

# Agricultural Water Use Efficiency

## A CALFED Program Overview for the Sacramento Valley

October 2002

The CALFED Record of Decision (ROD) contains an ambitious Water Use Efficiency (WUE) program “to accelerate the implementation of cost-effective actions to conserve and recycle water throughout the State.” (ROD at 59.) The WUE program is an important part of CALFED’s water management strategy. The following overview of the CALFED WUE program describes both the opportunities for efficient water management in the Sacramento Valley, and the potential risks for not engaging in such activities.

The primary agricultural-focused WUE program elements include: a competitive grant and loan program, program milestones (science/performance measures), appropriate measurement, technical assistance, comprehensive evaluation, and a public advisory committee. This overview also discusses system improvement projects in the Sacramento Valley Water Management Program (SVWMP) and legal protections for conserved water. The November 2002 managers meeting will be dedicated to this topic.

### CALFED Goals

The CALFED ROD establishes an estimated water savings (savings can be derived from a combination of consumptive use, applied water and rerouted flows) from water use efficiency in the agricultural sector at 260,000 to 350,000 acre-feet (af). The ROD explains that these numbers are not intended as targets, but rather estimates of savings that can be realized statewide. Most importantly, “these savings will be accomplished through incentive-based water use efficiency programs.” (ROD at 59.) For the Sacramento Valley, the ROD specifically recognizes that “agricultural efficiency opportunities exist but are more limited by financial capability and by the fact that a higher percentage of agricultural return flows are used by downstream users and are therefore not included in conservation estimates.” (ROD at 59.)

“The program implementation plan will include incentives in the agricultural sector that will consider several factors, including: (i) the potential for reducing irrecoverable water losses; (ii) potential for attaining environmental and/or water quality benefits from WUE measures; (iii) regional variation in water management options and opportunities; (iv) availability and cost of alternative water supplies; and (v) whether the water needs of the recipient area can be satisfied from existing sources.” (ROD at 61.) The CALFED WUE program is designed to meet the following objectives: build on existing water management programs, reduce existing irrecoverable losses, achieve multiple benefits, preserve local flexibility, use incentive-based

actions over regulatory actions, and provide assurance of high water use efficiency.<sup>1</sup> The broader objective is to develop a set of activities and assurances that contribute to CALFED goals and objectives, has broad stakeholder acceptance, fosters efficient water use, and helps support a sustainable economy and ecosystem.

Most importantly, water savings realized through the WUE program in the Sacramento Valley help to further demonstrate the region's commitment to water management and potential development for local and downstream uses. The WUE integrated program complements efforts to develop other water management programs in the Sacramento Valley, including Sites reservoir, an enlarged Shasta Dam and conjunctive water management, and will likely be important to obtaining regulatory approval of many of these projects under the Clean Water Act (CWA).

With respect to the Sacramento Valley, the CALFED goals provide an opportunity for water districts and companies to manage flows under their control. As a general rule, reductions in flow that would otherwise go to places in the system where the water is irrecoverable results in real water savings that have a certain market value through transfers and exchanges. Reductions in recoverable losses, on the other hand, have a more subjective value, such as environmental and water quality benefits under the CALFED program. This discussion will largely focus on incentives for reductions in recoverable losses, which are generally described as environmental and water quality benefits. Importantly, the evaluation of reductions in recoverable losses, must consider water rights and needs for downstream water users who rely upon the recoverable losses of upstream users.

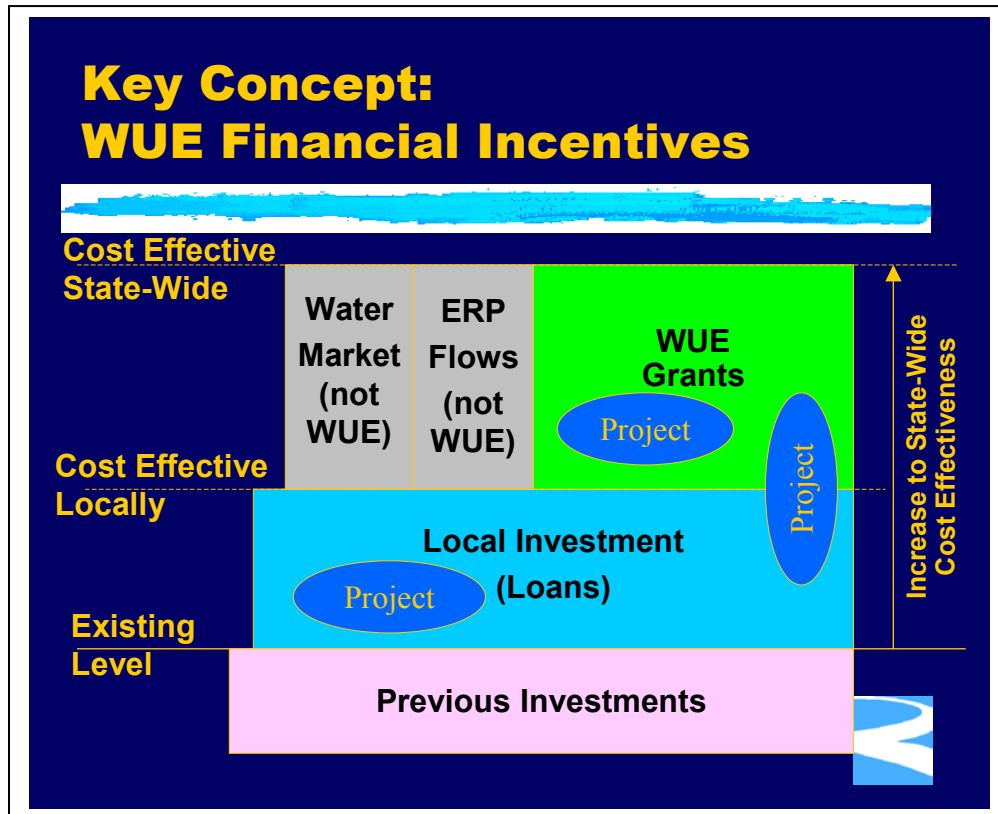
### **Competitive Grants and Loans**

“The primary CALFED program tool for encouraging investments in water use efficiency will be a competitive grant/loan program.” (ROD at 59.) Put differently, the “CALFED Agencies will rely on a competitive grant/loan program as the best mechanism to assure cost-effective investments in WUE.” (ROD at 60.) “CALFED agencies anticipate that the competitive grant/loan program could allow participating entities to effectively respond to local conditions.” (ROD at 60.)

The program is directed by the ROD to use incentives to pursue these water savings objectives in the form of grant and loan funding for projects developed at the local level. While the ROD emphasizes the need for these locally driven projects to be cost effective and appropriate at the local level, it also recognizes that some activities will only be considered cost effective when viewed from a statewide perspective (i.e. water savings that might not be used locally, but can be used in another part of the state, or water used locally for instream flows or other environmental benefit). Because of the limited local cost effectiveness in the Sacramento Valley (due to the price of water and the ability to use return flows downstream), CALFED staff is expecting that

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<sup>1</sup> A Lay Person's Guide to CALFED's Agricultural WUE Program at 1.



(Source: CALFED Water Use Efficiency Subcommittee)

there will be a limited number of locally-beneficial projects from this region. As mentioned above, the WUE program's strategy for providing incentives to develop water use efficiency projects distinguish between projects that: 1) provide local benefits and 2) those that are cost effective on a state-wide basis. More specifically, the WUE financial incentives strategy is best seen in three tiers that distinguish between local and statewide benefits (See chart above).

- Starting from the bottom of the chart, the first tier reflects previous investments in water use efficiency measures that have already been implemented.
- The second tier is local investments to be made in projects that are cost effective locally within a district or agency. These will include programs under the Agriculture Water Management Council (AB 3616). CALFED expects local agencies to provide the investment in these activities, but may provide incentives for these activities in the form of low-interest loans.
- Projects that are included in the third tier provide some degree of state-wide cost effectiveness. Because of this greater area of benefit, the projects are eligible for WUE grant funding (if available). Also note that in certain circumstances, a water market or Ecosystem Restoration Program (ERP) flows will provide the incentive to undertake these measures, recognizing the legal and institutional issues associated with these

actions. Although both of these activities provide a high level of statewide cost effectiveness, they will not receive funding from the WUE program because they are not WUE activities as they do qualify for funding from other CALFED programs.

In the Sacramento Valley, the low cost of water and the considerable potential to provide statewide benefits likely make grant funding the most viable means of providing incentive to individual farms and agencies to implement water use efficiency activities. In distributing agricultural WUE funding, “CALFED Agency investments will be made in the most cost-effective water use efficiency measures first. Due to the regional differences in water use efficiency potential, the exact cost-effective measures will vary. For example, in some agricultural districts the cheapest improvements may be to install automated delivery systems, while other districts may find channel improvements or canal lining productive.” (ROD at 60.)

CALFED has administered two WUE proposal solicitation packages (PSP). Attachment A lists the WUE proposals submitted from the Sacramento Valley and those that received funding for the first two funding cycles. Successful WUE proposals in the Sacramento Valley have included water measurement projects and canal improvements (including canal lining). Several Sacramento Valley projects were not selected for funding because the selection committee found their proposals did not describe CALFED benefits commensurate with the level of proposed state funding. Put differently, future proposals to be funded should demonstrate CALFED benefits as described in this document.

More specifically, in the second PSP, CALFED had no funding available for agricultural grants. The projects submitted from the Sacramento Valley are part of the SVWMP (see below). Overall, these PSPs have generated considerable interest in the water community. Demand for grant program funding has totaled \$87 million in the last two years, but CALFED has only had funding to provide \$12.2 million. This best exemplifies the biggest challenge the program faces – lack of adequate funding. The program has suffered from a total lack of federal grant funding the last two funding cycles and has seen state funding all but dry up. Of note, Proposition 50 on the November ballot contains \$180 million for CALFED WUE, which will be divided between agricultural and urban water conservation and water recycling.

### **Program Milestones**

The CALFED ROD directs CALFED Agencies to “establish specific milestones, and associated benefits, remedies and/or consequences to track and guide the implementation of the Agricultural WUE Program.” (ROD at 62.) In accordance with the ROD, the implementing agencies, working with the CALFED WUE Subcommittee to the Bay-Delta Public Advisory Committee (BDPAC) (see below), have developed recommended agricultural milestones, also referred to as “leading indicators,” to track progress toward goals established in the ROD.

### **Quantifiable Objectives**

To assist in the development of agricultural milestones for the program, Quantifiable Objectives (QOs) are being developed by CALFED WUE staff to establish numeric targets that will be

used. These objectives are expressed in terms of acre-feet of water for a particular stream reach during a specific period of time. Attachment B is a list of CALFED WUE QOs identified by sub-region in our area of the state. The QOs are very complicated, but deserve close study by water managers. To better understand the process, Marc Van Camp will discuss QOs at the November 2002 NCWA Managers Meeting.

The QOs are the WUE program's best estimate, with the data currently available, of cost-effective and practical contributions the agricultural community can provide towards attaining benefits for water quality, water quantity, and in-stream flow/timing. As can be seen in the attached tables, the QOs are very specific, identifying a goal for the WUE program on a particular river or stream. Additionally, CALFED "anticipates that the QOs will be an important factor in prioritizing expenditures under the agricultural incentive program." (ROD at 61.) This means that projects designed to meet the QOs will have a stronger chance of being funded. Water managers can look at a particular stream segment to determine the objectives for any WUE program.

#### Specific Milestones

The WUE milestones focus on three areas outlined in the ROD: administrative, implementation and results. (See Attachment C for a summary table of the CALFED Draft Assurances Milestones.)

*Administrative milestones* focus specifically on acreage enrollment in the Agricultural Water Management Council (AB 3616), which includes a statewide target of 3.8 million total acres by December 2003. Currently, the enrollment totals 3.3 million acres. (See Attachment D for a list of the Sacramento Valley participants in the Agricultural Water Management Council program.) As previously mentioned, the Agricultural Water Management Council facilitates broad-based, locally cost-effective water conservation activities. To encourage participation by Sacramento Valley water districts and companies, we are developing regional criteria for the Agricultural Water Management Council that will complement the QOs described above.

*Implementation milestones* track indicators that demonstrate progress in carrying out the WUE grant program funding, grant program participation and grant program projected effects. Critical funding objectives include the amount of grant funding that is available and the percentage of the funding that is directed to projects that directly contribute to meeting the QOs (the target is 90 percent of funding directed to QO projects). In addition, the milestones direct staff to pursue steadily increasing amounts of grant funding and distribute the funding in a manner that will allow for the pursuit of a considerable number of the QOs in varying regions throughout the state (i.e. award funding to meet a number of QOs and foster geographic diversity, rather than just concentrating the funding to meet one or two). In addition, the milestones call for a distribution of the grant funding among projects that will meet QOs for flow/timing, water quality, and water quantity in a number of different regions of the state.

The *results milestones* assess the program's progress in actually realizing its intended benefit, such as the acre-feet of water associated with either water quality, water quantity, or flow/timing objectives.

These milestones are dependent upon funding as described in the ROD. If funding continues to deviate from the schedule established in the ROD, these milestones will need to be revised.

The CALFED WUE Subcommittee (described below) has forwarded the agricultural milestones for the BDPAC, which will likely recommend that the CALFED agencies begin the process to implement the program later this year.

### **Appropriate Measurement**

The ROD directs CALFED to develop a definition of appropriate measurement of water deliveries to "provide better information on statewide and regional water use, enable water purveyors to charge for water according to the amount used, allow water users to demonstrate the effects of efficiency measures, and facilitate a water transfers market." (ROD at 63.)

In June 2001, CALFED convened an independent review panel to help define appropriate measurement as it relates to agricultural water use. The principal goal of the panel is to prepare a concise definition of appropriate measurement. This definition could be used to establish a means of measurement that will provide information that can establish opportunities or requirements to decrease diversions in important months to provide endangered species benefits, increased water quantity, and improved water quality. In the Sacramento Valley, appropriate measurement can be used to accurately determine the timing of water in the river to provide flows that will benefit listed species of fish.

The review panel has developed some primary recommendations to facilitate its deliberation of a definition of appropriate measurement, which include: clearly articulate objectives of measurements (i.e. to assist in state and federal water planning, water allocation, water transfers, and WUE), better understand and characterize California's current measurement approach, and develop and evaluate options moving forward (alternative strategies). Marc Van Camp, with MBK Engineers, serves on the technical advisory panel to the appropriate measurement review panel.

The CALFED Panel is looking at how measurement can support state and federal water management goals related to water allocation, water planning, water transfers, and water use efficiency. In this process, the panel will look at the costs and general benefits of several different types of measurement. This will include a look at measurement at farm turnouts but will also attempt to compare those costs and benefits to other alternatives such as stream gaging, district diversion, and regional groundwater studies. CALFED will then determine which approach to use in specific regions to provide the most useful level of measurement for the cost incurred.

Over the next six months, the review panel plans on completing and releasing its draft recommendations on the definition of appropriate measurement for agriculture. Informed by the panel's guidance and urban-related recommendations to be developed through a parallel process, staff is expected to work with CALFED advisory and decision-making bodies to develop draft legislation for consideration by the state legislature. The ROD calls for final recommendations to be submitted to the legislature in time for their consideration during the 2003 legislative session.

### **Technical Assistance**

“[California Department of Water Resources] and Reclamation will work with the Urban Water Conservation Council and Agricultural Water Management Council to provide technical assistance to urban agencies and agricultural districts developing management plans under the Urban Water Management Planning Act and the AB 3616 process.” (ROD at 62.) The Department of Water Resources also includes an Office of Water Use Efficiency, which is responsible for water use efficiency planning and coordination (website: [www.owue.water.ca.gov](http://www.owue.water.ca.gov)).

### **Comprehensive Evaluation**

The ROD requires CALFED agencies to complete an annual evaluation of the WUE program's progress. In addition to the annual evaluation, “by December of 2004 CALFED Agencies will conduct a comprehensive evaluation of the Program's first 4 years, and will make appropriate additional State and Federal investments and actions to assure continued aggressive implementation of WUE measures in the state.” (ROD at 62-63.) This evaluation will likely be compared to other CALFED program areas to determine balance in the program and as part of the CWA requirements for water supply infrastructure. The results of the assessment will have a bearing on the ability to obtain regulatory permits for Sacramento Valley storage projects (e.g. Sites reservoir or Enlarged Shasta).

### **Public Advisory Committee**

The WUE Subcommittee was established to provide recommendations to the CALFED Policy Group and CALFED agencies through the BDPAC on planning and implementation of the CALFED WUE program.

According to the WUE Subcommittee program description, the committee will provide the BDPAC with recommendations and guidance on the selection criteria and priorities for the loans and grants incentive program; appropriate distribution of funding across WUE components; emphasis, priorities and general approach to technical assistance and research; comprehensive and supportable assurances of high water use efficiency; a process for refining QOs, an urban Best Management Practices certification process; methods and approaches for integrating WUE with the CALFED Science Program; methods and approaches for coordination among CALFED agencies; review of CALFED annual report on WUE; and provide a forum for exchange of ideas with agencies and other interests. BDPAC Member David Guy serves as a co-chair of the CALFED WUE Subcommittee.

### **Sacramento Valley Water Management Program**

The SVWMP includes system improvement projects, most of which include efficient water management practices to meet CALFED target benefits. These projects, which have been advanced by local water districts and companies in the Sacramento Valley, are estimated to create 100,000 af of water in the short-term workplan. The SVWMP Draft Short-term Agreement states that, “WUE measures will be implemented to provide maximum environmental benefit and to provide operations and maintenance benefits to participating Upstream Water Users.”

Funding for WUE projects will be critical to advance the agreement, as shown by a recent letter signed by NCWA Executive Director David Guy and Metropolitan Water District of Southern California Vice President, State Water Project Resources Timothy Quinn (See Attachment E for a copy of this letter). A key to obtaining CALFED grant funding for these activities will be to credibly demonstrate that these projects will provide in-stream flow and water quality benefits to the Bay-Delta system.

### **Integration with other CALFED and Sacramento Valley Programs**

The WUE Program is part of the CALFED water management program, which includes groundwater management, conjunctive management, evaluation of Sites reservoir and a Lake Shasta enlargement investigation. A fundamental tenet of the CALFED program is balanced implementation of all program elements. More specifically, the CALFED Clean Water Act § 404 Memorandum of Understanding states that, “The Signatories [of the MOU] recognize the integrated nature of the CALFED Program and will evaluate individual actions in the context of the overall Program.” (CALFED Section 404 MOU at 3.)

Put differently, progress in the WUE program is essential to advance many water supply programs in the Sacramento Valley, including Sites reservoir. More specifically, locally developed and implemented system improvement projects particularly those that provide CALFED targeted benefits, are a crucial part of an integrated water management program for the Sacramento Valley.

### **Legal Issues to Protect Conserved Water**

The protection of water rights is critical to any program to conserve water or to implement more efficient water management in the Sacramento Valley. Any water produced for the WUE program will be subject to current provisions in both federal and state law. Most notably, Water Code § 1011 provides that “when any person entitled to the use of water under an appropriative right fails to use all or any part of the water because of water conservation efforts, any cessation or reduction in the use of the appropriated water shall be deemed equivalent to a reasonable beneficial use of water to the extent of the cessation or reduction in use.” As a result, the water right for the conserved water will not forfeit under state law. As an example, the State Water Resources Control Board (SWRCB), in its instructive decision on conserved water within Natomas Mutual (SWRCB Order 99-012, 2000-01), found that “Natomas’s right to use the amount of water conserved is protected.”

A second, and more difficult, issue is whether the conserved water can be transferred for use within the Sacramento Valley, for instream purposes (Water Code § 1707) or for use in other parts of the state that can utilize water from the Delta. These transfer issues are complex and are beyond the purposes of this document. To assure that water rights are protected, you should consult with your legal advisor.