includes savings accounted for in other BMPs.) Estimated reduction in gallons per employee per day in year 2000 use occurring over the period 1980-2000: 12%.

Industrial water reduction results from Best Management Practices, Waste Discharge Fee, New Technology, Water Surveys, Plumbing Codes and Other Factors (Includes savings accounted for in other BMPs.) Estimated reduction in gallons per employee per day in year 2000 use occurring over the period 1980-2000: 15%.

10. WHOLESALE AGENCY ASSISTANCE PROGRAMS

Amended March 10, 2004; Amended June 13, 2007

A. Implementation

Implementation shall consist of at least the following actions:

Financial Support

1) Wholesale water suppliers will provide financial incentives, or equivalent resources, as appropriate, beneficial, and mutually agreeable to their retail water agency customers to advance water conservation efforts and effectiveness.

2) All BMPs implemented by retail water agency customers that can be shown to be cost-effective in terms of avoided cost of water from the wholesaler's perspective, using Council cost-effectiveness analysis procedures, will be supported.

Technical Support

Wholesale water agencies shall provide conservation-related technical support and information to all retail agencies for whom they serve as a wholesale supplier. At a minimum this requires:

3) Conducting, funding or promoting workshops addressing the following topics:

   a) Council procedures for calculating program savings, costs and cost-effectiveness;

   b) Retail agencies' BMP implementation reporting requirements; and

   c) The technical, programmatic, strategic or other pertinent issues and developments associated with water conservation activities in each of the following areas: ULFT replacement; residential retrofits; commercial, industrial and institutional surveys; residential and large turf irrigation; and conservation-related rates and pricing.

4) Having the necessary staff or equivalent resources available to respond to retail agencies' technical and programmatic questions involving the Council's BMPs and their associated reporting requirements.

Program Management

Wholesale and retail agencies will retain maximum local flexibility in designing and implementing locally cost-effective BMP conservation programs. Cooperatively designed regional programs are encouraged.

5) When mutually agreeable and beneficial, the wholesaler may operate all or any part of the conservation-related activities which a given retail supplier is obligated to implement under the BMP's cost-effectiveness test. The inability or unwillingness of the wholesaler to perform this function, however, in no way relieves or reduces the retailer's obligation to fully satisfy the requirements of all BMPs which are judged cost-effective from the retailer's perspective.

Water Shortage Allocations

6) Wholesale agencies shall work in cooperation with their customers to identify and remove potential disincentives to long-term conservation created by water shortage allocation policies; and to identify opportunities to encourage and reward cost-effective investments in long-term conservation shown to advance regional water supply reliability and sufficiency.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1999.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the second year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

1) Cost-effectiveness assessments completed for each BMP the wholesale agency is potentially obligated to support. The methodology used will conform to Council standards and procedures, and the information reported will be sufficient to permit independent verification of the cost-effectiveness calculations and of any exemptions claimed on cost-effectiveness grounds. Any subset of the BMPs being directly implemented by a wholesale agency will be reported.

   All other BMPs supportable by the retailers located in a wholesaler's service area will be considered for financial and technical support, and will be dependent on agreement between the wholesaler and its retailers.

2) Agency avoided cost per acre-foot of new water supplies. The methodology used will conform to Council standards and procedures, and the information reported will be sufficient to permit independent verification of the avoided cost calculations.

3) The total monetary amount of financial support, incentives, staff support and equivalent resources provided to retail members to assist, or to otherwise support, the implementation of BMPs.

4) The total amount of verified water savings achieved by each wholesaler-assisted BMP.

5) At each reporting cycle, wholesale agencies shall provide a written offer of support to each of their retailers, and request a response from each retailer. Verification of such offers and responses shall be submitted to the Council at each regular reporting cycle via the “notes” section in the BMP reporting database.

   It is recognized that wholesale agencies have limited control over retail agencies that they serve, and must act in cooperation with those retail agencies on implementation of BMPs. Thus, wholesale agencies cannot be held responsible for levels of implementation by individual retailers in their wholesale service areas.

6) Wholesale agencies will receive full credit and acknowledgement for previous BMP implementation.

D. Requirements for Documenting BMP Implementation

1) The total monetary amount of financial incentives and equivalent resources provided to retail members to assist, or to otherwise support, the implementation of BMPs, subtotaled by BMP.

2) The total amount of verified water savings achieved by each wholesaler-assisted BMP.

E. Criteria to Determine BMP Implementation Status

1) Timely and complete reporting of all information as provided for above under "Requirements for Documenting BMP Implementation."

2) Offering workshops covering all topics listed above under "Technical Support" in Section A.

3) Timely reconciliation of wholesaler and retailer BMP reports as provided for above under “Requirements for Documenting BMP Implementation."

F. Water Savings Assumptions

Not quantified. Wholesalers shall use the Council's Cost and Savings Document to assess the total amount of water savings achieved by each wholesaler-supported BMP.

11. RETAIL CONSERVATION PRICING

Amended June 13, 2007

Part I - Retail Water Service Rates

A. Implementation

BMP 11 promotes water conserving retail water rate structures. BMP 11 recognizes that each agency or water enterprise fund has a unique rate setting system and history. When creating a rate case, professional judgments are made to determine whether costs are accounted to a variable or fixed cost center by the staff of the agency. The final water rate case is an accumulation of all the decisions and judgments made by staff and supplemented by the financial projections leading an agency to establish its final water rate recommendation. BMP 11 is not intended to supplant this process, but rather to reinforce the need for Water Agencies to establish a strong nexus between volume-related system costs and volumetric commodity rates.

In Bighorn-Desert View Water Agency v. Virjil the California Supreme Court applied Proposition 218's* provisions embodied in Articles XIII C and D of the California Constitution to ongoing water service. In addition, Article XIII D, Section 6 imposes procedural and substantive requirements on new or increased fees or charges for on-going water service. The Council considers the conservation principles of BMP 11 to be compatible with the cost of service requirements of Proposition 218. However, should a case arise in which a Water Agency's good faith efforts were unable to meet BMP 11's requirements due to legal constraints (e.g. Proposition 218), this would be grounds for exemption, as specified in MOU Section 4.5.

Definition: Conservation pricing provides economic incentives (a price signal) to customers to use water efficiently. Because conservation pricing requires a volumetric rate, metered water service is a necessary condition of conservation pricing. Unmetered water service is inconsistent with the definition of conservation pricing.

Conservation pricing requires volumetric rate(s). While this BMP defines a minimum percentage of water sales revenue from volumetric rates, the goal of this BMP is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with utility costs (which may include utility long-run marginal costs), financial stability, revenue sufficiency, and customer equity.

In addition to volumetric rate(s), conservation pricing may also include one or more of the following other charges:

* Proposition 218 was approved by California voters in November 1996.

1) Service connection charges designed to recover the separable costs of adding new customers to the water distribution system.

2) Monthly or bimonthly meter/service charges to recover costs unrelated to the volume of water delivered or new service connections and to ensure system revenue sufficiency.

3) Special rates and charges for temporary service, fire protection service, and other irregular services provided by the utility.

The following volumetric rate designs are potentially consistent with the above definition:

1) **Uniform rate** in which the volumetric rate is constant regardless of the quantity consumed.

2) **Seasonal rates** in which the volumetric rate reflects seasonal variation in water delivery costs.

3) **Tiered rates** in which the volumetric rate increases as the quantity used increases.

4) **Allocation-based rates** in which the consumption tiers and respective volumetric rates are based on water use norms and water delivery costs established by the utility.

Adequacy of Volumetric Rate(s): A retail agency's volumetric rate(s) shall be deemed sufficiently consistent with the definition of conservation pricing when it satisfies at least one of the following two options.

Option 1: Let V stand for the total annual revenue from the volumetric rate(s) and M stand for total annual revenue from customer meter/service (fixed) charges, then:

$$\frac{V}{V+M} \geq 70\%$$

This calculation shall only include utility revenues from volumetric rates and monthly or bimonthly meter/service charges. It shall not include utility revenues from new service connection charges; revenue from special rates and charges for temporary service, fire protection, or other irregular services; revenue from grants or contributions from external sources in aid of construction or program implementation; or revenue from property or other utility taxes.

Option 2: Use the rate design model included with the Municipal Water and Wastewater Rate Manual published by the Canadian Water & Wastewater Association with the signatory's water system and cost information to calculate V',

the uniform volume rate based on the signatory's long-run incremental cost of service, and M', the associated meter charge. [Let HCF be annual water delivery (in hundred cubic feet).] A signatory's volumetric rate(s) shall be deemed sufficiently consistent with the definition of conservation pricing if:

$$\frac{V}{V + M} \geq \frac{V'}{V' + M'}$$

The rate design model can be downloaded at www.cuwcc.org/technical.

This calculation shall only include utility revenues from volumetric rates and monthly or bimonthly meter/service charges. It shall not include utility revenues from new service connection charges; revenue from special rates and charges for temporary service, fire protection, or other irregular services; revenue from grants or contributions from external sources in aid of construction or program implementation; or revenue from property or other utility taxes.

Exemptions and At Least As Effective As

The exemption provisions in MOU Section 4.5 apply to BMP 11 in the same way they apply to other BMPs. Water supplier signatories meeting at least one of the three exemption conditions in MOU Section 4.5 may submit an exemption to the Council per the requirements of the MOU.

Water supplier signatories may pursue an "At Least As Effective As" implementation of BMP 11 per the Preamble to Exhibit 1 of the MOU. Water supplier signatories adopting an "At Least As Effective As" implementation of BMP 11 may adopt rates that do not meet the requirements of either Option 1 or Option 2 described in Section A provided the resulting water savings are at least as effective as those options.

BMP Refinement

Within five years of the adoption of this BMP revision, the Council shall reconvene the BMP 11 Revision PAC to 1) assess rate of compliance with the revised BMP, 2) identify barriers to implementation, 3) assess its compatibility with Proposition 218 requirements, 4) initiate a water savings assessment appropriate to the data and project resources available to the Council, and 5) develop further refinements as needed to improve the BMP's effectiveness.

B. Implementation Schedule

Agencies with fully metered service areas

1) Agencies signing the MOU prior to June 13, 2007, implementation shall commence no later than July 1, 2007.

2) Agencies signing the MOU after June 13, 2007, implementation shall commence no later than July 1 of the year following the year the Agency signed the MOU.

Agencies with partially metered service areas[1]

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 2010. [One year after Agency is to complete meter installation per BMP 4.]

2) Agencies signing the MOU after December 31, 1997, implementation shall commence no later than July 1, 2013, or within seven years of signing the MOU, but in no case later than the metering deadline specified by state law. [One year after Agency is to complete meter installation per BMP 4.]

C. Coverage Requirements

Agency shall maintain a rate structure that satisfies at least one of the options specified in Section A. Conformance to Option 1 or Option 2 will first be assessed using the revenue from the most recent year. If the most recent year does not satisfy the option, the average revenue from the three (3) most recent years will be used.

D. Requirements for Documenting BMP Implementation

1) Report the rate structure in effect for each customer class for the reporting period.

2) Report the annual revenue derived from volume charges for each retail customer class, as defined in Section A.[2]

3) Report the annual revenue derived from monthly or bimonthly meter/service charges for each retail customer class, as defined in Section A.

4) If agency does not comply with Option 1 in Section A, report v' and m' as determined by the Canadian Water & Wastewater Association rate design model described in Section A.

5) If agency does not comply with Option 1 in Section A, submit to the Council the completed Canadian Water & Wastewater Association rate design model described in Section A.

1 Agencies following this schedule must be on the Council's list of Agencies with partially metered service areas.
2 Note: Compliance with BMP 11 will be determined based on the Agency's total revenue from all retail customer classes.

E. Criteria to Determine BMP Implementation Status

An agency shall be incompliance with BMP 11 provided the following is true for the Agency's total revenue from all retail customer classes within four years after [date of revision]:

For Option 1: $V \geq 70\% \times 1.00$

For Option 2: $V \geq V' \times 1.00$

The following schedule is intended to guide agencies in implementing this revision in phases:

YEARS AFTER START YEAR	FOR OPTION 1	FOR OPTION 2
1	$V \geq 70\% \times 0.70$	$V \geq V' \times 0.70$
2	$V \geq 70\% \times 0.80$	$V \geq V' \times 0.80$
3	$V \geq 70\% \times 0.90$	$V \geq V' \times 0.90$
4	$V \geq 70\% \times 1.00$	$V \geq V' \times 1.00$

An agency shall not be required to increase the volumetric component of the rate structure by more than 10% in any single year until the full implementation is achieved.

F. Water Savings Assumptions

Not quantified

Part II – Retail Wastewater Rates

A. Implementation

This section applies to Water Agencies that provide retail sewer service. Water Agencies that do not provide retail sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

Conservation pricing of sewer service provides incentives to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service, and billing for sewer service based on metered water use. Conservation pricing of sewer service is also characterized by one or more of the following components: rates in which the unit rate is the same across all units of service (uniform rates); rates in which the unit rate increases as the quantity of units purchased increases (increasing block rates); rates in which the unit rate is based

upon the long-run marginal cost or the cost of adding the next unit of capacity to the sewer system. Rates that charge customers a fixed amount per billing cycle for sewer service regardless of the units of service consumed do not satisfy the definition of conservation pricing of sewer service. Rates in which the typical bill is determined by high fixed charges and low commodity charges also do not satisfy the definition of conservation pricing of sewer service.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Agency shall maintain rate structure for sewer service consistent with definition of conservation pricing for sewer service in Part II, Section in A.

D. Requirements for Documenting BMP Implementation

1) Report annual revenue requirement for sewer service by customer class for the reporting period.

2) Report annual revenue for sewer service from commodity charges by customer class for the reporting period.

3) Report rate structure by customer class for sewer service.

E. Criteria to Determine BMP Implementation Status

Agency rate design for sewer service shall be consistent with definition of conservation pricing for sewer service in Section A.

F. Water Savings Assumptions

Not quantified.

12. CONSERVATION COORDINATOR

A. Implementation

Implementation shall consist of at least the following actions:

1) Designation of a water conservation coordinator and support staff (if necessary), whose duties shall include the following:

   a) Coordination and oversight of conservation programs and BMP implementation;

   b) Preparation and submittal of the Council BMP Implementation Report;

   c) Communication and promotion of water conservation issues to agency senior management; coordination of agency conservation programs with operations and planning staff; preparation of annual conservation budget; participation in the Council, including regular attendance at Council meetings; and preparation of the conservation elements of the agency's Urban Water Management Plan.

2) Agencies jointly operating regional conservation programs are not expected to staff duplicative and redundant conservation coordinator positions.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

D. Requirements for Documenting BMP Implementation

1) Conservation Coordinator name, staff position, and years on job.

2) Date Conservation Coordinator position created by agency.

3) Number of Conservation Coordinator staff.

4) Duties of Conservation Coordinator and staff.

E. Criteria to Determine BMP Implementation Status

1) Creating and staffing a Conservation Coordinator position within the agency organization.

2) Providing the Conservation Coordinator with the necessary resources to implement cost-effective BMPs and prepare and submit Council BMP Implementation Reports.

F. Water Savings Assumptions

Not quantified.

13. WATER WASTE PROHIBITION

A. Implementation

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Signatories shall also support efforts to develop state law regarding exchange-type water softeners that would: (1) allow the sale of only more efficient, demand-initiated regenerating (DIR) models; (2) develop minimum appliance efficiency standards that (a) increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used; and (b) implement an identified maximum number of gallons discharged per gallon of soft water produced; (3) allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply.

Signatories shall also include water softener checks in home water audit programs and include information about DIR and exchange-type water softeners in their educational efforts to encourage replacement of less efficient timer models.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

Agency shall adopt water waste prohibitions consistent with the provisions for this BMP specified in Section A of this Exhibit.

D. Requirements for Documenting BMP Implementation

Description of water waste prohibition ordinances enacted in service area.

E. Criteria to Determine BMP Implementation Status

Agency's water waste prohibition ordinances meet the requirements of the BMP definition.

F. Water Savings Assumptions

Not quantified.

14. RESIDENTIAL ULFT REPLACEMENT PROGRAMS

A. Implementation

Implementation shall consist of at least the following actions:

1) Implementation of programs for replacing existing high-water-using toilets with ultra-low- flush (1.6 gallons or less) toilets in single-family and multi-family residences.

2) Programs shall be at least as effective as requiring toilet replacement at time of resale; program effectiveness shall be determined using the methodology for calculating water savings in Exhibit 6 of this MOU.

After extensive review, on July 30 1992, the Council adopted Exhibit 6, "ASSUMPTIONS AND METHODOLOGY FOR DETERMINING ESTIMATES OF RELIABLE WATER SAVINGS FROM THE INSTALLATION OF ULF TOILETS." Exhibit 6 provides a methodology for calculating the level of effort required to satisfy BMP 14.

B. Implementation Schedule

1) Agencies signing the MOU prior to December 31, 1997, implementation shall commence no later than July 1, 1998.

2) Agencies signing the MOU or becoming subject to the MOU after December 31, 1997, implementation shall commence no later than July 1 of the first year following the year the agency signed or became subject to the MOU.

3) The coverage requirement for this BMP, as specified in Section C of this Exhibit, shall be realized within 10 years of the date implementation was to commence.

C. Coverage Requirements

Water savings from residential ULFT replacement programs to equal or exceed water savings achievable through an ordinance requiring the replacement high-water-using toilets with ultra-low-flow toilets upon resale, and taking effect on the date implementation of this BMP was to commence and lasting ten years.

D. Requirements for Documenting BMP Implementation

1) The number of single-family residences and multi-family units in service area constructed prior to 1992.

2) The average number of toilets per single-family residence; the average number of toilets per multi-family unit.

3) The average persons per household for single-family residences; the average persons per household for multi-family residences.

4) The housing resale rate for single-family residences in service area; the housing resale rate for multi-family residences in service area.

5) The number of ULFT installations credited to the agency's replacement program, by year.

6) Description of ULFT replacement program

7) Estimated cost per ULFT replacement.

8) Estimated water savings per ULFT replacement

E. Criteria to Determine BMP Implementation Status

Calculated ULFT replacement program water savings at the end of each reporting period are within 10% of calculated retrofit-on-resale water savings, using Exhibit 6 methodology and water savings estimates.

F. Water Savings Assumptions

See Exhibit 6.

EXHIBIT 1

POTENTIAL BEST MANAGEMENT PRACTICES

This section contains Potential Best Management Practices (PBMPs) that will be studied. Where appropriate, demonstration projects will be carried out to determine if the practices meet the criteria to be designated as BMPs. Within one year of the initial signing of this MOU, the Council will develop and adopt a schedule for studies of these PBMPs.

1) **Rate Structure and other Economic Incentives and Disincentives to Encourage Water Conservation.**

   This is the top priority PBMP to be studied. Such studies should include seasonal rates; increasing block rates; connection fee discounts; grant or loan programs to help finance conservation projects; financial incentives to change landscapes; variable hookup fees tied to landscaping; and interruptible water service to large industrial, commercial or public customers. Studies on this PBMP will be initiated within 12 months from the initial signing of the MOU. At least one of these studies will include a pilot project on incentives to encourage landscape water conservation.

2) **Efficiency Standards for Water Using Appliances and Irrigation Devices**

3) **Replacement of Existing Water Using Appliances (Except Toilets and Showerheads Whose Replacements are Incorporated as Best Management Practices) and Irrigation Devices.**

4) **Retrofit of Existing Car Washes.**

5) **Graywater Use**

6) **Distribution System Pressure Regulation.**

7) **Water Supplier Billing Records Broken Down by Customer Class**

8) **Swimming Pool and Spa Conservation including Covers to Reduce Evaporation**

9) **Restrictions or Prohibitions on Devices that use Evaporation to Cool Exterior Spaces.**

10) **Point of Use Water Heaters, Recirculating Hot Water Systems and Hot Water Pipe Insulation.**

11) **Efficiency Standards for New Industrial and Commercial Processes**

EXHIBIT 2. CALIFORNIA URBAN WATER CONSERVATION COUNCIL

Amended December 11, 2002

1. The California Urban Water Conservation Council (the "Council") will be comprised of a representative of each of the signatories to the MOU.

2. The Council's responsibilities and authorities include:

   a. Recommending study methodologies for Best Management Practices ("BMPs"), including procedures for assessing the effectiveness and reliability of urban water conservation measures.

   b. Developing guidelines including discount rate to be used by all signatories in computing BMP benefits and costs pursuant to Exhibit 3.

   c. Reviewing and modifying the economic principles set forth in Exhibit 3.

   d. Collecting and summarizing information on implementation of BMPs and Potential Best Management Practices ("PBMPs").

   e. Adopting or modifying BMPs and PBMPs lists.

   f. Adopting or modifying reliable water conservation savings data for BMPs.

   g. Adopting or modifying the schedules of implementation for existing and new BMPs.

   h. Adopting or modifying the schedules for research and demonstration projects for BMPs and PBMPs.

   I. Coordinating and/or making recommendations regarding BMPs study and demonstration projects.

   j. Accepting or denying requests for additional parties to join the MOU and assigning additional parties to one of the three signatory groups as described in Section 1.3 of the MOU.

   k. Reviewing and modifying report formats.

   l. Making annual reports to the State Water Resources Control Board and the Council Members on the above items based on the format described in Exhibit 5.

   m. Within two years of the initial signing of this MOU, developing and implementing procedures and a funding mechanism for independent evaluation of the MOU process at the Council and signatory levels.

   n. Undertaking such additional responsibilities as the Members may agree upon.

3. The Council will make formal reports to the State Water Resources Control Board and to the governing bodies of all Council Members. Such reports shall include a formal annual written report. Other reports such as status reports and periodic updates may be prepared as deemed appropriate by the Council. Any Member of the Council will be entitled to review draft reports and comment on all reports. Such comments shall be included in any final report at the Member's request.

4. It is anticipated that the Council will develop a committee structure, which will include a Membership Committee as described in Section 7.2 of the MOU. A Steering Committee and one or more technical committees may also be needed.

5. For purposes of the Council, signatories will be divided into three groups: water suppliers ("Group 1"), public advocacy organizations ("Group 2") and other interested groups ("Group 3") as those terms are defined in Section 1 of the MOU. Members of Groups 1 and 2 shall be Signatory members of the Council and shall possess all voting rights. Members of Group 3 shall be Signatory members and shall not have voting rights, but shall act in an advisory capacity to the Council. Beginning January 1, 2004 members shall become Full Members of the Council upon payment of the annual assessment as invoiced by the Council according to Section 11.01 of the Council's Bylaws. Full members shall be eligible to receive all services and benefits available from the Council's resources. For Group 2 members, payment shall mean payment in cash and/or in kind services. Officers and members of the Council Steering Committee shall be Full Members in good standing.

6. Decisions by the Council to undertake additional responsibilities; to modify the MOU itself; or to modify Exhibits 2 or 3 require the following:

   a. The Council will provide notice to all signatories giving the text of the proposed action or modification at least 60 days in advance of the vote by the Council.

   b. To pass the action or modification, there must be a vote in favor of the action or modification by at least 2/3 of the members of Group 1 voting, including votes made in person or in writing, and a vote in favor of the action or modification by at least 2/3 of the members of Group 2 voting, including votes made in person or in writing.

7. All other modifications and Council actions shall be undertaken as follows: There must be a vote in favor of the modification or action by a simple majority of the members of Group 1 voting, including votes made in person or in writing, and a vote in favor of the modification or action by a simple majority of the members of Group 2 voting, including votes made in person or in writing.

EXHIBIT 3. PRINCIPLES TO GUIDE THE PERFORMANCE OF BMP ECONOMIC (COST-EFFECTIVENESS) ANALYSIS

Amended April 8, 1998

1. The total cost-effectiveness of a conservation measure will be measured by comparing the present value of the benefits of the measure listed in paragraph 3 below to the present value of the costs listed in paragraph 4. The measure will be cost-effective if the present value of the benefits exceeds the present value of the costs.

2. The cost-effectiveness of a conservation measure to the water supplier will be measured by comparing the present value of the benefits described in paragraph 5 to the present value of the costs described in paragraph 6. The measure will be cost-effective if the present value of the benefits exceeds the present value of the costs.

3. Total benefits exclude financial incentives received by water suppliers or by retail customers. These benefits include:

   a. avoided capital costs of production, transport, storage, treatment, wastewater treatment and distribution capacity.

   b. avoided operating costs, including but not limited to, energy and labor.

   c. environmental benefits and avoided environmental costs.

   d. avoided costs to other water suppliers, including those associated with making surplus water available to other suppliers.

   e. benefits to retail customers, including benefits to customers of other suppliers associated with making surplus water available to these suppliers.

4. Total program costs are those costs associated with the planning, design, and implementation of the particular BMP, excluding financial incentives paid either to other water suppliers or to retail customers. These costs include:

   a. capital expenditures for equipment or conservation devices.

   b. operating expenses for staff or contractors to plan, design, or implement the program.

   c. costs to other water suppliers.

   d. costs to the environment.

   e. costs to retail customers.

5. Program benefits to the water supplier include:

   a. costs avoided by the water supplier of constructing production, transport, storage, treatment, distribution capacity, and wastewater treatment facilities, if any.

b. operating costs avoided by the water supplier, including but not limited to, energy and labor associated with the water deliveries that no longer must be made.

c. avoided costs of water purchases by the water supplier.

d. environmental benefits and avoided environmental costs.

e. revenues from other entities, including but not limited to revenue from the sale of water made available by the conservation measure and financial incentives received from other entities.

6. Program costs to the water supplier include:

   a. capital expenditures incurred by the water supplier for equipment or conservation devices.

   b. financial incentives to other water suppliers or retail customers.

   c. operating expenses for staff or contractors to plan, design, or implement the program.

   d. costs to the environment.

7. The California Urban Water Conservation Council ("Council") will be responsible for developing guidelines that will be used by all water suppliers in computing BMP benefits and costs. These guidelines will include, but will not be limited to, the following issues:

   a. analytical frameworks.

   b. avoided environmental costs.

   c. other impacts on the supply system that may be common to many water suppliers.

   d. time horizons and discount rates.

   e. avoided costs to non-water supply agencies.

   f. benefits and costs to retail customers.

   g. benefits of water made available to other entities as a result of conservation efforts.

   These guidelines will recognize the uniqueness of individual water suppliers and will therefore not impose excessive uniformity.

   [Note: In September 1996, the Council adopted “Guidelines for Preparing Cost-Effectiveness Analyses of Urban Water Conservation Best Management Practices”]

8. Within these guidelines, each water supplier will be responsible for analyses of the cost-effectiveness of particular BMPs on its system. These analyses will be reviewed by the Council.

9. The Council will also be responsible for periodically reviewing the overall framework set forth in this Exhibit.

EXHIBIT 4. FORM LETTER TO SWRCB

Chairman and Board Members
State Water Resources Control Board
Sacramento, California 95814

Subject: Urban Water Conservation

Dear Chairman and Board Members:

We are pleased to forward to you a copy of a "Memorandum of Understanding Regarding Urban Water Conservation in California" recently entered into by many urban water suppliers, public advocacy organizations, and other interested groups.

This Memorandum of Understanding was developed over a period of many months of fact-gathering and intensive negotiations. It commits the signatory water suppliers to good faith implementation of a program of water conservation which embodies a series of "Best Management Practices" for California's urban areas. It also commits all of the signatories to an ongoing, structured process of data collection through which other conservation measures, not yet in general use, can be evaluated as to whether they should be added to the list of Best Management Practices. Finally, it commits all signatories to recommending to this Board that the Best Management Practices identified in this Memorandum of Understanding be taken as the benchmark for estimating reliable savings for urban areas which utilize waters affected by the Bay/Delta proceedings. An important part of this program is the signatories' recognition of the need to provide long-term reliability for urban water suppliers and long-term protection of the environment.

To carry out these commitments, please be advised that each of the signatories has endorsed making the following recommendations to this Board:

1. That for purposes of the present Bay/Delta proceedings, implementation of the Best Management Practices process set forth in the Memorandum of Understanding represents a sufficient long-term water conservation program by the signatory water suppliers, recognizing that additional programs may be required during occasional water supply shortages.

2. That for purposes of the present Bay/Delta proceedings only, the Board should base its estimates of future urban water conservation savings on implementation of all of the Best Management Practices included in Section A of Exhibit 1 to the Memorandum of Understanding for the entire service area of the signatory water suppliers and only on those Best Management Practices, except for (a) the conservation potential for water supplied by urban agencies for agricultural purposes, or (b) in cases where higher levels of conservation have been mandated.

3. That for purposes of the present Bay/Delta proceedings, the Board should make its estimates of future urban water conservation savings by employing the reliable savings assumptions associated with those Best Management Practices set forth in Section C of Exhibit 1 to the Memorandum of Understanding. Measures for which reliable savings assumptions are not yet available should not be employed in estimating future urban water use.

4. That the Board should include a policy statement in the water rights phase of the present Bay/Delta proceedings supporting the Best Management Practices process described in the Memorandum of Understanding and should also consider that process in any documents it prepares pursuant to the California Environmental Quality Act as part of the present Bay/Delta proceedings.

EXHIBIT 4

It should be emphasized that the Memorandum of Understanding does not contain projections of population for California and, accordingly, none of the signatories to the Memorandum of Understanding are agreeing to recommend that any specific population levels be used by the Board in estimating future water demands. Furthermore, it should be noted that the signatories have retained the right to advocate any particular level of protection for the Bay/Delta Estuary, including levels of freshwater flows, and that the Memorandum of Understanding is not intended to address any authority or obligation of the Board to establish freshwater flow protections or to set water quality objectives for the Estuary. The Memorandum of Understanding is also not intended to address any authority of the Environmental Protection Agency.

Finally, as described in Section 5.1 of the MOU, the signatories have not limited their ability to propose different conservation practices, different estimates of savings or different processes in a forum other than the present Bay/Delta proceedings or for non-urban water suppliers or for other water management issues. Public advocacy organization signatories have not agreed to use the initial assumptions of reliable conservation savings in proceedings other than the present Bay/Delta proceedings. The signatories may present other assumptions of reliable conservation savings for non-signatory water suppliers in the Bay/Delta proceedings, provided that such assumptions could not adversely impact the water supplies of signatory water suppliers.

The Memorandum of Understanding establishes an ongoing process for study and research in the field of urban water conservation and an organizational structure to support this effort, which is described in Exhibit 2 to the Memorandum of Understanding. The process is dynamic and contemplates periodic revisions to the list of Best Management Practices, as well as refinements to the savings assumptions based on continuing field studies. The California Urban Water Conservation Council will forward updated lists of Best Management Practices and updated savings assumptions to the Board as they become available. However, for the present Bay/Delta proceedings, the measures and savings assumptions listed on Exhibit 1 should be used as described above.

The Memorandum of Understanding is a significant accomplishment and one of which all the parties are proud. We hope it will be of value to the Board in the complex and important Bay/Delta proceedings. By copy of this letter, we are forwarding these recommendations to the Environmental Protection Agency.

Very Truly Yours,

Name of Signatory

By: _____

cc: Administrator
U.S. Environmental Protection Agency
401 "M" Street, SW
Washington, D.C. 20460

Regional Administrator, Region IX
U.S. Environmental Protection Agency
215 Fremont Street
San Francisco, California 94105

EXHIBIT 5. SWRCB ANNUAL REPORT OUTLINE

I. Executive Summary

II. Implementation Assessment

Water Suppliers' Report
- Findings
- Comments
- Progress

Public Advocacy Organizations' Report
- Findings
- Comments
- Progress

III. Survey Results for 199X

Summary of Survey Responses
- Table ___. Per Capita Usage [by region]
- Table ___. Status of BMP Implementation [by supplier]
- Table ___. Proposed Implementation Schedules

Interpretation of Survey Responses
- Lack of Data
- Climatic Influences
- Implementation Difficulties

Evaluation of Results

IV. Trend Analysis

Comparison with Prior Years
- Table ___. Per Capita Usage [by region]

Projected Conservation
- Table ___. Schedule of Implementation

Updated Estimates of Future Savings [by region]

Evaluation of Progress

V. Studies of Best Management Practices

Assessment of Current BMPs
- Table ___. Evaluation of Effectiveness [by measure and region]

Assessment of Potential BMPs
- Status of Current Studies
- Proposed Future Studies

Revision of Lists of Current and Potential BMPs.
- Additions and Deletions

Other Modifications to MOU or Exhibits

VI. Recent Developments

Legislative Update
- Program Funding
- Case Studies
- Residential Conservation
- Industrial Conservation
- Irrigation Efficiency
- Legal Actions

National Practices

Technical Advances

Publications

VII. Council Committee Activities

VIII. Funding Levels

IX. Staffing Levels

X. Substantiated Findings by Signatory Water Supplier in Support of Use of Exemptions

XI. Substantiated Findings in Support of Use of Alternative Schedule of Implementation

Appendices

List of Signatories [subcommittee members noted]
Key Correspondence and Comments

EXHIBIT 6. ASSUMPTIONS AND METHODOLOGY FOR DETERMINING ESTIMATES OF RELIABLE WATER SAVINGS FROM THE INSTALLATION OF ULF TOILETS

Amended April 8, 1998

July 1992

Approved June 30, 1992
California Urban Water Conservation Council

SUMMARY

On June 30, 1992, the California Urban Water Conservation Council (Council) adopted the assumptions and methodology described in this report for determining estimates of reliable water savings from the installation of ULF toilets. The Council voted to provide only a method for estimating ULF toilet conservation potential, not specific estimates for different regions or agencies.

The methodology presented here was explicitly developed to balance simplicity and accuracy. The method allows a water agency to customize the estimate of conservation potential by using service-area-specific information on household demographics, composition of housing stock, and turnover rates of real estate. Agencies lacking service area specific information can use regional averages. Given the large supply of conserved water that ULF toilets represent, the Council feels that the method's adjustments of estimated conservation potential for different local conditions is well worth the extra effort.

The first step required to estimate a given area's conservation potential is to assess water savings likely to result per ULF toilet retrofit. We provide a scheme for adjusting estimates of water savings that were realized by first-year participants in the Los Angeles and Santa Monica toilet rebate programs to make these estimates suitable for other service areas. Water savings estimates for participating households in Los Angeles and Santa Monica were derived through sophisticated statistical models based on data provided by over 23,000 households covering a seven year period[3]. These reliable estimates of conservation form the best basis for extrapolating to other service areas. These estimates should not be used directly, but must be adjusted for three service-area-specific factors: 1) people per household; 2) toilet retrofits per household; and 3) the mix of pre-1980 and post-1980 toilets.

The method and assumptions presented here apply to three separate ULF-toilet-related Best Management Practices (BMPs) in the Memorandum of Understanding (MOU).

BMP 14 requires water suppliers to implement programs for replacement of existing high water-using toilets with ultra-low-flush toilets (1.6 gallon or less) in residential commercial, and industrial buildings. As per BMP 14, such programs should be at least as effective as offering

[3]See *The Conserving Effect of Ultra Low Flush Toilet Rebate Programs*, Chesnutt, T., A. Bamezai, C. McSpadden, A & N Technical Services, June 1992, and related reports listed in Appendix A.

rebates of up to $100 for each replacement that would not have occurred without the rebate, or requiring replacement at the time of resale, or requiring replacement at the time of change of service. BMP 14 lists three alternatives that indicate compliance. The Subcommittee selected the second alternative, a bill requiring replacement of non-ULF toilets with ULF toilets when a property exchanges hands, as a quantifiable way for determining each service area's water conservation target. Furthermore, this framework allows the assessment of both the total water conservation target for each service area and the rate at which these targets must be met.

BMP 14 differs from other BMPs in that it is defined in terms of water savings instead of a level of activity.

Restated, water savings targets implied by BMP 14 come from calculating the effect of ULF replacement of all non-ULF toilets at the time of resale or exchange. This requires combining information about estimated per-household water savings with information about housing turnover rates and the natural toilet replacement rate. We present detailed analyses for a hypothetical service area to describe the methodology in detail.

According to the MOU, water suppliers will commit to saving water that is implied by BMP 14 through ULF toilet retrofit programs. This should not be interpreted to mean that such a legislation will actually be in place. It is a hypothetical scenario that is to be used for determining urban water conservation targets for each service area. Any water conservation program will be acceptable as long as it saves water that is implied by BMP 14; these program choices rest solely with each service area[4]. Water suppliers will calculate the amount of water to be saved for BMP 14 using the method described herein, and then achieve that targeted amount using a ULF program of their own choice.

As stated in the MOU, the Council voted and agreed that estimates of reliable savings potential are to be used. The Council agreed that the reliable estimate lies in the 50 percent to 90 percent range of statistical confidence. The Council did not reach consensus on the exact level of reliability to be used in calculating estimates of ULFT conservation potential. This issue is to be resolved at the next plenary session in September. Until such time as a precise level of desired reliability in estimated savings can be formally addressed by the Council, it should be noted that the magnitude of ULFT conservation potential does not change substantially under different assumptions. Due to the high quality of the statistical data, the agreed 50 to 90 percent range translates to a difference in estimated conservation of only three percent. The Council recognizes that the estimates of reliable savings can be changed as better information become available.

The Council has decided to postpone a formal recommendation on estimates of ULFT conservation potential for the commercial/industrial retrofits. Presently available data is too weak to support a

[4] For example, although a legislation that requires ULF retrofits upon resale or exchange implies that all non-ULF toilets in a home must be replaced when it is sold, this need not be the actual goal of a toilet retrofit program. The evaluation of ULF toilet rebate programs shows that the first toilet retrofit in a home is far more effective than subsequent retrofits, and that retrofits in multiple family complexes are more effective than retrofits in single family households. Thus, by increasing the coverage of ULF toilet rebate programs instead of within-household penetration, and emphasizing retrofits in multiple family complexes over retrofits in single family households, a water supplier may be able to achieve water savings implied by BMP 14 using a smaller number of ULF toilet replacements.

reliable estimate. Studies are currently underway to address the conservation potential of commercial/industrial ULFT retrofits, and the Council expects to address this issue next year.

I. INTRODUCTION

There are several ways that currently proposed BMP's can produce savings from ULF toilets. The 1991 plumbing code requires installation of ULF toilets in new construction. Additionally, if the State of California enacts legislation banning the sale and installation of non-ULF toilets, the result will be the natural replacement of existing toilets with ULF toilets as and when existing toilets begin to malfunction, are damaged, or households decide to remodel their bathrooms. Programs that affect the replacement of non-ULF toilets with ULF toilets (BMP 14), would additionally affect the existing housing stock.

This report describes a methodology for quantifying the conservation targets under BMP 14. In particular, the ULF Toilet Subcommittee has selected ULF replacement-upon-resale-or-exchange legislation as a quantifiable way for determining ULF conservation targets (under BMP 14) over a period of 10 years. The calculations required to quantify this legislation, and hence BMP 14, also yield information on the water saving potential of the other ULF-related BMP's. To keep estimates of ULF conservation potential accurate, it is important not to double count conservation from the different types of ULF programs.

Our basic method can be described as multiplying how much water ULF toilets save in a household by the number of households affected. Both of these quantities will vary in different service areas and are discussed in turn.

First, the quantity of water likely to be saved by a ULF toilet retrofit will vary in different service areas because of differences in household characteristics and age of the housing stock. Section II describes how we estimate water savings from ULF retrofits for different service areas.

Second, the number of affected homes will vary in different service areas due to differences in housing turnover rates and differences in the rate at which toilets are naturally replaced because of either damage, malfunction, or bathroom remodeling. Since, at the time of malfunction or breakdown some toilets are likely to be retrofitted with ULF toilets, the net water saving effect of BMP-14 will be overstated if this is not taken into account. Section III deals with this second set of issues. Section IV contains illustrative calculations for a hypothetical service area.

II. ESTIMATING PER-HOUSEHOLD WATER SAVINGS

The household water saving estimates are based on the evaluation of Los Angeles' and Santa Monica's ULF toilet rebate programs. Using the results of this evaluation it was possible to quantify how household water savings vary with the number of people that reside in a household, the number of toilets that are retrofitted in a home, and the type of toilet replaced. Thus, to extrapolate water savings estimates to other service areas requires three pieces of information at the service area level:

- Average number of people per household
- Average number of toilets per household
- Mix of pre-1980 and post-1980 toilets

To simplify the calculation of how these factors are related to expected household water savings, planning tables are provided for single and multiple family households. Table 1 shows expected average water savings per single family household per day corresponding to different service area characteristics (persons per household and toilets per household.) Table 2 shows similar information for multiple family units. So, for example, if in a service area the average number of people that reside in single family homes is 2.7 and the average number of toilets per single family home is 2, then approximately 43.3 gallons of water will be saved per day if both toilets are replaced with ULF toilets[5].

The water savings estimates shown in Tables 1 and 2 make no adjustment for differences in the mix of pre-1980 and post-1980 toilets[6]. If information about the existing mix of toilets is available the water saving estimates can be further refined. The default values implied by the planning tables reflect the combined experience of Los Angeles and Santa Monica--approximately 7.5 percent of all toilets replaced in single family households and 12.5 percent replaced in multiple family units were of the post-1980 (3.5 gallon/flush) variety. If water planners know how their service area differs from this mix of toilets, the following section describes how to incorporate that information.

Based on the data available from the first year of ULF rebate programs, we estimate that retrofitting a post-1980 (3.5 gl./flush toilet) saves 20 percent less than retrofitting a pre-1980 toilet[7]. If one does know the proportion of post-1980 toilets in a service area, then this information can be used to

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[5]If in a service area, the average number of people residing in single family homes exceeds 3, we recommend choosing a water savings estimate from Table 1 assuming the average is 3. This is because we had only a handful of households that reported having greater than 3 residents and therefore we were unable to derive reliable estimates of water savings for these larger households. The error this approximation is likely to produce is minimal because we found that, in general, water savings grow less than linearly as population density increases in a household.

[6]Effective January 1, 1978, all new dwelling units and lodging rooms in California were required to have toilets that used no more than 3.5 gallons per flush. Though there was no grace period in the law, it is widely believed that implementation and enforcement of this law was initially spotty. We have selected 1980 as the effective year of implementation. The requirement for 3.5 gallon-per-flush toilets was extended to virtually all new construction, effective January 1, 1983. (An exemption was allowed for blowout toilets used in some public restrooms.)

[7]Our estimate is an empirical one based on observed retrofits in Los Angeles and Santa Monica. It can differ from theoretical calculations based upon design specifications of toilets meeting the 1980 plumbing code versus those that do not for several reasons. Toilets may use less on average if they were designed conservatively or they may use more if the earlier 1980-compliant designs resulted in more double flushes. Many supposedly 5-7 gl./flush toilets actually use 4-5 gl/flush in laboratory tests. Furthermore, the average rate at which toilets develop leaks and the preexisting installation of toilet dams or bags can alter theoretical calculations. Since no one knows, or can know, the true average amount of water used per flush across the mix of installed toilets in a service area, we believe this issue is moot.

adjust any of the estimates of conservation. Since the overall mean net conservation provided in Tables 1 and 2 is a weighted average of pre- and post 1980 toilets, we can back out separate savings estimates for pre-1980 and post-1980 toilets. These estimates can then be applied to the proportion of the housing stock that has each type of toilet.

The adjustment factors come from combining our knowledge of the proportion of post- 1980 toilets (7.5 percent in single family homes) with how much less water retrofits of post-80 toilets save relative to pre-1980 toilets (about 20 percent). We state the following two equations:

$$\mathbf{N_{SF}} = N_{post\text{-}80} * .075 + N_{pre\text{-}80} * .925$$
$$N_{post\text{-}80} = .8 * N_{pre\text{-}80}$$

and solve for $\boldsymbol{N_{pre\text{-}80}}$ and $\boldsymbol{N_{post\text{-}80}}$ in terms of the overall single family mean N_{SF}:

$$N_{pre\text{-}80} = N_{SF} \div (.8 * .075 + .925) \cong N_{SF} * 1.015$$
$$N_{post\text{-}80} \cong N_{SF} * 1.015 * .8 \cong N_{SF} * .812$$

(1)

Changing for the proportion of post-80 toilets in the multiple family sample (about 12.5 percent), we can find the comparable relationships between the multiple family overall savings and pre-/post-80 toilet savings:

$$N_{pre\text{-}80} = N_{FM} \div (.8 * .125 + .875) \cong N_{MF} * 1.0255$$

$$N_{post\text{-}80} \cong N_{MF} * 1.026 * .8 \cong N_{MF} * .8205$$

(2)

Thus, if there is information on the mix of pre-/post-1980 toilets in a service area, the overall mean water savings given in Tables 1 and 2 should be separated into its two components: the mean for pre-1980 toilets and the mean for post-1980 toilets. For single family households, the mean for pre-1980 toilets can be derived by multiplying the overall mean from Table 1 by 1.015 and the mean for post-1980 toilets can be derived by multiplying the overall mean from Table 1 by 0.812. For multiple family households, the mean for pre-1980 toilets can be derived by multiplying the overall mean from Table 2 by 1.0255 and the mean for post-1980 toilets can be derived by multiplying the overall mean from Table 2 by 0.8205.

EXHIBIT 6

Table 1 Planning Table For Estimating Water Savings in Service Areas with Different Household Characteristics
Single Family
(Gallons per Household per Day)

Persons per House-hold	Toilets per Household															
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
2.0	22.8	24.3	25.7	27.1	28.5	29.9	31.3	32.7	34.1	35.5	37.0	38.4	39.8	41.2	42.6	44.0
2.1	23.8	25.4	27.0	28.5	30.0	31.5	33.0	34.5	36.0	37.4	38.9	40.4	41.8	43.3	44.6	45.9
2.2	24.6	26.4	28.0	29.6	31.2	32.8	34.3	35.9	37.4	38.9	40.4	41.9	43.4	44.8	46.1	47.4
2.3	25.3	27.1	28.8	30.5	32.2	33.8	35.4	37.0	38.5	40.0	41.6	43.0	44.5	45.9	47.2	48.4
2.4	25.8	27.7	29.5	31.2	32.9	34.6	36.2	37.8	39.3	40.9	42.4	43.8	45.2	46.6	47.9	49.0
2.5	26.4	28.2	30.0	31.8	33.5	35.2	36.8	38.4	40.0	41.5	42.9	44.4	45.7	47.0	48.2	49.3
2.6	26.8	28.6	30.5	32.3	34.0	35.6	37.3	38.8	40.3	41.8	43.3	44.6	45.9	47.2	48.3	49.3
2.7	27.1	28.9	30.8	32.6	34.3	35.9	37.5	39.0	40.5	41.9	43.3	44.6	45.9	47.0	48.0	48.9
2.8	27.3	29.1	31.0	32.8	34.4	36.0	37.6	39.1	40.5	41.8	43.1	44.4	45.5	46.6	47.5	48.2
2.9	27.5	29.2	31.1	32.8	34.4	36.0	37.4	38.8	40.2	41.5	42.7	43.8	44.8	45.8	46.6	47.2
3.0	27.5	29.3	31.0	32.7	34.2	35.7	37.1	38.4	39.6	40.8	41.9	42.9	43.8	44.6	45.3	45.8

Estimates in the body of the table are accurate within ±5 percent of model estimated water savings.

Table 2 Planning Table For Estimating Water Savings in Service Areas with Different Household Characteristics
Multiple Family (Gallons per Unit per Day)

Persons per Unit	Toilets per Unit					
	1.0	1.1	1.2	1.3	1.4	1.5
1.5	30.7	33.0	35.0	36.7	38.1	39.2
1.6	31.8	34.2	36.3	38.0	39.5	40.6
1.7	32.9	35.4	37.5	39.4	40.9	42.1
1.8	34.0	36.6	38.8	40.7	42.3	43.5
1.9	35.1	37.8	40.1	42.0	43.6	44.9
2.0	36.2	38.9	41.3	43.3	45.0	46.3
2.1	37.4	40.1	42.5	44.6	46.3	47.6
2.2	38.5	41.3	43.8	45.9	47.6	49.0
2.3	39.6	42.5	45.0	47.2	49.0	50.3
2.4	40.7	43.6	46.2	48.5	50.3	51.7
2.5	41.8	44.8	47.4	49.7	51.6	53.0
2.6	42.8	45.9	48.7	51.0	52.8	54.3
2.7	43.9	47.1	49.9	52.2	54.1	55.6
2.8	45.0	48.2	51.0	53.4	55.4	56.8
2.9	46.1	49.4	52.2	54.6	56.6	58.1
3.0	47.2	50.5	53.4	55.9	57.8	59.3

Estimates in the body of the table are accurate within ±5 percent of model estimated water savings.

Reliability

The estimates given in Tables 1 and 2 represent the expected value of household savings in an entire service area--i.e., there is a fifty percent chance that the realized savings will exceed the estimate and a fifty percent chance that the realized savings will be less than the estimate. Suppose that a different kind of estimate is desired--one that can be met or exceeded 90 percent of the time. The second estimate incorporates the idea of reliability; sometimes 50/50 odds of being right or wrong are not good enough. The charter of many public utilities requires them to provide a public good in a reliable fashion. Also, the MOU on Water Conservation calls for the use of "estimates of reliable water savings" for water resource planning that incorporates urban water conservation achievements. If a water utility wants to incorporate estimates of the water saved through ULF toilet programs as a means of reliably meeting future water demand, then the water utility needs an estimate of water savings that incorporates the desired level of reliability.

The estimates in Tables 1 and 2 can be adjusted to reflect any desired level of reliability. We estimate a within-sample standard error surrounding the estimates in Tables 1 and 2 of about two and a half percent. A standard normal Z table can be used to translate the desired level of reliability into a Z-value--the number of standard errors away from the expected value that one must move to attain a higher level of reliability. A desired reliability of 90 percent, for example, implies that the expected value of household savings should be lowered about 1.28 standard errors. In our case, this translates into an estimate that is (1.28*2.5 percent =) 3.2 percent lower. In other words, there are sufficient data in this case so that this expression of "reliable savings" is quite close to the expected values shown in the tables. However, estimates of water savings likely to be achieved from other BMPs may be much less well defined and as a result may differ significantly from the expected values. In such cases, the concept of planning for reliable savings will assume qualitatively more importance.

III. ESTIMATING TOILETS REPLACED BECAUSE OF HOUSING TURNOVER

Existing non-ULF toilets can be replaced with ULF toilets for reasons other than a legislation that requires retrofit upon resale or exchange. For example, toilets break down, malfunction, and are usually replaced when households remodel their bathrooms. Given that the State of California is considering another separate piece of legislation that would ban the sale and installation of non-ULF toilets in the state, it is very likely that a large number of old toilets will be replaced with ULF toilets purely as a result of the normal toilet replacement cycle. If this is not taken into account, one will overstate the water-saving effectiveness of a legislation that requires retrofit upon resale or exchange. To account for these complexities, we estimate the water-saving effectiveness of retrofit upon sale or exchange legislation by calculating the water that will be saved if it were in place and the amount of water that would be saved anyway in the absence of such legislation. There are at least seven factors that can affect estimates of net water savings attributable to a legislation that requires ULF toilet retrofits upon resale or exchange.

- Housing demolition rate
- Housing turnover rate
- Natural toilet replacement rate
- Existing mix of toilets

- Type of new toilet used for replacement
- Average number of people and toilets per household
- Changes in household size over time

Of these seven factors, changes in average household size over time can be safely ignored because it is unlikely to change appreciably over a period of ten years which is the focus of this analysis. Information about the average number of people and toilets per household, and the existing mix of pre-1980 and post-1980 toilets are required to forecast per-retrofit water savings--this was discussed in detail in Section II.

For the remaining factors--that is, the housing demolition rate, the housing turnover rate, the natural toilet replacement rate, and type of new toilet used for replacement--water planners should use data that is relevant to their own service area. Although some amount of uncertainty naturally surrounds estimates of the above factors, it is largest in the case of the natural toilet replacement rate and the type of new toilet that is likely to be used for replacement. To assess the extent to which this uncertainty affects estimates of the water-saving potential of BMP 14, we performed detailed sensitivity analyses. A total of six scenarios were considered for the sensitivity analysis.

It is generally agreed that, on average, a toilet lasts anywhere from 20 to 30 years, although some claim to have seen toilets as old as 50-60 years. Assuming that toilets are replaced at an annual rate of 3 percent implies that after 30 years approximately 40 percent [$(1-0.03)^{30}$] of toilets of this vintage would still be around; with a replacement rate of 7 percent this number declines to 11 percent [$(1-0.07)^{30}$] which can be considered the other end of the range. We performed sensitivity analyses assuming the natural toilet replacement rate is 3 percent, 5 percent and 7 percent. The sensitivity analyses also considered two additional scenarios corresponding to each natural toilet replacement rate that pertain to the type of toilets that are likely to be used to replace old malfunctioning toilets. In the first scenario we assume that all toilets that are naturally replaced are retrofitted with 1.6 gallon ULF toilets. This is a very likely scenario given that legislation banning the sale and installation of non-ULF toilets is being considered in the state of California. In the other scenario, we assumed that 50 percent of toilets naturally replaced are retrofitted with ULF toilets in the base year and that this proportion increases to 100 percent by the end of the 10-year analysis period. We found that the results were relatively insensitive to these assumptions. The 10-year cumulative water savings derived from these six scenarios were within ± 15 percent of the average.

The ULFT subcommittee proposes that service areas use a natural toilet replacement rate of 4 percent and assume that all toilets naturally replaced will be retrofitted with 1.6 gallon/flush ULF toilets for their area-specific calculations. The next section describes illustrative calculations performed for a hypothetical service area.

IV. SAMPLE CALCULATION FOR A HYPOTHETICAL SERVICE AREA

In this section, we present detailed calculations for a hypothetical service area to demonstrate the method of calculating conservation targets. Single family and multiple family homes are analyzed separately. This scenario is based on a natural rate of toilet changeout of 4 percent per year, and that all new retrofits are of the 1.6 gallon-per-flush variety.

Table 3 shows the data used for this sample calculation. For example, in this service area, publicly available data on real-estate sales suggest that 30 percent of all single family homes and 42 percent of all multiple family complexes were sold at least once in the last five years. This is typically the format in which real-estate transactions data are available. This five-year estimate can be transformed into an annual turnover rate using the following formula:

$$(1 - \boldsymbol{P})^5 = (1 - \boldsymbol{S})$$

Where ***S*** is the proportion of the stock that was sold at least once during the five year period and ***P*** is the annual turnover rate. We apply a different turnover rates for the single family and the multiple family housing stock.

Table 3 Data Used in Sample Calculation

Parameter	Single Family	Multiple Family
Annual housing demolition rate	0.5%	0.5%
Annual housing turnover rate	6.9%	10.3%
Annual toilet replacement rate	4.0%	4.0%
No. of homes with old pre-1980 toilets	700,000	420,000
No. of homes with 3.5 gal. (post-1980) toilets	250,000	210,000
No. of homes with 1.6 gal. toilets	50,000	70,000
Average persons per household	3.25	2.47
Average toilets per household	2.16	1.20

NOTE: Homes already with 1.6 gallon/flush toilets are excluded from the analysis.

After establishing the home turnover rate, the next step is to estimate average water savings per household per day using information contained in Section II. For single family households (Table 1), average household water savings corresponding to 3.25 people per household (refer footnote 1) and 2.16 toilets per household is approximately 43.4 gallons per day. As mentioned earlier, estimated water savings represent a weighted mix of pre-1980 and post-1980 (3.5 gl./fl.) toilets. To illustrate how to adjust these estimates for a specific service area, use the relations listed in Section II to incorporate the service area specific data in Table 3. From Equation (1) for single family homes, pre-1980 toilet retrofits are estimated to save approximately 44 gallons/day and post-1980 toilets are estimated to save 35.2 gallons/day. For a 90 level of reliability, these estimates are lowered 3.2 percent to 42.6 gallons/day and 34.1 gallons per day. The similar calculation for

multiple family complexes uses Table 2 and Equation (2), savings pre-1980 toilet retrofits are estimated to save approximately 48.2 gallons/day and post-1980 toilets are estimated to save 38.6 gallons/day. Changing this expected value to a 90 percent reliable value gives 46.7 gallons per day and 37.4 gallons per day.

We first calculate water savings assuming no retrofit-upon-resale legislation is in effect and that all savings result from the normal cycle of toilet replacements (Tables 4 and 6). These results can be interpreted as savings that would result from a legislation that bans the sale and installation of non-ULF toilets in the State of California. Next we estimate water savings that result from the combined effect of natural changeout combined with a retrofit-upon-resale-or-exchange legislation (Tables 5 and 7). The difference between the two then is the net water-saving effect of a legislation that requires replacement of non-ULF toilets with ULF toilets at the time of resale or exchange (BMP 14).

Table 8 shows these estimates of net water conservation (or conservation targets) that the particular service area in question will have to achieve over the course of the next 10 years. For example, in 1993 the total target is (2822 single family net + 3026 multiple family net =) 5848 acre feet. In the next year, additional conservation of (2412 single family net + 2487 multiple family net =) 4899 acre feet is added to the previous year's target for a total cumulative savings target of (5848 AF + 4899 AF =) 10747 acre-feet. Figures 1 through 3 plot the cumulative savings targets for BMPs 2B and 14 over the course of 10 years. Note that the conservation targets implied by BMP14 (Figure 3) has a curved shape. This is a complete result of the assumed ULF retrofits--in the later years, more and more of the homes that are sold have already been retrofitted with ULF toilets.

Note that the conservation targets are listed in acre-feet per year not toilets per year. To meet the water conservation targets, that amount of water specified in Table 8 must conserved through ULF efforts. Since multiple family retrofits save more than single family retrofits and the first toilet retrofit per household saves more than the second or third retrofits, it is possible to design ULF conservation programs that conserve the same amount of water using fewer toilets. Thus, issues of program design are intimately linked with the effort and costs that will have to be incurred to meet these conservation targets.

EXHIBIT 6

Table 4 Single Family Natural Replacement Only BMP 2b

Year	Housing Stock	Homes Naturally Retrofitted	Toilets Naturally Retrofitted	Annual Water Savings (AF/yr)	Annual Cumulative Savings (AF/yr)
1992	950,000	0	0	0	0
1993	912,190	37,810	81,670	1,709	1,709
1994	875,885	36,305	78,419	1,641	3,350
1995	841,025	34,860	75,298	1,576	4,926
1996	807,552	33,473	72,301	1,513	6,439
1997	775,411	32,141	69,424	1,453	7,891
1998	744,550	30,861	66,661	1,395	9,286
1999	714,917	29,633	64,007	1,339	10,626
2000	666,483	28,454	61,460	1,286	11,912
2001	659,142	27,321	59,014	1,235	13,147
2002	632,908	26,234	56,665	1,186	14,333

Note: Water savings are from a weighted mix of pre-1980 and post-1980 toilets.

Table 5 Single Family: Natural Replacement and Housing Turnover (BMP 2b and BMP 14)

Year	Housing Stock	Homes Naturally Retrofitted	Home Turnover	Total Homes Retrofitted	Total Toilets Retrofitted	Annual Water Savings (AF/yr)	Annual Cumulative Savings (AF/yr)
1992	950,000	0	0	0	0	0	0
1993	849,758	37,810	62,432	100,242	216,522	4.531	4,531
1994	760,094	33,820	55,844	89,665	193,675	4,053	8,584
1995	679,890	30,252	49,952	80,203	173,239	3,625	12,209
1996	608,150	27,060	44,681	71,740	154,959	3,243	15,452
1997	543,979	24,204	39,966	64,171	138,608	2,901	18,352
1998	486,580	21,650	35,749	57,399	123,983	2,594	20,947
1999	435,237	19,366	31,977	51,343	110,900	2,321	23,267
2000	389,312	17,322	28,603	45,925	99,198	2,076	25,343
2001	348,232	15,495	25,585	41,079	88,731	1,857	27,200
2002	311,488	13,860	22,885	36,745	79,369	1,661	28,861

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Table 6 Multiple Family: Natural Replacement Only

Year	Housing Stock	Homes Naturally Retrofitted	Toilets Naturally Retrofit	Annual Water Savings (AF/yr)	Annual Cumulative Savings
1992	630,000	0	0	0	0
1993	604,926	25,074	30,089	1,224	1,224
1994	580,850	24,076	28,891	1,175	2,369
1995	557,732	23,118	27,741	1,129	3,528
1996	535,534	22,198	26,637	1,064	4,611
1997	514,220	21,314	25,577	1,040	5,652
1998	493,754	20,466	24,559	999	6,651
1999	474,103	19,651	23,582	959	7,610
2000	455,233	18,869	22,643	921	8,531
2001	437,115	18,118	21,742	884	9,416
2002	419,718	17,397	20,877	849	10,265

Table 7 Multiple Family: Natural Replacement and Housing Turnover

Year	Housing Stock	Homes Naturally Retrofitted	Home Turnover	Total Home Retrofitted	Total Toilets Retrofitted	Annual Water Savings (AF/yr)	Annual Cumulative Savings (AF/yr)
1992	630,000	0	0	0	0	0	0
1993	542,943	25,074	61,983	87,057	104,468	4,250	4,250
1994	467,916	21,609	53,418	75,027	90,032	3,663	7,912
1995	403,257	18,623	46,036	64,659	77,591	3,156	11,069
1996	347,533	16,050	39,675	55,724	66,869	2,720	13,789
1997	299,509	13,832	34,192	48,024	57,629	2,344	16,133
1998	258,121	11,920	29,467	41,388	49,665	2,020	18,154
1999	258,121	10,273	25,395	35,669	42,802	1,741	19,895
2000	222,452	8,854	21,886	30,740	36,888	1,501	21,395
2001	165,221	7,630	18,862	26,492	31,790	1,293	22,689
2002	142,390	6,576	16,255	22,831	27,397	1,115	23,803

EXHIBIT 6

Table 8 Conservation Targets (AF/yr): Net Conservation for Single and Multiple Family

	Single Family Savings			Multiple Family Savings			Total Annual Savings (SF + MF) AF/yr			Annual Cumulative Savings AF/yr		
	Natural	Natural + Turnover	Net Savings	Natural	Natural + Turnover	Net Savings	Natural	Natural + Turnover	Net Savings	Natural	Natural + Turnover	Net Savings
Year	BMP 2B	BMP 2B + 14	BMP 14	BMP 2B	BMP 2B + 14	BMP 14	BMP 2B	BMP 2B + 14	BMP 14	BMP 2B	BMP 2B + 14	BMP 14
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	1,709	4,531	2,822	1,224	4,250	3,026	2,833	8,781	5,848	2,933	8,781	5,646
1994	1,641	4,053	2,412	1,175	4,663	2,487	2,816	7,715	4,899	5,749	16,496	10,747
1995	1,578	3,625	2,050	1,129	3,156	2,028	2,704	6,782	4,077	8,453	23,276	14,824
1996	1,513	3,243	1,730	1,064	2,720	1,637	2,597	5,963	3,366	11,050	29,241	18,190
1997	1,453	2,901	1,448	1,040	2,344	1,304	2,493	5,245	2,752	13,543	34,485	20,942
1998	1,395	2,594	1,200	999	2,020	1,021	2,394	4,615	2,221	15,837	39,100	23,163
1999	1,339	2,321	981	959	1,741	782	2,299	4,082	1,763	18,236	43,162	24,826
2000	1,286	2,076	790	921	1,501	579	2,207	3,578	1,389	20,443	46,736	26,295
2001	1,235	1,857	622	884	1,283	409	2,119	3,150	1,031	22,583	49,888	27,326
2002	1,186	1,661	475	849	1,115	265	2,035	2,775	740	24,598	52,664	28,068

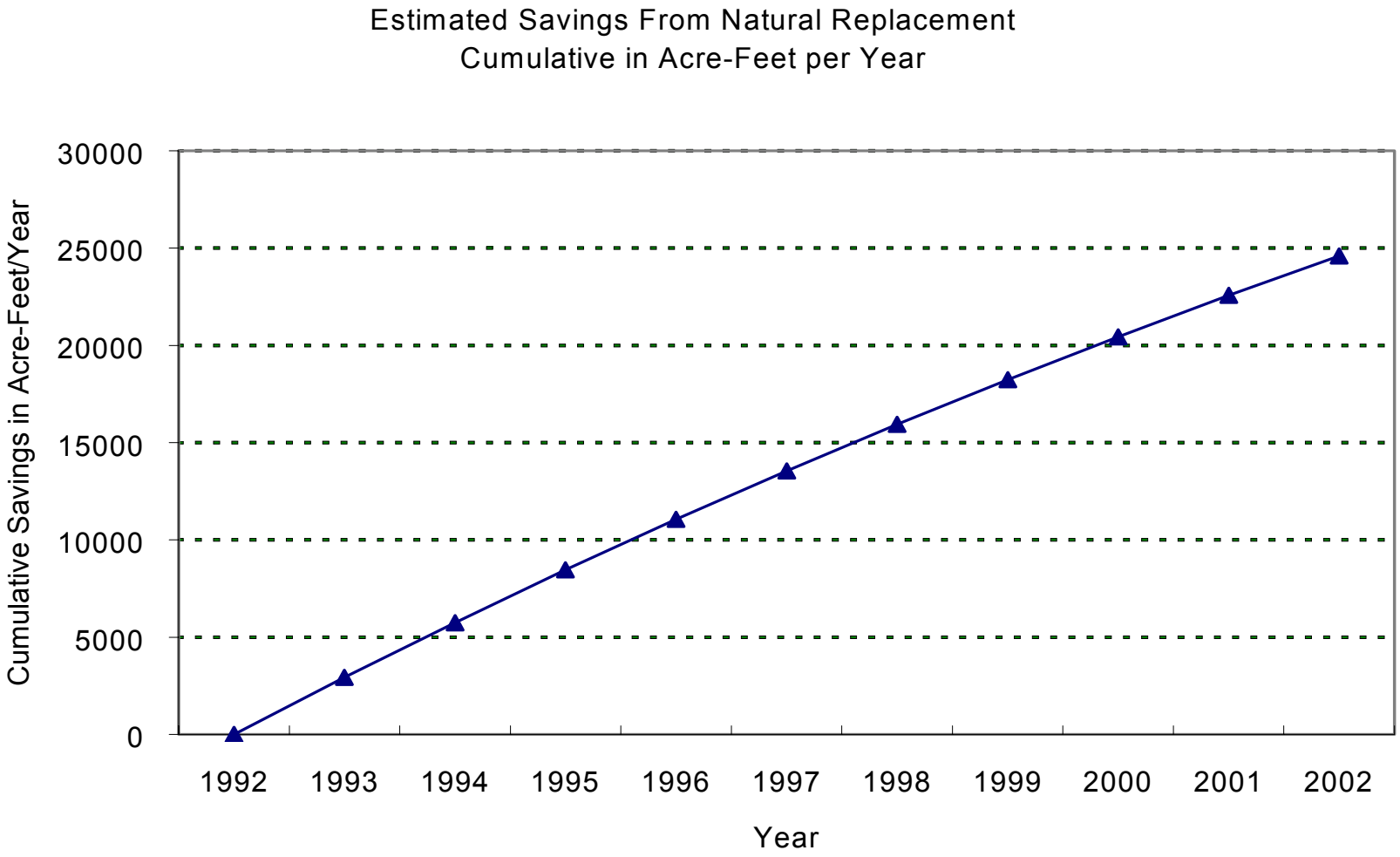

Figure 1. Estimated savings from natural replacement only.

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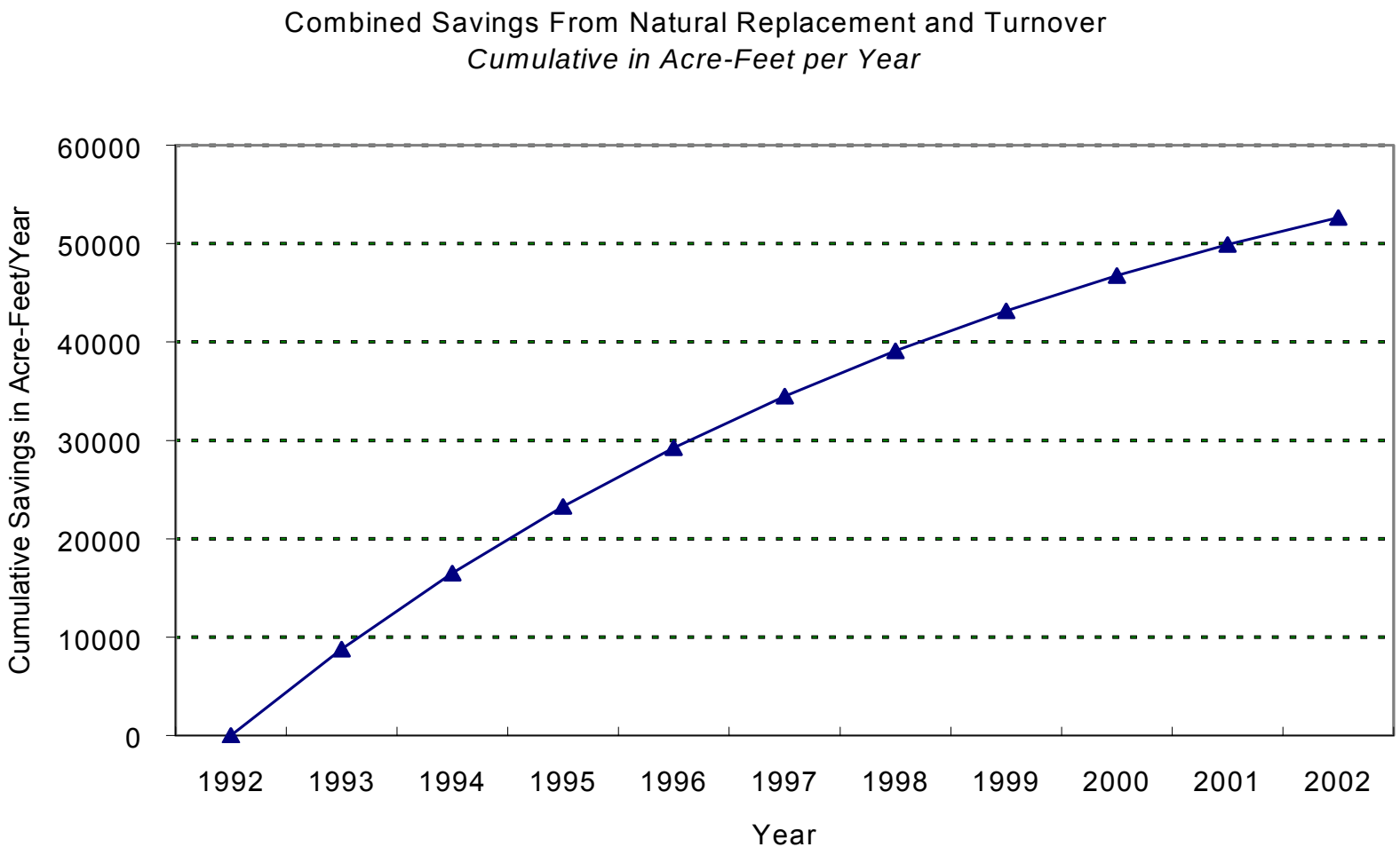

Figure 2. Estimated combined savings from natural replacement and housing turnover.

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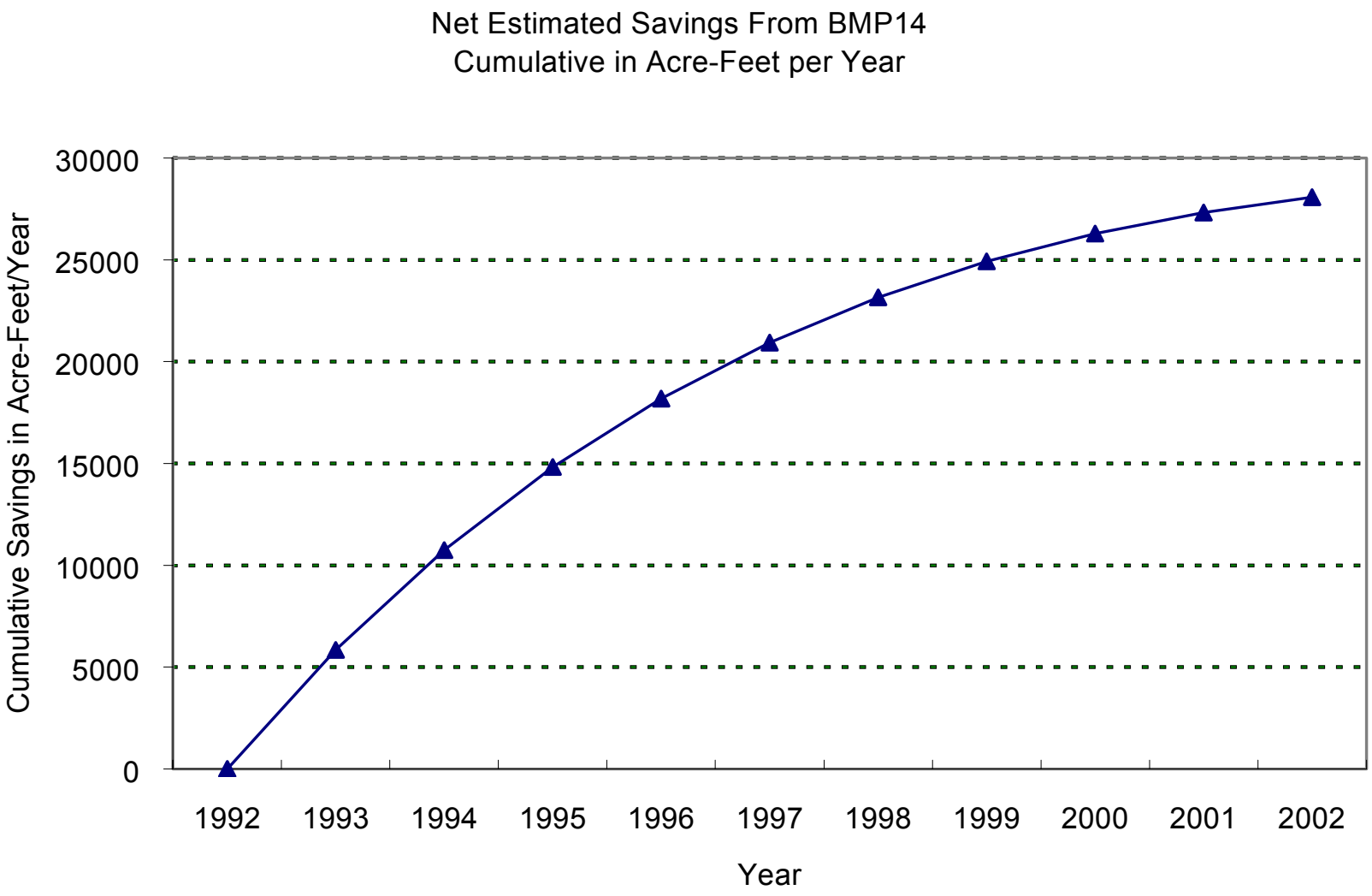

Figure 3. Net estimated savings from housing turnover only (BMP 14)

V. ESTIMATING WATER SAVINGS FROM NEW CONSTRUCTION

The analysis described above can be extended to evaluate water savings that will be achieved from new construction. For this analysis each service area will be required to forecast the rate of growth of new construction by type (single family, multiple family, and so on). The water savings calculations would be based on installation of 1.6 ULF toilets, assuming the implementation of the 1991 plumbing code, as opposed to installation of 3.5 gallon/flush toilets.

EXHIBIT 6

Appendix A. Overview of the ULF Toilet Rebate Evaluation Reports

There are several reports that document the ULF toilet rebate evaluation in Los Angeles and Santa Monica. Each has a different focus and different intended audience.

Ultra Low Flush Toilet Rebate Programs in Southern California: Lessons For Water Managers and Planners. This is an overview report that presents the key findings from Los Angeles and Santa Monica related to ULF program design, justification, and evaluation.

The Conserving Effect of Ultra Low Flush Toilet Rebate Programs. This report contains the summary of findings about how much water was saved by the Los Angeles and Santa Monica ULF toilet rebate programs. This study requires no technical background and presents the evaluation and its findings in plain English.

Continuous-Time Error Components Models of Residential Water Demand. This technical report documents the formal structure of the models of household water demand used in the evaluation of the Los Angeles and Santa Monica ULF toilet rebate programs. This study should be of interest to a technical audience concerned with statistical and analytic issues involved in estimating household water demand models from billing system data.

Mapping the Conserving Effect of Ultra Low Flush Toilets: Implications for Planning. This technical report presents an empirical approach to quantifying the conservation potential of ULF toilet retrofits. The analysis presented in this report can be used to provide quantitative answers to such questions as how much water would be saved by differently designed programs, or how much water ULF retrofit programs would save in other service areas. This study should be of interest to water planners and program managers interested in estimating the conservation potential of ULF retrofit programs in other service areas.

Data Used in the Evaluation of the Los Angeles and Santa Monica Ultra Low Flush Toilet Rebate Programs. This backup report presents the inspection and telephone survey instruments that were used to collect the data, as also the tabulations of responses.

EXHIBIT 7. BYLAWS OF THE CUWCC

Amended December 11, 2002; Amended March 14, 2001; Amended December 9, 1998; Amended April 8, 1998

ARTICLE I
Recitals and Definitions

Section 1.01. Name of Corporation. The name of this corporation shall be California Urban Water Conservation Council. In the balance of these Bylaws the corporation shall be referred to as the "Council."

Section 1.02. The Council Is Nonprofit. The Council has been formed pursuant to the California Nonprofit Corporation Law as a public benefit corporation.

Section 1.03. Specific Purpose. The specific and primary purpose of the Council is to implement the MOU, as defined in Section 1.05(c), below, which has been executed by and among signatories comprised of the water suppliers, public advocacy organizations and other interested groups that are more particularly described in section 3.01, below. Without limiting the foregoing, the Council shall make formal reports to the State Water Resources Control Board and to the governing bodies of all Council Members. Such reports shall include a formal annual written report. Other reports, such as status reports and periodic updates, may be prepared as deemed appropriate by the Council.

Section 1.04. Restrictions. All policies and activities of the Council shall be consistent with and limited by the MOU and shall also be consistent with: (a) applicable federal, state and local antitrust and trade regulation laws; (b) applicable tax-exemption requirements, including the requirement that no part of the Council's net earnings inure to the benefit of any private individual; and (c) all other legal requirements including the California Nonprofit Corporation Law under which the Council is incorporated and to which its operations are subject, as amended from time to time.

Section 1.05. Defined Terms. The following terms shall, when used in these Bylaws, have the following meanings:

(a) Convener and Vice Convener mean and refer to the persons who, from time to time, occupy those positions on the Steering Committee that are analogous to the positions of Chair and Vice Chair of a nonprofit corporate board. The Convener and Vice Convener shall have the duties and responsibilities more particularly defined in Section 9.05, below.

(b) Council means and refers to the California Urban Water Conservation Council.

(c) Full Member means a Signatory Member of the Council who has paid the current annual assessment in full.

(d) Member means and refers to an organization that is a signatory to the MOU. Council Members shall be assigned to one of the three group classifications of membership more particularly defined in Section 3.03, below. When used generally, Member means

Signatory Member. A Full Member of the Council is a Signatory Member entitled to full Council privileges and benefits.

(e) MOU means and refers to the Memorandum of Understanding Regarding Urban Water Conservation in California dated September 1991, and as the MOU may be amended from time to time.

(f) Plenary, Session or Plenary Meeting means and refers to a meeting of the Council Members (see Article V, below).

(g) Signatory Member means an organization that is a signatory to the MOU.

(h) Signatory and Signatory Organization mean and refer to qualified organizations which have executed the MOU and which have been accepted for membership in the Council in accordance with Section 3.02, below.

(i) Steering Committee means the Committee constituted and empowered as set forth in Article VII, below. The Steering Committee shall have the duties and powers of the board of directors of a California nonprofit public benefit corporation (California Corporations Code section 5210), subject to the limitations imposed on the steering committee by the California Nonprofit Public Benefit Corporation Law, the MOU and these Bylaws (see particularly Article VI, below, entitled "Actions Requiring Council Member Approval"). Accordingly, the Steering Committee is not a committee as the word "committee" is defined in Article X, below, or in California Corporations Code sections 5151(a)(4) and 5212.

ARTICLE II
Principal Office

Section 2.01. Location of Principal Office. The principal office of the Council will be located at such place within the State of California as the Steering Committee may from time to time designate by resolution. Currently, the address of the principal office is 455 Capitol Mall, Suite 703, Sacramento, California.

ARTICLE III
Council Membership

Section 3.01. Members of the Council. The membership of the Council shall be comprised of, and limited to, organizations that are signatories to MOU. Eligible signatories are: (1) water suppliers ("Group 1 Signatories"); (2) public advocacy organizations ("Group 2 Signatories"); and (3) other interested groups ("Group 3 Signatories"). Those three Groups are more particularly defined in Section 3.03, below.

Section 3.02. Application for Membership. As provided in Section 7.2 of the MOU, the Council shall have a Membership Committee which shall have the responsibility of evaluating new signatory applicants for Membership in the Council and recommending to the Council approval or disapproval of the applicant and the recommended category of membership for the applicant. The Council may adopt and use an application form to be completed by MOU signatory organizations in order to guide the Council's Membership Committee in making recommendations to the Council regarding the proper Group classification for new signatories. The Membership Committee shall consider applications and decide on the appropriate classification of new signatory organizations. Following action by the Membership Committee, the Committee's action shall be ratified by the Council Members at the Plenary meeting next following admittance of the new member organization to the Council. As of the date of the adoption of these Bylaws, the Members of the Council and their respective Group classifications (which are ratified and affirmed by the Members' approval of these Bylaws) are as set forth in Exhibit "7A".

Section 3.03. Classifications of Membership; Definition of Signatory Groups. The Council has three classes of membership comprised of the signatory groups identified in subparagraphs (a) thorough (c) of this Section 3.03:

(a) Water Suppliers -- Group 1 Signatories. Group 1 Signatories include and are limited to "water suppliers". A water supplier is any entity, including a city, which delivers or supplies water for urban use at the wholesale or retail level.

(b) Public Advocacy Organizations -- Group 2 Signatories. Group 2 Signatories include and are limited to public advocacy organizations. A "public advocacy organization" is defined to mean a nonprofit organization exempt from tax and described in either Internal Revenue Code section 501(c)(3) or 501(c)(4); which has as one of its significant missions and exempt purposes, environmentally sound management and conservation of California's waterways and water resources and/or protection of the environment; and which has a clear, but non-vested, interest in advancing the Best Management Practices ("BMPs") of the MOU. No public advocacy organization may be admitted to the Council's membership if such organization has a primary function of representing trade, industrial or utility entities.

(c) Other Interested Groups -- Group 3 Signatories. Group 3 Signatories include other organizations, approved for membership as provided in Section 3.02, above, which have a strong interest in, and commitment to, the purposes of the Council, but which are not eligible for inclusion in either Group 1 or Group 2.

Section 3.04. Representatives of Signatory Organizations. Each MOU signatory shall designate one representative to the Council. The signatory organization shall be responsible for informing the Council of the identity of its designated representative at all appropriate times. Signatories may also name substitute representatives to attend meetings in place of the designated representative. Substitute representatives have the same voting rights as the signatory's designated representative, but may not serve as an

officer of the Council. Only one representative from any signatory organization may vote on any matter presented to the Council Members, to the Steering Committee, or as the designated member of any committee appointed and constituted in accordance with Article X, below; provided, however, that the same person can be designated as the representative or as a substitute representative of more than one signatory organization within the same Group classification. Designated and substitute representatives of Council Members are referred to in these Bylaws as "Representatives."

Section 3.05. Term of Membership. Each organization that signs the MOU and is admitted to membership in the Council shall remain a Member until the organization no longer qualifies for membership under Section 3.01, above or wishes to withdraw. Organizations listed in Exhibit "7A" shall be deemed to meet the qualification requirements of section 3.01.

ARTICLE IV
Membership Voting

Section 4.01. Member Voting Rights.

(a) Generally. Only Group 1 Signatory Members and Group 2 Signatory Members have voting rights with respect to matters requiring the approval of Council Members under the MOU and these Bylaws (see particularly Article VI, below). Collectively, those two Groups are referred to as the "Voting Members" whenever these Bylaws discuss the voting rights of Council Members. On each matter submitted to a vote of the Voting Members, whether at a meeting of the membership called and held pursuant to the provisions of these Bylaws or otherwise, each Voting Member shall be entitled to cast one vote. Group 3 Signatory Members have no voting rights.

(b) Required Vote for Valid Action. Unless these Bylaws specifically confer authority on Group 1 Signatory Members or Group 2 Signatory Members to take unilateral action with respect to a particular matter (such as caucus votes to fill Group vacancies on the Steering Committee), any action requiring the vote or approval of the Voting Members of the Council shall require the affirmative vote of a majority of each of Group 1 and Group 2 Signatory Members, as to those actions identified in Section 6.02 (b), below, and a two-thirds affirmative vote of each of Group 1 and Group 2 Signatory Members as to those actions identified in Section 6.02(a), below. As to any other action or approval of the Voting Members not specifically identified in section 6.02, below, the required affirmative vote shall be a majority of each of Group 1 and Group 2 Signatory Members.

Section 4.02. Manner of Casting Votes.

(a) Voting at a Meeting or by Written Ballot. Voting by Group 1 and Group 2 Signatory Members may be by voice or by written ballot solicited in accordance with section 7513 of the California Corporations Code and Section 4.03, below. The vote on

any other issue properly before a Plenary meeting of the Council Members shall be conducted by secret ballot when determined by the chairman of the meeting, in his or her discretion, or when requested by 10 percent of the Voting Members present at the meeting.

(b) Proxy Voting. Proxy voting shall be permitted on any matter put to the vote of the Council Members subject to the following restrictions:

(i) If a Group 1 or Group 2 Signatory organization cannot be represented at a Plenary meeting by the Group's designated Representative or substitute Representative, the Group can, by written proxy, authorize another Representative of an organization within the same Group classification to appear and vote on behalf of the absent Signatory organization.

(ii) The proxy shall only be valid for the Plenary meeting for which it is issued, and for any adjournment thereof.

(iii) The proxy shall be in the form of a limited proxy which is defined as a proxy which instructs the proxy holder how he or she is to vote with respect to each matter which is scheduled to be presented at the Plenary for action by the Council Members.

Section 4.03. Action by Written Ballot Without a Meeting.

(a) Written Ballots, Generally. In addition to voting in person or by proxy at Council Plenaries, any matter or issue requiring the vote of the Council Members, other than the election of the Steering Committee, may be submitted to the Voting Members for a vote by use of a written ballot without the necessity of calling a Plenary of the Council Members, so long as the requirements for action by written ballot set forth in this Section 4.03 are met. The determination to seek Member approval for Corporation action in this fashion shall be made by a majority vote of each of Group 1 and Group 2 representatives on the Steering Committee.

(b) Distribution of Written Ballots. In the event that any matter or issue is to be voted upon by written ballot, the Committee shall distribute the written ballot to every Voting Member at least 30 days prior to the final date the written ballots are to be received for counting.

(c) Content of Written Ballots. Any written ballot distributed to the Voting Members to vote on an issue other than the election of the Committee shall set forth the proposed action, and provide an opportunity to specify approval or disapproval of the proposal.

(d) Balloting Time Requirements. All written ballots shall also provide a reasonable time within which to return the written ballot to the Council's principal office and shall state on its face or in an accompanying notice the date by which the written ballot must be returned in order to be counted. The time fixed for the return of ballots may only

be extended if the Committee notifies the Voting Members (in the balloting materials originally sent to Council Members) that the right to extend has been reserved and then for no more than two successive periods of 30 days each. The time stated for the return of written ballots can be scheduled to coincide with the date of a Plenary meeting.

(e) Requirements for Valid Action. Approval by written ballot shall be valid only when the number of votes cast by ballot within the time period specified equals or exceeds the quorum specified in Section 5.05, below, and the number of approvals equals or exceeds the number of votes that would be required to approve the action if approval was sought at a meeting of the Council Members.

(f) Solicitation Rules. Written ballots shall be solicited in a manner consistent with the requirements of Section 5.04, below, pertaining to the issuance of notice of Council Members' Plenary meetings. All solicitations of written ballots shall indicate the number of responses needed to meet the quorum requirement for valid action and shall state the percentage of affirmative votes necessary to approve the measure submitted for Council Member approval.

(g) Notification of Balloting Results. Upon tabulation of the written ballots, the Steering Committee shall notify the Council Members of the outcome of the vote immediately following the close of the balloting process and tabulation of the ballots. If the number of ballots cast are insufficient to constitute a quorum, the Steering Committee shall so notify the Council Members.

(h) Prohibition of Revocation. Once cast, a written ballot may not be revoked.

ARTICLE V
Plenary Meetings of the Council

Section 5.01. Place of Meeting. Plenary meetings of the Council Members may be conducted at any reasonable place within the State of California and at such time as may be designated by the Steering Committee in the notice of the Plenary.

Section 5.02. Annual Plenary Meeting. There shall be an annual Plenary meeting in December of each year. The date, time and location of the Plenary shall be set forth in the notice of meeting sent to the Council Members in accordance with Section 5.05, below.

Section 5.03. Other Regular Meetings. In addition to the annual Plenary meeting, there shall be three additional quarterly Plenary meetings of the Council Members on a day and at a time and place determined by the Steering Committee and communicated to all Council Members at the inception of each calendar year.

Section 5.04. Special Meetings.

(a) Persons Entitled to Call Special Meetings. A simple majority of the members of the Steering Committee, or the Convener, may call special meetings of the Council Members at any time to consider any lawful business of the Council. In addition, five percent or more of the Voting Members of the Council may request that a Plenary be convened.

(b) Procedures for Calling Special Meetings Requested by Council Members. If a special Plenary meeting is called by the Voting Members, the request shall be submitted by the requesting Council Members in writing, specifying the general nature of the business proposed to be transacted, and shall be delivered personally or sent by registered mail or by telegraphic or other facsimile transmission to the Convener, the Vice Convener, or the secretary of the Council. The officer receiving the request shall cause notice to be promptly given to the Council Members entitled to vote, in accordance with the provisions of Section 5.05, below, that a special Plenary will be held, and the date, time and specific purpose for such meeting, which date shall be not less than 35 nor more than 90 days following the receipt of the request. If the notice calling for a special Plenary meeting is not given within the 20 days after receipt of the petitioner's request, the Council Members requesting the meeting may give the notice. Nothing contained in this subsection shall be construed as limiting, fixing, or affecting the time when a Plenary meeting of Council Members may be held when the meeting is called by action of the Steering Committee or the Convener.

Section 5.05. Notice of Meetings of the Council's Members.

(a) Generally. All notices of Plenary meetings of Council Member Meetings (whether regular or special) shall be sent or otherwise given in writing to each Member who, on the record date for notice of the meeting (as provided in Section 5.09, below) is entitled to vote thereat, in accordance with subparagraph (c) of this Section 5.05, not less than 10 nor more than 90 days before the date of the meeting. The notice shall specify the place, date, and hour of the Plenary and (i) in the case of a special Plenary meeting, the general nature of the business to be transacted, and no other business may in that case be transacted, or (ii) in the case of a regular Plenary meeting, those matters which the Steering Committee, at the time of giving the notice, intends to present for action by the Council Members; but any proper matter may be presented at the Plenary for action by the Council Members so long as a quorum is present.

(b) Mailing of Notice. Notice of any Plenary meeting of Council Members shall be given either personally or by first-class mail, or other written communication, charges prepaid, addressed to each Member either at the address of that Member appearing on the books of the Council or the address given by the Member to the Council for the purpose of notice. If for any reason notice is given by mail and the notice is not sent by first-class, registered or certified mail, the notice shall be given not less than 20 days (nor more than 90 days) before the meeting. Notice shall be deemed to have been given at that time

when delivered personally or deposited in the mail or sent by telegram or other means of written communication.

(d) Affidavit of Mailing; Effect Thereof. An affidavit of the mailing or other means of giving any notice of any Council Plenary meeting may be executed by the secretary or the assistant secretary of the Council, and if so executed, shall be filed and maintained in the minutes book of the Council. The secretary's affidavit shall constitute prima facie evidence of the giving of notice.

Section 5.06. Quorum Requirements.

(a) A quorum of the Council Members for the purpose of conducting business at any Plenary Meeting shall be at least 30 Voting Members, provided at least 10 percent of the Group 1 Signatory Members and 10 percent of the Group 2 Signatory Members are present. In addition, when a Plenary is actually attended by less than one-third of the voting power of Council Members (but at which a quorum is present), the only matters upon which action can be validly taken are those matters the general nature of which was described in the notice of the Plenary meeting.

(b) The Council Members present at a duly held Plenary meeting at which a quorum is initially present may continue to transact business until adjournment, notwithstanding the withdrawal of enough Council Members to leave less than a quorum, if any action taken (other than adjournment) is approved by at least (i) a majority of the Council Members required to constitute a quorum; and (ii) if applicable, by such greater percentage or class vote as may be required by these Bylaws (see Section 6.02, below). For example, if a Plenary Meeting is called and is initially attended by 31 Voting Members and prior to adjournment two Voting Members leave the Plenary (thus leaving less than a quorum), a motion to approve the annual budget for the Council could nevertheless be entertained and valid action taken.

(c) When Council Member approval is sought by written ballot (rather than at a Plenary) the minimum quorum requirement is satisfied when written ballots are returned to the Council within the prescribed balloting period from both (i) 30 or more Voting Members of the Council, and (ii) at least ten percent (10%) of the Group 1 Signatory Members and ten percent (10%) of the Group 2 Signatory Members. In addition to satisfying the minimum quorum requirement for valid action, the vote by written ballot must also be approved by the requisite percentage of Group 1 and Group 2 Signatory Members (see sections 4.01(b) and 6.02).

Section 5.07. Adjourned Meeting. Any Plenary meeting of the Council, annual or special, whether or not a quorum is present, may be adjourned to another time and/or place (but not for more than 45 days) by the vote of the majority of the Council Members represented at the Plenary, either in person or by proxy. Unless there is an absence of a quorum (in which case no other business may be transacted at that meeting except as provided in Section 5.06(b) above), the Voting Members attending the reconvened Plenary

may take any action that might have been transacted at the original meeting. When a Plenary meeting of the Council's Members is adjourned to another time or place, notice need not be given of the new meeting if the time and place thereof are announced at the Plenary at which the adjournment is taken. Notwithstanding the foregoing, if after adjournment a new record date is fixed for notice or voting, a notice of the rescheduled meeting must be given to each Member who on the record date for notice of the meeting is entitled to vote thereat.

Section 5.08. Waiver of Notice or Consent by Absent Council Members.

(a) Waiver and Consents, Generally. If decisions are made by the Council Members at a Plenary where a quorum is present, but for which proper notice was not given to all Council Members for whatever reason, the decisions made at that Plenary will be valid if, either before or after the meeting, each Member entitled to vote who was not present at the meeting consents to the meeting by signing a written (i) waiver of notice; (ii) a consent to holding the Plenary; or (iii) an approval of the minutes of the Plenary. The waiver of notice need not specify the purpose or general nature of business to be transacted at such meeting unless action is taken or proposed to be taken on matters specified in Section 5.05(b), above, in which case, the waiver of notice must state the general nature of the matter. All such waivers, consents or approvals shall be filed with the Council records or be made part of the minutes of the meeting.

(b) Effect of Attendance at Plenary. Attendance by a Council Member Representative at a Plenary meeting shall also constitute a waiver of notice of that Plenary with respect to that Member, except when a member Representative attends the Plenary for the sole purpose of objecting at the beginning of the Plenary to the transaction of any business due to the inadequacy or illegality of the notice.

ARTICLE VI
Actions Requiring Council Member Approval

Section 6.01. Council Actions Requiring Member Approval. In addition to those matters requiring approval of the Members under the California Nonprofit Public Benefit Corporation Law or other applicable laws, the following actions of the Council shall require approval of the Voting Members:

(a) Recommending to signatory organizations study methodologies for Best Management Practices ("BMPS"), including procedures for assessing cost effectiveness and reliability of urban water conservation measures.

(b) Development of guidelines, including discount rates, to be available to all signatories in computing BMP benefits and costs pursuant to Exhibit 3 of the MOU.

(c) Reviewing and modifying the economic principles set forth in Exhibit 3 of the MOU.

(d) Collecting and summarizing information on implementation of BMPs and Potential Best Management Practices ("PBMPs").

(e) Adopting or modifying BMP and PBMP lists.

(f) Adopting or modifying reliable water conservation savings data for BMPs.

(g) Adopting or modifying the schedules of implementation for existing and new BMPs.

(h) Adopting or modifying the schedules for research and demonstration projects for BMPs and PBMPs.

(i) Coordinating and/or making recommendations regarding BMP study and demonstration projects.

(j) Approving or disapproving Membership Committee recommendations for the addition of parties as Signatory Organizations to the MOU and assigning additional parties to one of the three Signatory groups as described in Section 1.3 of the MOU, or as designated by the Members of the Council (see Section 3.02, above).

(k) Reviewing and modifying report formats for agency implementation programs.

(l) Making annual reports to the State Water Resources Control Board and the Council Members on the above items based on the format described in Exhibit 5 of the MOU.

(m) Undertaking such additional responsibilities as the Members of the Council may agree upon.

Section 6.02. Required Member Vote to Approve Various Actions. The following Member approval requirements apply to particular actions of the Council, as listed in subparagraphs (a) and (b), of this Section 6.02:

(a) Actions Requiring Two-Thirds Vote by Group 1 and Group 2 Signatories. Any decision by the Council to (i) undertake additional responsibilities not currently described in the MOU and its Exhibits; (ii) modify or amend the MOU itself; (iii) modify Exhibits 2 or 3 of the MOU; or (iv) develop guidelines, including discount rates, to be available to all Signatories in computing BMP benefits and costs pursuant to Exhibit 3 of the MOU shall require both of the following:

(A) Written notification by the Council to all Members, giving the text of the proposed action or modification, at least 60 days in advance of the date of a regular or special meeting called by the Council to vote on the matter; and

(B) Approval of the proposed action or modification by the affirmative vote of at least two-thirds of each of the Group 1 and Group 2 Signatory Organizations who actually cast ballots.

Although a meeting shall be called to coincide with the final date for return of ballots, approval of the Voting Members shall be solicited by use of a written ballot in accordance with Section 4.04, above.

(b) Actions Requiring Majority Member Approval. The following actions shall require the affirmative vote of at least a simple majority of each of the Group 1 and Group 2 Signatory Organizations actually voting on the matter:

(i) Approving the annual budget for the Council following presentation of the budget by the Steering Committee;

(ii) Adopting or modifying Best Management Practices and Potential Best Management Practices;

(iii) Approval and adoption of Council Strategic Plans;

(iv) Accepting or denying recommendations of the Membership Committee for the addition of parties as Signatory Organizations to the MOU and thereby the admission of the proposed Signatory Organization to one of the three classes of Council Membership, following review of the prospective applicant and recommendation of approval or denial by the Council Membership Committee;

(v) Adoption of Council policies, procedures and rules consistent with these Bylaws and the MOU; and

(vi) Approval of amendments to these Bylaws, other than any amendment to subparagraph (a), above.

Section 6.03. Right of Members to Comment on Council Reports. Any Member of the Council shall be entitled to review draft reports prepared by the Council (see Section 1.03, above) and to comment on all reports. Such comments shall be included in any final report at the request of the Member submitting the comments.

ARTICLE VII
Steering Committee of the Council

Section 7.01. General Corporation Powers. Subject to the requirement of Council Member approval of certain actions pursuant to these Bylaws or by State law, the business and affairs of the Council shall be vested in and exercised by the Council's Board of Directors which is referred to herein as the "Steering Committee". The Steering Committee may delegate the management of the activities of the Council to any person or persons, management company or committee, provided that notwithstanding any such delegation the activities and affairs of the Council shall continue to be managed and all Corporate powers shall continue to be exercised under the ultimate direction of the Steering Committee. All elected members of the Steering Committee shall be Full Members of the Council in good standing as defined in Section 11.01 of these bylaws.

Section 7.02. Composition, Selection and Term.

(a) Composition of the Steering Committee. The Steering Committee shall consist of the following persons: Group 1 Representatives shall select from among themselves up to eight MOU signatories whose Representatives shall serve as voting members of the Steering Committee. Group 2 Representatives shall select from among themselves up to eight MOU signatories whose Representatives shall serve as voting members of the Steering Committee. Advisory members of the Council representing Group 3 MOU signatories shall select, from among themselves, up to four MOU signatories, whose Representatives shall serve as non-voting members of the Steering Committee. In addition, all officers of the Council shall be members of the Steering Committee and have the same voting rights on the Steering Committee as their respective Groups. Finally, the following persons shall serve as non-voting ex-officio members of the Steering Committee: (i) the outgoing Convener shall be a Steering Committee member for the calendar year immediately following his or her term of office; and (ii) one designee from each of those State and Federal agencies selected by the Steering Committee as a result of the agencies' involvement in California water allotments, distribution, programs and/or policies shall serve as ex-officio members of the Steering Committee. Currently, the California Department of Water Resources and the U.S. Bureau of Reclamation have designees to the Steering Committee.

(b) Terms of Office. Steering Committee members shall hold office for a term of two years. The terms will be staggered with half of the positions of each group being elected each year. Unlimited consecutive terms may be served.

(c) Nominating and Election Process for Steering Committee Candidates. The Group 1 Signatory Members of the Council and the Group 2 Signatory Members of the Council shall nominate from among themselves candidates for election to the Steering Committee in person or in writing at the third Plenary of the year prior to the start of a new two-year term. Any nomination must be seconded by a Voting Member of the same Group, which second can be made in person or in writing, and accepted by the nominee in

person or in writing to be included on the ballot. The ballot of Group 1 and 2 candidates for the Steering Committee shall be included in the Plenary Packet of the fourth and final Plenary of the year. All written nominations, seconds, and acceptances by candidates must be received by the Council prior to the start of the third Plenary.

The Voting Members of the Council shall vote on the ballot to elect Steering Committee members to represent their respective Groups at the final Plenary of each year. Cumulative voting (casting all four votes for one party) will not be permitted in any election of Steering Committee members. Absentee ballots are permitted so long as the absentee ballot is received by the Council prior to the start of the final Plenary at which the election is conducted. The successful candidates shall assume office starting January 1 of the following year. Votes may be made in person or in writing. Group 1 and 2 Council Members may vote for up to four candidates from their respective Groups. The top four candidates from Group 1 and the top four candidates from Group 2, as ranked by the number of votes received, shall be elected to the Steering Committee. If either Group 1 or Group 2 nominates less than four candidates, all candidates from that Group shall be elected to the Steering Committee.

Section 7.03. Resignation and Removal from Office; Filling of Vacancies

(a) Resignation. Any member of the Steering Committee may resign at any time, effective upon giving written notice to the Executive Director or the Convener or Vice Convener, unless the resigning member's notice specifies a later time for the effectiveness of the resignation. If the resignation is to be effective at some future time, a successor may be elected or designated (as the case may be) to fill the vacancy when the resignation becomes effective.

(b) Removal. A sitting member of the Steering Committee may only be removed from office for cause. "Cause" shall be defined as failure of the Steering Committee member to attend at least two consecutive duly noticed meetings of the Steering Committee, and failure to adequately justify to the Committee the reason for the member's absence.

(c) Filling of Vacancies on the Steering Committee . If a vacancy occurs in any position on the Steering Committee other than Convener or Vice Convener by virtue of the death, resignation or removal of a Steering Committee member, the Member organization whose Representative created the vacancy shall select a replacement Representative to serve on the Committee for the unexpired term, subject to approval by the Steering Committee. If a vacancy occurs on the Steering Committee by virtue of a signatory organization's decision to withdraw from participation on the Steering Committee, the vacancy shall be filled from among signatory organizations that are of the same Group as the resigned organization by a caucus of the withdrawing organization's Council Member Group conducted either at the next Plenary or by telephone conference call, so long as all members of the Group are notified of the telephone conference and have an opportunity to participate. When a caucus is conducted by telephone conference, the actions taken shall

be affirmed at the next Plenary. If a vacancy occurs for any reason in the position of Convener or Vice Convener, for reasons other than expiration of the holder's term of office, the vacancy shall be filled by nomination of the Signatory Group of which the resigned Convener/Vice Convener was a member. If a vacancy occurs in the ex-officio positions held by any State or Federal agency (see Section 7.02(a)), the vacancy shall be filled by the governmental agency with the power of designation.

Section 7.04. Number and Place of Meetings. The Convener of the Council, and any other persons designated by the Steering Committee, may call meetings of the Steering Committee. At the annual Plenary meeting, the Steering Committee shall adopt a schedule of regular meeting dates for the following year. Once approved, the scheduled dates may be modified, or meetings initially scheduled to be conducted in person may be changed to a meeting conducted by use of a conference telephone or other permitted electronic media by action of the Steering Committee. Except for meetings conducted in accordance with Section 7.05, below, regular and special meetings of the Steering Committee may be held at any place designated from time to time by resolution of the Steering Committee and stated in the notice of the meeting. In the absence of such designation, regular meetings shall be held at the principal office of the Council.

Section 7.05. Meetings by Conference Telephone or Other Electronic Means. Members of the Steering Committee may participate in a meeting through the use of conference telephone, electronic video screen communications, or other communications equipment. Participation in a meeting through use of a conference telephone pursuant to this subdivision constitutes presence in person at that meeting as long as all members participating in the meeting are able to hear one another. Participation in a meeting through use of electronic video screen communication or other communications equipment (other than conference telephone) constitutes presence in person at the meeting if all of the following conditions are satisfied:

(a) Each member of the Steering Committee participating in the meeting can communicate with all of the other members concurrently;

(b) Each member of the Steering Committee is provided the means of participating in all matters before the Steering Committee including, without limitation, the capacity to propose, or to interpose an objection to a specific action to be taken by the Council; and

(c) The Council adopts and implements some means of verifying both of the following: (i) that a person participating in the meeting is a Steering Committee member or other person entitled to participate in the Steering Committee meeting; and (ii) that all actions of, or votes by, the Steering Committee are taken or cast only by the Steering Committee members and not by persons who are not Steering Committee members.

Section 7.06. Notice of Meetings.

(a) Manner of Giving Notice. Notice of the time and place of the annual meeting and any special meetings of the Steering Committee shall be given to each Steering Committee member by one of the following methods: (i) by personal delivery of written notice; (ii) by first-class mail, postage prepaid; (iii) by telephone communication, either directly to the Steering Committee member or to a voice messaging system or other system or technology designed to record and communicate messages; or (iv) by telegram, charges prepaid, facsimile, electronic mail or other electronic means; provided however that if notice is given by any means other than first-class mail or direct communication with a Steering Committee member, the notice shall also be confirmed in writing mailed or sent by facsimile transmission to the Steering Committee member's address or facsimile telephone number as shown on the records of the Council. Notice of a meeting need not be given to any Steering Committee member who signs a written waiver of notice or a written consent to holding the meeting or an approval of the minutes thereof, whether before or after the meeting, or to any Steering Committee member who attends the meeting without protesting, prior thereto or at commencement of the meeting, the lack of notice to such Steering Committee member. All such waivers, consents and approvals shall be filed with the Council records or made a part of the minutes.

(b) Time Requirements. Notices sent by first-class mail shall be deposited into a United States mailbox at least four days before the time set for the meeting. Notices given by other permitted means must be must be given at least 48 hours prior to the scheduled time of the meeting.

(c) Content of Notices. The notice shall state the date, time, place, and the general purpose of the meeting.

Section 7.07. Quorum Requirements. A quorum of the Steering Committee shall be at least fifty percent of each of Group 1 and Group 2 Steering Committee members.

Section 7.08. Waiver of Notice. The transaction of any meeting of the Steering Committee, however called and noticed or wherever held, shall be as valid as though taken at a meeting duly held after regular call and notice, if (a) a quorum is present; and (b) either before or after the meeting, each of the Steering Committee members not present, individually or collectively, signs a written waiver of notice, a consent to the holding of the meeting, or an approval of the minutes thereof. The waiver of notice or consent need not specify the purpose of the meeting. All waivers, consents, and approvals shall be filed with the Council records or made a part of the minutes of the meeting and shall have the same force and effect as a unanimous vote of the Steering Committee. The requirement of notice of a meeting shall also be deemed to have been waived by any Steering Committee member who attends the meeting without protesting before or at its commencement about the lack of notice.

Section 7.09. Adjournment. A majority of the Steering Committee members present, whether or not constituting a quorum, may adjourn any meeting to another time and place or may adjourn for purposes of reconvening in executive session to discuss and vote upon personnel matters, litigation in which the Council is or may become involved and orders of business of a similar nature. If the meeting is adjourned for more than 24 hours, notice of adjournment to any other time or place shall be given prior to the time of the adjourned meeting to the Steering Committee members who were not present at the time of the adjournment. Except as provided, above, notice of adjournment need not be given.

Section 7.10. Action Without a Meeting. Any action required or permitted to be taken by the Steering Committee may be taken without a meeting, if all members of the Steering Committee, individually or collectively, consent in writing to that action. Such action by written consent shall have the same force and effect as a unanimous vote of the Steering Committee. Such written consent or consents shall be filed with the minutes of the proceedings of the Steering Committee. For purposes of this section, "all members of the Steering Committee" shall not include any "interested director" as defined in California Corporations Code section 5233. Section 5233 of the Code defines an interested director as a director who has a material financial interest in a transaction involving the corporation he or she is serving, unless the transaction is expressly excluded from the definition of a "self dealing transaction" by other provisions of the same Code Section. See also Article XII, below ("Conflicts of Interest").

Section 7.11. No Compensation for Steering Committee Members. Members of the Steering Committee of the Council shall not be entitled to compensation for their services as such, although they may be reimbursed for such actual expenses as may be determined by resolution of the Steering Committee to be just and reasonable. Expenses shall be supported by an invoice or voucher acceptable to the Steering Committee.

Section 7.12. Actions of the Steering Committee. All Steering Committee actions require that a quorum be present, that a majority of the Steering Committee members voting from Group 1 vote in favor of the action, and that a majority of the Steering Committee Members voting from Group 2 vote in favor of the action. The Steering Committee may also act without meeting, provided that (1) the taking of the vote has previously been authorized by the Steering Committee; (2) the vote has received seven days' notice by first class mail or 48 hours notice delivered personally or by telephone or electronic media; and (3) the proposed action is approved by fifty percent or more of the Group 1 and fifty percent or more of the Group 2 members of the Steering Committee voting. The Steering Committee may take action without seeking Voting Member approval only where the Voting Members have delegated such authority to the Steering Committee and only to the extent that the action is consistent with the then current version of the MOU.

ARTICLE VIII
Duties and Powers of the Steering Committee and Limitations Thereon

Section 8.01. Specific Powers. Without prejudice to the general powers of the Steering Committee set forth in Section 7.01, above, the Steering Committee shall have the following responsibilities and powers:

(a) Exercise all powers vested in a board of directors of a nonprofit public benefit corporation under the laws of the State of California.

(b) Remove all officers of the Council, and other Council employees; prescribe any powers and duties for such persons that are consistent with law, the Articles of Incorporation and these Bylaws; and fix employee compensation. Any officer removed by action of the Steering Committee shall be filled by action of the Council Members at the next Plenary meeting in accordance with Section 9.03, below.

(c) Appoint such agents and employ such other employees, including attorneys and accountants, as it sees fit to assist in the operation of the Council, and to fix their duties and to establish their compensation.

(d) Contract for and pay premiums for insurance and bonds (including indemnity bonds) which may be required from time to time by the Council.

(e) Pay all taxes and charges incurred by or levied against the Council.

(f) Delegate its duties and powers hereunder to the Executive Director, to officers of the Council or to committees established by the Steering Committee, subject to the limitations expressed in Sections 7.01, above.

(g) Prepare or cause to be prepared budgets, and maintain a full set of books and records showing the financial condition of the affairs of the Council in a manner consistent with generally accepted accounting principles, and at no greater than annual intervals prepare a financial report, a copy of which shall be delivered to each Member of the Council as provided in Article XI, below.

(h) Appoint such committees as it deems necessary from time to time to implement the affairs of the Council in accordance with article X, below.

(i) Open bank accounts and borrow money on behalf of the Council and designate the signatories to such bank accounts.

(j) Bring and defend actions on behalf of the Council so long as the action is pertinent to the operations of the Council.

Section 8.02. Limitations on Powers.

(a) Actions Requiring the Consent or Approval of the Voting Members. The Steering Committee shall have no authority to act with respect to any matter identified in Section 6.01, above ("Council Actions Requiring Member Approval"), unless the Members of the Council have taken action at a Plenary to specifically confer on the Steering Committee authority to act with respect to a particular matter, and then only to the extent that the action is consistent with the then current version of the MOU. The responsibilities and powers described in Section 8.01, above, have been approved by the Council Members for exercise by the Steering Committee.

(b) Self-Dealing Transactions. Notwithstanding the powers conferred on the Steering Committee pursuant to Sections 7.01 and 8.01, above, the Council shall not engage in any transaction which meets the definition of a "self-dealing transaction" as defined in California Corporations Code section 5233 unless the transaction has been approved by one of the means specified in section 5233(d). Generally speaking, section 5233 of the Corporations Code defines a "self-dealing transaction" as any transaction to which the Council is a party and in which one or more of its directors (i.e., Steering Committee members) has a material financial interest. Certain transactions are excluded by that statute from being classified as self-dealing transactions.

(c) Transactions Between Corporations Having Common Directorships. Unless it is established that the contract or transaction is just and reasonable as to the Council at the time it is authorized, approved or ratified in accordance with the requirements imposed by California Corporations Code §5233, the Council shall not enter into a contract or transaction with any other corporation, association or entity in which one or more of the Council's Steering Committee members are directors unless the material facts as to the transaction and the Steering Committee member's common directorship are fully known or disclosed to the Steering Committee. The Steering Committee must approve, authorize or ratify any such contract or transaction in good faith and by a vote sufficient without counting the vote of the Steering Committee member(s) having a common directorship in another corporation that is a party to the transaction.

(d) Loans to Members of the Steering Committee or Council Officers. The Council shall not make any loan of money or property to, or guarantee the obligation of, any Steering Committee member or officer, unless the transaction is first approved by the California Attorney General. This provision shall not apply to any reasonable advance on account of expenses anticipated to be incurred in the performance of the Steering Committee member's or officer's duties.

(e) Standards for Investment. Except as provided in California Corporations Code sections 5240(c) and 5241, in the investment, reinvestment, purchase, acquisition, exchange, sale and management of the Council's investments, the Steering Committee shall:

(i) Avoid speculation, looking instead to the permanent disposition of the funds, considering the probable income, as well as the probable safety of the Council's capital; and

(ii) Comply with additional standards, if any, imposed by the Articles of Incorporation, these Bylaws, any resolutions duly adopted by the Steering Committee, or the express terms of any instrument or agreement pursuant to which the invested assets were contributed to the Council.

ARTICLE IX
Officers

Section 9.01. Officers. The officers of the Council shall be a Convener, a Vice Convener, a Secretary and a Treasurer. All elected Officers shall be Full Members of the Council in good standing as defined in Section 11.01 of these bylaws.

Section 9.02. Qualifications. The offices of Convener and Vice Convener may only be held by Steering Committee members representing Group 1 or Group 2 MOU signatories. No person may hold more than one office at the same time, except that one person may hold the offices of Secretary and Treasurer concurrently.

Section 9.03. Selection and Term of Office. The officers shall be selected at the annual (December) Plenary meeting of the Council and shall assume office starting January 1 of the following year for a term of one year. The offices of Convener and Vice Convener shall not be held by Representatives from the same Group. The office of Convener shall alternate between Group 1 and Group 2, with the Vice Convener assuming the office of Convener in the year immediately following completion of his or her term as Vice Convener. The Secretary and Treasurer shall be a Representative of a Group 3 signatory organization and shall thus be nominated by the Group 3 Members, subject to approval by the Steering Committee.

Section 9.04. Election of Officers. The Council Members shall nominate candidates for the offices of Convener, Vice Convener, Secretary and Treasurer in person or in writing at the third Plenary of each year not less than 60 days prior to the Plenary during which the nominations are slated for election. Written nominations must be received by the Council at its principal office prior to the start of the third Plenary, either by first class letter, facsimile, or electronic message. Any nomination must be seconded by a Voting Member Representative in person or in writing, and accepted by the nominee in person or in writing to be included on the ballot. For the offices of Convener and Vice Convener, Group 1 and 2 Council Members may only nominate candidates for the office their Group will hold in the coming term. The ballot for the offices of Convener, Vice Convener, Secretary and Treasurer shall be included in the Plenary Packet of the final Plenary of each year. The Voting Members of the Council shall vote on the ballot at the final Plenary of each year. Votes may be made in person or in writing. Any absentee ballots must be

received prior to the start of the Plenary to be counted. For the offices of Convener and Vice Convener, Group 1 and 2 Members may only vote for candidates for the office their Group will hold in the coming term. For each office, the candidate receiving the most votes will be awarded the office.

Section 9.05. Duties. The officers perform those duties that are usual to their positions and that are assigned to them by the Steering Committee or by the Voting Members at a Plenary, including those duties that are set forth in the position descriptions for each officer as adopted by the Steering Committee from time to time. In addition, the Convener of the Council acts as Chair of the Steering Committee; the Vice Convener acts in place of the Convener when the Convener is not available; and the Treasurer is the chief financial officer of the Council.

Section 9.06. Vacancies. If a vacancy occurs among the officers of the Council, for any reason, the Steering Committee shall elect another Representative from the same Group for the unexpired portion of the term. Signatory organizations whose Representative serves as an officer of the Council may not substitute another individual to serve in that office.

Section 9.07. Removal of Officers. Any officer may be removed, with cause, by the Steering Committee, at any regular or special meeting, so long as written notice of the proposed action is given to the subject officer and to all signatory organizations of the Group that appointed the officer to office at least 30 days prior to the Steering Committee meeting at which the action to remove will be entertained. The notice of the Steering Committee shall identify, with reasonable specificity, the grounds for removal which shall either be (i) failure of the officer to attend at least two consecutive duly noticed meetings without a justified excuse as approved by the Steering Committee; or (ii) repeated and material failure to perform the responsibilities of his or her office.

Section 9.08. Resignation of Officers. Any officer may resign at any time by giving written notice to the Board or to the Convener or to the secretary. Any such resignation shall take effect at the date of the receipt of such notice or at any later time specified therein; and unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

ARTICLE X
Standing and Other Committees of the Council

Section 10.01. Standing Committees of the Council. The Council has established the following Standing Committees:

(a) The Membership Committee. In accordance with Section 7.2 of the MOU, the Council shall have a Membership Committee comprised of three representatives of the Group 1 Signatories and three representatives of the Group 2 signatories. It shall be the

duty of the Membership Committee to evaluate new signatory applicants as follows: (i) designate the category of membership, if any, for which an applicant is qualified; (ii) provisionally approve or disapprove an applicant for membership according to a process approved by the Plenary; and (iii) forward any such provisional membership approvals to the Plenary for ratification.

Section 10.02. Other Committees. The Steering Committee may, by resolution, establish other standing and ad hoc committees and such committees may include persons who are not members of the Steering Committee; however, all committee members must be Representatives of a Council Member or the Executive Director of the Council. The Steering Committee, as to matters within its jurisdiction, and the Members of the Council, as to matters within their jurisdiction, may delegate management of the Council's activities to any committee to the same extent that those powers could be delegated to agents, employees or independent contractors generally, and subject to the ultimate direction of the Steering Committee. In all other respects, committees shall be limited to making recommendations and reports to the Steering Committee or to the Members at a Plenary meeting of the Council (as to matters requiring Member action or approval) and to the Executive Director regarding matters that are within their respective missions as defined by the Steering Committee in the resolution establishing the advisory committee.

Section 10.03. Limitations on Authority of Committees. No committee appointed by the Steering Committee shall:

(a) Take any final action on any matter that, under the California Nonprofit Public Benefit Corporation Law, also requires approval of the members or approval of a majority of all members;

(b) Fill vacancies on the Steering Committee or the Membership Committee;

(c) Amend or repeal Bylaws or adopt new Bylaws; or

(d) Amend or repeal any resolution of the Steering Committee or the Council.

Section 10.04. Meetings and Actions of Committees. Meetings and actions of committees of the Council may be conducted informally, provided that all members of a committee must receive at least 10 days' prior notice of committee meetings, with notice given by one of the means sanctioned for the issuance of notice of Steering Committee meetings pursuant to Section 7.06, above. The Steering Committee may adopt additional rules for the governance of any committee it establishes, provided such rules are consistent with these Bylaws or, in the absence of rules adopted by the Steering Committee, any committee may adopt such rules for the committee's governance.

ARTICLE XI
Finances of the Council

Section 11.01. Assessments by the Council. The Steering Committee shall recommend annual assessment amounts for Full Council Membership. The annual assessments shall be based upon an annual budget duly approved by the Plenary as required in Section 6.02 of these Bylaws and the Council's adopted Policies. The paying of annual assessments to the Council is voluntary for all Signatory Members, but is required for the benefits of Full Membership, which include access to Council technical assistance, publications, training, and written materials. For Group 2 members, payment shall mean payment in cash and/or in kind services, as defined in the Council's policies. Officers and members of the Council Steering Committee shall be Full Members in good standing.

Section 11.02. Checks. All checks or demands for money and notes of the Council shall be signed by the Executive Director and one or more officers of the Council; except that the Executive Director of the Council shall have authority to be the sole signatory on Council checks not to exceed such amount as may be designated from time to time by the Steering Committee.

Section 11.03. Operating Account. There shall be established and maintained a cash deposit account to be known as the "Operating Account" into which shall be deposited the operating portion of all Assessments as fixed and determined for all Members. Disbursements from such account shall be for the general need of the operation including, but not limited to, wages, repairs, betterments, maintenance, and other operating expenses of the Properties.

Section 11.04. Other Accounts. The Council shall maintain any other accounts it shall deem necessary to carry out its purposes.

Section 11.05. Financial Statements. The Steering Committee shall cause an audit of the financial affairs of the Council to be made at least every 12 months. Such audit shall reflect the financial condition of the Council as of the date of the audit and shall summarize the financial transactions in which the Council was involved during the period between the last of such audits and the date of the current audit. A copy of the audit shall be available for examination by each of the Steering Committee members of the Council. A copy of any annual financial statement and any income statement of the Council for each quarterly period of each fiscal year, and any accompanying balance sheet of the Council as of the end of such period, that has been prepared by the Council shall be kept on file in the principal office of the Council for 12 months.

The income statements, statements of changes in financial position, and balance sheet referred to in this section shall be accompanied by the report, if any, of any independent accountants engaged by the Council or the certificate of an authorized officer of the Council that the financial statements were prepared without audit from the books and records of the Council.

ARTICLE XII
Conflicts of Interest / Obligation of Recusal

Section 12.01. Conflicts of Interest. No Representative of a signatory Member organization of the Council, shall make, participate in making, or in any way attempt to use his or her position as a Member Representative, Steering Committee member, or officer of the Council to influence any decision or action of the Council at a Plenary or any decision or action of the Steering Committee with respect to:

(i) a vote to amend, modify, or rescind any BMP;

(ii) a vote to amend or modify the MOU;

(iii) a vote to amend, modify or rescind any Exhibit to the MOU; or

(iv) contracts to provide services to the Council if the Member Representative is personally aware that the signatory organization he or she represents on the Council, or any constituent organization that is a member or affiliate of the signatory organization, has a direct or indirect material financial interest in the subject matter of the decision or action to which the vote of the Council pertains. For purposes of this Article XII, a material financial interest is defined as an interest satisfying each of the following three elements:

(A) the interest relates to a grant received by the Member Representative's signatory organization (or any member or affiliated organization) or originates from an agreement between the Member Representative's signatory organization (or any member or affiliated organization) and any other person;

(B) the interest is or will be worth $2000.00 or more in value provided to, received by, or promised to the Representative's signatory organization (or any member or affiliated organization) within twelve (12) months of the date when the Council vote is conducted; and

(C) the outcome of the vote is, or is likely to have, a positive impact on the aforementioned interest which will enhance its value by a factor of ten percent or more during the term of the agreement or grant.

If a Member Representative knows that a material financial interest of his or her signatory organization (or any organization that is a member or affiliate of the signatory organization) may be positively influenced by a Council vote on any of the matters described in subparagraphs (i) through (iii) above, then prior to any vote by the Council on the matter the Representative shall be obligated to disclose to the Council the fact that his or her signatory organization (or one or more of its member or affiliated organizations) has/have a conflict with respect to the matter which involves a material financial interest.

As a result of that disclosure, the Representative must be recused from voting on behalf of the interested signatory organization.

Prior to entertaining any discussion and vote on any matter described in subparagraphs (i) through (iii) above, the presiding Convener shall read a statement reminding all attending Voting Members of their obligations under this Article XII. That statement shall include a recital of the above definition of what constitutes a material financial interest.

Section 12.02. Enforcement. If any Member Representative or signatory organization is found by the Steering Committee to have willfully failed to disclose a conflict of interest, as defined in section 12.0l above, said conduct shall be grounds for voiding the vote of the signatory organization. In addition, if it is determined that the Member Representative with the undisclosed conflict actively participated in any deliberations of the Steering Committee preceding the vote, it shall be presumed that the vote was adversely affected and thus rendered void and of no effect unless subsequently ratified by a proper vote which excludes the Member Representative with the conflict.

ARTICLE XIII
Miscellaneous

Section 13.01. Inspection of Books and Records.

(a) Inspection by Council Members. All accounting books and records, minutes of proceedings of the Council Members, the Steering Committee and committees appointed by the Steering Committee and membership lists and papers of the Council shall at all times, during reasonable business hours, be subject to the inspection of any Member or his or her duly appointed representative at the offices of the Council for any purpose reasonably related to the Member's interest as such. Member's rights of inspection hereunder shall be exercisable on ten (10) days' written demand on the Corporation, which demand shall state the purpose for which the inspection rights are requested. Inspection rights shall be subject to the Corporation's right to offer a reasonable alternative to inspection within 10 days after receiving the Member's written demand (as more particularly set forth in section 6330 and following of the California Nonprofit Public Benefit Corporation Law).

(b) Inspection by Members of the Steering Committee. Every member of the Steering Committee shall have an absolute right at any reasonable time to inspect all books, records, documents and minutes of the Council and the physical properties owned by the Council. The right of inspection by a Steering Committee member includes the right to make extracts and copies of documents.

(c) Inspection by Members of the Public. Regular reports of signatory organizations concerning their water conservation activities and efforts shall be available

for public inspection, as are any reports or filings of the Council with the State Water Resources Control Board.

(d) Rules Regarding Exercise of Inspection Rights. The Steering Committee may establish reasonable rules with respect to (i) notice of inspection, (ii) hours and days of the week when inspection may be made, and (iii) payment of the cost of reproducing copies of documents requested by the Member.

Section 13.02. Executive Director. The Council may, from time to time, employ the services of an Executive Director to manage the affairs of the Council. To the extent not inconsistent with the laws of the State of California, and upon such conditions as are otherwise deemed advisable by the Council, the Council, acting by and through its Steering Committee, may delegate to the Executive Director or to other employees or contractors any of its day-to-day management and maintenance duties and powers under these Bylaws, provided that the Executive Director shall at all times remain subject to the ultimate direction and control of the Steering Committee. Subject to those limitations, the Executive Director shall have sole responsibility for management, control and retention of other Council staff members.

Section 13.03. Amendment or Repeal of Bylaws. Except as otherwise expressly provided herein, these Bylaws may only be amended or repealed, and new Bylaws adopted by the affirmative vote or written ballot of a majority of all the Voting Members of the Council (which majority must also include a majority of each Group of Voting Members). Notwithstanding the foregoing, any amendment of the Bylaws must be consistent with the then current version of the MOU and the percentage of the Voting Members necessary to amend a specific clause or provision of these Bylaws shall be not less than the percentage of affirmative votes, or votes by classes of Members, prescribed for action to be taken under that clause.

Section 13.04. Notice Requirements. Any notice or other document permitted or required to be delivered as provided herein shall be delivered either personally or by first class mail in accordance with the notice requirements of Section 13.05, below.

Section 13.05. Annual Statement of General Information. As and when required by California Corporations Code section 6210, the Council shall file with the Secretary of State of the State of California, on the prescribed form, a statement setting forth the authorized number of directors (i.e., Steering Committee members), the names and complete business or residence addresses of all incumbent Steering Committee members, the names and complete business or residence addresses of the Convener, Vice Convener, Secretary and Treasurer, and the street address of its principal office in this state, together with a designation of the agent of the Council for the purpose of service of process.

Section 13.06. Construction and Definitions. Unless the context requires otherwise or a term is specifically defined herein, the general provisions, rules of

construction, and definitions in the California Nonprofit Corporation Law shall govern the construction of these Bylaws. Without limiting the generality of the foregoing, the masculine gender includes the feminine and neuter, and singular number includes the plural and the plural number includes the singular.

Section 13.07. Indemnification of Corporate Agents.

(a) Any person who was or is a Steering Committee member, officer, employee or other agent of the Council (collectively "Agents") may be indemnified by the Council for any claims, demands, causes of action, expenses or liabilities arising out of, or pertaining to, the Agent's service to or on behalf of the Council to the full extent permitted by California Corporations Code section 5238.

(b) The Council shall have power to purchase and maintain insurance on behalf of any agent of the Council against any liability asserted against or incurred by the agent in such capacity or arising out of the agent's status as such whether or not the Council would have the power to indemnify the agent against such liability under section 5238 of the Corporations Code; provided, however, that the Council shall have no power to purchase and maintain such insurance to indemnify any agent of the Council for a violation of California Corporations Code section 5233.

Section 13.08. Nonpaid Members of the Steering Committee; Alleged Failure to Discharge Duties; No Monetary Liability. Except as provided in California Corporations Code sections 5233 or 5237, there is no monetary liability on the part of, and no cause of action for damages shall arise against, any nonpaid member of the Steering Committee, including any nonpaid Steering Committee member who is also a nonpaid officer of the Council based upon any alleged failure to discharge the person's duties as a Board member or officer if the duties are performed in a manner that meets all of the following criteria:

(a) The duties are performed in good faith;

(b) The duties are performed in a manner such Steering Committee member believes to be in the best interests of the Council; and

(c) The duties are performed with such care, including reasonable inquiry, as an ordinarily prudent person in a like position would use under similar circumstances.

Section 13.09. Personal Liability for Negligence.

(a) Except as provided in subparagraph (c) below, there shall be no personal liability to a third party on the part of a volunteer member of the Steering Committee or officer of the Council caused by the Steering Committee member’s or officer's negligent act or omission in the performance of that person's duties as a Steering Committee member or officer, if all of the following conditions are met:

(i) The act or omission was within the scope of the Steering Committee member's or officer's duties;

(ii) The act or omission was performed in good faith;

(iii) The act or omission was not reckless, wanton, intentional, or grossly negligent; and

(iv) Damages caused by the act or omission are covered pursuant to a liability insurance policy issued to the Council, either in the form of a general liability policy or a Steering Committee member's and officer's liability policy, or personally to the Steering Committee member or officer. In the event that the damages are not covered by a liability insurance policy, the volunteer Steering Committee member or volunteer officer shall not be personally liable for the damages if the Steering Committee and the person had made all reasonable efforts in good faith to obtain available liability insurance.

(b) For purposes of this Section 10.10, "volunteer" means the rendering of services without compensation. "Compensation" means remuneration whether by the way of salary, fee, or other consideration for services rendered. However, the payment of per diem, mileage, or other reimbursement expenses to a member of the Steering Committee or an officer does not affect that person's status as a volunteer within the meaning of this section.

(c) This section does not eliminate or limit the liability of a Steering Committee member or officer for any of the following:

(i) Any liability with respect to self-dealing transactions as provided in California Corporations Code section 5233 or any liability with respect to certain prohibited distributions, loans or guarantees as provided in section 5237 of said law; or

(ii) In any action or proceeding brought by the California Attorney General.

Section 13.10. Nondiscrimination. The Council shall ensure equal employment opportunity for all persons, regardless of race, color, religion, sex, national origin, age, physical condition or disability, or other conditions within the limits imposed by law. These principles shall apply to all employment practices, to selection of consultants, contractors, and suppliers, and to all other applicable business practices of the Council.

EXHIBIT 7

Exhibit 7A

Signatories of the CUWCC Memorandum of Understanding Regarding Urban Water Conservation in California (As of 12/11/2002)

Group 1 Retailer
Alameda County Water District
American Canyon, City of
Anaheim, City of, Public Utilities Department
Atascadero Mutual Water Company
Bear Valley Community Services District
Benicia, City of
Blythe, City of
Brentwood City of
Burbank, City of, PSD
Calaveras County Water District, W/PW
Calexico, City of
California Water Service Company
California-American Water Company
Calistoga, City of
Camarillo, City of
Camrosa Water District
Carpinteria Valley Water District
Casitas Municipal Water District
Channel Islands Beach Community Services District
Coachella, City of
Coastside County Water District
Compton, City of, Water Department
Contra Costa Water District
Corona City Water Utilities Department
Cotati, City of
Covina, City of
Crestline Village Water District
Cucamonga Valley Water District
Davis, City of, Public Works Department
Del Oro Water Company
Desert Water Agency
Dublin San Ramon Services District
East Bay Municipal Utilities District
East Orange County Water District
Eastern Municipal Water District
El Toro Water District
Elsinore Valley Water District
Escondido, City of
Fair Oaks Water District
Fairfield, City of, Department of Public Works
Fallbrook Public Utility District
Forestville Water District
Fountain Valley, City of
Fresno, City of
Fullerton, City of
Garden Grove, City of
Glendale, City of, Public Services Department
Goleta Water District
Grass Valley, City of
Hayward, City of
Helix Water District
Hidden Valley Lake Community Services District
Hi-Desert Water District
Hilmar County Water District
Hollister, City of
Huntington Beach, City of
Indian Wells Valley Water District
Irvine Ranch Water District
Jurupa Community Services District
La Verne, City of
Lake Arrowhead Community Service District
Las Flores Water Company
Las Virgenes Municipal Water District
Lincoln Avenue Water Company
Long Beach Water Department
Los Angeles County Waterworks Districts
Los Angeles Department of Water and Power
Malaga County Water District
Manteca, City of
Marin Municipal Water District
Marina Coast Water District
Mesa Consolidated Water District
Mid-Peninsula Water District
Millbrae, City of
Monte Vista Water District
Montecito Water District
Moulton Niguel Water District
Mountain View, City of
Napa, City of
Newhall County Water District
North Coast County Water District
North Marin Water District
North of the River Municipal Water District
North Tahoe Public Utility District
Oceanside, City of, Water Department
Olivenhain Municipal Water District
Ontario, City of
Otay Water District
Padre Dam Municipal Water District
Palo Alto, City of
Pasadena, City of
Patterson, City of
Petaluma, City of
Pittsburg, City of
Pomona, City of
Poway, City of

EXHIBIT 7

Group 1 Retailer (Cont.)
Purissima Hills Water District
Ramona Municipal Water District
Redwood City, City of
Rincon Del Diablo Municipal Water District
Rio Linda/Elverta Community Water District
Riverbank, City of
Riverside, City of, Public Utilities
Rohnert Park, City of
Rowland Water District
Rubidoux Community Services District
Sacramento, City of
Sacramento County Municipal Water District
San Buenaventura, City of
San Diego, City of
San Dieguito Water District
San Fernando, City of
San Francisco Water Department
San Jose, City of, Environmental Services
San Juan Capistrano, City of
San Juan Water District
San Luis Obispo, City of
Santa Ana, City of
Santa Barbara, City of, Public Works Department
Santa Cruz, City of, Water Department
Santa Fe Irrigation District
Santa Monica, City of
Santa Rosa, City of
Santa Ynez River WCD - I.D. #1
Seal Beach, City of
Shasta Lake, City of
Sonoma, City of
South Coast Water District
South Mesa Water Company
Southern California Water Company
Sweetwater Authority
Templeton Community Services District
Thousand Oaks, City of
Torrance, City of, Water Division
Trabuco Canyon Water District
Triunfo Sanitation District
Tuolumne County Water District
Upland, City of
Vallecitos Water District
Valley Center Municipal Water District
Valley of the Moon Water District
Ventura County Waterworks District #1
Vista Irrigation District
Walnut Valley Water District
Westborough Water District
Western Municipal Water District of Riverside
Windsor, Town of
Yreka, City of
Total Group 1 Retailer: 148

Group 1 Wholesaler
CA Department of Water Resources
Calleguas Municipal Water District
Castaic Lake Water Agency
Central Basin Municipal Water District
Central Coast Water Authority
Contra Costa Water District
Covina Irrigating Company
Elsinore Valley Water District
Foothill Municipal Water District
Inland Empire Utilities Agency
Kern County Water Agency
Metropolitan Water District of Southern California
Municipal Water District of Orange County
North of the River Municipal Water District
Orange County Water District
Padre Dam Municipal Water District
Sacramento, City of
San Diego County Water Authority
San Francisco Public Utilities Commission
San Juan Water District
Santa Barbara County Water Agency
Santa Clara Valley Water District
Solano County Water Agency
Sonoma County Water Agency
Three Valleys Municipal Water District
Upper San Gabriel Valley Municipal Water District
U.S. Bureau of Reclamation
West Basin Municipal Water District
Western Municipal Water District of Riverside
Total Group 1 Wholesaler: 29

Group 2
Bay Institute of San Francisco, The
Butte County Environmental Council
California Oak Foundation
California Trout, Inc.
Clean Water Action
Environmental Defense
Friends of the River
Global Cities Project
Heal the Bay
Korean Youth and Community Center
League of Women Voters of California
Los Angeles Water Conservation Council
Mono Lake Committee
Mothers of East L.A. Santa Isabel
Natural Heritage Institute
Natural Resources Defense Council
P.O.W.E.R.
Pacific Institute
Planning and Conservation League
Resource Renewal Institute
Richmond Improvement Association

Group 2 (Cont.)
Rocky Mountain Institute
Save San Francisco Bay Association
Sierra Club
Sierra Nevada Alliance
Southern California Water Committee
Southern California Watershed Alliance
TreePeople
Valley Water Protection Association
Total Group 2: 29

Group 3
A&N Technical Services
Act Inc. Metlund Systems
ADRO Environmental
ADVANCE, Inc.
AM Conservation Group, Inc.
Applied Graphics, Inc.
Aqua Conservation, Inc.
AquaMetrics, LLC
Asian American Drug Abuse Program
Association of California Water Agencies
Bay Area Water Users Association
Best Management Partners
Black and Veatch
Bookman-Edmonston
Brown and Caldwell Consultants
CA Public Utilities Commission
CA State Water Resources Control Board
California Golf Course Superintendents Assn
California Green Industry Council
California Landscape Contractors Assn
California Municipal Utilities Association
California Outdoors
California Sod Producers Association
California Urban Water Agencies
California Water Association
Calvary Baptist Homes, Inc.
Center for Irrigation Technology, CSUF
Chino Basin Water Conservation District
Community Enhancement Services
Conservation Solutions, Inc.
ConserVision Consulting, LLC
Contra Costa Co. Community Dev. Dept
Council for a Green Environment
Craft & Associates
David Evans & Associates, Inc.
Dendron Landscape Management Consultants
Diamond Head Water Management
Economic Insights
El Dorado County Water Agency
Expert, Inc.
Falcon Waterfree Technologies, LLC
Fisher Mfg. Co.
Gardeners Guild, Inc.
GardenSoft
Hilton Farnkopf-Hobson, LLC
Honeywell DMC
J. V. Manufacturing, Inc.
John Blevens Consultant
John Deere Landscapes
John Olaf Nelson, Water Resources Mgmt
Kennedy/Jenks
Koeller & Company
Krieger & Stewart, Inc.
Laing Thermotech, Inc.
Lake Canyon Community Service District
Larry Farwell Consultant (formerly SynAqua)
Lynn Rodriguez
Maddaus Water Management
Maximus
McCormick, Kidman & Behrens
Midwest Landscaping
Montgomery Watson Harza Americas, Inc.
National Energy Foundation
NEOS Corporation
Niagara Conservation Carp
Northern California Golf Association
Orange County Sanitation District
Pieroni Enterprises, LLC
Plumbing, Heating, Cooling Contractors of California
Pollution Prevention International
Rain Bird Corporation
Rain Master Irrigation Systems
Regional Water Authority
Resource West
Richard Heath and Associates
SA Associates
San Bernardino County
Southern California Golf Association
Southwest Environmental, Inc.
Space Imaging
Susanville Consolidated Sanitary District
TCA
Tetratech, Inc. (formerly ASL Engineers)
The Writing Company
Tubiolo, Jan & Associates
United Conservation Management
United States Golf Assn. Green Section
Van Dyke, LLP
Volt VIEWtech
Water Resources Institute - CSU, San Bernardino
Waterless Co., LLC
Wellspring International, Inc.
West Yost & Associates
Western Policy Research
Total Group 3: 94
Total Signatories: 300

EXHIBIT 8. ASSUMPTIONS AND METHODOLOGY FOR DETERMINING CII ULFT TOTAL SAVINGS POTENTIAL

I. INTRODUCTION

This Exhibit provides the Council's data and methodology to determine a water supplier signatory's Total Savings Potential for the installation of ultra-low-flow-toilets (ULFTs) in commercial, industrial, and institutional (CII) settings. An agency's Total Savings Potential is used to determine its coverage requirement for CII ULFT programs per BMP 9.[8]

Total Savings Potential can be quickly calculated using CII toilet census data and calculation spreadsheets available from the Council (the calculation spreadsheets can be downloaded from the following URL: www.cuwcc.org/technical_assistance.htm; contact the Council directly for information on ordering the toilet census data). It is not necessary to conduct an independent toilet census or to make independent calculations to determine Total Savings Potential, although agencies may do so at their discretion. In this regard, Exhibit 8 serves two purposes. First, it explains the underlying methods, assumptions, and data sources supporting the Council's tools for calculating Total Savings Potential. Second, it provides a basis for agencies to independently calculate Total Savings Potential if they choose to do so.

The Council's *CII ULFT Savings Study* (2001 Edition) provides the basis for the Council's methods of determining the Total Savings Potential of ULFTs in the CII sector. This study prepared estimates of water savings per toilet for ten CII sub sectors. The Council has endorsed these as reliable estimates of CII ULFT savings potential, and the calculation tools developed by the Council rely on these estimates to determine Total Savings Potential. However, signatories are not required to utilize these estimates to determine Total Savings Potential if they have valid and reliable estimates for their service area. They may utilize their own estimates if available and substantiated.

Table 8-1 depicts the steps one would take to calculate Total Savings Potential.

Table 8-1. Steps to Determine CII ULFT Total Savings Potential and Coverage Requirement

Step 1	Obtain from the Council CII toilet counts for each zip code in your Service Area.
Step 2	Identify zip codes that are partially outside your Service Area. Prorate the toilet count for these zip codes.
Step 3	Aggregate the zip code toilet counts to obtain the total count for your Service Area.
Step 4	Enter the toilet counts by CII sub sector into the BMP 9 CII ULFT Coverage Calculator. (Note: the calculator is an Excel spreadsheet that can be downloaded from the Council's website.) Enter the rate of natural replacement of CII toilets in your service area (e.g. the rate at which CII toilets would turnover in the absence of any utility programs) or use the calculator's default of 4%. The calculator will indicate Total Savings Potential and Coverage Requirement for your Service Area.
Step 5 (Optional)	The calculator can also be used to estimate the upper bound number of toilets an agency would need to replace over 3 years to satisfy the coverage. The estimate represents an upper bound because it assumes (1) no

8 As defined in Exhibit 1, Section 9 A (b).

	targeting of toilets to CII sub sectors with the highest savings potential, and (2) replacements are evenly spaced over the 3-year implementation period. It is important to realize that the number of toilets replacements required to meet the Coverage Requirement can be substantially reduced from this upper bound by targeting and scheduling strategies.

The remainder of this Exhibit describes the methods and data used to support these calculations. The Exhibit also includes an example calculation of Total Savings Potential for a water supplier. This material is provided for reference and documentation purposes. Agencies can also consult the BMP 9 Handbook for additional discussion of the CII ULFT Coverage Requirement and guidance on designing CII ULFT replacement programs.

II. DEFINITION OF TOTAL SAVINGS POTENTIAL

Total Savings Potential is defined as the estimated volume of water that would be saved over 10 years if all existing toilets with flush volumes greater than 1.6 gallons-per-flush (gpf) were replaced in the year the ULFT portion of BMP 9 implementation is scheduled to commence for the agency. This estimate needs to account for the fact that some of these toilets would have been replaced over this 10-year period as a consequence of device failure, remodeling, and facility upgrades, and that because of plumbing code requirements, these toilets would have been replaced with ULFTs. Consequently, the calculation of Total Savings Potential must account for the natural replacement of existing toilets with ULFTs. That is, one cannot simply multiply the estimated number of toilets by expected savings per toilet and then multiply by 10 to determine Total Savings Potential. The same methodology used in Exhibit 6 of this MOU is also used by this Exhibit to account for the natural replacement of toilets over time.

Calculation of Total Savings Potential requires the following:

1. A CII toilet count for the agency's service area.

2. Estimates of water savings per ULFT.

3. Assumptions regarding the rate of natural replacement for CII toilets.

III. SERVICE AREA TOILET COUNT

One of the products to come out of the Council's *CII ULFT Savings Study* was a methodology for estimating the number of toilets within 10 different CII sub sectors. The methodology is described and illustrated in detail in Chapter 3 of that study. This section provides a brief description along with the table of parameters needed to implement the methodology.

While this Exhibit and the study that supports it provide an agency with the information needed to complete its own toilet count census, please note that the Council has already developed toilet counts for every zip code in California. These zip-code level counts can be purchased from the Council for a nominal fee. The zip code level counts can be aggregated to produce service area level counts. This option eliminates the need for an agency to develop its own toilet count.

The toilet count method is based on the following:

1. Covariant Identification. The basic strategy is to identify a high correlation between the number of toilets at a CII site and some other data parameter, such as number of employees. In the Council's *CII ULFT Savings Study*, these correlated parameters are referred to as "drivers" or "data drivers." Using these drivers, the number of toilets is estimated using the following equation

$$TOILETS_{i,s} = DRIVER_{i,s} * COEFFICIENT_{i,s}$$

where

$TOILETS_{i,s}$	=	number of toilets in market segment i of size s
$DRIVER_{i,s}$	=	number of CII sites in market segment i of size s
$COEFFICENT_{i,s}$	=	number of toilets per CII site in market segment i of size s

2. Market Segmentation. Because of their heterogeneity, CII sites are divided into 10 market segments. This allows for selecting the data driver that best represents a particular sub sector rather than using the same driver for all sectors. For example, while the number of students is used to predict the number toilets for schools, the number of guest rooms is used to predict the number of toilets for hotels and motels. The 10 segments are as follows:

1. Offices	*Commercial*
2. Eating Establishments	*Commercial*
3. Hotels/Motels	*Commercial*
4. Retail/Wholesale Establishments	*Commercial*
5. Industrial (SIC Codes 2000 through 3999)	*Industrial*
6. Health	*Institutional*
7. Churches	*Institutional*
8. Schools	*Institutional*
9. Government	*Institutional*
10. Other	*Other*

The methodology presented in the Council's *CII ULFT Savings Study* relies on three different drivers: (1) number of employees; (2) number of guest rooms; and (3) number of students. Segments other than Education and Hotels/Motels use the number of employees data driver.

3. No Toilet-Type Differentiation. The method is unable to provide separate counts for tank and flushometer valve toilets. It produces a single estimate of all toilets within a sector.

Table 8-2 reproduces Table 3-4 from the second edition of the Council's *CII ULFT Savings Study*. This table provides the coefficients for each data driver needed for the toilet count. To implement the methodology, an agency also needs to estimate the number of establishments for each data driver. For example, for the "Eating" segment, one would need to estimate the number of establishments with 1 to 9 employees, the number with 10 to 19 employees, etc. There are several options for producing these estimates. The easiest is to aggregate the zip code-level estimates available from the Council. Chapter 3 of the Council's *CII ULFT Savings Study* lists additional data sources, including purchasing data from private data services, utilizing census data, and utilizing data available from other government agencies. Agencies producing their own estimates are

referred to the *CII ULFT Savings Study* for more information on these sources. Estimates provided by the Council rely on 1992 Economic Census data.

Table 8-2. CII Toilet Census Data Drivers and Coefficients

Table 2
Toilet Coefficients

	Toilets per Site				
Employment Size	1 to 9	10 to 19	20 to 49	50 to 99	100 to 249
Offices	6.2	10.5	25.4	56.5	101.7
Retail/Wholesale	5.3	6.4	14.3	24.2	34.9
Health	4.5	12.9	30.8	66.4	133.8
Other	8.9	10.4	25.2	56.3	86.4
Eating	1.7	2.2	3.7	6.7	10.1
Employment Size	1 to 9	10 to 19	20 to 49	50 to 99	100 to 249
Industrial	2.4	3.1	5.7	9.6	18.0
Employment Size	250 to 499	500 to 999	1000 to 2499	2500+	
Industrial	32.1	64.1	144.4	304.9	
Schools	Toilets Per Student				
K to 8	0.0364				
9 to 12	0.0286				
	Toilets Per Site				
Hotels/Motels	116.5				

<u>Calculating Toilet Counts Using Table 8-2</u>
To determine the number of toilets in each market segment, multiply the number of sites for each driver range listed in the table by each driver range's coefficient and sum the results. For example, if the health segment consisted of 10 sites with 1 to 9 employees and 5 sites with 10 to 19 employees, the toilet count for this segment would be

(1) Example Toilet Count for Health Segment = 10 * 4.5 + 5 * 12.9 = 110 (rounded)

For the data drivers that are not broken into ranges (e.g., number of students, number of hotel/motel sites) it is only necessary to multiply the data driver value by its coefficient. For example, if there are 6,500 primary school students in an agency's service area, then the estimated number of toilets is 6,500 * 0.0364 = 237 (rounded).

IV. RELIABLE ESTIMATES OF ULFT SAVINGS BY CII MARKET SEGMENT

Table 8-3 provides the Council's estimates of reliable water savings (gallons per day) per ULFT for the eleven CII sub sectors. These estimates were developed as part of the *CII ULFT Savings Study* and presented to the Plenary on June 25, 1997 and again on September 30, 1997.

Table 8-3. Estimates of Reliable Water Savings for CII ULFTs

CII Sub Sector	ULFT Savings (GPD)
Offices	20
Retail/Wholesale	40
Hotels	16
Health	21
Other	18
Industrial	23
Schools: K to 12	0 or 18 (see text below)
Eating	47
Government	25
Churches	28

Source: *CII ULFT Savings Study, CA Urban Water Conservation Council*

The *CII ULFT Savings Study* did not find statistically significant ULFT water savings for the school sub sector. There are several possible explanations for this result. First, very few schools were sampled as part of the study. Second, irrigation water use was not separately metered for the majority of schools in the sample, making it difficult to isolate ULFT savings from total use. Regardless of the cause, the study was unable to determine a reliable estimate of water savings for this sector. Consequently, for the purposes of calculating Total Water Savings Potential, an agency may either assume school savings equivalent to the "Other" sub sector (18 gpd) or zero.

V. CALCULATION OF TOTAL SAVINGS POTENTIAL

Once the Toilet Census has been completed, the calculation of Total Savings Potential can proceed in three steps, as follows:

1. Adjust the count of toilets for natural replacement occurring between 1994 and the year implementation of the BMP 9 ULFT requirement is to commence.[9]

2. Calculate the annual savings from replacing the adjusted count of toilets with ULFTs in the year implementation of BMP 9 is to commence, adjusting for natural replacement.

3. Sum the annual savings to determine Total Savings Potential.

9 The state plumbing code required the installation of ULFTs for tank toilets starting in 1992. Prohibition of the sale of flushometer valve toilets rated above 1.6 gpf began in 1997. Since the relative proportion of tank and flushometer valve toilets is usually unknown, 1994 is used to approximate when toilet replacements in the CII sector became predominantly ULFT.

Adjusting the Toilet Count for Natural Replacement

The following method is used to adjust the toilet count for natural replacement between 1994 and the year implementation of BMP is to commence for an agency. Let Ti be the count of toilets in CII sub sector i. Let r be the average annual rate of natural replacement of CII toilets. Let N (N≥2001) be the latest year an agency is to begin implementation of BMP 9 ULFT requirement according to Exhibit 1. Then the adjusted count of toilets, T_i' , at the beginning of year N in sector i is

(3) $$T_i' = T_i(1-r)^{(N-1-1994)}$$

For example, if the unadjusted count of eating sites is 33, the average rate of natural replacement is 4% and the latest year the agency is to begin implementing the ULFT portion of BMP 9 is 2001. The adjusted number of toilets in the eating sector

(4) $$T' = 33(0.96)^6 \approx 26$$

This adjustment can be further refined to account for any sites included in the toilet count constructed after 1994. For the purposes of this exhibit it is assumed that these sites were installed with toilets rated 1.6 gpf or lower. However, this will be unnecessary if the toilet count is based only on CII facilities constructed prior to 1994. For example, the zip-code level counts available from the Council are based on CII facilities existing in 1992, thus obviating the need for this secondary adjustment.

The estimated rate of natural replacement used to adjust the initial count of toilets should be based on empirical evidence for the agency's service area or region. If no such estimate is available, 4% should be used.[10]

Table 8-4 shows how an unadjusted toilet count would be adjusted assuming the agency is to begin implementing the ULFT portion of BMP 9 in 2001 and a natural replacement rate of 4%. This example assumes the count only includes sites constructed prior to 1994.

Table 8-4. Toilet Count Adjusted for Natural Replacement

CII Segment	Unadjusted Toilet Count	Adjusted Toilet Count
Offices	2,637	2,064
Retail/Wholesale	2,575	2,016
Hotels	1,697	1,328
Health	1,745	1,366
Other	972	761
Industrial	614	481
Schools: K to 12	122	95
Eating	336	263
Government	880	689
Churches	128	100
Total	11,706	9,163

10 4% results in an average toilet life of 25 years and is consistent with preliminary findings on natural replacement of toilets in the CII sector for some agencies. 4% is also the default value used by Exhibit 6 to calculate the estimated natural replacement rate for BMP 14.

Calculation of Annual Savings

Assume an agency is to begin implementing the ULFT portion of BMP 9 in 2001. Taking T_i' to be the adjusted count of toilets in sector i , S_i to be the estimated savings per ULFT, and r the average annual rate of natural replacement, annual savings for any year j (j ≥2001) is

(5) $$\text{Annual Savings in Year j} = S_i \times T_i'(1-r)^{(j+1-2001)}$$

Using the adjusted count of toilets for the "health" sector in Table 8-4 for example, and assuming implementation begins in 2001, given a 4% natural replacement rate the annual savings in 2005 would be

(6) $$\text{Annual Savings for Health Sector in 2005} = 18 \text{ gpd } \times 1{,}366(0.96)^5 \approx 20{,}048 \text{ gpd}$$

Calculation of Total Savings Potential

The Total Savings Potential is defined as the sum of annual savings over 10 years, beginning with the year an agency is to start implementing the ULFT portion of BMP 9 according to Exhibit 1. Algebraically, Total Savings Potential is as follows:

(7) $$\text{Total Savings Potential} = \sum_i \sum_{j=N}^{N+9} S_i \times T_i'(1-r)^{(j-N)}$$

where i is the index of CII sub sectors, N is the year an agency is to start implementing the ULFT portion of BMP 9 and the remaining variables follow their previous definitions. Equation (7) can be easily calculated using a spreadsheet. Table 8-5 shows the calculation of Total Savings Potential for the toilet count shown in Table 8-4. This example assumes a natural replacement rate of 4% and that implementation begins in year 2001. The last cell in Table 8-5 gives the Total Savings Potential (expressed in gallons per day). Converting this to acre-feet gives

$$\text{Total Savings Potential} = 1{,}855{,}753 \text{ gal/day } \times 365 \text{ days} \div 325{,}900 \text{ gal/AF}$$

$$= 2{,}078 \text{ AF}$$

VI. DETERMINATION OF THE CII ULFT COVERAGE REQUIREMENT

Within the three year period, beginning July 1, 2001, *an agency will be considered on track if by the end of the first year of implementation the 10-year cumulative water savings equals or exceeds 0.5% of Total Savings Potential; by the end of the second year of implementation the 10-year cumulative water savings equals 1.5% of Total Savings Potential; and by the end of the third year of implementation the 10-year cumulative water savings equals or exceeds 3.0% of Total Savings Potential.* This is the minimum amount of water an agency's CII ULFT replacement program would need to save over the interim three-year implementation period.

VII. CALCULATING CREDIT FOR ULFT REPLACEMENTS OCCURING PRIOR TO ADOPTION OF A LONG-TERM CII ULFT COVERAGE REQUIREMENT

Note: During the 3-year interim implementation period, cumulative savings from CII ULFT replacements occurring prior to January 1, 2001, may not be applied towards the interim coverage requirement. However, agencies may credit against the long-term Coverage Requirement 100% of the cumulative savings from agency-assisted CII ULFT replacements that occurred prior to the adoption of the 3-Year Interim CII ULFT Coverage Requirement by the CUWCC Plenary. The credit for these replacements would be calculated as follows:

Case 1: Agency knows in which CII sub sectors toilets were installed

If the agency knows in which CII sub sectors toilets were installed, it can use sector-specific savings estimates to determine cumulative savings for each sector. The sum of these savings can then be credited against the Coverage Requirement. For example, suppose implementation of the CII ULFT Coverage Requirement was to begin in year N and the agency had already installed T_i toilets in sub sector i in year M (where M < N). The credit for these previous installations would be:

$$\text{(8)} \qquad \text{Credit}_{i,M} = \sum_{j=M}^{N+9} S_i \times T_i (1-r)^{(j-M)}$$

where S_i is the savings per toilet for sub sector i and r is the average rate of natural replacement. Equation (8) can be used to calculate credit for each CII sub sector and for each year M prior to the adoption of the CII ULFT Coverage Requirement in which agency-assisted toilet replacement occurred. Assuming CII ULFT replacements occurred no earlier than 1991, the total credit for all past replacements would be:

$$\text{(9)} \qquad \text{Total Credit} = \sum_{i} \sum_{M=1991}^{N-1} \text{Credit}_{i,M}$$

Case 2: Agency does not know in which CII sub sectors toilets were installed

If the agency does not know in which CII sub sectors toilets were installed, it can use the average savings per toilet derived from its CII toilet count. The sum of these savings can then be credited against the Coverage Requirement. For example, suppose implementation of the CII ULFT Coverage Requirement was to begin in year N and the agency had already installed T_M toilets in year M (where M < N), but it did not know in which sub sectors these toilets were installed. The credit for these previous installations would be:

$$\text{(10)} \qquad \text{Credit}_{M} = \sum_{j=M}^{N+9} \bar{S} \times T_M (1-r)^{(j-M)}$$

where $\bar{S}$ is the average savings per toilet derived from the agencies CII toilet count and r is the average rate of natural replacement. Equation (10) can be used to calculate credit for each year M

prior to the adoption of the CII ULFT Coverage Requirement in which agency-assisted toilet replacement occurred. Assuming CII ULFT replacements occurred no earlier than 1991, the total credit for all past replacements would be:

(11) $$\text{Total Credit} = \sum_{M=1991}^{N-1} \text{Credit}_M$$

Table 8-5. Calculation of Total Savings Potential

CII Sub Sector	Unadjusted Toilet Count	Adjusted Toilet Count	Savings Per ULFT (GPD)	Water Savings (GPD) 10-Year Period										Row Total
				2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Offices	2,637	2,064	20	39,631	38,046	36,524	35,063	33,661	32,314	31,022	29,781	28,590	27,446	332,078
Retail/Wholesale	2,575	2,016	40	77,399	74,303	71,331	68,478	65,739	63,109	60,585	58,161	55,835	53,602	648,541
Hotels	1,697	1,328	16	20,403	19,587	18,804	18,052	17,329	16,636	15,971	15,332	14,719	14,130	170,963
Health	1,745	1,366	21	27,537	26,435	25,378	24,363	23,388	22,453	21,555	20,692	19,865	19,070	230,736
Other	972	761	18	13,147	12,621	12,117	11,632	11,167	10,720	10,291	9,880	9,484	9,105	110,164
Industrial	614	481	23	10,612	10,187	9,780	9,389	9,013	8,653	8,307	7,974	7,655	7,349	88,919
Schools: K to 12	122	95	18	1,650	1,584	1,521	1,460	1,402	1,346	1,292	1,240	1,190	1,143	13,827
Eating	336	263	47	11,867	11,392	10,936	10,499	10,079	9,676	9,289	8,917	8,561	8,218	99,435
Government	880	689	25	16,532	15,871	15,236	14,626	14,041	13,480	12,940	12,423	11,926	11,449	138,523
Churches	128	100	28	2,693	2,585	2,482	2,383	2,287	2,196	2,108	2,024	1,943	1,865	22,567
Column Total	11,706	9,163		221,472	212,613	204,108	195,944	188,106	180,582	173,359	166,424	159,767	153,377	1,855,753