

# PROPOSITION 50

## CONSERVATION IMPLEMENTATION CHALLENGES AND OPPORTUNITIES

Applicant

California Urban Water Agencies

**Applicant: California Urban Water Agencies**

**Proposal: Conservation Implementation Challenges and Opportunities**

This application is being submitted as a Section B proposal, pursuant to the November 15, 2004 "Final 2004 Water Use Efficiency Proposal Solicitation Package".

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**A-15c. Statement of Work, Section 1: Relevance and Importance (10 points)  
(Provide hypothesis upon which the research is based, background of existing pertinent research in this area and research and monitoring and assessment methodologies.)**

**Describe how this project will contribute toward or support California Bay-Delta Program goals.**

The goal of this proposal is to improve the success of specific urban water conservation programs by identifying implementation barriers and developing potential solutions to overcome such barriers. The focus will be initially on the broad range of best management practices, and later shift to a more intensive look at a selected subset of the most difficult to implement conservation programs.

Implementation of urban water conservation programs to date through the Department of Water Resources (DWR) and the California Bay-Delta Authority (CBDA) has been based on the tacit assumption that funding is the primary limiting factor in implementing conservation programs. Our hypothesis is that there are other limiting factors which need to be identified, put in context, and for which solutions need to be developed. Our proposal is submitted as a “Section B” project since it deals primarily with research and development. However, our proposal includes development of case studies and a marketing program that could overlap with other areas under Section B.

Recent research such as, *Water Efficient Landscape Ordinance (AB 325): A Statewide Implementation Review*<sup>1</sup>, *Urban Water Conservation Potential: 2003 Technical Update*<sup>2</sup>, *Waste Not, Want Not: The Potential for Urban Water Conservation in California*<sup>3</sup>, and the most recent draft version of the DWR California Water Plan Update 2003 (Bulletin 160-03), has focused on the potential for urban water conservation savings, but little on how to achieve these savings. In 2004 California Urban Water Agencies (CUWA) commissioned a limited study *Urban Water Conservation Implementation Challenges and Opportunities*<sup>4</sup> of both barriers and opportunities related to conservation programs. This initial work pointed to a number of opportunities for gaining greater implementation success. However, the scope of the study was limited in both sample size and the type of conservation programs considered.

Experience has repeatedly shown that simply offering free or subsidized conservation solutions to households and businesses is often inadequate to gain customer participation in agency-sponsored conservation programs. This is especially true in the commercial and

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<sup>1</sup> CUWA sponsored study: *Water Efficient Landscape Ordinance (AB 325): A Statewide Implementation Review*. Western Policy Research, Perry and Associates Collaborative. March 2001.

<sup>2</sup> CUWA sponsored study: *Urban Water Conservation Potential: 2003 Technical Update*. A&N Technical Services, Inc. July 2004.

<sup>3</sup> *Waste Not, Want Not: The Potential for Urban Water Conservation in California*. Pacific Institute. November 2003.

<sup>4</sup> CUWA sponsored study: *Urban Water Conservation Implementation Challenges and Opportunities*. A & N Technical Services, Inc. September 2004.

industrial sectors where the cost-savings of water conserved is often considered too small to the customer to entice participation.

The limited research that is available suggests that at least two issues must be addressed to increase the effectiveness and the outcomes of conservation programs. The first is to better understand the range of implementation opportunities, barriers and constraints at two levels:

- Potential participating customers: What are the types and importance of the factors that influence the customer's decision to participate in a conservation program?<sup>5</sup>
- The water utility: What are the issues that enhance and detract from cost-effective conservation *program delivery* (e.g. limited staffing, contract management, managerial constraints, monitoring and assessment.)

The second issue to be addressed involves developing marketing strategies, or program delivery mechanisms that effectively address these issues, resulting in higher rates of customer participation, better run conservation programs and, ultimately, more water savings for the same conservation budget. More cost effective conservation programs, in turn, can justify greater funding and accelerated implementation levels. This study proposal was developed recognizing that implementation of the CALFED Water Use Efficiency (WUE) Program urban water conservation element has not, to date, been addressed in a manner as comprehensive as other areas of the CALFED Bay-Delta Program. More explicitly, efforts to date have been aimed at: (1) estimating the savings potential of WUE measures, (2) developing proposals for “appropriate water use measurement”, and (3) securing funds through bond propositions to promote WUE implementation. No substantive CBDA efforts have been directed at evaluating implementation challenges and developing potential solutions. This observation is not unique to CBDA activities; past efforts by DWR in updating the California Water Plan have addressed implementation challenges of other water resources management tools but have remained nearly silent on conservation challenges. The current draft of Bulletin 160-03 does include a short discussion of implementation challenges, which was added largely through CUWA's efforts and backed up by our initial research in this area.

The popular presumption has been that funding is the limiting factor in achieving conservation savings. Results of CUWA's earlier research and discussions with staff of the California Urban Water Conservation Council (Council) indicate that there are implementation challenges that are not directly related to program funding.<sup>6</sup> Such challenges appear to cover a range that includes institutional structure, program design, organizational norms, public support, and human behavior.

This proposal seeks to conduct much more comprehensive research into the area of urban water conservation implementation. Outcomes will be:

- A more complete inventory of implementation barriers
- Case studies of successful implementation solutions
- Marketing alternatives for increasing implementation beyond current efforts

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<sup>5</sup> Early CUWA sponsored work in this area includes *A Guide to Consumer Incentives for Water Conservation*, Barakat and Chamberlin, February 1994.

<sup>6</sup> This conclusion is supported by preliminary results of a study currently being undertaken by the American Water Works Association Research Foundation entitled “Water Efficiency Programs for Integrated Resource Management”.

Urban water conservation is a key component of the CALFED WUE Program, and has been the subject of a great deal of focus by the Bay-Delta Public Advisory Committee (BDPAC) WUE Subcommittee. It is widely recognized that successful implementation of the WUE Program will contribute to the CALFED goals of improving water supply reliability, improving water quality and improving ecosystem restoration. These are separately addressed below.

Improve Water Supply Reliability. The Bay-Delta Authority is developing revised conservation targets as part of its four-year review of the WUE Program. A draft was distributed to the BDPAC WUE Subcommittee in December 2004. The current draft does not address implementation challenges, but presumes that meeting specific urban (and agricultural) water conservation targets will help meet the goal of improving water supply reliability as a whole.

Obviously, the impact of barriers to implementation of urban water conservation measures has a significant impact on water supply reliability at the local, regional and state level. By identifying opportunities for overcoming these barriers, and putting those tools in the hands of conservation program managers, the likelihood of more effective implementation of water conservation measures will become a reality. This increased water conservation will result in increased local water supply reliability while decreasing dependence on imported supplies. In turn, this would result in additional water supply reliability in the Bay-Delta.

Improve Water Quality.

Additional implementation of water conservation measures that reduce sewage flows (i.e. ultra low flush toilet and high efficiency washer programs) result in decrease discharges of treated sewage into the state's waterways and, therefore, increase water quality.

Improve Ecosystem Restoration.

Increased water end-use efficiency—the objective of well implemented water conservation programs—can have additional beneficial effects on existing ecosystems at risk: either through improved freshwater flow (due to decreased withdrawals) or due to minimization of the deleterious effects of freshwater taken and not consumed (reduced urban runoff). (Also refer to water quality discussion above.)

## **A-15d. Statement of Work, Section 2: Technical/Scientific Merit, Feasibility (25 points)**

### **Approach**

The scope of the proposed project is broad: we propose to conduct a comprehensive written survey of all urban water utilities that are signatories to the California Urban Water Conservation Council's (Council) Memorandum of Understanding (MOU). This proposal has the following technical components: (1) survey design; (2) collection and analysis of data via a scientific sample of urban water agencies; (3) development of case studies based on the resulting data; (4) development of trial marketing program to accelerate the implementation of selected urban water conservation programs; and (5) conduct of two public workshops to share the results of the work under this project with the interested public.

We recognize that there are limited funds for Section B projects (research and development). To that end we have designed our proposal to be both scalable and incremental. If the funds available for our proposed project are less than needed, the proposal can be scaled back by: (1) limiting the number of survey participants, (2) limiting the scope of the survey to only selected Best Management Practices (BMPs), (3) reducing the comprehensiveness of the case studies, and/or (3) reducing the overall project scope or by eliminating entirely the marketing component. In any event, the survey component will include the full range of existing BMPs, since this will likely provide a great deal of useful data regardless of the comprehensiveness of subsequent study components. The focus within the marketing component on landscape issues is appropriate due to the difficulty and importance of water use efficiency within these end uses.

CUWA's initial study of *Implementation Challenges and Opportunities* establishes the feasibility of the research approach proposed herein. Further, initial findings from that study have guided the research plan for this proposal throughout. Since this proposed research follows and builds upon the earlier work, it is worth briefly reviewing findings from this initial assessment of implementation challenges and opportunities.

The key overall finding from this initial study is that good water conservation programs are neither quick nor easy. Staff in water agencies struggle to create, maintain, and improve the implementation of cost-effective conservation programs. Another key finding guiding this proposal is how implementation challenges are specific to the particular environment in which a program is implemented:

- Staff in retail water agencies report different types of implementation challenges than do those in wholesale water agencies;
- Conservation programs implemented directly by the utility face a different set of implementation issues than do those implemented by a contractor; and
- Conservation programs targeting residential customers encounter different types of implementation challenges than do those targeting commercial end uses.

Key findings of this initial work are summarized below.

Implementation Challenges by Customer Type: Water conservation programs differ from other water resource alternatives in that the implementation must occur through customers. This "distributed" implementation must, at a minimum, occur with a customer's permission and typically requires active customer participation. How can customers be induced to

voluntarily participate in conservation programs? How can water utilities induce customers to change water-using behaviors? These fundamental implementation challenges require effective customer communication, skillful marketing, and proper incentives.

Residential Customers: Residential conservation programs critically depend on customer participation to work. Ideally, the program will induce interest in conservation on the part of customers who would otherwise not participate. Similarly, the utility generally wants to limit the number of free-riders—customers who partake of program offerings who would have implemented the conservation measure anyway. Adjusting the scale of the program is one way to address concerns about free-ridership: a program that continues at a low level for a long period of time is likely to end up funding more free-riders than is one that concentrates its efforts in a short period of time. Addressing the attractiveness of the program to utility customers was a key issue with residential conservation programs. Some utility staff cited the positive impact of changes in water rate structures to making conservation programs easier to market to customers; others cited the lack of a sufficient price signal as a significant impediment to securing customer participation.

Commercial Industrial Institutional (CII) Customers: Conservation programs targeting CII customers presented a very different set of implementation challenges. Some utility respondents argued that CII programs are intrinsically more difficult because CII end uses are more complicated and more heterogeneous. These programs require a higher level of technical knowledge to implement or oversee. Conservation programs targeting residential customers, by contrast, appeared to be easier to standardize and scale. Larger agencies were more likely to have the expertise in-house to either implement or oversee CII programs.<sup>7</sup>

Implementation Challenges by Program Type: Table 1<sup>8</sup> lists some key implementation challenges, organized by program type. Note that this list reflects comments received and should not be interpreted as either a comprehensive list or as universally applicable in every service area.

Residential programs always require careful consideration of incentive levels in order to drive effective marketing and to minimize free-ridership. Residential programs targeting outdoor end uses have been held back by the uncertainty associated with expected water savings; customer follow-up is essential to establish persistent water savings. Public Information programs have experienced wide variation in funding levels; building awareness of the need for water conservation, though a necessary first step, may not have easily quantified water savings. Conservation programs targeting large landscapes confront several implementation challenges: the bill payer may not directly manage or control irrigation water uses; the measurement of irrigable landscape area—needed to define a water budget for efficient and appropriate water use—is not easy and can be expensive; and questions of water savings persistence may still apply.

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<sup>7</sup> An example of an analysis of implementation challenges for one commercial end use—ultra low flush toilets—can be found in the CUWA co-funded study: *Ultra Low Flush Toilets in Commercial Installations*, A report by A & N Technical Services for CUWCC and CUWA, February 1994.

<sup>8</sup> CUWA sponsored study Urban Water Conservation Implementation Challenges and Opportunities. A&N Technical Services, Inc. September 2004, pg 9.

Programs targeting public end uses can face similar incentive issues as well as other constraints (e.g., staffing, cash flow, etc.). Water utilities have been instrumental in helping to revise plumbing codes establishing more efficient standards. These efforts have been and continue to be difficult work requiring persistence and a willingness to work with manufacturers. Water rate structures are a decidedly local issue. Attempts to reform water rates to develop more efficient price signals confront uncertain effects on expected revenue. Water system leak detection programs are very service area specific. Water utilities have been implementing leak detection programs more aggressively in the last decade as water supply constraints have increased.

<b>Table 1: Key Implementation Challenges by Program Type</b>	
<b>Program Type</b>	<b>Key Implementation Challenges</b>
Residential Indoor Programs	Marketing; incentive levels; net free-ridership; language barriers.
Residential Outdoor Programs	Persistence of water savings; uncertain reliability; follow-up is key; language barriers.
Public Information	Lack of direct savings estimates; communication barriers and the need to update information on a regular basis.
CII Programs	Lack of reliable savings estimates; lack of in-house technical skills to handle all CII-end uses; adversity to changes in any working process; language barriers; water can be a low priority for some businesses.
Large Landscape Programs	Incentive issues (the hand on the spigot may not pay the bill); area measurement; persistence of water savings; language barriers.
Programs Targeting Public End Uses	Incentives – some public entities do not directly pay for water; schools may have cost-effective opportunities but no cash to implement them.
Plumbing Codes	Lack of coordinated effort to rationally revise; institutional inertia.
Water Rates/Efficiency Pricing	Changes to rate structures are a local issue; intrinsically political and risky.
Leak Detection Programs	Can be expensive; uncertain requirements for retrofit or rehabilitation.

The proposed research builds on this initial listing of conservation challenges and seeks to better explore and document solutions to these challenges.

Finally, CUWA and our member agencies have extensive experience working with a number of consultants on urban water conservation research and program development. We also have a longstanding relationship with the California Urban Water Conservation Council, and CUWA is a signatory to the Urban Water Conservation MOU. We believe this adds to the credibility of our proposal and the likelihood of successful study outcomes.

Technical and Scientific Merit. Merits of the proposal's individual components are addressed separately below, first with a description of research methods and then with a detailed discussion of research tasks and schedule.

## **Methods**

Given the differences among types of conservation implementation programs at the various water agencies, a single cookie-cutter analytic approach is inappropriate. We propose an adaptive research design using the multiple data collection methods described below. The research addresses the question of *how well* the different programs are at achieving conservation program participation and retention.

**Web-Based Utility Survey** – This survey will use the Council's web-based survey tool as a means of implementing the utility survey. The Council has used this tool to quickly and cost-effectively roll out surveys for other purposes. It also offers some methodological advantages in terms of controlling the form and completeness of responses.

**Implementing Staff Follow-up Interviews** - In-person follow-up interviews with agency staff responsible for implementation to assess program success, factors important in success, weaknesses, strengths, and areas for improvement. Answers to these types of questions will serve as the foundation for the in-depth case studies.

**Other Water Agency Staff Interviews** - In-person focused interviews with agency financial and managerial staff to glean insights on the following issues: revenue effects, assessment of financial planning complications, program success, factors important in success, weaknesses, strengths, direct and indirect program costs, and areas for improvement.

**Quarterly Progress Reports** – The results of the quarterly progress reports will be integrated into the research with an eye to developing an understanding of the reasons why differences may be observed in program progress.

**Market Research – Focus Groups and Customer Surveys**—the project team will conduct a focus group targeting conservation coordinators to assess implementation barriers and solutions. Given the importance of customer participation to implementation success, we also propose conducting several customer-specific focus groups. Additionally, we would like to piggyback on existing and ongoing utility customer surveys to add depth to the data collected on the customers' perception of conservation program attractiveness.

## **Project Plan**

A more detailed workplan will be reviewed by the project's Project Advisory Committee (PAC) and finalized. As currently envisioned the project tasks are outlined below:

### **Task 1. Compile Prior Research.**

Task 1 will conduct a literature review of published research on urban water conservation implementation problems and successes.<sup>9</sup> It will include a limited literature review of energy utility conservation implementation research, since it can shed some light on water conservation challenges. To complete this task expeditiously, this task will draw heavily on the expertise of consulting team. Quantec, for example, has developed a national reputation for its work on energy conservation implementation issues in many studies.

### **Task 2. Statewide Survey of Signatory Water Agencies**

We will use established qualitative interview and survey methodologies to gather data from urban water agencies that are signatories to the Council's Memorandum of Understanding.

Sample selection. All necessary contact information is included in publicly available databases housed at the Council. The population of all urban water agencies constitutes the sampling frame. A stratified sampling plan will be developed to control for the biasing effects of nonresponse. Potential strata will be reviewed with the Principals-in-Charge and will be subject to input by the PAC. Potential strata include geographic area, size of utility or type of signatory.

Survey Design. We will design the survey to be distributed electronically. We will notify potential respondents about how to access the survey via a link to a webpage developed specifically for this purpose. The survey will be designed to solicit the same information from urban water utilities and will require listing a contact person for any follow-up questions. Unlike mailed surveys, the web-based survey will be designed with more controls over the form of acceptable responses. Project consultant(s) will develop specific questions and the survey format with review by the PAC and approval of the Principal Investigators. As some responses may be sensitive in nature, we will conduct data analysis at only the aggregate level, and not at the individual water utility level, unless respondents agree in writing to forego confidentiality.

The survey instrument will build on the one used in CUWA's September 2004 study. That instrument addressed a broad range of implementation challenges and separated issues by type of conservation program. A draft of this two part instrument is included as Attachment 1.

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<sup>9</sup> Implementation research, a longstanding field of inquiry, will be included in this assessment.

### **Task 3. Data Collection and Analysis**

As indicated above, survey data will be collected via a web-based system. This has been used successfully in the past by the Council<sup>10</sup> Analysis of survey data will include, as sample size permits:

- Univariate descriptive statistics and tests including: frequency distributions; measures of central tendency – mean, median, and mode; and measures of dispersion – standard deviation and variance. Tests may include t-tests between groups on variables of interest and Chi square tests on the frequency of distributions.
- Cross-tabulation on appropriate variables to determine existence and strength of relations among variables and groups.

### **Task 4. Follow-up In-person Interviews**

In-person follow-up interviews focusing on implementation challenges and opportunities will also be conducted. These in person interviews will allow for follow-up on the part of the respondent or the interviewer to any need for clarification. A key finding of CUWA's initial study of implementation challenges was the extent to which challenges vary by both program and customer type. These interviews will provide an important data source for the case studies developed in Task 5. The interview protocol will explore the impetus and original design of the conservation program, the challenges encountered, how the conservation program was modified over time to address the implementation challenges. A list of lessons learned will be developed using this information. Allocation of in-person interviews will be guided by the stratified sampling plan, reviewed by the PAC, and guided by qualitative methodological principles.

### **Task 5. Case Studies of Successes and Challenges**

Case studies will be developed to identify, explain, and communicate proposed options and opportunities for overcoming implementation challenges. This shall be in the form of structured case studies for three to five BMPs based on input from the PAC and the identification of those conservation measures having the most promise for water savings.

Case studies have the potential for providing the type of context that gives the design of customer incentives and program delivery mechanisms concrete meaning. We propose going at this in two ways: (1) specific case studies of successful programs, identifying the water agency and appropriate details of the program, and/or (2) case studies of programs, to remain anonymous, that encountered significant implementation challenges, accompanied by suggested strategies to address these challenges.

Mindful of the confidential nature of the survey and the volume of data we are likely to collect, we propose to develop case studies related to one to three of the most difficult to

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<sup>10</sup> Personal conversation with Mary Ann Dickinson, Executive Director, California Urban Water Conservation Council, December 2004.

implement BMPs. The selection will be based on a number of factors including the results of survey data analysis, the willingness of individual utilities to provide necessary information about one of their successful conservation programs, and the potential benefits of case studies for use by a large number of urban water utilities. Hypothetical case studies may be developed in addition to, or in place of, actual case studies, depending on these same factors. There may be a benefit to developing a hypothetical case study that represents a composite of successful individual programs. Decisions regarding case study development will be made by the Principals-in-Charge in consultation with project consultant(s) and PAC.

#### **Task 6. Development of a Landscape Marketing Program.**

Urban water conservation differs from other water management tools in that it involves distributed implementation, operation, maintenance and replacement. It is very different from centralized facilities, which are typically under the control of a single entity. Marketing is a key component in implementing conservation programs and, in fact, is embodied in BMP 7 (Public Information), BMP 8 (School Education) and BMP 12 (Conservation Coordinator).

Based on CUWA's prior research, landscape was identified as an area likely to benefit the most from a trial marketing program, based on a review of potential savings from the range of urban water conservation measures. Current efforts to examine this area of potential savings include the Assembly Bill 2717 signed by Governor Schwarzenegger in 2004, authored by Assemblyman Laird, which asks the Council to set up a stakeholder Task Force to review and evaluate landscape water issues statewide and to make recommendations for improvements; and the development by the Council of a pilot program for local water suppliers to help improve understanding and implementation of BMP 5 (large landscape conservation programs) as part of its work on the \$1.9 million CALFED Cooperative Agreement.

As the long-term drought continues in the western states, we observe that decreasing landscape water use has a very high priority in Nevada, Arizona and areas of southern California – in addition to the emphasis already placed on it by the MOU. Much of the attention on improving landscape water use efficiency has focused on new technologies. The focus of this project is to make the process of implementation and marketing of these new solutions entirely complementary.

Water utility conservation programs can be thought of as “selling” a common product and a service. The *product* is the *concept* of improved water use efficiency. The *service* is the knowledge provided by a conservation program designed to assist customers to improve their water use efficiency. Implementing water conservation programs in California is a business of selling these products and services to a potential customer base of millions of users. The marketing task is determining what message it takes to convince a customer to participate in a conservation program.

Marketing Focus Groups: Focus group interviews will be used to determine the types of information and marketing strategies that are effective in evoking desired conservation

behaviors among different customer segments (e.g., residential, commercial, industrial). Observers shall include water conservation coordinators from urban water supply agencies, selected by the Principals-in-Charge with recommendations from the PAC. These focus groups will be used to solicit comments and ideas, and serve as a sounding board for potential marketing and communication strategies.

As part of the project, a subcontractor with expertise in market research will be hired to explore customer attitudes and behaviors toward water conservation for several customer types. The research will identify issues and recommend marketing strategies and messages for each customer type. The deliverable under this task will include a template for a marketing plan containing each of the recommended parts: definition of target audience, delineation of message, choice of media, and a design of feedback channels for modification. This template will be presented in the public workshops and will serve as the foundation for local agencies to use in developing service area-specific marketing and communication strategies.

#### **Task 7. Reports and Publications.**

There will be a final report developed for DWR that includes summaries of the statewide utility survey, the follow-up in person focused interviews, the case studies, and recommendations. The landscape marketing plan, developed as a separate deliverable, will also be provided to DWR. Additionally, an abbreviated version of the report will be developed for publishing in a peer-reviewed technical journal that will reach water resource managers and conservation practitioners throughout California.

It is the intent of this study proposal to develop information and recommendations that will be useful to water utilities, DWR, the CBDA and the public in pursuing a greater level of success in urban water conservation programs. These report recommendations will be specific and instructive, with the goal of improving water utility conservation program efforts.

#### **Task 8. Public Workshops.**

CUWA, with support from the Council (Cooperator) and participation by the Principals-in-Charge, will conduct two public workshops for the purpose of sharing the results and recommendations from this study with the interested public. This task will include preparation of all workshop materials, and will provide a working template for water agency implementation of recommendations.

### **Project Deliverables**

The project will have the following deliverables:

1. Quarterly fiscal and programmatic reports will be provided to DWR for the duration of the project (January 15, April 15, July 15, October 15).

2. Summary report, literature review.
3. Draft and final utility survey instruments.
4. Draft and final customer market research instruments.
5. Draft and final data analyses, including all data. (Data shall not be provided in a form that would identify specific survey respondents – either individuals or their organizations).
6. Draft and final recommendations.
7. Final report, in both electronic (PDF) and printed formats (100 copies, 8-1/2 x 11, spiral bound).
8. Draft and final market research report describing customer attitudes and behavior towards conservation including recommended messages for each customer type.
9. PowerPoint presentation to DWR at one public workshop in Sacramento. Additional workshops targeting conservation coordinators can be implemented as time and budget allow.
10. Summary report for journal publication.

The feasibility of this study relies on the success of the survey and the active engagement of consultants and appropriate advisors. The proposed study structure shall consist of a project team and a PAC, as set forth below:

### **Project Team**

- Principals-in-Charge: Steve Macaulay, Executive Director, CUWA; Bill Jacoby, Chair of CUWA Water Conservation Committee and Water Resources Manager, San Diego County Water Authority
- Cooperator: California Urban Water Conservation Council, represented by Executive Director Mary Ann Dickinson
- Principal Investigators: Thomas Chesnutt of A & N Technical Services will serve as Principal Investigator for the project. Dr. Chesnutt has been under contract with CUWA for the past two years to provide support services on water conservation studies. Sharon Baggett and Gary Fiske of Quantec LLC will serve as additional investigators for qualitative methods, energy demand side management (DSM) implementation practices, and design of customer incentives. They will subcontract with A & N Technical Services. The conduct of the marketing task will be determined by the PAC.

**Project Advisory Committee:** Members shall consist of two water conservation professionals selected from among CUWA member agencies, two representatives from the Council, the Council's Executive Director, two representatives from the BDPAC Water Use Efficiency Subcommittee, and the Chief of DWR's Office of Water Use Efficiency. This group will offer suggestions regarding conduct of the study including survey questions, data analysis and development of recommendations. All final decisions shall be made by the Principals-in-Charge.

**A-15e. Statement of Work, Section 3: Monitoring and Assessment (25 points)**  
**(Provide estimates of total expected water savings for proposals that are designed to lead to quantifiable water savings. Provide an explanation for all assumptions, methodologies, and computations used to arrive at the values. Provide a plan for project monitoring and evaluation that will be used to document the benefits to mark progress and to determine the success of the project in relation to project goals and objectives.)**

This section is required of all Section B project proposals, including those involved in research and development. Our proposal is basic research, coupled with development of potential tools for gaining an increased level of urban water conservation savings over what might occur otherwise. This is a difficult area to quantify, since neither DWR nor the CBDA has yet addressed difficulties in meeting the goals set forth in current planning documents. Our concern is that current targets for future water savings at 2020 and 2030 will not be achieved unless and until more is known about implementation challenges. These missed water conservation opportunities could result in hundreds of thousands of acre-feet of lost water savings. This lack of knowledge stands in contrast to other water management tools such as additional storage, conveyance infrastructure, desalination, etc. for which there has been substantial public dialogue over implementation challenges.

We are convinced that current targets will not be reached unless and until implementation challenges are evaluated and successful measures are developed. The proposed study is likely to achieve benefits that go beyond current BMPs, since they will be equally applicable to other water conservation measures or measures that require greater implementation efforts than required by the current BMPs.

We propose to monitor the progress of this study through requirements for intermediate products the active engagement of a PAC and, in the case of the marketing component a market research group. The study organizational structure is set forth at the end of “Section 2, Statement of Work”. We will gauge success of the project through direct feedback of the PAC, quality of the deliverables (including intermediate deliverables) and publication of the study results.

CUWA will be responsible for primary project management and administrative activities and will be assisted by sub-contractor, A&N Technical Services. Project management will consist of the following list of commitments:

- CUWA will sign and execute the contract with the funding agency and submit additional information, if required. CUWA will also execute a contract with the sub-contractor, A&N Technical Services.
- A&N Technical Services, in coordination with CUWA, will oversee all survey development and procedures to ensure that the project objectives are met and that all deliverables listed in Section 1 are completed on schedule. All project oversight and decisions will be coordinated with CUWA.
- CUWA will prepare and submit quarterly fiscal and programmatic reports (January 15, April 15, July 15, October 15) to the funding agency as well as a final report at the end of the project. The quarterly reports will describe the fiscal and programmatic

status during each three month period. These reports will include (1) the total amount of money awarded to the project, (2) the amount invoiced to the granting agency, (3) description of activities performed during the three month period and the percentage of each task completed, (4) deliverables produced to date of the report, (5) problems encountered that may delay the progress of the project, and (6) description of amendments or modifications to the grant agreement. Table D-2 included in Appendix D breaks down the project budget to an estimate of quarterly expenditures.

- CUWA will prepare and submit invoices inclusive of A&N Technical Services to the funding agency on a monthly basis.
- CUWA and/or A&N Technical Services will participate in relevant stakeholder groups such as the BDPAC WUE Subcommittee to inform interested parties regarding progress and solicit feedback. Acquiring feedback and recommendations from group members will ensure that the project is able to address as many areas of interest as feasibly possible and is complementary to ongoing and future efforts.

### **A-15f. Qualifications of the Applicants and Cooperators (5 points)**

The Applicant is CUWA. CUWA was formed in 1990 as a 501c(3) nonprofit public benefit corporation to provide a research and public educational forum for its member agencies<sup>11</sup>. The charge of CUWA is to study and promote the need for a reliable, high quality water supply for current and future water needs. CUWA focuses on four major areas: water management, drinking water quality, Bay-Delta ecosystem integrity, and participation and collaboration.

Urban water conservation is one of California's key water management tools, and an area of strong CUWA involvement. CUWA has been involved in urban water conservation research from the start. CUWA helped form the Council, following signing of the Urban Water Conservation MOU in 1991. CUWA provided administrative support to the Council for a number of years until a full-time staff was hired.

CUWA has conducted / sponsored various conservation studies, including:

- Evaluating Urban Water Conservation Programs: A Procedures Manual. February 1992.
- CUWA Survey of 1992 Demand Management Measures. May 1992.
- Ultra-Low Flush Toilets in Commercial Installations. February 1994.
- A Guide to: Consumer Incentives for Water Conservation. February 1994.
- Long-Term Water Conservation and Shortage Management Practices; Planning That Included Demand Hardening. June 1994.
- Urban Water Conservation Programs. Volume I, Annotated Bibliography. September 1994.
- Urban Water Conservation Programs. Volume II: Topical Listings. September 1994.
- Urban Water Conservation Programs. Volume III: Experiences and Outlook for Managing Urban Water Demands. December 1995.
- Willingness to Pay for Household Water Savings Technology in Two California Service Areas. December 1995.
- Performance Standards for Demonstrating Urban Water Conservation. June 1997.
- Water Use Efficiency in Urban California. April 1999.
- Water Efficient Landscape Ordinance (AB 325): A Statewide Implementation Review. March 2001.
- Urban Water Conservation Potential. August 2001.
- Urban Water Conservation Potential: 2003 Technical Update. July 2004.
- Urban Water Conservation Implementation Challenges and Opportunities. September 2004.

Several of the initial studies were done on behalf of, or in partnership with, the Council.

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<sup>11</sup> CUWA membership consists of eleven municipal water providers serving over 20 million consumers in Sacramento, San Francisco Bay Area, and southern California. Members include Alameda County Water District, Contra Costa Water District, East Bay Municipal Utility District, Los Angeles Department of Water and Power, Metropolitan Water District of Southern California, City of Sacramento Utilities Department, San Francisco Public Utilities Commission, San Diego County Water Authority, City of San Diego Water Department, Santa Clara Valley Water District, and Alameda County Flood Control and Water Conservation District, Zone 7.

Biographies of the Principals-in-Charge and cooperators to this project noting relevant qualifications have been included with this application for reference (Appendix E). The first two are the Principals-in-Charge: Steve Macaulay, Executive Director of CUWA and Bill Jacoby, Chair of CUWA Water Conservation Committee and Water Resources Manager, San Diego County Water Authority. The third is Mary Ann Dickinson, Executive Director of the Council, who is a Cooperator in this study and will be represented on the PAC. The project team is composed of the three research investigators and their support staff. Dr. Tom Chesnutt, President of A&N Technical Services will be the prime-contractor on the project. Dr. Sharon Baggett and Gary Fiske of Quantec LLC will round out the project team.

The Council is a 501c(3) nonprofit organization. The role of the Council as “cooperator” will be to provide knowledge, expertise and historical perspective of BMP implementation as the organization recognized by DWR and the CBDA as the entity central to urban water conservation best management practices and programs. Executive Director Mary Ann Dickinson will fulfill this role, and will participate in this study as a member of the PAC as well as through direct communication with the Principals-in-Charge.

The mission of the Council is to improve water use efficiency statewide. The Council and the MOU that created it represent a unique approach to urban water conservation through collaboration between water agencies, regulators, public interest groups, and other interested organizations. The approach relies on a consensus partnership to simultaneously improve the state of the art in urban water conservation while moving forward on recognized BMPs in a timely and cost-effective manner. The Council supports the water conservation efforts of its member organizations through assistance in implementing the BMPs, collaborative research and development among the membership, and through monitoring and evaluation of the urban water conservation programs and activities undertaken by the membership. A special interest of the Council's is the overall integration of urban water conservation BMPs into the planning and management of California's water resources.

Finally, as a condition of this application we certify that there will be no volunteers on this project and that we will meet all prevailing wage requirements. Principals-in-Charge will be paid prevailing wages by their organizations, and such wages are not reimbursable from grant funds available for this project. Cooperator Mary Ann Dickinson will also continue to be paid prevailing wages from the Council, with wages also not paid from grant funds available for this project. Grant funds will be used entirely for consultant costs as well as reproduction and distribution of deliverables.

#### **A-15h. Innovation (10 points)**

Our goal in this project is to evaluate barriers to conservation implementation, and to identify means of overcoming such barriers through a combination of evaluation and compilation of survey results; development of case studies; and creation of a proposed marketing strategy/program. We believe people and organizations learn best by successful examples, and this has long formed the basis of the Innovations in American Government Program jointly sponsored by the Ford Foundation and the J.F. Kennedy School of Government at Harvard University.

This is not the first time positive examples have been developed. CUWA, the Ford Foundation, the U.S. Bureau of Reclamation, the U.S. EPA and others funded a study published in 1999 by the Pacific Institute, "Sustainable Use of Water, California Success Stories." That report captured 28 specific success stories involving integrated resources management, urban conservation, reuse, treatment technologies, environmental water management and other activities that run the full range of issues being dealt with by the CALFED Bay-Delta Program. Our "innovation" is to narrow the approach to the endeavor of urban water conservation programs implemented by water agencies and, in the case of a marketing program, address reduction in landscape water use. We believe our proposal is unique, and has a high probability of providing a useful product to DWR and its many partners in water use efficiency.

Another unique feature of this proposal is evaluation of implementation challenges, and development of potential solutions, for landscape irrigation conservation programs from the water user's perspective. Implementation of BMP 5, *Large Landscape Conservation Programs and Incentives*, has been incomplete: of the 151 retail signatories to the MOU only 82 filed information on BMP 5 implementation on their 2003 annual report (source the Council's database). Much of the attention on improving landscape water use efficiency has focused on new technologies; the focus of this project is to make the process of implementation and marketing of these new solutions entirely complementary. We also plan to benefit from recommendations of the Landscape Task Force, which will hold its initial meeting in January 2004 and complete its recommendations by December 2005. We plan to incorporate Task Force recommendations as appropriate into the landscape marketing program (Task 6), recognizing that timing of those recommendations with that of our study cannot be determined at this time.

## **Costs and Benefits (15 points)**

The project is scheduled to begin in January 2006, culminating in a final report, a marketing study, and two public workshops in December of 2007. The project tasks are defined in the proposal and outlined in the schedule included as Table D-1 in Appendix D. The rates listed under the category tasks in Table C-1 are based on the market rate for a consultant in this field with the qualifications to meet the needs of the project scope. The tasks will be staffed by A & N Technical Services, and Quantec. As stated in the proposal under the project team description, Dr. Chesnutt, President of A & N Technical Services, has been working with CUWA for the past two years on issues of conservation. In addition to the task work, A & N Technical Services will provide support to the PAC and CUWA staff in the management of the project. Table D-2 in Appendix D shows the consultant expenses by task,

Other direct costs for this project include on Table C-1 are: printing of the quarterly and final reports, cost of conducting and promoting two public workshops, conducting two focus groups, and travel. All other indirect cost and overhead will be absorbed by CUWA.

While the PSP does not require cost sharing for Section B projects, it should be noted that there is a significant indirect cost share by CUWA staff and member agencies, namely the significant time that will be needed to manage and participate in this project. This will involve time and resources from Principals-in-Charge Steve Macaulay of CUWA and Bill Jacoby of SDCWA. In addition, CUWA will contribute the staff costs of contract manager Michelle Matthes to manage the contract and its work components. Total “in kind” CUWA support is estimated to be \$40,000 per year for the two years of the study. We also estimate that the Council, through participation of Executive Director Mary Ann Dickinson and the use of the Council’s web-based survey tool, will provide \$10,000 per year of support for the two years of the study. Table D-4 of Appendix D breaks down the contribution by participant which is shown as cost share on Table C-1, Appendix C.

Contract management will include but not be limited to: (1) administering the contract with DWR for funding of this study; (2) convening the PAC and following through on their recommendations; (3) developing and administering consultant contracts, including progress reports and payments; and (4) assuring the completion and distribution of all deliverables.

Costs for this proposal are related to research and development, aimed at identifying problems and developing potential solutions to the implementation of urban water conservation programs. The proposal also includes development of marketing tools to aid in achieving greater conservation savings in landscape irrigation. We cannot forecast at this time what future benefits may result from the findings and deliverables of the study. However, we observe from CUWA’s preliminary work in this area that there are significant challenges to implementing conservation programs. We believe such challenges (or barriers) make achievement of full CALFED conservation savings targets impractical unless workable solutions are developed.

Appendix C-5 includes required information regarding the potential benefits of this proposal to the Bay-Delta system. Funding of our proposal is expected to lead to greater as well as accelerated implementation of urban water conservation measures, which should translate to reduced reliance on sources of water supplies than would otherwise occur. One of these

sources is the Delta. Presumably, this translates into greater carryover storage in upstream water systems as well as undetermined benefits to the Bay-Delta system by reduced diversion than would otherwise occur.

It is difficult to estimate the potential water supply and demand reduction benefits of successful use of the recommendations that are likely to come out of this study. The difficulty is related to a number of factors, including the following: (1) implementation will depend on follow-up actions by individual water utilities and funding agencies; (2) persistence of conservation savings is a separate but important factor in terms of long-term water savings; (3) there is a wide range of estimates for the potential of urban water conservation savings over the next 25 years (California's current statewide water resources planning horizon); (4) a wide range in estimates of the potential for future urban water conservation savings under provisions of the existing MOU; and (5) the greatly diverse costs of delivered water supplies throughout California. We take a conservative view of savings for the purposes of this required portion of the grant application, recognizing all these uncertainties. We assume the following:

- All urban water purveyors who have signed the MOU will implement study recommendations
- This will result in increased urban water conservation savings of 5 percent over what might occur otherwise
- There is an additional urban water conservation potential of at least 1 million acre-feet between 2005 and 2030
- Water value is conservatively estimated at \$200 per acre-foot per year on a statewide basis

Use of these assumptions results in a potential benefit of \$10 million per year gained by the modest investment in our proposal. Even if that estimate is reduced to \$1 million per year (extremely conservative), the benefits to be gained from investment in our study proposal are well-justified.

We recognize that an estimate of potential benefits is required for purposes of the grant submittal. From a practical standpoint we expect that periodic evaluation of conservation program successes will be needed in the future. Hopefully the initial broad approach taken by our proposed study can be followed by more focused work at the level of local agencies as the major challenges are overcome. One of the principal goals of our proposal is to achieve a more common understanding of implementation challenges among urban water utilities and funding entities, opening the door to greater future collaboration.

# Attachment 1

## CUWA Survey of Conservation Program Implementation Challenges

**Confidentiality Statement:** YOUR RESPONSES TO THE FOLLOWING QUESTIONS WILL BE TREATED IN COMPLETE CONFIDENCE AND USED ONLY TO ASSESS THE CHALLENGES OF IMPLEMENTING CONSERVATION PROGRAMS IN YOUR SERVICE AREA. RESULTS OF THIS SURVEY WILL ONLY BE PRESENTED IN A SUMMARY FORM, TO PROTECT THE IDENTITY OF RESPONDENTS.

### **Survey Identification**

Date:

Name of Water Agency:

Name of Respondent:

Job Title:

### **Conservation Program Descriptions**

Please define and categorize each conservation program that your agency has implemented in the previous 5 years. (Urban Water Management Plans often contain much of this information.)

Name of Program	Category			
	Residential		Commercial, Institutional, Industrial (nonresidential)	
	(1) Indoor	(2) Outdoor	(3) Indoor	(4) Outdoor

Please choose a minimum of two conservation programs for the more detailed CUWA Survey Part II that follows. (You will need to print a minimum of two copies of Part II).

## Part II - CUWA Survey of Program Specific Implementation Challenges

*For each selected conservation program, please define the following information:*

Name of Respondent:

Job Title:

### **1. Program identifiers and timing**

Formal name of program

Approximate date of the program's formal inception

Duration

### **2. Staffing and Organizational Capabilities**

Were you personally involved in the creation of the program?

Were you personally involved in the implementation of the program?

Did this program involve significant additional effort on your part?

If not you, then who did?

What type of staff skills are needed to make this program successful?

What other organizational capabilities are needed?

Were these skill and other capabilities available to your agency?

If the program implementation was contracted out, what capabilities were needed to administer and oversee the work?

### **3. Original program design and features**

Describe the program as originally designed.

What are the goals of the existing programs?

Was this program difficult or straightforward to design and implement?

### **4. Modifications to program over time**

What changes were made to the program in the first year? After?

How have existing programs been modified over time?

What motivated the changes?

Did the changes serve their intended purpose? Is the program better as a result?

Are there additional program modifications that are being considered?

What is the next phase of the program?

Is there a need to continue the program over time?

### **5. Financing of programs**

How were the programs funded?

Was cost sharing involved with other agencies/sources (e.g., energy, waste water, or welfare agencies)?

Approximately what has been the program budget since its inception?

### **6. Effectiveness assessment (strengths and weaknesses)**

On a 1 to 10 scale, how successful do you think the program was?

What were the most important barriers to the program's success?

What is your impression of the program's effectiveness in achieving water savings?

In percentage terms, what level of water use reduction would you expect among participating customers?

How confident are you in this estimate? Could you give a range of expected savings?

Besides water savings, what additional benefits would you attribute to the program?

Has the program been formally or informally evaluated?

**7. Public relations**

What is your impression of your customers' response to this program?

(1=very negative, 10 = very positive)

How would you describe the public relations benefits from the program (if any)?

Any public relations nightmares?

What has been the response in the press?

Other customer responses?

**8. Lessons learned** - advice to other agencies planning such programs

What advice would you give to other agencies contemplating similar programs?

What would limit the applicability of your program to other areas?

What are the important lessons that you learned in the development and implementation of the programs?

What special features or design elements of the program are important for its operation and success?

**9. Conservation Program Implementation Challenges**

For each identified conservation program (minimum two) please describe the nature of implementation challenges, by the following categories

Lack of good planning information on reliable water savings potential or cost

Program design issues

Institutional constraints

    staff constraints

    budget constraints

    administrative issues with contractor

    multiple institution coordination issues

Marketing challenges

    attractiveness to customer (cost-effectiveness versus other drivers.)

    customer communication hurdles

Program evaluation and justification

    Did the program achieve its intended effects?

    Was sufficient information available on achieved water savings?

    To what extent did program results help win or lose program support?

**Ranking of Implementation Challenges by Program**

Think about the water conservation programs that you know the most about: how would you rank the implementation challenges?

**Ranking of Implementation Challenges by Program**

Think about the water conservation programs that you know the most about: how would you rank the implementation challenges?

Formal Program Name			
Program Category (circle one)	Residential or NonResidential	Residential or NonResidential	Residential or NonResidential
Program End Use Focus	Indoor/Outdoor/Both	Indoor/Outdoor/Both	Indoor/Outdoor/Both
Rank	Rank	Rank	Rank
<b>Impediment</b>	1=not an impediment at all and 5=a major impediment	1=not an impediment at all and 5=a major impediment	1=not an impediment at all and 5=a major impediment
Lack of good planning info on water savings:			
Lack of good planning info on program costs:			
Program design challenges:			
Budget constraints:			
Staffing constraints:			
Contractor issues:			
Institutional coordination issues:			
Program marketing issues (post-design phase) :			
Attractiveness to customers:			
Customer communication:			
Program evaluation:			
Continued program justification:			

## **Appendix A**

### **Project Information Form**

# 2004 Water Use Efficiency Proposal Solicitation Package

## APPENDIX A: Project Information Form

Applying for:

Urban

Agricultural

1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**

(a) implementation of Urban Best Management Practice, # \_\_\_\_\_

(b) implementation of Agricultural Efficient Water Management Practice, # \_\_\_\_\_

(c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable  
\_\_\_\_\_

(d) Specify other: \_\_\_\_\_

2. (Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**

(e) research and development, feasibility studies, pilot, or demonstration projects

(f) training, education or public information programs with statewide application

(g) technical assistance

(h) other

3. Principal applicant  
(Organization or affiliation):

California Urban Water Agencies

4. Project Title:

Conservation Implementation Challenges and Opportunities

5. Person authorized to sign and submit proposal and contract:

Name, title

Steve Macaulay

Mailing address

Executive Director

455 Capitol Mall, Ste. 705

Sacramento, CA 95814

Telephone

916-552-2929

Fax.

916-552-2931

E-mail

cuwaexec@mindspring.com

6. Contact person (if different):

Name, title.

Michelle Matthes

Mailing address.

Contract Manager

455 Capitol Mall, Ste. 705

Sacramento, CA 95814

916-552-2929

Telephone

916-552-2931

Fax.

cuwa@mindspring.com

E-mail

7. Grant funds requested (dollar amount):

\$ 394,630

(from Table C-1, column VI)

8. Applicant funds pledged (dollar amount):

\$ 100,016

9. Total project costs (dollar amount):

\$ 494,646

(from Table C-1, column IV, row n)

10. Percent of State share requested (%)

80%

(from Table C-1)

11. Percent of local share as match (%)

20%

(from Table C-1)

12. Is your project locally cost effective?

*Locally cost effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.*

(a) yes

(b) no

*(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)*

11. Is your project required by regulation, law or contract?

(a) yes

(b) no

If no, your project is eligible.

If yes, your project may be eligible only if there will be accelerated implementation to fulfill a future requirement and is not currently required.

*Provide a description of the regulation, law or contract and an explanation of why the project is not currently required.*

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12. Duration of project (month/year to month/year): 12/1/2005-11/30/2007
13. State Assembly District where the project is to be conducted: Statewide
14. State Senate District where the project is to be conducted: Statewide
15. Congressional district(s) where the project is to be conducted: Statewide
16. County where the project is to be conducted: Statewide
17. Location of project (longitude and latitude) Statewide
18. How many service connections in your service area (urban)? N/A
19. How many acre-feet of water per year does your agency serve? N/A
20. Type of applicant (select one):
- (a) City
  - (b) County
  - (c) City and County
  - (d) Joint Powers Authority
  - (e) Public Water District
  - (f) Tribe
  - (g) Non Profit Organization
  - (h) University, College
  - (i) State Agency
  - (j) Federal Agency
  - (k) Other
    - (i) Investor-Owned Utility
    - (ii) Incorporated Mutual Water Co.
    - (iii) Specify \_\_\_\_\_
21. Is applicant a disadvantaged community? If 'yes' include annual median household income.  
(Provide supporting documentation.)
- (a) yes, \_\_\_\_\_ median household income
  - (b) no

## **Supplement, Appendix A**

Question 12: Our project is expected to be locally costs effective for all of the reasons suggested in Question 12. The proposal is designed to develop broad transferable benefits, the purpose of the study is to address implementation barriers and develop potential solutions, and we expect the results of the proposal to result in acceleration of implementation of urban water conservation programs.

**Appendix B**

**Signature Page**

**2004 Water Use Efficiency Proposal Solicitation Package  
APPENDIX B: Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form has the legal authority to submit the proposal on behalf of the applicant;

There is no pending litigation that may impact the financial condition of the applicant or its ability to complete the proposed project;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant;

The applicant will comply with all terms and conditions identified in this PSP if selected for funding; and

The applicant has legal authority to enter into a contract with the State.

  
Signature

Steve Macaulay, Executive Director  
Name and title

1-11-2005  
Date

**Appendix C**

**Project Costs**

**Applicant: California Urban Water Agencies**

THE TABLES ARE FORMATTED WITH FORMULAS: **FILL IN THE SHADED AREAS ONLY**

Section A projects must complete Life of investment, column VII and Capital Recovery Factor Column VIII. Do not use 0.

**Table C-1: Project Costs (Budget) in Dollars)**

	Category  (I)	Project Costs  \$ (II)	Contingency % (ex. 5 or 10)  (III)	Project Cost + Contingency  \$ (IV)	Applicant Share  \$ (V)	State Share Grant  \$ (VI)	Life of investment (years)  (VII)	Capital Recovery Factor  (VIII)	Annualized Costs  \$ (IX)
	Administration <sup>1</sup>								
	Salaries, wages	\$67,839	0	\$67,839	\$67,839	\$0	0	0.0000	\$0
	Fringe benefits	\$30,177	0	\$30,177	\$30,177	\$0	0	0.0000	\$0
	Supplies	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Equipment	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Consulting services	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Travel	\$19,000	0	\$19,000	\$2,000	\$17,000	0	0.0000	\$0
	Other	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(a)	Total Administration Costs	\$117,016		\$117,016	\$100,016	\$17,000			\$0
(b)	Project Initiation	\$9,720	0	\$9,720	\$0	\$9,720	0	0.0000	\$0
(c)	Task 1 Compile Prior Research	\$20,840	0	\$20,840	\$0	\$20,840	10	0.0000	\$0
(d)	Task 2 Statewide Survey of Water Agencies	\$14,400	0	\$14,400	\$0	\$14,400	0	0.0000	\$0
(e)	Task 3 Data Collection and Analysis	\$39,940	0	\$39,940	\$0	\$39,940	0	0.0000	\$0
(f)	Task 4 Follow-up In person Interviews	\$29,120	0	\$29,120	\$0	\$29,120	0	0.0000	\$0
(g)	Task 5 Case Studies of Successes and Challenges	\$31,080	0	\$31,080	\$0	\$31,080	0	0.0000	\$0
(h)	Task 6 Development of Landscape Marketing Plan	\$94,040	0	\$94,040	\$0	\$94,040	0	0.0000	\$0
(i)	Task 7 Reports and Publications	\$41,250	0	\$41,250	\$0	\$41,250	0	0.0000	\$0
(j)	Task 8 Public Workshops	\$11,440	0	\$11,440	\$0	\$11,440	0	0.0000	\$0
(k)	2 Public Workshop	\$2,000	0	\$2,000	\$0	\$2,000	0	0.0000	\$0
(l)	Focus Groups (3 types at 2 locations)	\$58,800	0	\$58,800	\$0	\$58,800	0	0.0000	\$0
(m)	Monitoring and Assessment	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(n)	Report Preparation	\$25,000	0	\$25,000	\$0	\$25,000	0	0.0000	\$0
(o)	<b>TOTAL</b>	\$494,646		\$494,646	\$100,016	\$394,630			\$0
(p)	Cost Share -Percentage				20	80			

1- excludes administration O&M.

Applicant: **California Urban Water Agencies**

THE TABLES ARE FORMATTED WITH FORMULAS: FILL IN THE SHADED AREAS ONLY

Table C-5 Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

	Qualitative Description - Required of all applicants <sup>1</sup>				Quantitative Benefits - where data are available <sup>2</sup>
	Description of physical benefits (in-stream flow and timing, water quantity and water quality) for:	Time pattern and Location of Benefit	Project Life: Duration of Benefits	State Why Project Bay Delta benefit is Direct <sup>3</sup> Indirect <sup>4</sup> or Both	Quantified Benefits (in-stream flow and timing, water quantity and water quality)
Bay Delta	*Reduced water demand throughout the year; *Avoided costs associated with demand reduction (supply, distribution, energy, etc.) *Improved reliability for Bay Delta region *Reduction of runoff nonpoint contaminants *Reduced unrecoverable water losses due to evaporation *General improvements to ecosystem related to reduced drought stress	*Time pattern: year round with special emphasis during dry summer months *Location: statewide	Indefinite life span. Improving implementation will yield benefits as long as it is carried out into the future.	Some benefits will be direct in that the project will conduct pilot or marketing test activities that will yield savings within the context and time frame of the project. However, the majority of benefits are indirect in that they accrue upon dissemination of the study results and adoption of its recommendations for years to come.	The illustrative calculation assumes an additional 5 percent conservation savings from the project, and that there is an additional 1 million acre-feet of water conservation potential between 2005 and 2030. The resulting benefits are \$10 million per year.
Local	*Reduced water demand throughout the year; *Avoided costs associated with demand reduction (supply, distribution, energy, etc.) *Improved reliability *Reduction of runoff nonpoint contaminants *General improvements to ecosystem related to reduced drought stress	*Time pattern: year round with special emphasis during dry summer months *Location: statewide	Indefinite life span. Improving implementation will yield benefits as long as it is carried out into the future.	<b>Not applicable.</b>	Same.

<sup>1</sup> The qualitative benefits should be provided in a narrative description. Use additional sheet.

<sup>2</sup> Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.

<sup>3</sup> Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

<sup>4</sup> The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.

## **Appendix D**

### **Budget Support**



**Applicant: California Urban Water Agencies**  
**Project Proposal: Conservation Implementation Challenges and Opportunities**

**Table D-2: Quarterly Budget Schedule**

Project Task	Budget	Year 1				Year 1	Year 2				Year 2	Total
		Q1	Q2	Q3	Q4	Subtotal	Q1	Q2	Q3	Q4	Subtotal	
	Project Initiation	9,720	X			9,720						\$ 9,720
Task 1	Compile Prior Research	20,840	X			20,840						\$ 20,840
	Statewide Survey of Water Agencies	-	X	X	X							\$ -
	Sampling Plan	5,400	X			5,400						\$ 5,400
Task 2	Survey Design	9,000	X	X		9,000						\$ 9,000
Task 3	Data Collection & Analysis	39,940		X	X	39,940						\$ 39,940
Task 4	Follow-up In Person Interviews	29,120		X	X	29,120						\$ 29,120
Task 5	Case Studies	31,080			X	31,080						\$ 31,080
	Market Research	30,480	X			15,240	X	X			15,240	\$ 30,480
	Focus Groups	28,320				-	X				28,320	\$ 28,320
Task 6	Market Tools & Plan	35,240				-		X	X		35,240	\$ 35,240
Task 7	Reports & Publications	41,250		X	X	8,839	X	X	X	X	32,412	\$ 41,251
Task 8	Public Workshops	11,440								X	11,440	\$ 11,440
	Travel	17,000								X	17,000	\$ 17,000
	Printing	25,000								X	25,000	\$ 25,000
	Focus Groups	58,800					X				58,800	\$ 58,800
Direct Costs	Public Workshops	2,000								X	2,000	\$ 2,000
	<b>Total</b>	<b>394,630</b>	52,580	37,754	35,260	43,584	<b>169,178</b>	105,306	20,566	20,566	79,011	<b>\$ 394,630</b>



**Applicant: California Urban Water Agencies**

**Project Proposal: Conservation Implementation Challenges and Opportunities**

**Table D-4: Cost Share Budget**

	Hourly Rate	Benefits	Total Hourly Rate	Hours	Total	Total Salary In-Kind	Total Benefits In-Kind	Total Contribution
Bill Jacoby	55.16	14.99	70.15	300	\$ 21,045.60	16,549	4,497	21,046
Steve Macaulay	67.50	45.00	112.50	300	\$ 33,750.00	20,250	13,500	33,750
Michelle Matthes	23.40	15.60	39.00	600	\$ 23,400.00	14,040	9,360	23,400
Travel					\$ 2,000.00	-	-	2,000
<b>CUWA In-Kind Contribution</b>						<b>50,839</b>	<b>27,357</b>	<b>80,196</b>
Mary Ann Dickinson	60.00	12.25	72.25	170	\$ 12,282.50	10,200	2,083	12,283
Council staff	40.00	4.34	44.34	170	\$ 7,537.80	6,800	738	7,538
<b>Council In-Kind Contribution</b>						<b>17,000</b>	<b>2,820</b>	<b>19,820</b>
<b>Total In-Kind Contribution</b>						<b>\$ 67,838.60</b>	<b>\$ 30,177.30</b>	<b>\$ 100,015.90</b>

## **Appendix E**

### **Qualifications of the Applicants and Cooperators**

## **California Urban Water Agencies**

A list of project participant's biographies is included below. More detailed resumes can also be provided upon request.

### **Steven C. Macaulay, Executive Director, California Urban Water Agencies**

Steve Macaulay has served as Executive Director of the California Urban Water Agencies since May 2003. CUWA is a statewide urban water agency association that promotes informed, progressive water management in California through engagement in scientific and policy issues. Prior to this position Mr. Macaulay had 31 years of extensive water resources management experience, of which 26 years was an employee of several State agencies. He has been at a management level for more than 20 years.

From 1999 to 2003 Macaulay was Chief Deputy Director for the California Department of Water Resources. In this capacity he was actively engaged in the CALFED Bay-Delta Program, and a part of the state/federal team that collectively developed the August 2000 CALFED Record of Decision. In that capacity Macaulay was directly involved in water supply reliability policy discussions in which water conservation was considered as one of CALFED's most important water management tools. Since coming to CUWA Macaulay has been actively engaged in water conservation issues. In the past year CUWA has completed three water conservation studies that help in advancing the understanding of implementation aspects of urban water conservation. Macaulay works with water conservation managers at all 11 CUWA agencies in areas of common interest, including this grant proposal. CUWA has had a longstanding leadership role in urban water conservation, as set forth in this grant proposal.

Macaulay has published numerous articles in water resources conference proceedings and speaks regularly at local, state and international conferences on water resources management issues. He received a number of awards during employment in various positions with the State of California, including the 2003 Director's Award from the Director of the Department of Water Resources. He was a key member of the team receiving an award as Finalist in the 1995 Innovations in American Government Program, Ford Foundation and the J.F. Kennedy School of Government, Harvard University.

Macaulay is a registered Civil Engineer in the State of California, and a member of a number of professional organizations. He holds a B.S. degree from U.C. Davis in chemical engineering, an M.S. degree from California State University, Sacramento in civil engineering and is a graduate of the U.C. Davis Executive Program.

### **Bill Jacoby, Water Resource Manager, San Diego Water Authority**

Bill Jacoby is the water resources manager for the San Diego County Water Authority, the regional water agency that provides about 90 percent of all the water used in San Diego County, supporting a \$126 billion economy and the quality of life for 3 million residents. Jacoby joined the Water Authority in 1988.

Jacoby manages the Water Authority's local water resources programs, including water conservation and water recycling, and is involved with development of the seawater desalination program.

He supports the desalination program portion of the Water Authority's Regional Water Facilities Master Plan by working with environmental organizations to identify their concerns regarding the program and through his efforts to procure financial assistance and other support from the state. The master plan is a long-range, comprehensive study that will serve as the blueprint for identifying the water supplies and facilities needed to store, treat and transport water supplies to the Water Authority's member agencies through 2030.

Jacoby is an elected member of the California Urban Water Conservation Council's Steering Committee; serves as a member of the American Water Works Association's Water Conservation Division's Communication, Education, Legislation Committee; is co-chairman of the WaterReuse Association's California Division's Legislation/Regulation Committee; and is chairman of the California Urban Water Agencies' Water Conservation Committee.

He received the 2000 Excellence Award for Statewide/Institutional Innovations from the California Urban Water Conservation Council and was part of the Water Authority team that received the 2001 Governor's Environmental and Economic Leadership Award.

Prior to assuming his duties at the Water Authority, Jacoby worked for the city of San Diego for 12 years in a variety of administrative positions and took part in the initial development of its water conservation program.

He holds bachelor's and master's degrees from Bemidji State University in Northern Minnesota.

## **California Urban Water Conservation Council**

### **Mary Ann Dickinson, Executive Director, California Urban Water Conservation Council**

Mary Ann Dickinson is Executive Director of the California Urban Water Conservation Council, a non-profit organization composed of urban water supply agencies, environmental groups, and other entities interested in statewide water conservation in California. Created in 1991, the Council now has 328 members who have signed a Memorandum of Understanding promoting water conservation Best Management Practices, and the Council operates in a consensus manner to assist those members in reaching their water conservation goals. The Council is also the organization currently working on a program to certify water agencies for water use efficiency throughout the California Bay-Delta watershed.

Prior to joining the Council in January of 1999, Mary Ann was employed as a Branch Manager for the Metropolitan Water District of Southern California, where she worked on planning, legislative, conservation, and community outreach programs since 1992. Prior to joining Metropolitan, she served from 1989 to 1992 as Deputy Director for Public and Governmental Affairs at the South Central Connecticut Regional Water Authority. In that capacity she coordinated state and local government activities and managed a statewide water conservation program involving 63 water utilities.

Mary Ann is also a veteran resource manager, having worked at the Connecticut Department of Environmental Protection for 18 years as a coastal management regulator, planning specialist, executive assistant/speech writer, and legislative lobbyist. A graduate of the University of Connecticut with a degree in environmental planning, she has authored numerous publications on water conservation, land use planning, and natural resources management, and has co-produced two films which have aired on public television and community cable stations. She is past Chair of the American Water Works Association National Water Conservation Division and is currently Chair of the Association of California Water Agencies' Water Efficiency Committee and an appointed member of the Advisory Committee for California Statewide Water Plan.

## **A & N Technical Services, Inc.-- Key Personnel**

### **Thomas W. Chesnutt, Ph.D.**

Dr. Chesnutt is President of A & N Technical Services, Inc. He has extensive experience in econometric time-series analysis, stochastic simulation and forecasting in the fields of water policy, chemicals regulation, health policy and economic modeling. His recent projects include: 1) Impact evaluation of the change in average and peak demand load from the ET Controller program in Orange County; 2) Impact evaluation of reduced urban runoff in the Residential Runoff Reduction study; 3) Principal Investigator for the AwwaRF national research project on *Water Efficiency Programs for Integrated Water Management*; 4) Impact and process evaluation of water budget-based landscape water conservation programs at multiple agencies in California; 5) Design of stochastic simulation methodology for use in integrated resources planning; 6) Critical review of strategic uses of demand side management programs for the Metropolitan Water District of Southern California; and 7) Evaluation of the world's largest ultra low flush toilet rebate program in Los Angeles and Santa Monica using micro-data for more than 23,000 households.

Dr. Chesnutt holds a Ph.D. in Policy Analysis from the RAND Graduate School, an M.S. in Technology and Science Policy from the Georgia Institute of Technology and a B.A. in Economics from Kenyon College. He is a member of the American Statistical Association, the Econometric Society, and the Institute for Operations Research and Management Science.

### **David M. Pekelney, Ph.D.**

Dr. Pekelney is Director of Policy Analysis at A & N Technical Services, Inc. He has extensive experience analyzing environmental policies in the areas of water conservation, urban smog, stratospheric ozone depletion, air toxics, and hazardous waste using quantitative and qualitative methods. His employment background includes work at the South Coast Air Quality Management District and the RAND Corporation. During the 1994-95 academic year, Dr. Pekelney served as a visiting assistant professor at the University of Michigan where he taught microeconomics, cost-benefit analysis, and policy analysis. Dr. Pekelney's recent experience includes the development of guidelines to conduct cost-effectiveness analysis of urban water conservation best management practices and the evaluation of the cost-effectiveness of water conservation programs in Southern California

Dr. Pekelney holds a Ph.D. in Policy Analysis from the RAND Graduate School, a Master of Public Policy Analysis from U.C. Berkeley, and a B.A. in Political Science, Astrogeophysics, and Physics from the University of Colorado, Boulder. He is a member of the Association for Public Policy Analysis and Management, the Association of Environmental and Resource Economists, the American Water Works Association, and the Air and Waste Management Association.

### **Sanjay Gaur, M.S.**

Sanjay Gaur is a policy analyst at A & N Technical Services. He is a resource economist with experience in quantitative modeling, statistical analysis and database development. He has additional experience in project management, environmental/resource economics, and international development, with excellent interpersonal and presentation skills.

### **Dana Holt, M.S.**

Dana Holt is the resident information scientist at A & N Technical Services. She has over 17 years experience in software and hardware project lifecycle development, software implementation, project management, technical writing, and training. She is responsible for database, programming, web development, and financial analyses under tight time and budget constraints.

## **Quantec, LLC: Key Personnel**

### **Sharon Baggett, Ph.D.**

Dr. Baggett has more than 25 years of experience in process evaluation and is a specialist in qualitative methods. Her expertise includes questionnaire design, sampling, interviewing, and focus group facilitation as well as analysis of qualitative and quantitative data. She has led process evaluations for a wide variety of organizations and more than 150 programs. Her utility company clients include San Diego Gas & Electric, Southern

California Edison, and Delmarva Power and programs targeted to both residential and commercial customers. Her projects for these utilities have all involved design of survey instruments, management and quality control for survey implementation, in-depth interviews with program staff, analysis of the resulting data, and delivery of clear, actionable recommendations for program improvements.

In addition to utilities, Dr. Baggett has served an array of government and nonprofit clients. Recently, she was the principal investigator for Quantec's evaluation of the seniors' volunteer program run by the National Park Foundation. She also led the process evaluation for the Oregon Energy Assistance Program, a project involving surveys with residential participants and non-participants statewide and interviews with program staff from 17 delivery organizations.

Dr. Baggett is a past-president of the Oregon Program Evaluator's Network, has presented papers at numerous professional conferences, and teaches a course in Qualitative Methods at Portland State University. She holds a Ph.D. in Urban Studies from Portland State University.

#### **Gary Fiske, M.S.**

Mr. Fiske has more than 25 years of experience in water conservation program planning, design, and evaluation. He is also a pioneer in the application of cost-effectiveness analysis and integrated resource planning techniques to water utilities and has managed IRPs for water supply agencies throughout the western U.S. He has worked with the CUWCC and with many of its signatory agencies from the time of MOU inception.

Mr. Fiske is expert in a host of analytical tools and techniques. He developed Confluence®, a state-of-the-art water resources planning model and ConEAST, a model for assessing program cost-effectiveness. He and Dr. Chesnutt have collaborated on a variety of projects. Currently, the two are working on the CUWCC's effort to develop approaches and tools to standardize and improve the quality of estimates for water utility avoided costs. They are also working on a major project for the American Water Works Association Research Foundation – an effort to develop a conceptual approach and set of tools to help water utilities better integrate water conservation into their overall supply planning.

Mr. Fiske's previous California clients include, among others, the City of Santa Cruz Water Department, the San Diego County Water Authority, EBMUD, Marin Municipal Water District, California Urban Water Agencies, and the California Bay-Delta Authority. Mr. Fiske holds a B.S. degree in Physics from M.I.T., an M.S. degree in Engineering-Economic Systems from Stanford University and a Master of Public Policy degree from the University of California at Berkeley.

**Doug Bruchs, B.A.**

Doug Bruchs is a Quantec Associate with extensive experience in utility program evaluations. His research experience includes on-site verification of technology installations, interviews, and focus groups. He is also experienced in statistical and quantitative analysis.

Mr. Bruchs' projects have included interviews, surveys and site visits for programs at PacifiCorp, Portland General Electric, and San Diego Gas & Electric. He recently completed extensive survey/interview work for the National Parks Foundation and is providing survey and analysis expertise for the Green Schools program in Southern California. Bruchs holds a Bachelor of Arts degree in Economics from the University of California at San Diego.

## **Appendix F**

### **Letter of Support**

January 9, 2005

Ms. Debra Gonzalez  
Office of Water Use Efficiency  
Department of Water Resources  
901 P Street  
Sacramento, CA 95814

**RE: Support Letter for Prop 50 WUE Funding Application  
*Urban Water Conservation Implementation Challenges and  
Opportunities***

Dear Ms. Gonzalez:

The California Urban Water Conservation Council wishes to indicate its support for Proposition 50 Funding for the above-mentioned project. The goal of this proposal is to improve success of specific urban water conservation programs by identifying implementation barriers and developing potential solutions to overcome such barriers. It has always been assumed that funding is the primary limiting factor in implementing urban water conservation programs. This project suggests that there are other limiting factors which need to be identified, put in context, and for which potential solutions need to be developed.

Urban water conservation programs to date have not been successful enough with certain customers and in certain market sectors. This project will fill a needed gap in reaching those areas of potential efficiency that have not been able to be tapped thus far. The Council very much looks forward to being a partner on this project.

Sincerely yours,



Mary Ann Dickinson  
Executive Director



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Suite 703  
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California 95814

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