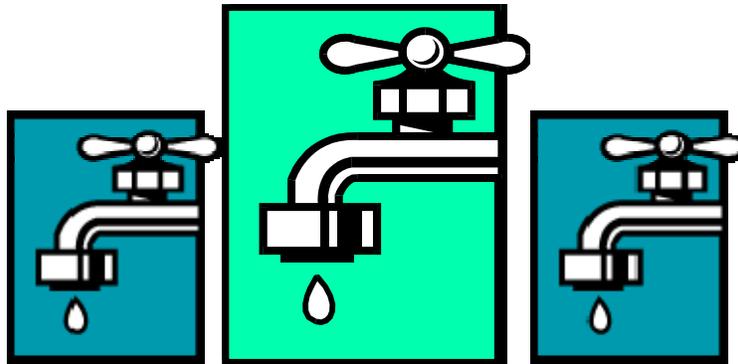


**2004
Water Use Efficiency
Grant Proposal**



**Recirculating Hot Water Systems
Residential Survey and Feasibility Study**

to

**California Department of Water Resources
Office of Water Use Efficiency
1416 Ninth Street, Room 338
Sacramento, CA 95814
Attn: Debra Gonzalez**

by the

**City of San Diego
Water Department**



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):

City Of San Diego

4. Project Title:

Recirculating Hot Water Systems
Residential Survey and Feasibility Study

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

Name, title

Frank Belock, Jr.

Mailing address

Water Department Director

600 B Street, MS 913

San Diego, CA 92101

Telephone

(619) 533-7555

Fax.

(619) 533-7589

E-mail

fbelock@sandiego.gov

6. Contact person (if different):	Name, title.	Kyrsten Burr-Rosenthal
	Mailing address.	City Of San Diego
		600 B Street, MS 1210
		San Diego, Ca. 92101
	Telephone	(619) 533-4202
	Fax.	(619) 533-5300
	E-mail	krosenthal@sandiego.gov

7. Grant funds requested (dollar amount): <i>(from Table C-1, column VI)</i>	\$30,100

8. Applicant funds pledged (dollar amount):	

9. Total project costs (dollar amount): <i>(from Table C-1, column IV, row n)</i>	\$30,100

10. Percent of State share requested (%) <i>(from Table C-1)</i>	100

11. Percent of local share as match (%) <i>(from Table C-1)</i>	

12. Is your project locally cost effective? <i>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.</i> <i>(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.)</i>	<input type="checkbox"/> (a) yes <input checked="" type="checkbox"/> (b) no
--	--

13. Is your project required by regulation, law or contract? 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. <i>Provide a description of the regulation, law or contract and an explanation of why the project is not currently required.</i>	<input type="checkbox"/> (a) yes <input checked="" type="checkbox"/> (b) no
--	--

14. Duration of project (month/year to month/year):	April 2005 to April 2006
15. State Assembly District where the project is to be conducted:	73,75,76,79
16. State Senate District where the project is to be conducted:	38,36
17. Congressional district(s) where the project is to be conducted:	50,53
18. County where the project is to be conducted:	San Diego
19. Location of project (longitude and latitude)	32/-117
20. How many service connections in your service area (urban)?	283,173
21. How many acre-feet of water per year does your agency serve?	236,268 AF

22. 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 _____

23. Is applicant a disadvantaged community? If 'yes' include annual median household income.

(Provide supporting documentation.)

(a) yes, _____ median household income

(b) no

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

Name and title

Date

Statement of Work, Section 1: Relevance and Importance

Proposed Study - Relevance and Importance

Engineering and mathematical studies conducted by, and on behalf of recirculating hot water system manufacturers contend that water savings of up to 15,000 gallons per year per household can result from the retrofit installation and use of these innovative devices in existing homes. The study proposed herein is the response to a need for an independent evaluation of this technology to provide data and field study as the basis for reliable water savings estimates. Significant water savings can in fact be derived from the use of recirculating hot water systems, as indicated in a preliminary study currently being conducted by the City of San Diego (City) Water Resources Management Program (WRMP). The Recirculating Hot Water Systems Residential Survey and Feasibility Study proposed herein will be conducted by the WRMP. Using data collected from residential surveys and on-site assessments, the proposed study will further an understanding of the variables that impact the potential for whole-house water savings from these systems. It will determine the feasibility of implementing a utility-sponsored incentive based program to encourage installation and use of recirculating hot water systems by residential water customers throughout San Diego.

This project is designed to ensure that established goals and objectives produce meaningful results directly related to CALFED and California Urban Water Conservation Council (CUWCC) goals and objectives. To date, there has been no substantial and independent study to ascertain water savings associated with retrofit recirculating hot water systems. The insights garnered through this study will be germane to all jurisdictions throughout the region and State interested in exploring this water conservation strategy. Recirculating hot water systems are currently considered a "Proposed Best Management Practice" by CUWCC. The proposed study will provide currently unavailable and relevant information to CUWCC's future strategy and potential support of these systems. It will include a cost-benefit analysis and feasibility study examining prospects of an incentive-based program from both the utility and water customer perspectives. The study will commence where the WRMP's current pilot project concludes (see explanation of the current pilot project in the next section).

A residential survey and on-site assessment of approximately 200 residences is set as the first task for the study proposed herein, which will be scheduled and conducted by WRMP survey staff in concurrence with residential surveys performed as part of the existing Residential Survey Program. It is anticipated that WRMP staff surveyors will require approximately 20 minutes to complete each questionnaire and on-site assessment survey in association with the proposed study. Survey results will be used to build a data base to ascertain key characteristics/variables that are significant factors in determining potential water savings from recirculating hot water systems. The following represents a sample list of some information to be collected by surveyors.

Sample Set of Survey Questions and On-Site Assessment

Fixture in the residence with the longest wait for hot water

Wait time for hot water to this fixture (attempt to determine when hot water has not been demanded in the home for at least an hour)

of hot water fixtures (by room):

Bathrooms:

Kitchen:

Other:

of bathrooms

of bathrooms with showers

of stories

Square footage of dwelling

Estimate of how often occupants wait for hot water each day thereby letting all the “warm-up” water go down the drain

Estimated distance b/t fixture w/ longest wait for hot water and central hot water heater

Estimate type of internal plumbing structure (branch/trunk; radial, etc.)

Estimate number of hot water fixtures on the same trunk line between central hot water heater and fixture with longest wait time for hot water to arrive

of hot water heaters in the home

The proposed study will contain a summary analysis of the residential survey data, and will identify key characteristics of a home that help to determine the whole-house water savings potential when a recirculating system is installed. By its distinct layout and features (distance between central water heater farthest hot water fixture; number of hot water fixtures in the house, etc.), each dwelling contains a unique set of characteristics impacting potential water savings derivable from the recirculating hot water system. Based on data collected on these household characteristics, one or more profiles will be developed that categorize likely whole-house water savings derived from recirculating hot water systems. Using what we learned from survey results to be the key features affecting water savings, an analysis of these characteristics will enable the development of a “matrix” or classification of recognized potential water savings. This, combined with the cost-benefit analysis, becomes the basis for categorizing incentive level(s) offered by the utility to the customer. The additional data gathered from the 200 residential surveys is fundamental in determining the suitability of an incentive-based

water conservation program for recirculating hot water systems with regard to potential water savings over the life of the device and cost effectiveness of installation and use (for both utility and customer).

Background

In concept, recirculating hot water systems are designed to move hot water from a home's central hot water heater to the most remote hot water fixture (usually the kitchen sink or master bathroom sink) within a matter of seconds. Hot water left standing in the home's internal hot water line often cools down between hot water use events. When hot water is demanded, the cooled water must be drained before useable hot water follows from the central hot water heater. Through the use of a valve and pump, recently developed technology used in recirculating hot water systems allow this cooled water to instead be recirculated back to the water heater through the internal cold water plumbing line, pulling hot water to the fixture from the central heater at the same time. Once the hot water from the central heater arrives at the device, the system is then shut off by the device's internal temperature sensor and valve, and the plumbing configuration returns to normal.

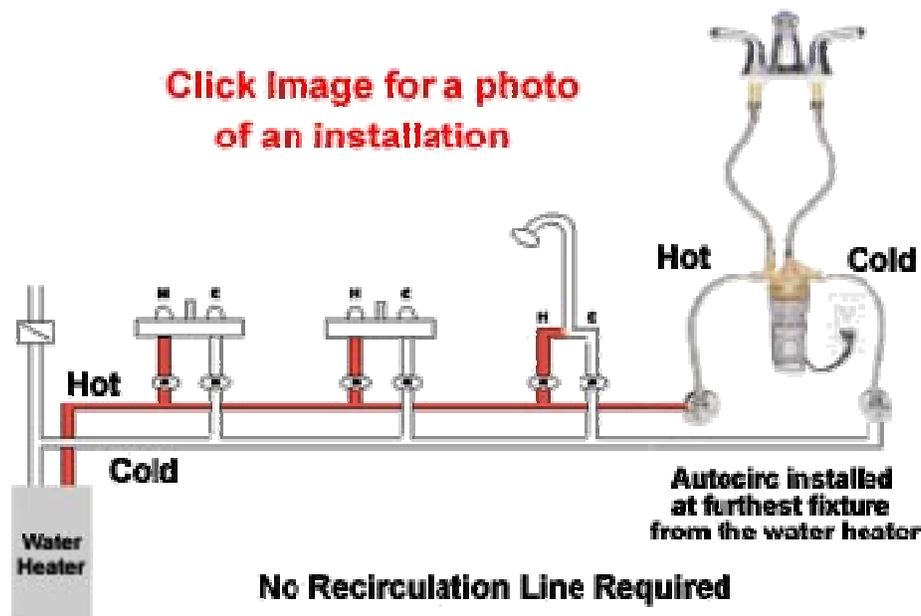


Diagram provided by Laing, Autocirc website.

WRMP is currently conducting a small scale pilot study regarding the water savings potential of recirculating hot water systems. One Laing Autocirc recirculating hot water system (one of four or five different models/manufacturers currently available on the market) has been installed underneath the kitchen or master bathroom sink in each of ten (10) single family homes located throughout San Diego. This pilot study assesses

changes in wait time for hot water at the hot water fixture(s) in the room where the system is installed. Participants recorded data on wait times for hot water to arrive both “before”, and then again “after” the system was installed. Projections on water savings are being developed from this data. Preliminary results from this pilot study show recirculating hot water systems do save water by decreasing the amount of “warm up” water (cooled hot water wasted down the drain). Early test results indicates these devices result in a reduction in “warm up” water waste by 35% to 74%, saving between 1 and 9 gallons per day for just the hot water fixtures used in one room (usually represents 1-2 hot water fixtures). This study is expected to conclude by March, 2005.

With these results, WRMP is optimistic about the potential water savings recirculating hot water systems can offer its residential water customers as wells as the utility, and would like to consider incentivizing the product. However, due to the current study’s limited scope as well as the multitude of variables contributing to the potential water savings from these systems (ie., plumbing configurations, distance between fixture and central water heater, number of hot water fixtures), additional data must be collected in order to determine and typify how such factors influence potential whole-house water savings. Once a better understanding is gained, feasibility of developing a water conservation incentive program can be evaluated. This is what we aspire to achieve through the proposed study.

Explanation of the need for the project as related to critical local, regional, Bay-Delta, State or federal water issues.

The City is located in a semi-arid coastal desert environment, receives 9 to 10 inches of rain annually, and imports 90% of its water from the State Water Project (SWP) and Colorado River. Approximately 32% of the City’s imported water comes from the SWP. In fiscal year 2001-2002 the City used a total 219, 170 acre feet of water. Of that, 70,134 acre feet were imported from the SWP. Due to the City’s heavy dependence on imported water, its supplies are only as reliable as those available to the wholesale agencies that serve the City, namely the San Diego County Water Authority and Metropolitan Water District of Southern California. These organizations continue to work on a number of key issues that would improve the long term reliability and cost of the City’s imported water supplies. An important source of new water for the City is water saved through conservation (demand management) incentive programs. The City’s conservation programs, all considered Best Management Practices in California, directly resulted in over 23,407 acre feet of water saved in fiscal year 2004.

Indirect Bay-Delta system benefits can be obtained through the implementation of water conservation (demand management) projects demonstrating a potential for achieving California Bay-Delta Program goals. These goals include reducing water demand through “real water” conservation; improving water quality by altering volume, concentration, timing and location of return flows; improving ecosystem health by increasing in-stream flows where necessary to achieve targeted benefits. By reducing water waste, recirculating hot water systems decrease the amount of water demanded

locally. Their widespread use can translate to a reduction in the amount of SWP water demanded by the City, leaving more water available to the Bay-Delta system during all times of the year.

Per the 2000 Record of Decision defining the Water Use Efficiency Program, water savings benefits derived from the widespread use of recirculating hot water systems:

1. would be “transferable to other parts of the State” if determined effective through the study proposed herein;
2. would likely result in actions taken by the City to increase the use of these devices through an *incentive-based* program (as opposed to *regulatory based* program);
3. would increase the overall volume of available water in the Bay Delta System at all times of the year.

As such, this proposed study supports CALFED Water Use Efficiency Program goals and objectives.

Describe how this project would be consistent with local or regional water management plans or other integrated resource management plans.

The City has a structured and documented water conservation effort. In 1982, the City Council adopted and implemented a Water Conservation Plan and Work Program. The Work Program allocated the financial resources necessary to retrofit City buildings and facilities with water-conserving plumbing fixtures, update the existing City landscape and irrigation systems, initiate a public information program, propose a low-water use demonstration garden, and recommend developing an emergency plan for distributing water during a shortage. The City Council updated and incorporated the Water Conservation Plan and Work Program into Council Policy 400-11, entitled an “Action Plan for Implementation of Water Conservation Techniques”, adopted in 1987. The Action Plan requires the preparation of an annual report which reviews the water conservation activities undertaken by the City during the previous year.

All of the above mentioned conservation efforts and others have been, and continue to be carried out with success by WRMP. The proposed recirculating hot water system survey and feasibility study aligns with the City’s current Strategic Plan (see below) and Water Conservation Plan and Work Program, which call for increased annual conservation levels and continued exploration of new and innovative water saving technologies such as recirculating hot water systems. Additionally, goals of an incentive program for recirculating hot water systems would be consistent with other successful incentive based programs currently administered by WRMP, including the Residential Ultra Low Flush Toilet and H-Axis Washing Machine Voucher Programs.

Document the implementation of water demand management activities that have been identified in urban or agricultural water management plans.

In compliance with State legislation, the City prepared its first Urban Water Management Plan and Conservation Program in 1985. The City’s updated 2000 Urban Water

Management Plan water conservation goal is to reduce the City's dependency upon imported water. In order to accomplish this goal, the City has worked to create a water conservation ethic, adopted policies and ordinances designed to promote City-wide water conservation practices, and implemented a comprehensive public information and education program. In addition, the City adopted the Strategic Plan for Water Supply, which outlines the preferred alternative to meet existing and ongoing demand for water from 1997 - 2015. Water conservation is integrated into this Plan for supplying water to meet forecasted needs. The Plan calls for the doubling of water conservation over FY 1997 levels of 13,000 acre feet per year, by 2005. Specific new programs identified in the Plan include: turf management, targeting large landscaped commercial accounts, rain sensor rebates (irrigation incentives), H-axis clothes washer incentive program, facility repair and replacement, and enhanced public information program.

Describe how the project will further implement existing water management activities or initiate new ones.

The proposed feasibility study would at first elucidate the suitability, and then develop the preliminary structure of an incentive-based indoor water conservation program similar to existing indoor programs that have resulted in year after year of proven water savings (e.g. low flow plumbing fixture exchange program, ULFT and H-axis voucher programs). Results from this study would be directly relevant to local and regional water agencies exploring the viability of recirculating hot water systems as an indoor conservation strategy and best management practices as identified by CUWCC.

Statement of Work, Section 2: Technical/Scientific Merit, Feasibility

Preliminary Plans and Specifications and Certification Statements (for construction projects only).

Not applicable, this is not a construction project.

Environmental Documentation:

Not applicable. This is not a "project" as defined by CEQA.

Project Plan, Methods, Procedures, Equipment, and Facilities.

The City would like to conduct residential surveys, cost benefit analysis, and a feasibility study on CUWCC's Potential Best Management Practice # 10, "Recirculating Hot Water Systems". Preliminary findings in the City's current small pilot project show that the "time and temperature control" type recirculating hot water systems (the type used in the study was the Laing Autocirc) do appear in fact to be effective in saving water. This pilot project asks homeowners to measure the "warm up" water wait time associated with the room requiring the longest wait for hot water. As mentioned previously, results of this pilot study indicates water savings do result from the use of these devices. Yet,

because data for only one fixture/room was collected, the current study is inconclusive with regard to a set of assumptions relating to potential “whole-house” water savings (see Background section on page 9). Therefore, WRMP is interested in collecting additional data from 200 residences in order to assemble more information on the variables that impact potential whole-house water savings realizable through the use of recirculating hot water devices. Further, the proposed study will include a cost-benefit analysis to determine if an incentive-based water conservation program for recirculating hot water systems is appropriate, cost effective, and viable from the perspective of the utility and customer.

Proposed Task list, Work Plan, Schedule, Start/End Dates, Projected Costs.

The following is the task list, work plan, schedule, start/end dates and projected costs suggested for the proposed study. WRMP staff dedicated to this project would work in a ½ time capacity. An overhead rate of 1.76 is used to develop this budget. This is the recognized rate used by the City’s Water Department to capture fringe benefits and other standard overhead costs.

Task 1: Design a residential survey instrument/questionnaire and site assessment process.

Work Plan: Utilizing Scantron forms and technology, design of the questionnaire (with assistance of contract Scantron operator/consultant) , develop method in which residential site-assessment will be conducted at the 200 residences (surveys to be scheduled and conducted by WRMP survey staff).

Deliverables: Survey instrument/questionnaire
Site Assessment process

Schedule: 2 months

Start/End Dates: April 2005 - May 2005

(Note: timeframe falls before most contracts will be authorized by DWR. Intent is to begin conducting surveys as soon as possible, as most WRMP residential surveys are conducted during summer months).

Projected Costs: \$5,173 (\$3,173 in labor costs; \$2,000 in Scantron consultant services)

Task 2: Conduct 200 on-site residential surveys.

Work Plan: Surveys will include completion of Scantron questionnaire forms and site-assessments to be conducted in homes throughout the City of San Diego. Surveys will consist of a combination of completion of Scantron questionnaire by homeowner/occupant (with assistance from WRMP Residential Survey Program Staff); on-site testing of hot water warm-up wait times at some of the hot water plumbing fixtures; notation and collection of information (such as number of hot water fixtures and other variables which correlate with potential water savings from recirculating hot water device). Access to residences will be available to City surveyors through WRMP's existing Residential Water Conservation Survey Program. Homeowner/occupant participation in the proposed project survey will be voluntary. Time requirement for completion of questionnaire and site-assessment efforts is estimated at 20-30 minutes per household.

Deliverables: Data Base of surveys and site-assessment conducted.

Schedule: 5 months

Start/End Dates: June 2005 - October 2005 (see note in Task 1)

Project Costs: \$8,647 (\$7,822 in labor costs; \$825 in mileage costs for travel to the survey sites)

Task 3: Develop data report and analysis.

Work Plan: Use Scantron equipment (contract/consultant services) to process and summarize survey responses and site-assessment information. Devise assumptions, develop analysis to capture average/typical potential water savings estimates from recirculating hot water devices, given household characteristics.

Deliverables: Data report and analysis of survey results.

Schedule: 2 months

Start/End Dates: October 2005 - December 2005

Project Costs: \$5,667 (100% labor costs)

Task 4: Conduct cost-benefit analysis and feasibility for incentive based program.

Work Plan: Develop cost benefit analysis from the perspective of the utility and water consumer. Given results, conduct feasibility study examining viability of incentive based water conservation program and program design options and consider recommendations (such as, rebate program; voucher program; reduced water rate program; program not feasible)

Deliverables: Cost Benefit Analysis

Schedule: 4 months

Start/End Dates: January 2006 - April 2006.

Project Costs: \$7,876 (100% labor costs)

Total Project Costs: \$27,363 + 10% Contingency = \$30,100

Statement of Work, Section 3: Monitoring and Assessment

This project includes a survey and feasibility study. To conduct effective monitoring and evaluation of the survey portion of the project, the project manager will review the survey responses as they are completed, which will provide quality assurance as the survey process occurs, and will allow the opportunity for any necessary adjustments and/or modifications to be applied to the process and survey instrument as the surveys are conducted. Raw data and original Scantron questionnaire forms will be held in the office of the project manager and be made available for review by DWR staff upon request. A copy of the data utilized in the cost benefit analysis and feasibility study portions of this project will be included in the final report made available to DWR. Reference to data used in the report will be tied to original documentation. Estimated costs for monitoring and evaluation are expected to be minimal and incidental for this Section B project, and are built into the proposed budget.

Statement of Work - Section B Additional Information:

The hypothesis upon which the research will be based is the professed water savings associated with recirculating hot water systems installed for use in existing buildings, specifically residential units. Pertinent research in this area include the City of San Diego's Instant Hot Water Pilot Project; Economic Operating Cost Analysis Summary for Laing Instant Hot Water Recirculating System; Reference Document: Program Design Tool and Savings Estimates (prepared for Southern California Metropolitan Water District on May 12, 1996 by A&N Technical Services); Hot Water Distribution Systems (3 part article published in "Plumbing Systems & Design" Journal in 2004 by

Gary Klein, California Energy Commission); “Water & Energy Savings Using Demand Hot Water Recirculating Systems in Residential Homes: A Case Study of Five Homes in Palo Alto, California” (Prepared in October, 2002 by Oak Ridge National Laboratory).

See above paragraph for discussion of monitoring and evaluation methodologies.

Qualifications of the Applicants and Cooperators

1. Resume of the project manager.

Project Manager: Kyrsten Burr-Rosenthal
 City of San Diego Water Department
 Water Resources Management Program
 Associate Management Analyst

Ms. Burr-Rosenthal is a member of the water conservation staff within the City’s Water Resources Management Program and is currently Project Manager for the City of San Diego’s Instant Hot Water Delivery System Pilot Project. Anticipated completion date of the pilot project is March, 2005. She acted as Project Manager for the City’s Graywater Pilot Project beginning in January 2003, which concluded late 2003. She provides ongoing budget and fiscal management support for the program.

2. Identify and describe the role of any external cooperators that will be used for this project.

Precision Data Consultants will compute results of Scantron questionnaires and provide a summary report with data results.

3. Describe briefly any previous water use efficiency grant projects in which the applicant has participated. Consideration will be given to the applicant’s performance in prior water use efficiency programs.

The City of San Diego Water Resource Management Program has received 14 local, state and national awards for conservation program design, development and implementation in the past 14 years. These programs include public education and outreach to promote water conservation and implementation of new technologies. Some of these programs which reduce water consumption include:

Ultra Low-Flush Toilet Voucher Program (ULFT)

Incentive program which replaces existing high-volume City toilets with ULFTs. It serves as a model to encourage Commercial, Industrial and Institution (CII) water customers to retrofit building using low water use plumbing fixtures. Qualcomm Stadium was previously retrofitted, replacing 365 toilets and 196 urinals. The City Facilities ULFT Retrofit Program accounted for water saving of 201,756 in FY02.

Residential High Efficiency Clothes Washing (HEW) Machine Voucher Program

The High Efficiency Clothes Washer (HEW) Voucher Program provides a point-of-purchase discount off the cost of a new qualifying HEW. These machines use 40% less water and 60% less energy per load than standard top-loading machines. HEWs are also credited with cleaning clothes more thoroughly, reducing detergent requirements, and reducing wear and tear of clothing.

Residential Interior/Exterior Water Surveys

This program offers residential customers an interior and exterior water use survey of their home. The service consists of analyzing water usage and flow rates of fixtures, checking for leaks, installing water-saving devices, and recommending efficiency improvements to landscaping and irrigation. A typical household participating in the program can reduce daily water consumption by 13%. This program is extremely popular, because surveyors can often identify hard-to-find water leaks that contribute to higher water and sewer bills. The Residential Survey Program accounts for water savings of 40 gpd for each survey.

4. If applicant is a disadvantaged community, provide geographic scope and the source of information documenting annual median household income.

Not applicable.

Outreach, Community Involvement and Acceptance

The final results of this project will be made available on the City's website, and on the monthly bill mailed to water customers. An e-mail link on the website as well as a hot line on the water bills will be publicized as a method of gaining citizen feedback and input on published results. Results of the study will be reported in the WRMP's monthly newsletter and shared with regional organizations included the San Diego County Water Authority and Southern California Metropolitan Water District. Based upon results of the proposed feasibility study, should the Water Department decide to recommend to City management and the City Council an incentive program, the WRMP will develop a marketing and advertising program to disseminate information to Water Department customers on recirculating hot water systems, the incentive program, and how to qualify for the incentive.

Please see Attachment A for support letter from San Diego County Water Authority.

Innovation

Engineering studies on behalf of the manufacturers of recirculating hot water systems show huge water savings potential (up to 15,000 gallons per year per household). This innovative technology must be further field tested by an independent organization in order to supply reliable data and conclusions as to the verifiable water savings of recirculating hot water systems. The potential for significant water savings exists, but must be confirmed and quantified through the examination of variables impacting the effectiveness of these innovative systems.

Benefits and Costs

Please see Attachments C-1 to C-2 for proposed hours, staff, labor rates, overhead rates and other costs associated with the project budget.

Potential Benefits and Information to be Gained

The City believes this study will assist in reducing its high dependency on scarce and valuable imported water resources and promote City-wide water conservation practices. Based upon the findings of this study the City would like to develop a utility sponsored conservation incentive based program. Additionally, the City would be willing to share the data and findings with any agency or regulatory policy agency to affect conservation statewide.

Benefits Realized and Information Gained Versus Costs

Studies conducted on behalf of recirculating hot water system manufacturers contend that water savings of up to 15,000 gallons per year per household can result from the retrofit installation of these innovative devices. Based upon that projected water savings figure, and the fact that the City has 283,173 service area connectors, the water savings would be substantial. This study will provide the City with its own independent cost-benefit analysis and determine the feasibility of an incentive based recirculating hot water system program.

Exhibit A



San Diego County Water Authority
4677 Overland Avenue • San Diego, California 92123-1233
(858) 522-6600 FAX (858) 522-6568 www.sdcwa.org

January 5, 2005

Debra Gonzalez
Office of Water Use Efficiency
California Department of Water Resources
1416 Ninth Street, Room 338
Sacramento, CA 95814

MEMBER AGENCIES

- Carlsbad Municipal Water District
City of Del Mar
City of Escondido
City of National City
City of Oceanside
City of Poway
City of San Diego
Fellbrook Public Utility District
Hills Water District
Obregon Municipal Water District
City Water District
Padre Dam Municipal Water District
Camp Pendleton Marine Corps Base
Rainbow Municipal Water District
Ramona Municipal Water District
Municipal Water District
San Diego Water District
Santa Fe Irrigation District
South Bay Irrigation District
Vallecitos Water District
Valley Center Municipal Water District
Vista Irrigation District
Yuima Municipal Water District

RE: City of San Diego Water Department Water Use Efficiency Grant Proposals
Letter of Support

Dear Ms. Gonzalez

The San Diego County Water Authority encourages and supports the following three (3) grant proposals for the City of San Diego Water Department:

• San Diego State of the Urban Forest Report

The goal of this study is to produce science-based information on the extent and value of the urban forest ecosystem. This will facilitate tracking future canopy cover and impervious surface change, serve as a baseline for developing comprehensive urban forestry, conservation, and storm water management programs applicable to all jurisdictions throughout the state. The project is also directly related to CALFED goals and objectives as well as the California Urban Water Conservation Council's (CUWCC's) Best Management Practices.

• Pressure Regulator Incentive Pilot Program

This project would begin promoting and assisting customers to install pressure regulators that have been identified as having high or low water pressure via audits through the City's Water Conservation Program. Benefits include more efficient irrigation distribution, lower water usage and less site runoff. The proposed project supports CALFED Water Use Efficiency program goals and objectives. Regionally, and statewide, the data obtained through this pilot program could be used to create a data conservation model for similar programs throughout California.

• Recirculating Hot Water Systems Residential Survey and Feasibility Study

This project is to conduct a survey, cost benefit analysis, and feasibility study on CUWCC's Potential Best Management Practice # 10. Results from this study would be relevant to regional and statewide water agencies exploring the viability of recirculating hot water systems as an indoor water saving conservation strategy. The study supports

A public agency providing a safe and reliable water supply to the San Diego region

PRINTED ON RECYCLED PAPER

CALFED Water Use Efficiency Program goals and would increase the volume of available water in the Bay Delta System.

The Water Authority views these submissions under Proposition 50 Chapter 7, Water Use Efficiency as having beneficial results locally and statewide. Examining additional water supply sources is an ongoing practice in our region and the information we obtain from these studies will be useful. The state also will benefit as it compiles data from various sources. If these studies ultimately result in the development of these water use efficiency projects, there will be a reduction in the demands on the state's imported water system.

These are prudent measures with potentially significant waters supply benefits to California. Again, the San Diego County Water Authority supports and respectfully requests your endorsement of these Water Use Efficiency Grant Proposals.

Sincerely,

A handwritten signature in black ink, appearing to read 'Maureen A. Stapleton', written over a faint circular stamp.

**Maureen A. Stapleton
General Manager**

cc: Frank Belock, Jr., City of San Diego Water Department Director

l:/vvd/letterofsupport.doc

APPENDIX C: PROJECT IMPLEMENTATION COSTS TABLE

APPLICANT: City of San Diego Water Resources Management Program

Project Title: Recir. Hot Water System Su rvey & Feasibility Study

Table C-1: Project Costs (Budget)

	Category	Project Costs \$	Contingency % (ex. 5 or 10)	Project Cost + Contingency \$	Applicant Share \$	State Share \$	Life of investment (Years)	Capital Recovery Factor (Table C-4)
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
	Administration (for initiation of project)							
	Salaries, wages	13,942	1,394	15,336	0	15,336		
	Fringe benefits	10,596	1,060	11,656	0	11,656		
	Supplies							
	Equipment							
	Consulting services	2,000	200	2,200	0	2,200		
	Travel	825	83	908	0	908		
	Other							
(a)	Total Administration Costs ¹							
(b)	Planning/Design/Engineering							
(c)	Equipment Purchases/Rentals/Rebates/Vouchers							
(d)	Materials/Installation/Implementation							
(e)	Implementation Verification							
(f)	Project Legal/License Fees							
(g)	Monitoring and Assessment							
(h)	Report Preparation							
(i)	Structures							
(j)	Land Purchase/Easement							
(k)	Environmental Compliance/Mitigation/Enhancement							
(l)	Construction							
(m)	Other (Specify)							
(n)	TOTAL (=a+...+m)	27,363	NA	30,100	0	30,100	NA	NA
(o)	Cost Share Percentage	NA	NA	NA	(row n, column V/IV) x 100	(100 - row o, column V)	NA	NA

¹ (Excludes administration O & M costs)

Table C-2
 City Of San Diego
 Residential Survey and Feasibility Study

Schedule of Project Costs:

Task	Description	Dedicated Staff	Hours	Hourly Rate	Cost W/O Overhead	Cost W/ Overhead	
Task 1	Survey Development	Assoc. mgmt analysts	25	\$28	\$712	\$1,253	
		Supv mgmt analyst	5	\$35	881	1,551	
		Program mgr	2	\$42	210	370	
		Scantron Consultant*				2,000	2,000
		Totals:		32		\$3,803	\$5,173
Task 2	Conduct Surveys	Surveyors**	130	\$26	\$3,380	\$5,949	
		Assoc. mgmt analysts	30	\$28	854	1,504	
		Supv. mgmt analyst	5	\$42	210	370	
		Other: (mileage)***				825	825
		Totals:		165		\$5,269	\$8,647
Task 3	Survey Scantron Report / Data Analysis	Assoc. mgmt analysts	100	\$28	\$2,800	\$4,928	
		Supv.mgmt analyst	<u>10</u>	\$42	420	739	
		Totals:	110		\$3,220	\$5,667	
Task 4	Feasibility / Cost-Benefit Analysis	Assoc. mgmt analyst	120	\$28	\$3,418	\$6,015	
		Supv mgmt analyst	<u>30</u>	\$35	1,057	1,861	
		Totals:	150		\$4,475	\$7,876	
Total					\$16,767	\$27,363	
10% Contingency						\$2,737	
Grand Total						\$30,100	
*note: all costs to develop, process and analyze survey by Scantron operators/consultants are captured here.							
** surveyor(s) will spend about 30 minutes per survey x 200 surveys =				100			
plus an additional 10 hours for 3 surveyors to train =				30			
				130			
*** mileage: avg. travel per survey estimated at 20 miles (pt. A to pt. B). 25% covered by this project :							
mileage for city employees is \$.33/mi.			.25-20*.33*500				