

State of California
Proposition 50 Section B Grant Proposal

**MULTI-FAMILY SUBMETER PILOT
AND FEASIBILITY STUDY**

Submitted by

East Bay Municipal Utility District
375 11th Street, Oakland, CA 94607

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State of California
Proposition 50 Section B Grant Proposal

**MULTI-FAMILY (MF) SUBMETER PILOT
AND FEASIBILITY STUDY**

PROJECT SUMMARY

Title of Project: Multi-Family (MF) Sub-meter Pilot and Feasibility Study

Project Products: Two one-year pilot studies: one on a sub-metering pilot incentive program and one on the merits of Point-of-Use (POU) meters; a study on the merits of individual metering of new MF dwelling units; and a report assessing project results.

Study Cost: \$300,000

Cost Share: 50% applicant, 50% State

Study Participants: East Bay Municipal Utility District (EBMUD), California Department of Weights and Measures, California Urban Water Conservation Council, San Francisco Public Utilities, and the Bay Area Water Agencies Coalition.

Project Timeframe: 36 months

Water Savings: 15% of indoor MF use or an estimated 110,480 AF per year in California with full program implementation included.

Program Location/Implementation Sites: Urban areas

Innovative: Encouraging metering of individual multi-family dwelling units represents a new water conservation practice not currently being implemented in California. Evaluation of Point-of- Use (POU) meters represents new technology not yet approved for use in California. Significant water savings can result leading to more water potentially available for marketing/transfers. Program may be very cost-effective and involves interagency cooperation, a collaborative process, and addresses institutional barriers.

Relevance and Importance: This proposal represents a potential new water conservation measure that can lead to significant water savings and, therefore, supports California Bay-Delta goals. The benefits identified in this proposal are transferable to other parts of the State and support CALFED Water Use Efficiency Program goals and objectives. This proposal represents the initial effort in a multi-phased program to potentially save over 1.1 MAF in California annually.

Technical/Scientific Merit and Feasibility: This proposal includes (1) a one-year pilot program to assess the cost-effectiveness and administrative issues associated with utility supported metering of multi-family dwellings, (2) a one-year pilot/feasibility study of Point-of-Use meters to assess their efficacy, (3) a review of the merits of metering individual multi-family units in new construction, and (4) a report on these projects that including study findings, conclusions, and recommendations.

Monitoring and Assessment: This proposal includes a program to monitor water use and savings and the use of qualified consultants to manage this project to produce a report addressing program water savings, administrative issues, technical issues, program barriers, and program cost-effectiveness. The final report will address project findings, conclusions, and recommendations.

Outreach, Community Involvement and Acceptance: This proposal involves reaching out to the multi-family sector to elicit feedback and support for program participation in a pilot incentive program. Thus, presentations will be made to such stakeholders as apartment associations and tenant rights groups to obtain program acceptance and to improve program design. EBMUD will be cooperating with the California Department of Weights and Measures in this effort and will rely heavily on their expertise.

Costs and Benefits: One of the primary goals of this proposal is to assess program cost-effectiveness (costs and benefits) of this new potential conservation measure.

DISCUSSION

Background

As water and wastewater costs increase faster than the rate of inflation, MF property owners are seeking to shift these uncontrolled costs directly to the resident instead of including them as part of the rent. Owners are using two basic methods to bill residents. One method involves billing for actual consumption via metering. The second method involves billing based upon an allocation formula, such as the number of people, number of bedrooms, square footage, etc. Nationally, up to 4% of MF residents may now be metered and charged for consumption based upon actual volume of use. Another 9% pay for their water through various allocation formulas and about 2% are billed through a combination of metering and allocation programs. That leaves about 85% of MF residents still paying for their water and wastewater as part of their rent. There was a great deal of interest in investigating the merits of billing conversion programs because the water used by around 60 million people, or 25% of all residents, could be reduced.

A national study was recently conducted on the merits of billing conversion programs sponsored by the EPA, 10 water utilities, and two national apartment associations. The study indicated that individually metered MF units reduce indoor use by an average of 15%, or by about 8,000 gallons per dwelling unit (gpdu) per year. The study also contained a set of findings that identified specific actions to take to fully capture the potential water savings in the MF sector. The study suggested that water utilities could play an important role in both capturing the water conservation potential and in addressing the need for administrative standards for the mostly unregulated business activity of third party billing. This grant proposal flows from and builds on the findings, conclusions, and recommendations of the national study, and has the goal of setting the groundwork to fully capture the water conservation potential in the MF sector. The highlighted findings of the national study are presented in Appendix E to help give perspective to this proposal.

Technical/Scientific Merit, Feasibility: Scope of Work

Three issues are proposed to be addressed in this study to fully capture the savings potential in the MF sector through metering. First, there are numerous administrative issues that need to be addressed and tested with third party billing and where the water utility can play a very important role in setting administrative standards to help protect the consumer. Second, the water use in over 50% of all multi-family dwellings cannot be conventionally metered due to the design of the plumbing system. In these situations, multiple plumbing lines need to be metered if the tenant is to be billed for actual consumption. However, Point-of-Use (POU) meters are currently not allowed in California due to concerns over meter accuracy in the installed positions. The California Department of Weights and Measures has agreed to cooperate in a pilot study to determine the accuracy of POU meters in a limited number of MF units. In addition, representatives from the California Department of Weights and Measures will lend their expertise and help guide the study protocol.

Third, the merits (including legal and administrative issues) of requiring individual metering in new MF dwellings will be investigated and a report issued.

There are two primary reasons for water utilities to support the metering of individual units in MF dwellings: one is to capture additional cost-effective water savings to support long-term water conservation goals and the other is to use metering (pricing signals) as a management tool during water shortages.

Issues Addressed

Based upon the findings of the national study on submetering, this proposal has three elements to assess the full potential for water savings in the MF sector, namely:

- **a one-year pilot program** to retrofit existing MF dwelling and **a report** evaluating water savings and administrative issues,
- **a one-year pilot/feasibility study** to test the efficacy of POU meters in MF dwellings, and **a report** evaluating technical and administrative issues and program cost-effectiveness,
- a project advisory committee to **review the merits of metering individual apartment units in new construction** (by either third parties and/or by water utilities) and **a report** on its merits.

One-Year Pilot Sub-meter Retrofit Program

A pilot program is proposed for implementation in FY06 that involves offering incentives for metering existing MF units. It is proposed that incentives be offered for water efficient fixture installation and toilet tank leak repair when billing conversion (metering) programs are implemented. The program strategy involves offering incentives primarily for water efficient fixtures, subject to the implementation of a metering program. If water efficient fixtures are already in place, then a \$100 incentive is proposed to help offset the cost of sub-metering, estimated at around \$300/dwelling unit (du).

Table 1 shows that, based upon the savings findings of the recent national study on sub-metering, estimated at around 19,500 per dwelling unit annually, the benefits to EBMUD, assuming avoided costs of \$300/AF are \$90/du for sub-metering and \$200-\$240/du for the installation of water conserving fixtures depending on whether the toilet is a ulft or a higher efficiency toilet (HET).

Table 1. EBMUD Benefit per MF Dwelling Unit

Element	Water Saved Gal/yr	Estimate life	Value to EBMUD
Fixture replacement	10,800- 12,000	20 years	\$200 for ulfts, showerheads, and leak repair, and \$240 for HETs
Sub metering	8,000	12 years	\$90
Total	18,800-20,000	N.A.	\$290-\$330

Water savings will be captured through the installation of water saving hardware, leak repair, and the implementation of tenant billing for the metered consumption. The first phase of a pilot program involves presentations to various organizations representing the MF community to test the concept and to receive feedback as the initial step toward implementing a pilot program.

A primary goal of the pilot incentive program is to encourage individual apartment unit metering while helping protect the tenant. It can be generally assumed that when a property owner shifts the water (and wastewater) payment directly to the tenant there is a decreased incentive to install water efficient fixtures. Therefore, when the property owner shifts the cost of water (and wastewater) to the tenant, the property owner will need to install efficient fixtures. They will also need to implement certain administrative standards to be eligible for incentives. For this to occur, water utilities may need to update their water service regulations to set administrative standards for billing conversions.

A report will be issued on the findings of the pilot study that will include an assessment of water savings, administrative issues, and program cost-effectiveness. Table 2 shows how an incentive program might be structured.

Table 2. MF Metering Incentive Program

Conservation Measure	Financial Incentive Level per dwelling unit	Comments
Metering of individual MF units	\$0 to \$100 ¹	Metering is required to qualify for the toilet incentives
Toilet #1	\$100 for ulfts and \$150 for HETs	Required for program eligibility
Toilet #2	\$100 for ulfts and \$150 for HETs	Required for program eligibility
Toilet #3 and above	0	No incentive
Leak repair	0	Required for incentive program eligibility
Showerheads & Faucet Aerators	Provided free by District	Required for incentive program eligibility

(1) If the property owner has already installed water saving toilets, then a \$100 incentive would be applied toward the metering costs. If no water saving toilets are present, then a maximum \$300 incentive would be applied to the purchase of water efficient toilets. If a unit has two toilets and only one is efficient, then the unit is eligible for up to a \$150 incentive for the toilet and \$100 for the meter. Incentive eligibility under this program is contingent upon both the implementation of a metered billing program and the installation of water efficient fixtures.

One-year Pilot/Feasibility Study on Point-of-Use Meters

Approximately 50% of all MF dwelling units cannot be metered via a single meter due to the design of the plumbing system. In these situations, POU meters are needed. However, POU meters have not yet been approved by the California Department of Weights and Measures for use in California due to accuracy concerns under installed conditions. A Proposition 50 state grant will be applied for, with support from the California Department of Weights and Measures, to implement a POU metering

feasibility study that will include a report with an evaluation of, (1) water savings, (2) accuracy of POU meters under installed conditions, and (3) technical and administrative issues.

Individual Unit Metering in New MF Construction

The merits of either District and/or third party metering and billing of new MF dwelling units will be reviewed via the formation of an internal District committee. This committee will be comprised of departmental stakeholders beginning in January 2005 for possible implementation in FY07, if appropriate. A report will be issued presenting such program merits as implementation costs and benefits, technical challenges, and legal concerns.

Tasks

The work needed to satisfy the objectives of this proposal includes the following tasks:

Task 1

What: Develop and implement a one-year pilot incentive program to encourage submetering in the MF sector.

How: Develop a program protocol and marketing plan using District resources to implement a one-year submetering pilot program. Develop a database to track program activity. Analyze for pilot program costs and water savings and determine program cost-effectiveness. Conduct survey of property owners and tenants to determine administrative and other issues. Issue a report on study findings. Resources will include District staff and consulting services.

Task 2.

What: Develop and implement a one-year pilot program to study the efficacy of point-of-use submeters.

How: Identify study sites to retrofit a minimum of 150 MF dwelling units. Identify point-of-use submeter company participants. Develop study protocol. Install POU meters for a one-year pilot program to analyze for meter accuracy, water savings, and program costs to determine program cost-effectiveness. Conduct a survey of program participants to determine administrative and other issues. Issue a report on study findings. Resources will include District staff and consulting services.

Task 3.

What: Evaluate the merits of requiring the metering of new individual multi-family dwelling units.

How: Form a Project Advisory Committee (PAC) comprised of internal stakeholders and other interested parties to assess project merits and issue a report on findings. Resources will comprise District staff.

COSTS AND BENEFITS

Project Costs

It is estimated that the project tasks can be completed for \$300,000. The estimated project costs are broken down as follows:

- One-year pilot incentive program: \$110,000
- One-year pilot Point-of-Use submetering program: \$105,000
- A survey of program participants to determine administrative and other issues: \$20,000
- An evaluation of both pilot programs and a report issuing study findings: \$40,000
- An internal stakeholder committee to assess the merits of individual metering of new multi-family dwelling units: \$5,000
- Project administration: \$20,000

EBMUD proposes to fund 50% of the project cost with possible in-kind contributions. Due to funding constraints this project will probably not be able to move forward without a cooperative effort involving funding assistance.

[EBMUD database information, assumptions and calculations](#)

EBMUD Database Information:

Average indoor daily water use for multi-family residents: 70 gallons/day
Number of multi-family dwellings: 200,000

Assumptions:

Average savings: 15% of indoor use or 8,000 gallons/year/dwelling unit
Length of savings: 10-year life cycle
Number of EBMUD multi-family units requiring POU meters: 50% or 100,000
California population: 36 million
Number of MF units in California: 4.5 million
Number of MF units in California requiring POU meters: 2.25 million
Value of saved water to EBMUD: \$350/AF

Calculations:

Water savings per dwelling unit: 0.25 AF
(8,000 gallons/yr x 10 years ÷ 325851 gallons/AF = 0.25 AF)
Potential Statewide water savings from submetering all MF units: 0.25 AF x 4.5 million dwelling = 1.1 MAF

Potential Statewide water savings from submetering with POU meters: $0.25 \text{ AF/du} \times 2.25 \text{ du's} = 0.56 \text{ MAF}$

Submetering Program Benefits and Costs

The purpose of the two proposed pilot studies are to determine the cost-effectiveness of submetering and Point-of-Use submetering in the MF sector. While the national study identified program savings, program costs were not well defined. One of the goals of the two pilot studies, therefore, is to better identify program costs. Until that is done, program cost-effectiveness cannot be accurately determined.

PROJECT ORGANIZATION

EBMUD will serve as project administrator for the grant and will enter into agreements with qualified consultants to manage the project and develop the proposed work products.

Project Administrator: EBMUD

Project Manager: Consultant

Technical Research and Report: Consultant

One year pilot submetering incentive program: EBMUD, consultant

One year pilot Point-of-Use metering study: EBMUD, consultant

Innovative Elements of the Proposal

Some of the innovative elements of this proposal are itemized below and include:

- Studying the efficacy of a new urban water conservation measure/program in the MF sector. No known water agency in the United States has implemented a broad-based billing conversion incentive program for submetering or studied the efficacy of point-of-use submeters.
- Transferring study benefits to other parts of the State and supporting CALFED Water Use Efficiency Program goals and objectives.
- Verifying water savings and administrative issues identified in national study on submetering and billing allocation programs.
- Determining cost-effectiveness of submetering incentive programs
- Study may lead to new long-term cost-effective water conservation measure/program for MF sector.
- Significant water savings potential in MF sector (15% of indoor use).
- Study will indicate merits of individually metering new MF dwellings.
- A collaborative effort representing other organizations including the California Department of Weights and Measures

Project Relevance and Importance

This proposal represents a possible new water conservation measure in the urban multi-family sector with the potential for significant statewide water savings cost-effectively.

The benefits identified in this proposal are transferable to other parts of the state and, as such, supports California Bay-Delta goals and objectives. This proposal represents the initial effort to potentially save over 1.1 million AF in California annually.

Project Monitoring and Assessment

This proposal involves two separate pilot studies in the multi-family sector: one to assess the merits of Point-of-Use meters and one to assess the merits of a submetering incentive program. Qualified consultants will be retained to assess water savings, technical and administrative issues, measure cost-effectiveness, and to report on study findings and conclusions and to make recommendations for potential full-scale implementation. In addition, EBMUD will form an internal stakeholder committee to assess the merits of metering new individual multi-family units and will issue a report on the findings.

Outreach, Community Involvement and Acceptance

This proposal involves reaching out to the multi-family sector to elicit feedback and program participation in the pilot incentive program. Therefore, presentations will be made to such stakeholders as apartment associations and tenant rights groups to obtain program acceptance and to improve program design.

PROJECT TIMELINE

TIME FROM EXECUTION OF AGREEMENT:

	Year 1	Year 2	Year 3
Development of pilot program protocol/material: 8 months	-----		
Implementation of pilot programs: 12 months		-----	
Conduction of follow-up surveys: 4 months		-----	
Report-Evaluation of pilot studies: 8 months			-----

REGULATORY COMPLIANCE

EBMUD will submit a “Finding of No Significant Impact (FONSI)” for this project prior to project initiation since this project will result in water savings and have a positive environmental impact. The proposed project is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The project activities would result in no possibility of significantly impacting the physical environment. As such, the proposed project qualifies under Class 1 Categorical Exemption (Section 15301 of the California CEQA Guidelines).

FUNDING PLAN AND BOARD RESOLUTION

EBMUD has an approved budget for FY06 that includes funds for this research. The Board has adopted Resolution No. 33021-02 authorizing the General Manager to submit grant applications. The proposal for funding and the terms of agreement shall be submitted to the Board of Directors for approval.

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):

East Bay Municipal Utility District

4. Project Title:

Multi-Family Submeter Pilot Study

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

Name, title Dennis M. Diemer
General Manager

Mailing address 375 Eleventh Street

Oakland, CA 94607

Telephone 510-287-0101

Fax. 510-287-0188

E-mail dennisd@ebmud.com

6. Contact person (if different):	Name, title.	Richard Bennett Water Conservation Administrator
	Mailing address.	P.O. Box 24055-MS: 48 Oakland, CA 94623
	Telephone	510-287-0597
	Fax.	510-287-1883
	E-mail	dbennett@ebmud.com

7. Grant funds requested (dollar amount): **\$150,000**
(from Table C-1, column VI)

8. Applicant funds pledged (dollar amount): \$150,000

9. Total project costs (dollar amount): \$300,000
(from Table C-1, column IV, row n)

10. Percent of State share requested (%): 50%
(from Table C-1)

11. Percent of local share as match (%): 50%
(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.
(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.)

(a) yes
 (b) no

11. Is your project required by regulation, law or contract?
If no, your project is eligible. (a) yes
 (b) no

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.

12. Duration of project (month/year to month/year):

07-200 to 06-2008

13. State Assembly District where the project is to be conducted:

District 16

14. State Senate District where the project is to be conducted:

District 9

15. Congressional district(s) where the project is to be conducted:

California 9th District

16. County where the project is to be conducted:

Alameda

17. Location of project (longitude and latitude)

37° 48'04"N 122°

16'15"W

18. How many service connections in your service area (urban)?

378,000

19. How many acre-feet of water per year does your agency serve?

250,000 AF

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

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

Dennis M. Diemer, General Manager

Name and title



Date

APPENDIX C
Project Cost Tables

Applicant:

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) \$1,000	Contingency % (ex. 5 or 10) (III)	Project Cost + Contingency \$ (IV) \$1,000	Applicant Share \$ (V) \$1,000	State Share Grant \$ (VI) \$1,000	Life of investment (years) (VII)	Capital Recovery Factor (VIII)	Annualized Costs \$ (IX)
	Administration ¹								
	Salaries, wages	\$20	0	\$20	\$10	\$10	0	0.0000	\$0
	Fringe benefits	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Supplies	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Equipment	\$10	0	\$10	\$5	\$5	0	0.0000	\$0
	Consulting services	\$100	0	\$100	\$50	\$50	0	0.0000	\$0
	Travel	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Other	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(a)	Total Administration Costs	\$130		\$130	\$65	\$65			\$0
(b)	Planning/Design/Engineering	\$20	0	\$20	\$10	\$10	0	0.0000	\$0
	Equipment								
(c)	Purchases/Rentals/Rebates/Vouchers	\$80	0	\$80	\$40	\$40	10	0.0000	\$0
(d)	Materials/Installation/Implementation	\$5	0	\$5	\$3	\$2	0	0.0000	\$0
(e)	Implementation Verification	\$5	0	\$5	\$2	\$3	0	0.0000	\$0
(f)	Project Legal/License Fees	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(g)	Structures	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(h)	Land Purchase/Easement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Environmental								
(i)	Compliance/Mitigation/Enhancement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(j)	Construction	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(k)	Other (Specify)	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(l)	Monitoring and Assessment	\$50	0	\$50	\$25	\$25	0	0.0000	\$0
(m)	Report Preparation	\$10	0	\$10	\$5	\$5	0	0.0000	\$0
(n)	TOTAL	\$300		\$300	\$150	\$150			\$0
(o)	Cost Share -Percentage				50	50			

1- excludes administration O&M.

Appendix C Project Costs

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

QUALITATIVE DESCRIPTION - REQUIRED OF ALL APPLICANTS ¹				QUANTITATIVE BENEFITS –(where data are available) ²
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 ³ Indirect ⁴ or Both	Quantified Benefits (in-stream flow and timing, water quantity and water quality)
Bay-Delta: Submetering - Related savings help to reduce water diversions and timing of demand thereby improving in-stream flow, quantity & quality of water supplies at local, regional, (Bay-Delta) and state levels.	In perpetuity as it matures regional and statewide.	In perpetuity as it matures.	Indirect market transformation will eventually result in <u>direct</u> local, regional and statewide water supply benefits.	Quantifiable benefits to occur over time through Submetering related to statewide savings, potential BMPs, & naturally occurring savings is estimated at 110,000 AFY.
Local: Bay-Delta: Submetering- Related savings help to reduce water diversions and timing of demand thereby improving in-stream flow, quantity & quality of water supplies at local, regional, (Bay-Delta) and state levels.	Local, regional, and statewide.	Natural and local incentive water savings over long term.	Not Applicable	Quantifiable benefits occur overtime through Submetering related products tied to Statewide BMPs, potential BMPs and naturally occurring savings.

¹The qualitative benefits should be provided in a narrative description. Use additional sheets to describe the benefits.

²The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.

³Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.

⁴Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

APPENDIX D
Statement of Qualifications

Statement of Qualifications

Project Name: Multi-family Sub-meter Pilot Study

Project Manager: Dick Bennett, Water Conservation Administrator, EBMUD

Project Manager Qualifications

Dick has a science degree, has worked full time in water conservation for the past 22 years and has over 30 years of experience in the water and wastewater field. During that time Dick has served as a project manager for a number of successful studies and projects including one national study, two statewide projects, and several EBMUD studies, namely:

EBMUD's *Plants and Landscapes for the Bay Area* (Landscape book-1988)

Sunset Films *Beautiful Gardens with Less Water* (32 minute film with 25 contributing water utilities in California, 1992)

EBMUD ULFT Study (1994)

EBMUD Baseline Study (1995)

Bay Area Clothes Washer Rebate Program with PG&E (1996)

EBMUD End Use Study (2001)

National Sub-meter Study (2004)

Prop 13 DWR Pre-Rinse Spray Valve and Dishwasher Grant (2004-2006)

In addition to the above mentioned projects, Dick has been active in a number of statewide and national conservation committees, has co-authored an AWWA publication titled *Water-Efficient Landscape Guidelines* (1994), and has contributed to numerous other publications/projects. Dick also initiated a water conservation certification program under the auspices of the California-Nevada Section of AWWA and under his two-year chairmanship implemented the level 1 certification program.

EBMUD Qualifications

EBMUD is a public retail water district formed in 1923 under the MUD Act. EBMUD serves approximately 1.3 million people in two counties and 22 cities and delivers approximately 250,000 AF of water annually. EBMUD has a staff of around 1600 employees and an annual operating budget of around \$240 million serving the water system. Since the early 1970's EBMUD and its customers have continued to make important strides in reducing water use and enhancing overall water supply reliability through demand management.

EBMUD's Water Conservation Division (WCD) has a full-time staff of 21 and an annual budget of approximately \$5 million and is saving about 1.1 MGD annually. In addition, the WCD has implemented numerous conservation measures, conducted many studies and is actively involved in a number of cooperative efforts. By submitting this grant application, EBMUD has committed to providing the staff, expertise (consultants) and resources necessary to obtain the project goals and objectives.

APPENDIX E

Highlighted Findings of National Study on Sub-metering and Billing Allocation Programs

Results of National Study on Billing Conversions in the Multi-family Sector

A national study on the merits of billing conversion programs in the multi-family (MF) sector was completed in August, 2004. The goal of the study was to: 1) determine the water savings potential in the MF sector resulting from both direct metering and allocation programs, 2) understand the current regulatory framework governing separate billing programs across the U.S., 3) access the current business practices in the billing service companies (read and bill industry), 4) draw conclusions from the findings, and 5) make recommendations that offer consumer protection, provide ethical business practices for the industry, and capture cost-effective water savings.

Study findings and conclusions include:

- Finding: Sub-metering was found to achieve a statistically significant water savings of 15.3% (21.8 gal/day/du or 8,000 gal/year/du). Conclusion: Sub-metering should be fostered by public policies seeking to encourage water savings, together with appropriate measures to protect the consumer.
- Finding: Billing allocation programs were found to have no statistically verifiable savings. Conclusion: Allocation programs should be carefully bounded by public policy.
- Finding: The installation of water efficient fixtures will save approximately 11,000 gal/year/du or about 30 gal/day/du. Also, any third party water and wastewater billing system will reduce a MF property owner's incentive to invest in in-unit plumbing efficiency upgrades. Conclusion: The initiation of any separate billing system should be coupled with complete plumbing fixture upgrades within a specified time.
- Finding: There is little or no regulatory oversight governing third-party billing practices. Conclusion: Best Management Practices should be implemented by the appropriate regulatory agency to ensure consumer protection for property owners and residents and to promote the adoption of sub-metering.
- Finding: Installation standards are needed for point of use (POU) sub-meters. Conclusion: Installation stands for POU sub-meters need to be adopted and incorporated into the appropriate plumbing codes.

Recommended Actions by Utilities, Regulators, and the Third Party Billing Industry

Based upon the findings and conclusions of the national study, the following general recommended actions were made for utilities, regulators, and third-party billing entities to promote water conservation and to help guide policy for separate billing for water and sewer in multi-family housing.

Actions by Water and Wastewater Utilities

- Require MF properties to notify the local water utility of separate billing for water
- Promote sub-metering and water efficient fixture retrofit
- Explore direct metering of MF units in new construction
- Apply volumetric billing to all MF master meters, rather than flat or fixed billing

Actions by State and Local Governments

- Provide for the measurement of the water use in each unit in all new MF structures
- Require efficient plumbing fixtures (EPACT compliant) when implementing a separate billing program
- Once sub-meters are installed, a property cannot revert to a RUBS system
- State landlord-tenant law or similar legal framework should address the special concerns arising from MF water and sewer billing systems

Actions by the US EPA

- Property owners implementing a separate billing program should not be subject to the full suite of National Primary Drinking Water Regulations
- Promote water efficiency in MF housing

Actions by the Third-Party Billing Industry

- Adopt certified Best Management Practices (BMPs) that provide consumer protection and service
- Apply for POU sub-meter installation standards for adoption into the appropriate plumbing codes