
CALFED Bay-Delta Program

Water Use Efficiency Common Program

[Note: This draft outline includes all parts of a proposed CALFED water use efficiency approach. The attached paper includes only the sections described in boldface type.]

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[Note: A draft approach was previously described in the *Urban Water Use Efficiency Approach Discussion Paper* dated September 17, 1996. The approach is currently being refined and is not included in this draft.]

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[Note: This approach will be developed in coordination with appropriate CALFED agencies and consultation with the Water Use Efficiency and Ecosystem Restoration Work Groups.]

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[Note: This approach will be developed in coordination with appropriate CALFED agencies and consultation with the Water Use Efficiency Work Group.]

VII. WATER TRANSFERS

[Note: Draft tools related to water transfers were originally described in an August 22, 1996 draft paper entitled *Agricultural Water Use Efficiency, Objectives and Tools*. That discussion of transfers is being revised and modified based on Work Group input.]

I. INTRODUCTION

The CALFED Bay-Delta Program will develop a long-term comprehensive plan to restore ecological health and improve water management for beneficial uses of the Bay-Delta system. Three alternatives to accomplish this mission will be refined and analyzed during Phase II of the Program. These alternatives share a "common program" of measures to ensure that California's water supplies are used efficiently. This common program of measures is the water use efficiency component. The water use efficiency component focuses on improvements in local water use management and efficiency in the urban, agricultural, and diverted environmental (e.g., wetlands, refuges) water use sectors. [This paper describes the CALFED approach to agricultural water use efficiency.]

Public Policy Foundations

California public policy places a strong emphasis on efficient use of developed water supplies. The California Constitution (Article X, Section 2) prohibits "waste or unreasonable use" of water and excludes from water rights any water that is not reasonably required for beneficial use. The constitutional prohibitions of waste and unreasonable use are repeated in Sections 100 and 101 of the California Water Code. The state's process for appropriation of water rights is also based on furtherance of the constitutional policy of reasonable and beneficial use (Water Code Section 1050). The State Water Resources Control Board can and does place water conservation conditions on water rights permits that it approves.

The California Water Code requires all urban water suppliers to prepare and adopt urban water management plans and requires first consideration be given to demand management measures that offer lower incremental costs than expanded or additional water supplies (Water Code Section 10610 *et seq.*). The Code previously placed limited planning requirements on agricultural water suppliers, but these provisions have expired as a result of legislative sunset provisions (Water Code Section 10800 *et seq.*)

State and federal water projects are also affected by efficiency requirements. The Central Valley Project Improvement Act calls for the development of water conservation criteria "with the purpose of promoting the highest level of water use efficiency reasonably achievable by project contractors." Some State Water Project contracts contain conservation requirements, and some water right permits granted to the State Water Project by the State Water Resources Control Board contain specific conservation requirements.

Efforts by the State Water Resources Control Board to place more specific efficiency conditions on water right permits have also led to innovative voluntary efforts. Proposed efficiency

requirements in the Board's draft 1988 Water Quality Control Plan for the Bay-Delta prompted efforts which ultimately resulted in the creation of the California Urban Water Conservation Council and implementation of urban Best Management Practices by many urban agencies. The board's draft plan also prompted the negotiation of the *Memorandum of Understanding Regarding Agricultural Water Management for Water Suppliers in California*.

Water Use Efficiency in the Bay-Delta System Today

California's strong public policy emphasis on efficiency, and Californians' strong conservation ethic, are reflected in many outstanding water use efficiency and water conservation efforts throughout the state. California irrigation districts and growers have implemented pioneering methods to manage water supplies and improve efficiency. These methods range from canal control and improved flexibility of deliveries to new irrigation system technology to drainage reduction to computerized information on crop water needs. Similarly, urban water suppliers have worked with public interest groups to create the California Urban Water Conservation Council, a nationally recognized forum for the successful advancement of our understanding and implementation of urban water use efficiency measures.

The greatest current challenge in water use efficiency is finding ways to encourage more water users and water suppliers to implement the proven cost-effective efficiency measures that are being used successfully by their peers throughout the state.

The Basis for a CALFED Water Use Efficiency Common Program

The CALFED Bay-Delta Program will develop a long-term solution to problems affecting the San Francisco Bay/Sacramento-San Joaquin Delta. The Program addresses four categories of Bay-Delta problems: ecosystem quality, water quality, water supply reliability, and system integrity. Efficient use of developed water supplies can contribute to solution of problems in several of these categories. Clearly, water use efficiency can help to achieve the Program's goal for water supply reliability: *Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system*. In addition, changes in local water management, compatible with intended beneficial uses, can help achieve other objectives of the Program by improving water quality or enhancing ecosystem health.

During April and May of 1996 a series of public scoping meetings and workshops were held to explain the solution alternatives under consideration at that time and to solicit comments from the public about these alternatives. Citizens from all parts of the state expressed strong support for water use efficiency. There is a strong sentiment that water use efficiency should figure

prominently in all the alternatives, and that existing supplies must be used efficiently before we undertake costly efforts to develop additional supplies or improve the ability to convey water across the Delta.

Based on the many comments received, the Program created a simplified structure for the Bay-Delta solution alternatives in which several components do not vary among the alternatives but are common to all of them. Water use efficiency, water quality, levee system integrity, and ecosystem restoration are all treated as common programs. For water use efficiency, this means that all three of the alternatives refined and analyzed during Phase II of the Program will include very similar approaches to assure that cost-effective efficiency measures are widely implemented. The variable components (Delta conveyance and additional storage) will influence which of these efficiency measures will be cost-effective.

Development of the Water Use Efficiency Common Program

Efficiency has several definitions. One is a traditional view of water use efficiency defined in terms of physical efficiency: the ratio of water consumed to water applied. Efficiency can also be defined in economic terms: deriving the greatest economic output from a given input such as a unit of water. For the purpose of developing and implementing a water use efficiency common program, CALFED has defined efficiency somewhat differently: **efficient water use refers to the implementation of local water management actions that contribute to the achievement of CALFED goals and objectives.** This definition includes physical efficiency but is not limited to this narrow definition.

While physical efficiency and the broader definition of efficiency to achieve CALFED objectives are the responsibility of the Program, increasing economic efficiency -- which might result in a reallocation of water -- is not a specific objective of the Program.

The task of the CALFED Bay-Delta Program is to develop a comprehensive solution to Bay-Delta problems associated with ecosystem quality, water quality, system integrity, and water supply reliability. This task recognizes that there are linkages among these resource areas, that it is not easy or appropriate to separate them. Thus, there is unavoidable overlap among the Program's components. The water use efficiency common program will focus on promoting actions that increase water supply reliability, such as those under the physical efficiency definition, but will encourage similar or related actions that achieve other CALFED objectives, particularly those related to water quality and ecosystem quality.

The physical scope of water use efficiency actions is limited to improvements that can affect Bay-Delta water supplies (surface and subsurface) from points of local diversion for beneficial use to points of local return to the receiving water. This scope focuses on opportunities that are

implementable at the local water supplier and end-user level. For instance, changing the timing of diversion, reducing demand through conservation and recycling, or improving the quality of a return flow are actions related to beneficial use of local diversions and are implementable at the local and end-user levels. Reservoir operation, upper watershed management, and instream flow standards typically would not fit within the scope of water use efficiency, although these issues will be integral to a comprehensive CALFED Bay-Delta solution.

CALFED's water use efficiency component must also be compatible with the solution principles that the program has identified to guide development of a Bay-Delta solution. These principles state that a Bay-Delta solution must:

- Reduce conflicts in the system
- Be equitable
- Be affordable
- Be durable
- Be implementable
- Not exhibit significant redirected impacts

The water use efficiency component is divided into five elements to facilitate discussion and development of CALFED approaches: urban water use, agricultural water use, diverted environmental water use, water recycling, and water transfers. The first three elements correspond to traditional water use sectors of urban, agriculture, and the environment. Differences in the water use efficiency approach for each sector may be appropriate because there are differences in water rights, type and method of water use, and potential for downstream reuse. Water recycling will be treated separately for the sake of expediency, because urban water recycling has traditionally been approached separately from urban water conservation, and is often the responsibility of different agencies. Water transfers, which are fundamental to state and federal water policies, are not strictly efficiency measures but they may prompt the implementation of efficiency measures or in some cases provide the funding for efficiency measures on a local basis.

A subcommittee or work group of the Bay-Delta Advisory Council has been established to address policy issues related to efficient water use and to assist in development of draft approaches to efficiency.

II. OBJECTIVES

Implementation objectives were established in order to guide the development of approaches for water use efficiency. These objectives are intended to reflect and protect the various stakeholder interests regarding local water use management and efficiency. To date, specific objectives have

only been developed for urban and agricultural water use efficiency. Originally, the objectives were presented in draft discussion papers separately for urban and agriculture. However, several of the objectives are common to both and are presented below under *General Objectives*. The objectives will be used to serve as a test of whether a draft approach is satisfactory. For instance, if a draft approach fails to meet one of the implementation objectives, the approach may be modified to meet all of the objectives.

General Objectives. These will apply to the approaches for both urban and agricultural water use sectors.

- **Ensure a strong water use efficiency component in the Bay-Delta solution** - During the CALFED scoping period and at numerous public meetings, the public as well as stakeholders said local water use management and efficiency improvements should play an integral role in the Bay-Delta solution.
- **Emphasize incentive/disincentive based tools over regulatory tools** - The CALFED approach to local water use management and efficiency will include market-based incentive/disincentive tools and regulatory tools to prompt efficient use. Incentive/disincentive based tools that offer financial benefits/impacts to water users are most likely to be accepted and implemented. Regulatory tools will help provide assurance of efficient use to supplement and reinforce incentive/disincentive measures. Regulatory tools will also provide the necessary assurances to avoid or ensure mitigation for third party impacts that may result from incentive/disincentive based approaches.
- **Preserve local flexibility** - During the CALFED scoping period and at numerous public meetings, stakeholders stressed the desire to maintain the flexibility of implementing water use management and efficiency improvements at the local level. CALFED will strive to develop an approach to local water use management and efficiency that provides necessary assurances of improved efficiency while maintaining this flexibility to tailor implementation to local conditions.
- **Remove disincentives and barriers to efficient water use** - Many water agencies and water users are discouraged from implementing conservation measures as a result of various disincentives. Examples of disincentives include poorly planned water wholesaler drought water allocation plans, negative impacts to agency operation budgets resulting from reduced water sales, and inability to pass some conservation costs along to customers (as occurs with some investor owned utilities). Removal of these disincentives can allow agencies and their customers to implement conservation measures that otherwise could not be justified. However, removal of barriers must support the original purposes of the institutions associated with the measure.

- **Offer greater help in the planning and financing of local water use management and efficiency improvements** - To implement efficient water management practices, water users need information about proposed measures and also need the ability to finance implementation of such measures. Greater levels of technical, planning, and financial assistance will be essential to improve local water use management and efficiency.

An important part of technical assistance is helping agencies understand the value of conservation. Many agencies fail to see the value of implementing conservation measures. This includes the value to their customers as well as the greater value to society and the environment. Some of this view results from the lack of common language and approach used to define demand projections and approach used to determine potential savings from conservation measures. Use of integrated resource planning methods and common approaches to cost-effectiveness determinations will help agencies recognize the value of conservation and make more educated decisions regarding implementation of such measures.

Urban Objectives. The objectives presented in this subsection relate to urban water use efficiency improvements. They are presented here for use in comparison with the agricultural objectives.

- **Include the strengths and benefits of the CUWCC and the urban MOU** - The California Urban Water Conservation Council (CUWCC) has an established role in the urban water use community relating to the implementation of BMPs. The CUWCC consists of water agencies, environmental and public interest groups, and other interested parties that have signed the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU). The strengths of the CUWCC include: ability to foster collaboration among diverse urban agencies and the non-profit community; development of a framework for implementation of urban BMPs; the ability to update BMPs to reflect advances in technology and knowledge in the area of urban conservation; and its ability to allow a signatory agency to exempt itself from a specific BMP given proof of non-cost effectiveness.

One important role for the CUWCC is to review implementation of landscape and other urban water conservation BMPs. Tremendous water savings potential exists with landscape water conservation and further implementation of other targeted BMPs. There may be significant opportunities for additional landscape conservation through market mechanisms, further public education, basing water rates on evapotranspiration or lot size, stronger enforcement of existing laws and regulations, or other measures. Implementation of landscape and other urban BMPs should be reviewed by the CUWCC to better understand potential water savings and to develop mechanisms that can be used to achieve greater savings.

- **Provide some type of assurance that a high “floor” level of conservation implementation will occur** - Nearly half of California’s larger urban water retailers have signed the MOU and committed themselves to conservation. In addition, major water wholesalers have signed the agreement. Implementation of BMPs is high among many of the signatories. However, for some, BMP implementation rates are low and inconsistent. Additionally, many non-signatory agencies have yet to implement any sort of strong conservation programs. Establishment of a high “floor” level of conservation implementation will provide needed assurance that existing water supplies are being used efficiently; necessary for proposed new storage or conveyance to be credible.
- **Achieve a higher level of BMP implementation, and by more agencies** - This is related to the establishment of a “floor” level of conservation and the need to ensure a strong conservation component. A higher level of BMP implementation would demonstrate the commitment to water use efficiency that will be an essential component of a Bay-Delta solution. Additionally, water savings from BMPs implemented by more agencies is necessary for added reliability in future water supplies.

Agricultural Objectives. The objectives presented in this subsection relate solely to agricultural local water use management and efficiency improvements.

- **Build on the progress and achievements of the *Memorandum of Understanding Regarding Efficient Water Management Practices by Agricultural Water Suppliers in California* (AB 3616)** - The AB 3616 process has resulted in an agricultural MOU that emphasizes uniform analysis of efficient water management practices, provides a standardized format for water management plans, and calls for implementation of district level measures that meet criteria contained in the MOU. It, along with recent CVPIA conservation criteria, represent important steps forward in agricultural water management.
- **Provide adequate assurance that agricultural water supplies will be used at highly efficient levels** - A central tenet of the CALFED process is that all interests will move forward together. As planning for possible improvements in water conveyance and storage moves forward, it will be important for stakeholders and taxpayers to be assured that existing water supplies are being used as efficiently as practical at all levels. The approach taken must provide the information and include the tools to offer this assurance.
- **Improve local water use management to achieve multiple benefits** - This objective reflects the broad mission and multiple objectives of the CALFED program. Typically, the use of water for environmental, agricultural, and urban purposes are viewed independently. However, many opportunities exist to manage local water use for multiple benefits without adversely impacting any of the users. Examples of these opportunities include development of

conjunctive use programs; coordination of releases to correspond with fishery, water quality, and agricultural needs; and changes in water management that help support wildlife habitat. Emphasis would be placed on those improvements that not only promote water use efficiency but also directly benefit these other resource areas.

- **Encourage improved local water use management and efficiency at all levels, from field to basin-wide** - Local water use management and efficiency measures implemented at different levels may yield different benefits. Efficiency measures should be conducted with these different perspectives in mind so that all opportunities for local management and efficiency improvements are identified and the relationships among water uses within a basin are understood.

III. AGRICULTURAL WATER USE EFFICIENCY APPROACH

Agriculture is an important part of California's economy. This \$20-billion-a-year industry produces about 11 percent of the total U.S. agricultural value and 40% of the nation's produce on 31 million acres, including about 9.1 million irrigated acres. The CALFED Bay-Delta Program, by solving interrelated problems of the Bay-Delta system, will help to preserve the viability of agriculture in California. The Program's approach to agricultural water use efficiency will be to encourage cost-effective water use efficiency measures and to achieve other CALFED objectives in ways that are compatible with agriculture. The agricultural sector, primary holder of water rights and water supplies that flow to or from the Bay-Delta, can improve its water management methods. Improvements will not only help assure continued agricultural production capacity, but will allow agriculture to provide benefits to other users, including the environment.

In the agricultural sector, the benefits from improvements in local water use management and efficiency might differ from the perspective of a field, farm, irrigation district, or basin. If the perspective is broadened to include environmental and water quality benefits as well as water supply benefits, then additional measures might become available to improve efficiency in the broader sense of meeting CALFED objectives. The CALFED agricultural water use efficiency approach is designed to identify diverse opportunities for local water use management and efficiency improvements and increase the benefits that can be derived from a unit of water. The program will look to water management techniques that increase the effectiveness of water use management and efficiency at the field, farm, district, and basin level where these are appropriate. In addition, the Program will support measures that cost-effectively increase agricultural production from a unit of water, protect water quality, or increase environmental benefits while meeting agricultural needs.

In the case of agricultural water suppliers, the number of efficiency improvements that are cost-effective at the local level is highly constrained. Distribution costs are far lower for agriculture than for urban agencies. Much of agriculture's infrastructure was built many decades ago and has long since been amortized. Consequently, agricultural water suppliers typically cannot afford improvements in efficiency unless the improvements provide direct cost-effective benefits.

In addition, the identification of agricultural efficiency and water use management improvements is complicated. In contrast to most urban agencies, much of the water applied to crops that is excess to plant needs is reused, whether via return flows, deep percolation, or flow to neighboring farms or wetlands. Although excess applications can generate benefits, they can also create negative impacts such as additional fish entrainment or degradation of water quality. Opportunities for improvements are often site-specific, which reduces the practicality of using broadly mandated requirements in an approach. Instead, use of a flexible approach with a focus on incentives will be most likely to help us identify and implement desired improvements.

CALFED is developing an approach for agricultural water use efficiency that consists of many different actions, programs, and institutional changes. Collectively referred to as tools, many of these were originally presented in the August 22, 1996 draft agricultural objectives and tools paper. Analysis and discussion of the tools confirmed that many of these previously presented tools have a place in an agricultural approach. However, based on comments received from Work Group participants and further work by CALFED staff, some modifications to the original list of tools were made.

Tools 8 through 12, all related to water transfers, will be moved into a separate discussion paper (similar to this one) that specifically addresses water transfers. Tools 4 and 5 have been incorporated into Tool 3 and several other tools have been modified from their original description. In addition, several tools are not being included in the proposed approach. Reasoning for exclusion is presented at the end of this section. The table below represents a list of tools seen as most promising for inclusion.

ORIGINAL IDENTIFIED TOOLS	INCLUDED?
1. Water Management Planning	✓ (modified)
2. Technical and Planning Assistance	✓
3. Low Interest Loans, Tax Credit, Rebate Program, or other Financial Assistance	✓ (modified to include #4 and #5)
4. Tax Credits and Rebate Programs	(included as part of #3)
5. Facilitate the Use of Bond Pooling	(included as part of #3)
6. Surface Water Pricing for Conjunctive Use	not included
7. Identify and Implement Management Improvements to Achieve Multiple Benefits	✓ (modified)
8. Comprehensive Water Transfer Rules	(move to transfer element)
9. Water Rights Assurances	(move to transfer element)
10. Structured Water Transfer Tax	(move to transfer element)
11. Condition for Transfer of Marketed Water	(move to transfer element)
12. State Drought Water Bank Conditions	(move to transfer element)
13. Increased SWRCB Funding for Water Rights Enforcement	(provisional inclusion in #1)
14. Contract Language Revision	not included
15. CVP/SWP Contract Provision	not included
16. Non-Compliance Fee	not included
17. Water Use Diversion Fee	not included

Many of these tools are directed at the same objectives, and inclusion of such overlapping tools may seem redundant. However, experience has shown that implementation of existing tools is usually imperfect: not all agencies respond to market incentives to the same degree, compliance with existing law is not universal, and so on. A degree of redundancy is intentionally included in this set of most promising tools in order to help assure that their implementation would achieve the objectives.

Tools Included in Approach

1. Water Management Planning

Purpose: Provide a uniform, verifiable, locally directed process for agricultural water management planning. Identify and implement opportunities for improved local



water use management and efficiency with a focus on water conservation at the water supplier level.

This approach to improved local agricultural water use management and efficiency is based on flexible, locally directed water management planning. It is intended to result in the identification and implementation of cost-effective opportunities for efficiency improvements. The approach depends on planning efforts exercised in good faith by water suppliers and users in order to better understand their systems and look for ways to improve. This tool can play a vital role in the CALFED program. Widespread water management planning by water suppliers can help identify new opportunities for improvement as well as demonstrate where existing supplies are being used efficiently. Efforts to improve current management and document that existing water supplies are being used efficiently will be a prerequisite for benefits such as new supplies and improved transfer markets.

Based on input from CALFED agencies and Work Group discussions to date, we believe that a flexible, locally directed water management planning process is most desirable. To help encourage participation, such a voluntary process will be facilitated through inclusion of other tools presented below. Given time to demonstrate its success and ample encouragement and availability of assistance, the process should provide the desired levels of participation. This should lead, in turn, to implementation of local water use management and efficiency improvements.

This tool has three primary parts. The first is the identification of cost-effective local water use management and efficiency improvements through water management planning. The second would provide incentives for implementation of identified actions (Tools 2, 3, 4, and 5 listed below). The third includes mechanisms to ensure desired levels of participation in planning and implementation efforts.

All agricultural water suppliers would be encouraged to develop a water management plan. Plans would require approval and could be satisfied by the following:

- Signatory to the *Memorandum of Understanding Regarding Efficient Water Management Practices by Agricultural Water Suppliers in California* (Agricultural MOU) and completion of an endorsed plan;
- Compliance with current CVPIA water conservation requirements; or
- Approval of an independently developed plan that is functionally equivalent to Agricultural MOU provisions or current CVPIA requirements.

All plans would be submitted to and reviewed by the Agricultural Water Management Council (to be established as part of the AB 3616 MOU). It is conceivable that the Agricultural Council would not come to function as a balanced approval body for water management plans. This could

occur if few or no environmental representatives sign the MOU, thereby potentially biasing the approval of plans to the perceived benefit of agricultural interests. In this event, CALFED would propose the Department of Water Resources and the U.S. Bureau of Reclamation provide provisional review and approval of plans with appropriate public comment. CALFED would also provide technical and planning assistance to water suppliers for plan development.

Compliance mechanisms are envisioned to have a three part approach. The use of market incentives is the primary approach to encourage compliance. Fundamentally, water management planning depends on water suppliers and users realizing it makes financial sense to identify and implement cost-effective local water use management and efficiency improvements.

A secondary approach relies on conditions placed on benefits associated with the CALFED solution. For instance, compliance will be necessary in order for an entity to receive any additional water supplies made available by a CALFED solution, to participate in the Drought Water Bank, or to buy or sell water in a transfer market (a principle also outlined by the Governor in his water policy speech).

A final regulatory approach is also proposed. If, after a two year period ending January 1, 1999, a significant majority of water suppliers had not developed approved plans, legislative and regulatory mechanisms would be triggered. (This time period was selected because it includes a two year planning cycle as described in the agricultural MOU, and it is short enough so that adequate assurances of implementation might be developed for stronger regulatory mechanisms if they are needed.) These mechanisms would include introduction of legislation for a statewide agricultural water management planning requirement (similar to the urban planning requirement) and other regulatory measures that might be imposed on urban agencies, as well as more careful scrutiny of water use, perhaps through increased funding for the State Water Resources Control Board to investigate waste and unreasonable use violations (a current, but minimally funded, role of the SWRCB).

Success of a locally directed approach based on the agricultural MOU will be judged by the participation of water suppliers representing a minimum of 2/3 of the irrigated agricultural lands in the Bay-Delta watershed including export areas. (This level of participation was selected to be comparable to an acceptable minimum level of urban participation in the urban MOU process.) Participation of an agricultural water supplier, whether a CVP contractor, SWP contractor, or a water rights holder, would include preparation, adoption, and initial implementation of a "certifiable" water management plan.

Issues: Can adequate assurances be developed to ensure implementation of a regulatory approach later if locally directed efforts prove inadequate?

Given that the intention of this tool is to have a significant majority of local water districts develop and implement water management plans, is the 2/3 value the appropriate goal? If not, what is?

Water management planning requirements of the U.S. Bureau of Reclamation are different from requirements under the agricultural MOU. Should approved or endorsed plans of both types be acceptable? Should both be counted in target acreage levels?

This approach is expected to lead to implementation of measures that are cost-effective at the current cost of water to districts or users. It would not lead to implementation of additional measures that are cost-effective at the marginal cost of new supplies. Is such an approach adequate?

2. Technical and Planning Assistance

Purpose: Ensure that lack of technical and planning expertise does not impede implementation of cost-effective measures by providing easily accessible assistance for planning and implementing local water use management and efficiency improvements.

Technical and planning assistance is an integral part to the successful achievement of agricultural water use efficiency. Assistance can be directed either at identifying opportunities (water management planning, guidebook development, conservation program planning) or at implementation of opportunities (short courses, mobile labs, technical review). Currently, both DWR and USBR provide this kind of assistance directly to their contractors as well as to other water suppliers. Agencies such as the Cooperative Extension and Department of Food and Agriculture also provide assistance. Much of this assistance is directed at water management and efficiency improvements. Current planning assistance would likely continue under this action.

Additional planning assistance may also be made available to the suppliers or end-users as an incentive to evaluate and implement efficiency improvements. Assistance could continue to be provided directly by the agencies mentioned previously. Alternatively, funding could be provided through government grants or through local programs operated by Resource Conservation Districts, commodity groups, or water districts themselves. Technical and planning assistance may provide benefits to local suppliers as well as water users. For example, a water district providing assistance to individuals within the district might gain improvements in operations and maintenance aspects that save the district money. A technical program could also be a function of the Agricultural Water Management Council, to be formed under the agricultural MOU.

Issues: What amount of technical and planning assistance is necessary to facilitate the development and approval of water management plans and the identification and implementation of appropriate efficiency measures?

What is the appropriate source of funding for this assistance? Is local cost-sharing appropriate or desirable?

3. Funding Assistance

Purpose: Ensure that lack of financing ability does not impede implementation of cost-effective measures by providing easily accessible funding for planning and implementing local water use management and efficiency improvements.

Funding assistance is an integral part of the successful achievement of agricultural water use efficiency. CALFED can facilitate the implementation of local water use management and efficiency improvements by making available flexible funding assistance programs. There are many varieties of funding programs, several of which have been successful in the past in agricultural and other water use sectors. Funding assistance available to water suppliers and end-users (available through DWR, USBR, EPA and others) is likely to continue under this action. Determination of most appropriate programs and levels of funding will be made in coordination with CALFED agencies and consultation with the BDAC Finance Work Group during broader discussions of financing a Bay-Delta solution. Several examples of funding programs are presented below.

Low interest loans are financial incentives made available to water users to provide funds required for implementation of local water use management and efficiency programs. Programs may be implemented by individuals for particular fields, or can be on a district or even regional basis. Loans are provided at low interest rates to ease the burden of repayment while aiding the early implementation of water conservation and management improvements. Other forms of funding assistance include grants and direct financing (funding agency pays directly for a particular project).

Rebate programs are designed to pay individuals a sum of money after installation of particular equipment. The money from rebate programs usually is from the local water agency, cooperative associations, or from grant funding. The savings in reduced water use or improved management help to offset the cost to the agency. However, statewide rebate programs have successfully resulted in increased field level irrigation evaluations at no cost to the water supplier. Payment of rebates typically do not occur until after the installation of equipment or changes in management as a way to ensure implementation. Grant and loan programs typically provide funding prior to implementation.

Bond pooling is another example of funding assistance. Bond pools work by joining several agencies together under one bond issuance. Some of the benefits for agencies in a bond pool include slightly lower bond rates, better bond ratings, reduced bond issuance costs, and the ability to separate the debt from other financial aspects of the agency. Bond pools are currently available through several water or utility associations but only to member agencies (e.g., ACWA's pooled financing program is only available to ACWA members). CALFED agencies could help promote and coordinate the use of these bond pools.

Funding assistance could be made available through State or federal agencies or through regional cooperative groups (e.g., Resource Conservation Districts, Cooperative Extensions, commodity boards), to local water suppliers, or possibly individual water users. Conditions could be placed on the applicants to require water management plans or other items prior to loan or grant approval.

Issues: What amount of assistance is necessary to facilitate the implementation of local water use management and efficiency improvements? How long would assistance remain available?

What is the source of funding for this assistance and who should administer it? Some agricultural interests are concerned with the potential of taxing their water supplies to provide this kind of funding. This is perceived as "paying the government to pay me money" and not looked upon highly.

Should restrictions be included that require completion of water management plans or other proof of efficient use of existing supplies prior to receiving funding or is this counter-productive?

Burdensome levels of paper work can accompany funding assistance programs. These can deter participation by districts and end-users who do not want, or do not have the staff, to satisfy reporting requirements. To improve the level of participation, what can be done to minimize the reporting requirements while maintaining adequate program control?

Currently, many attempted bond pools fail because of the slow process of bringing qualified applicants together. Should CALFED play a role in coordinating applicants to facilitate the use of bond pools and if so, how?

4. Tax Credits and Rebate Programs - (Incorporated into Tool 3.)

5. Facilitate the Use of Bond Pooling - (Incorporated into Tool 3.)

7. Identify and Implement Management Improvements to Achieve Multiple Benefits

Purpose: Help to meet CALFED objectives, including those related to ecosystem quality and water quality, by encouraging districts to identify opportunities for improvement when preparing water management plans, and creating incentives for implementation.

The planning process required under the agricultural MOU includes completion of a net benefit analysis which, among other things, will help districts identify environmental benefits and impacts associated with the implementation of Efficient Water Management Practices. Use of the net benefit analysis creates an opportunity for districts to simultaneously identify other local water use management and efficiency improvements which might meet CALFED objectives by improving water quality or ecosystem health. In many instances, it is not cost-effective for local suppliers or water users to implement or even identify opportunities that address these benefits. Yet, from a societal standpoint, implementation of these types of actions can be justified. If additional technical and planning assistance could be provided to districts while they were conducting the net benefit analysis, it would offer an excellent chance to identify additional actions that might improve water quality or ecosystem health.

Incentive payments could be used to encourage implementation of practices that yield environmental, water quality, or water supply benefits but which are not cost-effective at the local water supplier or water user level. The incentive payment would change the calculation such that the practice would become cost-effective. For instance, incentives could be offered to encourage installation of on-farm measures to improve water quality, or for district level measures to vary the timing of diversions. Incentives could be offered at multiple levels, depending on the beneficiaries. For instance, payments could be made by a district to end-users with the district gaining the benefit, or an environmental agency or group may pay a district or end-user to implement measures in return for benefit. Incentive payments can be viewed as a method of making actions that are cost-effective from one perspective cost-effective from all perspectives.

CALFED's role in implementing this tool would include many facets. Initially, CALFED would further develop this proposed program. This could lead to establishment of an advisory committee. Once a program was better defined, CALFED would assist with implementation, perhaps by developing a guidebook to help districts and interested parties identify opportunities. CALFED agencies could also provide planning assistance or funding to help districts use the guidebook and identify opportunities. Finally, CALFED would provide financial incentives to make identified opportunities cost-effective for local suppliers or users to implement when opportunities help meet CALFED objectives and priorities.

Development of this program would require close coordination with other parts of the CALFED Bay-Delta Program including ecosystem quality, water quality, financing, and assurances.

Issues: Changes in water management practices might require continuing incentives to districts or water users. Can continuing incentives be assured, or can continuing program benefits be assured in some other way?

How would incentive levels be determined? Would it require individual negotiations and agreements with individual parties or could more broad based agreements be used to reduce the level of bureaucracy?

Tools Excluded from Approach. Several tools were not included in the approach for reasons presented below.

6. Surface Water Pricing for Conjunctive Use

Reason for Exclusion: This tool is a specific aspect of the water pricing Efficient Water Management Practice in the agricultural MOU. Analysis of these EWMPs is already the focus of Tool 1. Districts involved in the MOU planning process should be analyzing this price setting method as well as other methods when identifying cost-effective EWMPs. DWR and the Bureau could provide assistance (as part of Tool 2) to help districts analyze the potential of implementing this tool. Otherwise, CALFED does not see a specific purpose for separately including this tool.

Description: Current pricing structures used by agricultural water districts predominantly are based upon distribution of annual fixed costs and an associated price for water supplied. Most often, the cost for the water is on a per-acre-foot basis, although, several water suppliers still only charge by acreage irrigated (regardless of quantity). Usually, the variation seen by users from one year to the next is based on the allocation of fixed costs (a result of district operations and maintenance costs and project facilities payments) and typically does not involve a change in the price of the associated water delivered. For instance, during a wet year, a users may pay \$30/acre-foot, consisting of a \$10 fixed cost and a \$20 cost for the water. During a dry year, the same user may pay \$40/acre-foot, comprised of the same \$20 cost for the water, but with a higher allocated fixed cost because of reduced water supplies for the district to sell. If less water is sold by a district, the fixed cost per acre-foot charged to the user must increase to generate the necessary revenue.

What is often not varied by water suppliers, however, is the cost of the surface water supplied. As an incentive to promote in-lieu conjunctive use, districts could subsidize the cost of surface

What is often not varied by water suppliers, however, is the cost of the surface water supplied. As an incentive to promote in-lieu conjunctive use, districts could subsidize the cost of surface deliveries in wet years and surcharge the cost in dry years. The intended result is that the cost of surface water would be made lower than the equivalent cost of groundwater in wet years and higher than the cost to pump groundwater in dry years. This should result in an incentive for users to take advantage of wet year surface supplies, allowing aquifers to recharge for use during dry years (i.e., in-lieu conjunctive use). In essence, circumstances would be created by the district such that it would make economic sense for users to vary between surface and subsurface supplies depending on the hydrologic conditions.

14. Contract Language Revision

Reason for exclusion: On-going efforts appear to adequately address the issues presented below. If so, no additional action would be required.

Description: Certain aspects of CVP and SWP contracts for agricultural water supply contain language that tends to be a barrier to efficient water management. Terms such as "use it or lose it" and "take or pay" are used to describe the agricultural district's interpretation of this contract language. Some on-going CVP contract renewal negotiations are attempting to remove the barrier this language creates.

In addition, some CVP contracts do not provide for carrying over unused water from one year to the next. This encourages the use of water during one year when it might be more efficient to defer the use of the water until the following year. Language such as this could be removed and language added to allow for protection of contract rights even when not all contract water is used every year, and to allow for carryover of undelivered water. Carryover water could be considered "first to spill" and would not be guaranteed available in subsequent years.

15. CVP/SWP Contract Provisions (or other condition of service)

Reason for exclusion: This tool would apply to federal CVP contractors and state SWP contractors. However, federal contractors are already asked to prepare, adopt, and implement conservation plans. Some state water supply contracts also contain conservation provisions (which are apparently not being enforced). It would be difficult if not impossible to achieve consistent water use efficiency policies through negotiation of a series of individual state contract amendments.

Description: The state and federal water projects have contracts with numerous agricultural and urban water purveyors to wholesale surface water. Under these contracts there may be provisions to encourage or require water conservation planning or programs. However, many contracts do not have provisions or in the case of some SWP contracts, the current provisions are simply not being enforced. There are at least three ways to include conservation provisions as a part of contract requirements. One method would be to include such provisions during contract renewals. A second would include the use of incentives, such as assurances or grant funds, to allow contractors to renegotiate or agree to the addition of provisions into existing contracts. The third would be more universal and would include the use of legislative changes, such as CVPIA or the Reclamation Reform Act to include provisions across all existing and future contracts.

16. Non-compliance Fee

Reason for exclusion: This type of fee could serve as a powerful incentive for districts to prepare, adopt, and implement water management plans. However, if the locally directed planning process outlined in the agricultural MOU is implemented in good faith, a non-compliance fee would not be necessary. Such a fee could be considered along with other enforcement mechanisms if the MOU process proves inadequate.

Description: A fee could be established that would require payment by an agency per acre-foot of diversion or delivery when the agency is not in compliance with particular stipulations, such as completion of water management plans or implementation of EWMPs. This approach could be viewed as a penalty fee for non-compliance. Funds derived could be used to develop a revolving fund to help finance efficiency improvement projects or complete water management plans, or to fund environmental restoration programs designed to reduce the impacts of water diversions.

17. Water Use Diversion Fee

Reason for exclusion: This tool is being considered by CALFED as part of overall financing options. It is not within the role and scope of the Work Group to discuss but will be discussed in other CALFED forums.

Description: A fee could be established that would require payment of a tax or fee by an agency per acre-foot of diversion or delivery. Such a fee would apply to all water purveyors. It could act as a price incentive to induce efficiency improvements. In some cases, increases in the price paid for water have resulted in improvements in the efficiency of its use. Funds derived could be used to develop a revolving fund to help finance efficiency improvement projects, or to fund environmental restoration programs designed to reduce the impacts of water diversions.