



PROPOSITION 13 URBAN GRANT ET IRRIGATION CONTROLLER PROGRAM

— S U B M I T T E D B Y : —



East Bay Municipal Utility District

Background picture courtesy of the Department for the Environment, Food and Rural Affairs, UK

Presented to:

CALIFORNIA DEPARTMENT OF WATER RESOURCES
OFFICE OF WATER USE EFFICIENCY
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ATTENTION: MARSHA PRILLWITZ

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PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

PART ONE

A. Project Information Form

1. Applying for (select one): (a) Prop 13 Urban Water Conservation Capital Outlay Grant
 (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
 (c) DWR Water Use Efficiency Project

2. Principal applicant (Organization or affiliation): East Bay Municipal Utility District

3. Project Title: ET Controller Installation Project

4. Person authorized to sign and submit proposal:

Name, title	Dennis M. Diemer General Manager
Mailing address	P.O. Box 24055, Oakland, CA
Telephone	94623-1055
Fax.	(510) 287-0101
E-mail	(510) 287-0188 DENNISD@ebmud.com

5. Contact person (if different):

Name, title.	John Swindell, Water Conservation Representative
Mailing address.	P.O. Box 24055, MS #48, Oakland, CA 94623-1055
Telephone	(510) 287-0594
Fax.	(510) 287-1883
E-mail	jswindel@ebmud.com

6. Funds requested (dollar amount): \$4,229,545

7. Applicant funds pledged (dollar amount): \$732,500 and customer funds of \$2,511,700

8. Total project costs (dollar amount): \$7,473,745

9. Estimated total quantifiable project benefits (dollar amount): \$18,634,378 (undiscounted)
\$17,005,309 (discounted)

Percentage of benefit to be accrued by applicant: 100%

Percentage of benefit to be accrued by CALFED or others:

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Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet): 5287
- Estimated total amount of water to be saved (acre-feet): 79,306
Over 15 years
- Estimated benefits to be realized in terms of water quality, instream flow, other: Reduced urban runoff
Reduced pumping and treatment of urban runoff
11. Duration of project (month/year to month/year): Oct 2002 – Sept 2005
12. State Assembly District where the project is to be conducted: 1, 4, 5, 6, 7, 9, 10,
11, 14, 15, 16, 18,
20, 21, 22, 23, 24, 27, 28
13. State Senate District where the project is to be conducted: 1, 2, 3, 4, 5, 6, 7, 9, 10,
11, 13, 15
14. Congressional district(s) where the project is to be conducted: 1, 3, 4, 5, 7, 9, 10, 11, 13,
14, 15, 16, 17
15. County where the project is to be conducted: Alameda, Contra
Costa, Marin, Placer
Sacramento, Santa
Clara, Sonoma
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: January 2002
17. Type of applicant (select one):
Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
- (a) city
 - (b) county
 - (c) city and county
 - (d) joint power authority
 - (e) other political subdivision of the State, including public water district
 - (f) incorporated mutual water company
 - (g) investor-owned utility
 - (h) non-profit organization
 - (i) tribe
 - (j) university
 - (k) state agency
 - (l) federal agency
- DWR WUE Projects: the above entities (a) through (f) or:
18. Project focus:
- (a) agricultural
 - (b) urban

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B. Signature Form

Insert Signature Page Here...

PART TWO

Project Summary

The major water agencies in California have come together to create a statewide initiative to target the replacement of standard irrigation controllers with self-adjusting, EvapoTranspiration (ET) controllers at residential and small commercial sites.

East Bay Municipal Utility District (EBMUD) has formed and a coalition with Northern and Central California water agencies including:

- East Bay Municipal Utility District
- Alameda County Water District
- Contra Costa Water District
- North Marin Water District
- City of Petaluma
- Sacramento Regional Water Authority
- Santa Clara Valley Water District
- City of Santa Rosa
- City of Sonoma

This coalition proposes an EvapoTranspiration Controller Program for both residential and commercial customers throughout northern and central California.

In California, landscape water usage for single family and small commercial customers is an opportunity that has largely gone untapped. For years water agencies have been attempting to find a service or technology that could be cost effectively implemented and, as important, desired by customers.

Until recently, there was no viable controller product that caught the consumers' attention and yielded durable water savings. Water surveys that provided customers with customized irrigation schedules also did not result in long-term savings.

The EvapoTranspiration (ET) controllers to be offered through the proposed program offer a technology that will stimulate customer interest and achieve long-term savings. In this program, it is intended to replace the common "clock-type" irrigation controllers with controllers possessing this new technology.

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This program is designed to:

1. Install 14,650 ET controllers throughout EBMUD's and the coalition's service territory;
2. Save in excess of 79,000 acre feet of water over the expected 15-year life of the equipment;
3. Reduce urban runoff by nearly 30,000 acre-feet during the same time period (equivalent to a 1.8 million gallons per day reduction in treatment requirements);
4. Transform the irrigation controller market into a viable consumer sector with competing products and technologies.

Our major goal is to transform the residential and small commercial irrigation market with the same vigor and success that occurred with ultra-low-flush toilets. The plumbing industry was permanently changed as a result of the water agencies' toilet replacement program initiatives. We intend to replicate this model of success and drive the irrigation product Industry in a similar direction.

EBMUD is the Principal Applicant for this program and will act as Program Administrator. It is our intent to work in collaboration with Metropolitan Water District, whose proposal is submitted under separate cover.

The EBMUD/MWD partnership will benefit all parties with program cost economies and management efficiencies. The alliance will offer significant negotiating and purchasing strength with the product manufacturers. Second, a common data tracking system will be developed that will result in common formatting and easier application. A third significant benefit will be the universal marketing message and strategy in customer outreach.

EBMUD's coalition of participating water agencies will be the Program Implementers, conducting the marketing, customer service and, where applicable, installation processes. One of the major benefits of utilizing the EBMUD and their coalition of water agencies is their well-established local network and their experience in implementing water conservation programs tailored to their own unique customer base. The existing agency infrastructure allows for rapid program deployment and drives down program costs.

The ET Controller Program offers an intelligent solution to a difficult market...residential and small commercial outdoor water usage.

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A. Scope of Work: Relevance and Importance

1. *Nature, Scope and Objectives of Project*

Large landscape sites in California have been targeted for programs by water agencies and, to a great degree are market driven. Water purchases for large sites can be a major line item cost for the customer and these economics drive the customers' motivation to participate in conservation programs.

On the other hand, residential and small commercial sites are generally perceived as hard-to-reach markets, with economics that do not send a strong conservation signal to the customer.

The single family and small commercial customers make up a large percentage of the overall water demand yet, to date, water agencies have had few services or products of interest to customers. As a result, these markets have long been under-addressed. The ET controller products and technology will allow the water agencies to offer their customers an effective way to save significant water and improve the health of their landscape.

The California water agencies are determined to be the impetus that motivates irrigation equipment industry to manufacture and market ET Controllers as a principal item in their product line. As mentioned previously, our program model is based on the highly successful toilet market transformation process of the past ten years. Following is a recap of the market barriers and the resulting course of action proposed by this program.

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Early Program Barriers	ULFT Market Issues	ET Controller Issues	Solutions used in the ULFT program and included in the ET Controller Program
Devices not widely known or accepted by customers	✓	✓	<p>Water agencies create an offer that is hard to turn down.</p> <p>Initiate targeted marketing campaigns to increase customer awareness and provide education regarding product benefits</p>
Product manufacturers have little incentive to modify their product offerings for new technology	✓	✓	<p>Educate forward-vision manufacturers about market potential.</p> <p>Create market potential by placing large orders for product</p>
Distributors experienced little or no demand for the new product	✓	✓	<p>Help viable manufactures to link up with distributors</p> <p>Create demand through program production</p>
Early models experienced performance problems	✓	✓	<p>Test models and select products with quality performance. Select at least two products for program.</p> <p>Maintain stringent quality assurance practices for the program to identify and resolve product problems.</p> <p>Provide market and technical feedback to manufacturers and distributors.</p> <p>Remove or replace a product that demonstrates substandard performance.</p>
Installers did not believe that the technology could work	✓	✓	<p>Initially work with a select group of installers.</p> <p>Educate wider circle of installers utilizing performance statistics and hands-on workshops.</p>

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

EBMUD believes that the best way to initiate market transformation is with this proposed ET controller program. Customers will respond to the attractive program offerings and high level of customer convenience. Following is an overview of the program's goals and objectives:

Program Objectives

- Goals
 - Installation of 14,560 ET Controllers
 - Eventual market transformation, replacing standard controllers with ET controllers
- Geographic Coverage
 - Participating Water Agencies throughout northern and central California
- Program Timeframe
 - 3 years (Savings benefits to extend for useful lifetime of ET controller devices, estimated at 15 years)
- Savings
 - 79,000 acre feet of water (15 years)
 - 1.8 mgd reduction in urban runoff with attendant pumping and treatment benefits
- Target Market Segments
 - Residential and commercial customers who meet all of the following criteria:
 - Irrigation area ranging from 1,500 to 40,000 square feet
 - Customers with existing controller
 - Customers that do not currently deficit irrigate

This program is the critical first step in EBMUD's campaign to drive ET controllers into the market. It is our belief that the eventual downstream result, in years to come, will be that...

1. The customer will elect to pay retail price for the ET Controller because of customer's desire for the product, i.e., no water industry incentives will be required.
2. Product selection will increase and prices will decrease due to customer demand.
3. Manufacturers will substantially reduce or discontinue the production of inefficient controllers in lieu of ET controllers.
4. Governing bodies will enact legislation requiring ET controllers for landscape in new construction projects.

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2. *Statement of Critical Water Issues*

The efficient use of California's limited water supplies is a critical local, regional and statewide water issue. The Bay-Delta supplies 22 million people in the state with water. However, there is a mis-match between the available supplies and beneficial uses of the Bay-Delta system. CALFED's water management strategy is to reduce that mis-match in order to improve the overall health of the Bay-Delta, increase supply reliability and improve water quality. Water use efficiency is one of the strategies that will help to meet this objective, as stated in the CALFED's Record of Decision (ROD).

This project is intended to significantly increase urban water use efficiency through the installation of ET-based irrigation controllers. Residential water demand in California accounts for 54% of total urban water demand and is forecasted to reach 58% by the year 2020 as a result of population growth, primarily in the hotter, inland areas of the state. The 1999 AWWA Residential End Uses of Water Study found that a significant portion of residential consumption is devoted to irrigation (58%). The study also found that homes with automatic sprinklers use 47% more water than those without automated systems. Much of the problem is due to the complexity and time involved in developing irrigation schedules. That is why the ET-based irrigation controller technology is so exciting. It removes that barrier by automatically adjusting the schedule based upon either real-time or historical ET. Small commercial landscape sites also represent a significant potential for water savings. These sites tend to be not as well managed as the larger commercial sites, many of which have an expensive centralized irrigation controller. The ET-based irrigation controllers proposed in this project make ET-based scheduling a cost-effective option, even for the smaller sites.

The proposed project provides water use efficiency beyond the level of the existing BMPs. Although BMPs 1 and 5 do address landscape water use, all measures do not necessarily result in effective water savings with long-term persistence. We expect that the installation of ET-controllers will generate long-term water savings that have persistence.

The water savings from this project would reduce the need for withdrawals from the Bay-Delta, thereby contributing to statewide water management strategies and objectives. On a regional and local level, they contribute to improved water reliability resulting from more efficient use of available resources.

This project is consistent with the Integrated Resources Management Plans of the participating agencies that include demand-side management through water conservation efforts as part of the long-term water supply mix. It is also consistent with the Urban Memorandum of Understanding (MOU) and associated BMPs. The participating agencies in this project are signatories to the Urban MOU, and have committed to implementing cost-effective conservation measures.

Finally, many of the urban agencies are also facing local problems resulting from non-point source pollution and excessive run-off. Over-watering is a key source of urban run-off. Therefore, irrigation scheduling based upon ET, and the reduction of excess

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irrigation will also contribute to reduced levels of urban run-off and non-point source pollution.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring and Assessment

1. *Methods, Procedures, and Facilities*

EvapoTranspiration (ET) is the combined process of water evaporating from the soil and water transpiring from plants. ETo, or reference evapotranspiration, is based on calculated values of several factors, including solar radiation, temperature, and moisture in the air and wind speed. ET can vary considerably from week to week, so to maximize water use efficiency with existing, standard controller technology, one needs to adjust irrigation schedules and re-program controllers on at least a weekly basis. This real time ET can be downloaded from local weather stations located throughout California.

The average ETo for a specific location is referred to as normal year ETo, or historical ET. It reflects the amount of water that is both transpired and evaporated from a plot of tall fescue grass. It is used to develop an irrigation schedule. However, because it is based on a normal year, adjustments have to be made to the schedule to compensate for variations from normal year ETo.

The amount of water that a plant needs can be scientifically calculated based upon the ET and a factor that is specific to plant or crop types (known as the crop coefficient). An appropriate irrigation schedule for a specific site is developed from a combination of the local ET value (ETo adjusted by the crop coefficient) and other site variables, such as plant types, soil type, sun exposure, amount of slope, etc. The challenge is in getting residential customers and landscape site managers to make the appropriate calculations and adjust their irrigation schedules appropriately as ET changes. Traditionally landscape water management has been poor because the process of developing irrigation schedules is time-consuming and sophisticated. As a result, over-watering of landscape sites is very common, and results in several problems:

- Most plants cannot store more water than they need to meet evapotranspiration needs; water applied in excess of their needs is wasted
- Over irrigation causes excessive run-off that contributes to non-point source pollution
- Over-irrigation tends to result in poorer plant health and increased site maintenance costs
- Summer peak demands on water distribution systems are exacerbated by excessive irrigation

The existing ET controllers on the market are large, centralized systems that cost thousands of dollars. They are usually not cost-effective for smaller commercial sites, and certainly not for single-family residential customers. However, new technology

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exists that incorporates ET-based irrigation scheduling into cost-effective residential and commercial controller models. They either use real-time ET transmitted by signal to the controller on a weekly basis, or they use irrigation schedules based upon historical ET. ET-based irrigation controllers remove the need for customers to make scheduling adjustments, while ensuring that the landscapes receive the appropriate amount of water. This cost-effective technology finally addresses the gap between the science of irrigation scheduling and the ability and time required of customers to implement it. Once installed, ET-based controllers automatically adjust the irrigation schedule for the site. The benefits of this breakthrough are multiple and far-reaching in scope, and include:

- Water savings
- Improved plant health
- Reduced non-point source pollution
- Reduced green waste
- Reduced “summer peaking” problems resulting from excessive irrigation

For this Program, water agencies throughout California have come together to jointly develop a series of implementation methods that address the residential and small commercial applications. We propose to work with the Metropolitan Water District (Program Administrator for the South program equivalent) and their co-operators to jointly develop a product specification, qualify ET controller products, and negotiate for and purchase the product for our two programs. The economies and synergies achieved through a multi-agency approach to implementing this Program will be reflected in a variety of ways:

- Coordinated and centralized procurements of product will achieve a more rapid transformation of the market.
- Centralized procurements of product will yield better pricing and terms from the manufacturers.
- Ongoing parallel agency programs throughout the state will provide the data and feedback necessary to properly evaluate and compare the effectiveness of the four methods of implementation within regions of varying demographics.
- Ongoing parallel agency programs will stimulate communication among the agencies and lead to beneficial synergies that might not otherwise occur.
- Development of a single technical specification for controllers will enable manufacturers to produce a single product for all agency programs in the state.
- Quality assurance programs will become more cost-effective when implemented uniformly throughout the state.

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- Consumer awareness will be enhanced and regional marketing will be more effective with a coordinated and focused marketing outreach.

As was experienced with previous toilet replacement programs, we know that it takes multiple outreach approaches to “drive up” the number of replacements. Several distinct outreach methods have been developed for this program. EBMUD’s coalition of water agencies will each select the best method(s) for their own unique customer base. The customer intervention methods are as follows:

1. Residential and Small Commercial Vouchers
2. Residential and Small Commercial Direct Installation
3. Residential and Small Commercial Self Install through Landscape Workshops
4. Residential Self Install through School Fundraiser Program

During the three-year program, EBMUD and the coalition of water agencies will gather customer response data, costs, and technical feedback for each of the intervention methods. Logically, some service offerings will be more successful than others. The low-performing or unfeasible (for cost and/or technology reasons) options will be ramped down and replaced with one or more methods with a higher success rate.

On the following pages are cut sheets highlighting key information regarding the various implementation methods.

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RESIDENTIAL AND SMALL COMMERCIAL VOUCHER

Program Description	<p>Voucher programs are designed to overcome the customer's capital outlay concern. Vouchers offer a point of purchase discount while still providing controls for customer qualification and participation tracking.</p> <p>For the current ET Controller market, the voucher design will model a fulfillment model rather than distributor point of purchase discounting. Water agencies will contract with the manufacturers and the manufacturers will perform the fulfillment services.</p>
Target Customer	<ul style="list-style-type: none">▪ Single Family Homeowners - 1,200+ Sq. Ft. Landscape▪ Small Commercial Customer - Up to 48 Valves
Start Up Requirements	<p>Standard Program Start Up with Additional Requirements for:</p> <ul style="list-style-type: none">▪ Contract Execution with Manufacturers▪ Product Fulfillment thru Manufacturers▪ Set Up Voucher Payment Processes for Manufacturers
Database and Administration	<p>Standard Program Database with Voucher Processing and Manufacturer Management</p> <ul style="list-style-type: none">▪ Voucher Redemption Tracking▪ Voucher Disbursement Tracking▪ Commitment to Prompt Manufacturer Payment▪ Payment Turn Around Time Tracking
Marketing and Customer Education	<ul style="list-style-type: none">▪ Targeted Bill Inserts▪ Targeted Direct Mail▪ Targeted Newspaper Ads <p><i>Response Rate = .5%</i></p> <p><i>Marketing Costs = \$30 per unit</i></p>
Customer Enrollment	<ul style="list-style-type: none">▪ Customer Calls Agency or Contractor and Requests Application▪ Agency/Contractor Qualifies Customer and Enrolls in Program▪ Agency/Contractor Sends Customer the Voucher - Customer Sends Voucher Application to Manufacturer
Product Distribution	<ul style="list-style-type: none">▪ Manufacturer Sends Product to Customer▪ Customer Sends Completed Application to Manufacturer and Agency/Contractor▪ Manufacturer Bills Agency/Contractor
Installation	<ul style="list-style-type: none">▪ Customer Self Installs or▪ Customer Hires Contractors
Installation Verification	<ul style="list-style-type: none">▪ 5-10% On-site Inspections

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RESIDENTIAL AND SMALL COMMERCIAL VOUCHER

Pros/Cons	<u>Cons</u>
	<ul style="list-style-type: none">▪ Lower Response Rate/Higher Marketing Costs Because Customer Must Do Everything (apply for voucher, send to manufacturer, learn to install and install product or research contractors and hire contractor, send completed voucher back in to manufacturer and agency)▪ Possible Lower Savings because Customer Does Not "Customize" Controller Settings
	<u>Pros</u>
Cost per Unit	<ul style="list-style-type: none">▪ Customer Absorbs Installation Costs and Liability▪ Easy and Quick to Implement
	<ul style="list-style-type: none">▪ Residential = \$286.79▪ Commercial = \$671.79

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RESIDENTIAL AND SMALL COMMERCIAL DIRECT INSTALL

Program Description	<p>Direct install programs are designed to overcome many traditional customer barriers – the customer simply calls for an appointment and the product is installed by a representative of the water agency. They are especially effective when dealing with hard-to-reach customers such as the small commercial and residential markets.</p> <p>This design is the most expensive option, but will produce the highest participation levels.</p> <p>In order to “push” the ET Controller market, a significant amount of controllers need to be installed through the direct install method. This will ensure that volume goals are being met and that the market-entry barriers are being minimized by the initial free offer.</p>
Target Customer	<ul style="list-style-type: none">▪ Single Family Homeowners - 1,200+ Sq. Ft. Landscape▪ Small Commercial Customer - Up to 48 Valves
Start Up Requirements	<p>Standard Program Start Up and Additional Requirements for:</p> <ul style="list-style-type: none">▪ Installer Training▪ Process for Scheduling Installation Appointments▪ Process for Handling Customer Installation Problems
Database and Administration	<p>Standard Program Database with Scheduling Capabilities</p> <ul style="list-style-type: none">▪ Track Installations▪ Evaluate Quality of Installations▪ Track Customer Installation Problems and Resolutions
Marketing and Customer Education	<ul style="list-style-type: none">▪ Direct Mail▪ Telemarketing <p><i>Response Rate = 3%</i></p> <p><i>Marketing Costs = \$15 per Unit</i></p>
Production Estimates	<ul style="list-style-type: none">▪ Continued customer participation, assuming funding and ongoing marketing efforts.
Customer Enrollment	<ul style="list-style-type: none">▪ Customer calls office and is Qualified and Enrolled during Scheduling Call▪ Customer Qualification Criteria Will Be Stringent and must include:<ul style="list-style-type: none">✓ Working Controller✓ Install Inside of Garage on Wall or Outside in a Weather-Proof Plastic Box✓ Maximum 12 Valves per 1,500 Sq. Ft. of Landscape

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RESIDENTIAL AND SMALL COMMERCIAL DIRECT INSTALL

Product Distribution	<ul style="list-style-type: none">▪ Product Brought to Installation
Installation	<ul style="list-style-type: none">▪ Conduct Simple Outdoor Survey▪ Second Round of Qualification Criteria Will be Applied on-site and Include:<ul style="list-style-type: none">• Assessment of Controller and Irrigation System• If System Fails Test, Customer will Be Requested to Fix Before Installation Can Occur▪ Precipitation Tests on 50% of Sites▪ Field Personnel Removes Old Controller and Installs/Programs New Controller
Installation Verification	<ul style="list-style-type: none">▪ 1-5% On-site Inspections▪ Lower Inspect Rate Because Staff/Contractors Are Performing Installation
Pros/Cons	<p><u>Cons</u></p> <ul style="list-style-type: none">▪ Liability for Product Installation and Health of Plants <p><u>Pros</u></p> <ul style="list-style-type: none">▪ Highest Response Rate Because Customer Has to do Nothing▪ Maximum Water Savings Because Trained Program Staff will “Customize” Settings as Necessary▪ Lower Marketing Costs Because Customer Barriers Have Been Eliminated
Cost per Unit	<ul style="list-style-type: none">▪ Residential = \$365.19▪ Commercial = \$904.19 <p>* <i>Commercial Cost Based on 60% of the sites requiring a commercial grade controller and a longer Installation Time.</i></p>

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RESIDENTIAL AND SMALL COMMERCIAL SELF INSTALL THRU LANDSCAPE WORKSHOPS

Program Description	<p>Customers will receive a free ET Controller after attendance at a local landscape workshop. The workshop will demonstrate to the customer how to:</p> <ul style="list-style-type: none">▪ conduct a simple outdoor landscape survey (identifying soil type, plant type, sprinkler type, and microclimate)▪ remove the old controller▪ install new controller▪ program new controller <p>The customer will then be required to install the product. A list of certified landscapers that provide installations would be provided to customers upon request. After the product is installed, the customer will be required to send in an installation verification postcard.</p>
Target Customer	<ul style="list-style-type: none">▪ Single Family Homeowners - 1,200+ Sq. Ft. Landscape▪ Small Commercial Customer - Up to 48 Valves
Start Up Requirements	<p>Standard Program Start Up and Additional Requirements for:</p> <ul style="list-style-type: none">✓ Customer Workshop Design✓ Certified Landscapers Workshop Design
Database and Administration	<p>Standard Program Database with Capabilities to:</p> <ul style="list-style-type: none">▪ Tracking Workshop Attendance▪ Tracking Installation Completions
Marketing and Customer Education	<ul style="list-style-type: none">▪ Targeted Bill Inserts▪ Targeted Direct Mail▪ Targeted Advertising <p><i>Response Rate = .5%</i></p> <p><i>Marketing Costs = \$30 per Unit</i></p>
Production Estimates	<ul style="list-style-type: none">▪ 25 participants average per workshop. 20-40 workshops per 1000 controllers. It may be difficult to sustain numbers of workshop participants.
Customer Enrollment	<ul style="list-style-type: none">▪ Customer Will Be Enrolled at the Workshop• Customer Will Be Required to Bring a Copy of Their Water Bill to the Workshop
Product Distribution	<ul style="list-style-type: none">▪ Distributed at Workshop
Installation	<ul style="list-style-type: none">▪ Customer Self Installs or▪ Customer Hires Certified Landscaper

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RESIDENTIAL AND SMALL COMMERCIAL SELF INSTALL THRU LANDSCAPE WORKSHOPS

Installation Verification	<ul style="list-style-type: none">▪ 5-10% On-site Inspections
Pros/Cons	<p><u>Cons</u></p> <ul style="list-style-type: none">▪ Lower Response Rate/Higher Marketing Costs Because Customer Time Commitment is High (attending workshop & installing product)▪ Possible Lower Savings Because Customer Does Not "Customize" Controller Settings <p><u>Pros</u></p> <ul style="list-style-type: none">▪ Customer Absorbs Installation Costs and Liability▪ Customer Better Understands Controller, therefore Can "Tweak" Settings Over Time
Cost per Unit	<ul style="list-style-type: none">▪ Residential = \$287.24▪ Commercial = \$671.79 (requires customer co-payment of \$350)

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RESIDENTIAL SELF INSTALL THRU SCHOOL FUNDRAISER

Program Description	<p>The Self-Install Thru Schools Program is a school fundraiser. Students will solicit participation from their parents and neighbors. Participants will be required to attend a workshop held at the school. The workshop will be virtually the same as the Landscape Workshop as described in the previous program write up.</p> <p>The school will be paid per documented participant.</p>
Target Customer	<ul style="list-style-type: none">▪ Single Family Homeowner<ul style="list-style-type: none">✓ 1,200+ Sq. Ft. Landscape✓ Existing "Working" Controller▪ Target Schools in Middle to Upper Income Areas (larger lot sizes and higher percentage of automatic controllers)
Start Up Requirements	<p>Standard Program Start Up with Additional Requirements for:</p> <ul style="list-style-type: none">▪ Fundraiser Assembly Template Design▪ Customer Workshop Design▪ Certified Landscapers Workshop Design
Database and Administration	<p>Standard Program Database with Capabilities for:</p> <ul style="list-style-type: none">▪ Tracking School Participation and Funds Disbursement▪ Tracking Workshop Attendance▪ Tracking Installation Completions
Marketing and Customer Education	<ul style="list-style-type: none">▪ Flyer Distribution▪ Assembly Workshop Held at School▪ Students Solicit Participation▪ School Paid \$10 per Participant <p><i>Response Rate = .5%</i></p> <p><i>Marketing Costs = \$10.50 per Unit</i></p>
Production Estimates	<ul style="list-style-type: none">▪ 250 Controllers Distributed per School▪ Schools Paid \$10.00 per Unit "Installed"
Customer Enrollment	<ul style="list-style-type: none">▪ Customer Enrolled During Assembly Workshop▪ Customer Will Be Required to Bring a Copy of Their Water Bill to the Workshop
Product Distribution	<ul style="list-style-type: none">▪ Distributed at Assembly Workshop
Installation	<ul style="list-style-type: none">▪ Customer Self Installs▪ Customer Hires Certified Landscaper from List Provided at Workshop

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

RESIDENTIAL SELF INSTALL THRU SCHOOL FUNDRAISER

Installation Verification	<ul style="list-style-type: none">▪ 5-10% On-site Inspections
Pros/Cons	<p><u>Cons</u></p> <ul style="list-style-type: none">▪ Lower Response Rate/Higher Marketing costs because customer time and commitment is high (attending workshop & installing product)▪ Possible Lower Savings because Customer Does Not "Customize" Controller Settings <p><u>Pros</u></p> <ul style="list-style-type: none">▪ Customer Absorbs Installation Costs and Liability▪ Customer Better Understands Controller therefore Can "Tweak" Settings Over Time (could be a con also)▪ Schools/Community Groups Generate Revenue▪ Students Learn About Environmental Issues
Cost per Unit	<ul style="list-style-type: none">▪ \$255.79

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

2. Task List and Schedule

The program is scheduled to begin in October of 2002 and run for three years, including a six-month start-up period.

For EBMUD and the entire coalition of water agencies, marketing outreach and production will begin in April of 2003 and ramp up as each program intervention method is initiated.

- Voucher processing will begin in April 2003;
- Workshops will begin in May;
- Direct installations will begin in May;
- Due to the school calendar, the schools program will begin in October;
- By July 1, 2003, we estimate that the program will reach full production levels.

Below is a detailed program implementation timeline:

Program Implementation Chart

Tasks	Schedule
DWR Selects ET Controller Program to be Funded	April 2002
Water Agencies Commit to Production Targets and Type of Interventions	May 2002
Water Agencies Obtain Cost-Sharing Commitment Letters	May 2002
Contract Negotiations Conducted between DWR and Principal Applicant	May 2002
MOUs and/or Agreements Prepared between Principal Applicant and Participating Member Water Agencies	Jun - Jul 2002
Contract Executed by DWR with Principal Applicant, Project Begins	October 2002
Program Operations, Monitoring and Assessment Plan Finalized	October 2002
MOUs and/or agreements Executed with Principal Applicant and Participating Water Agencies	October 2002
Product Specifications	
Product Specifications Developed in Conjunction with EBMUD	Oct – Nov 2002

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Tasks	Schedule
Products and Technologies Evaluated and Tested Against Specifications and Approved	Nov – Dec 2002
Eligible Product List Generated	January 2003
Prices, Production and Delivery Schedules Negotiated with Product Manufacturers	January 2003*
Water Agency Personnel Trained on Approved Products	March 2003
Program Information Systems	
Required Program Data Identified	October 2002
Centralized Computer Tracking System and Database Developed and Tested	Nov 2002 – Apr 2003
Internet Services, Data Access, and Security Protocols for Customers and Water Agencies Created	Jan – Feb 2003
Data Transfer Protocol, Format and Frequencies Developed	December 2003
Program Forms, Reports and Invoices	
Standardized Program Forms Developed for Each Intervention Method	January 2003
Standardized Reports and Reporting Requirements Developed	January 2003
Standardized Invoices and Procedures Developed	January 2003
Water Agency Personnel Trained on: <ul style="list-style-type: none"> ▪ Form, Report and Invoice Completion ▪ Computer System Usage 	March 2003
Program Marketing and Production Planning	
Marketing Strategies Created for Each Intervention Method	Nov 2002 – Jan 2003
Productivity Milestones Generated for Each Marketing Method	January 2003
Calendar of Outreach Campaign Generated	January 2003
Program Theme and Logo Developed	February 2003
Marketing Collaterals Developed for Each Intervention & Marketing Method	March 2003

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Tasks	Schedule
Marketing Templates Created for Each Water Agency, including: <ul style="list-style-type: none"> ▪ Calendar of Marketing Activities ▪ Production Planner ▪ Marketing Collaterals 	March 2003
Water Agencies Trained on Marketing Tools	March 2003
Program Operations, Standard and Controls	
Operational Policies and Procedures Developed for Each Intervention Method	Nov – Jan 2003
Controls and Standards Developed for: <ul style="list-style-type: none"> ▪ Customer Service ▪ Processing/Fulfillment Turn-around Time ▪ Verification Inspections ▪ Fiduciary Processes ▪ Security and Confidentiality of Data ▪ Data Transfer, Reporting & Invoicing Accuracy and Schedule 	Nov – Jan 2003
Create Master Program Flow Integrating Operational Processes and Controls	February 2003
Create Calendar for Audit Events	February 2003
Train Water Agency Personnel on Operational Procedures, Standards and Controls	March 2003
Monitoring and Assessment Plan	
Monitoring and Assessment Plan Finalized	November 2002
Develop Research Plan for Submission to Project Advisory Committee	November 2002
Water Agency Involvement in Monitoring and Assessment Outlined	December 2002
Conduct Workshop with Project Advisory Committee	January 2003
Water Agencies Training in Monitoring and Assessment Requirements	March 2003

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Tasks	Schedule
Conduct Process Evaluation <ul style="list-style-type: none"> ▪ Develop Interview Instrument ▪ Conduct Interviews ▪ Compile and Analyze Responses ▪ Draft and Disseminate Results 	All Three Years
Conduct Impact Evaluation <ul style="list-style-type: none"> ▪ Develop Sampling Plan and Consumption Data Protocol ▪ Collect Pre-installation Water Use and Other Data ▪ Clean Data, Draw Sample, Construct Sampling Weights ▪ Collect Daily Weather Data from Multiple Weather Stations ▪ Conduct Water Use Modeling ▪ Analyze Cost Effectiveness 	All Three Years
Prepare and Submit Program Evaluation Results	End of Year 1 End of Year 2 End of Year 3
Modify Program Based on Evaluation Results	Ongoing
Customer Questionnaire Developed to Assess Customer Satisfaction	January 2003
Conduct Customer Satisfaction Surveys	All Three Years
Compile and Evaluate Customer Satisfaction Results	All Three Years
Modify Program Based on Customer Satisfaction Results	Ongoing
Implementation Contractor(s) Selection	
Water Agencies Each Determine Internal vs. External Program Implementation	November 2002
Standard RFPs Prepared by Water Agencies	December 2002
List of Qualified Implementation Contractors Created	December 2002
Water Agencies Conduct RFP Process and Select Program Implementation Contractor(s)	Jan – Feb 2003
Program Template Development	
Small Commercial and Residential Workshop Templates Developed	Jan – Feb 2003
School Fundraiser Template Developed	Feb – Mar 2003
Small Commercial and Residential Installation Guidelines Developed	Jan – Feb 2003

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Tasks	Schedule
Small Commercial and Residential Installer Training Developed	February 2003
Water Agency Installer Training	March 2003
Program Kick Off	April 2003
Program Marketing Begins	April 2003
Voucher Processing Begins	April 2003
Small Commercial and Residential Landscape Workshops Begin	May 2003
Small Commercial and Residential Direct Installations Begin	May 2003
Residential School Fundraisers Begin	October 2003
Weekly and Monthly Reporting	May 2003
Field Inspections Begin	May 2003
First Quarterly Report and Invoice Submitted to DWR	July 2003

On the following pages are tables indicating production estimates, program costs, and quarterly expenditure estimates.

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Listed in the table below is the estimated production and costs per implementation method and customer class target:

Total Program Production and Cost

Program Implementation Method	Implementation Cost Per ET Controller Unit¹	No. of ET Controller Units Proposed - 3 yrs	Extended Program Cost
Single Family Residential Voucher	\$286.79	3,480	\$ 998,029
Residential Direct Install	\$365.19	3,770	\$ 1,376,766
Residential Self-Install Through Schools	\$255.79	160	\$ 40,926
Landscape Workshops Self-Install	\$287.24	710	\$ 203,940
Small Commercial Direct Install	\$904.19	935	\$ 845,418
Small Commercial and Multi-family Self-Install or Voucher	\$671.79	5,595	\$3,758,665
SUB-TOTALS		14,650	\$7,223,744
Program Evaluation: Monitoring and Assessment			\$ 250,000
TOTAL		14,650	\$7,473,744

1-Cost includes amortized start-up cost, program marketing, implementation, and administration, and equipment (controller).

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Listed in the table below is the per unit cost per implementation method and customer class:

UNIT COST BREAKDOWN BY TASK	Self-Install School Program	Self-Install Landscape Workshop	Direct Install Residential	Voucher Residential	Direct Install Small Commercial	Self Install or Voucher Multi-family & Small Commercial
Product Cost (melded)	\$ 221.00	\$ 221.00	\$ 221.00	\$ 221.00	\$ 545.00	\$ 545.00
Installation cost (direct install only)	0	0	\$ 100.00	0	\$ 300.00	0
Voucher Processing & Administration				\$ 10.00		
Vendor Negotiation				\$ 2.00		
Marketing	\$ 11.00	\$ 0.25	\$ 25.00	\$ 35.00	\$ 40.00	\$ 60.00
Workshop - Marketing		\$ 22.50				\$ 30.00
Workshop- Development	\$ 2.00	\$ 2.00				\$ 2.00
Workshop - Agency Staff Training	\$ 1.00	\$ 7.50				\$ 1.00
Additional Program Administration (Data Entry, Tracking, Phones, Customer Service, Reporting)	\$ 2.00	\$ 15.00				\$ 15.00
Mail Distribution - Marketing		\$ 0.20				
Certified Contractor Workshop	\$ 3.10	\$ 3.10		\$ 3.10		\$ 3.10
Customer Service/Liability			\$ 6.00		\$ 6.00	
Installation Verification	\$ 5.00	\$ 5.00	\$ 2.50	\$ 5.00	\$ 2.50	\$ 5.00

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UNIT COST BREAKDOWN BY TASK	Self-Install School Program	Self-Install Landscape Workshop	Direct Install Residential	Voucher Residential	Direct Install Small Commercial	Self Install or Voucher Multi-family & Small Commercial
Customer Satisfaction Survey	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60
Sub-Total	\$ 245.70	\$ 277.15	\$ 355.10	\$ 276.70	\$ 894.10	\$ 661.70
Plus: Central Administration	\$ 6.77	\$ 6.77	\$ 6.77	\$ 6.77	\$6.77	\$6.77
Plus: Program Start-Up Costs	\$3.31	\$3.31	\$3.31	\$3.31	\$3.31	\$3.31
TOTAL COST	\$ 255.79	\$ 287.24	\$ 365.19	\$ 286.79	\$ 904.19	\$ 671.79

UNIT COST BREAKDOWN BY PSP CATEGORY						
Materials & Installation	\$ 221.00	\$ 221.00	\$ 321.00	\$ 221.00	\$ 845.00	\$ 545.00
Administration	\$ 9.37	\$ 22.37	\$ 13.37	\$ 19.37	\$ 13.37	\$ 22.37
Planning	\$3.31	\$3.31	\$3.31	\$3.31	\$3.31	\$3.31
Other	\$ 22.10	\$ 40.55	\$ 27.50	\$ 43.10	\$ 42.50	\$ 101.10
TOTAL COST	\$ 255.79	\$ 287.24	\$ 365.19	\$ 286.79	\$ 904.19	\$ 671.79

PROPOSITION 13 URBAN GRANT ET CONTROLLER PROPOSAL

Listed in the table below are the estimated quarterly expenditures:

QUARTERLY EXPENDITURES

	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
Year 1	\$ -	\$ 17,500	\$ 387,589	\$ 403,339	\$ 818,429
Year 2	\$814,768	\$ 814,768	\$ 814,768	\$ 814,768	\$ 3,259,071
Year 3	\$851,501	\$ 851,501	\$ 851,501	\$ 851,501	\$ 3,406,004
Total Expenditures					\$7,473,504

3. *Monitoring and Assessment*

One of the key elements of developing a successful program is the ongoing monitoring and assessment of performance. In order to track and monitor program implementation performance, we propose four main components:

1. Developing and maintaining a centralized relational program database;
2. Performing verification inspections;
3. Conducting customer satisfaction surveys;
4. Administering a full-scale process and impact program analysis.

All of this information and feedback will be used to modify the program. Continual enhancement and changes will be made to program marketing and operations in order to ensure the highest potential for success.

Centralized Database

We propose to develop and maintain a centralized master program database for this project. Individual copies of the centralized database will be made available and required for use by individual agencies for their in-house needs or for their contractors where applicable. Each participating agency will be required to provide an updated copy of their local program database when submitting invoices for payment. The updated copies will then be merged into the master project database. This approach offers several benefits:

- Economies of scale with respect to database development and administration
- Consistent data structure and format

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- Ease of use for analysis and study purposes due to the consistent data structure and format
- Centralized reporting capabilities
- Using a consistent structure and format, each participating agency will operate its own program database and will be able to incorporate supplementary features that may be required to accommodate conditions unique to its service area.

A project team will develop the specifications for the database during the start-up phase of the project. The data will include, at a minimum, the following information:

- Participating Agency
- Individual customer information (name, address, account number)
- Installation location
- Installation date
- Type of distribution method
- ET controller type and model
- Square footage at the site

Additional data fields, including detailed site information, will be determined during the planning phase.

Reporting

The database will be used to generate program status reports on a monthly and quarterly basis for comparison against program implementation targets. Yearly reports and a final project report will also be created. The monthly reports will show sub-total information for individual participating agencies, as well as for the program overall. Standard summary reports showing information for the reporting period, as well as cumulative information, will include, at a minimum:

- Total number of ET Controllers installed
- Number of ET Controllers by program implementation method
- Quantities of the types and models of ET-Controllers installed – totals as well as by implementation method

Detailed reports will be designed based on the specifications developed during the planning phase. Additional reports will be developed, as necessary, to facilitate program implementation and evaluation, throughout the progress of the project.

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Customer and agency feedback will also be tracked and monitored in order to evaluate the ongoing impact and effectiveness of the program.

Verification Inspections

Direct-installations amount to approximately 38 percent of all of the ET Controllers planned for installation on the proposed programs. For these installations, field reports from the installers (under contract to the water agency) are normally deemed to be sufficient evidence of installation.

For the remaining 62 percent of installations, all of which rely upon the customer for ET Controller installation (self-install and voucher methods), an independent (third-party) verification process will be implemented.

This verification process will involve the random selection from the universe of reported installations a sample of installations for field inspection. Samples will be stratified in accordance with method of implementation (voucher, direct install, etc.) and the intended end-use (residential, commercial) and will be based upon a 95% confidence level that the result will be within $\pm 2\%$ of the actual installation percentage. In the event that, during Year 1 of the Program, in excess of 99 percent of the reported installations are found to actually be installed, the independent verification process may be temporarily modified or suspended (with the prior approval of the DWR).

The independent verification process will begin field inspections of the randomly selected sites no sooner than 45 days and no later than 90 days following the date of reported ET Controller installation¹. Results of the independent verification process will be reported on a quarterly basis.

Process and Impact Evaluation

There are three very different types of questions raised by this study. One type of question is practical—how well are the different programs/intervention methods doing at getting customers to adopt the ET controllers? The second type of question is empirical—what is the net change in water use attributable to ET controllers? A related question, of course, pertains to the costs and benefits of ET controller programs—Are they worth doing?

There are relationships between the questions. The design of ET controller programs can minimize unnecessary costs, increase the likelihood of customer participation and retention, and, thereby, increase the benefits produced by these programs. The magnitude of water savings is a key determinate how ET controller programs can

¹ A minimum period of 45 days is proposed to assure that the customer has ample opportunity to install and operate the ET Controller and provide the inspector with customer feedback. A condition of the installation will be that the old irrigation clock/timer be removed by the customer and provided to the water agency.

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benefit water/wastewater utilities, the Bay Delta, and society. An integrated evaluation approach is proposed to address these interrelated issues.

Overall Evaluation Approach

The research approach is designed to be both flexible and dynamic. A brief summary of the recommended approach—subject to input from the Project Advisory Committee and possible major revisions—partitions the research into three phases:

Phase I would be conducted in six months and would develop the research approach, draft interview instruments, develop a consistent consumption data submission protocol, and define expected results.

Phase II will seek to provide the earliest possible set of evaluation results that could feed back into improving program design and, thereby, program effectiveness (months 7-18).

Phase III would involve a higher resolution examination of these ET controller programs and intervention methods, to provide the most definitive answers about the sample of participating customers and address questions of potential effects of these programs if scaled to additional water agencies and other customers (month 19 to project conclusion.)

In the following section, a more detailed topology of questions is developed. Thereafter, methods are proposed to develop a corresponding set of answers.

Questions to be Addressed

There are two dimensions that we would like to divide the questions about ET controller program impacts--internal versus external validity. Another division is the feasibility of implementation (customer acceptance, industry support, and sustainable financing) versus the effectiveness (what benefit at what cost).

Questions of internal validity refer to what may be inferred about the feasibility and impact of programs that are implemented:

Feasibility - Implementation Success

How satisfied were participating customers?

How would the programs be changed to increase the probability of participation?

How would the programs be changed to decrease the attrition probability?

How did different intervention methods (direct versus self-install) differ?

Effectiveness - Benefits and Costs

How much water was saved by participants (gross savings).

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How much water was saved by non-participants (ongoing savings).

How much additional water was saved by participants (net savings).

Are there any “spillover” effects of program participation?

What is the relationship between savings and wastewater flow/urban runoff?

How do savings vary:

By type of controller used?

By intervention type (direct versus self-install)?

By customer segment (residential vs. commercial)?

By size of irrigated area?

By climate zone (inland versus coastal, north versus south)?

Questions of external validity refer to what inference may be extended outside the sample of participants. These could include:

- The effects of the same program targeted toward other customers.
- The effects of the same program expanded statewide.
- The potential effect of a differently configured program (small vs. large lots)
- The projection of water savings into the future (persistence).

The questions of external validity are naturally more conjectural and are an inherently riskier inference. Nonetheless, these questions are also the ones most important to provide answers to sustain the scope and scale of this market transforming efficiency program.

Decisions over how to allocate analytic resources must address how much effort is allocated to each question? Of the questions listed under internal validity label, the implementation feasibility and the variation in water savings deserve the largest allocation of research effort. ET controller programs have yet to pass the market test for implementation feasibility. The magnitude of water savings is the most contentious issue in estimating cost-effectiveness; variation in water savings is the critical knowledge needed to improve cost-effectiveness (through better program design.) Under the external validity label, we believe the extrapolation of conservation potential and the persistence of water savings deserve a greater allocation.

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Methods

Given the differences among types of ET controller programs, a single cookie-cutter analytic approach is inappropriate. We propose this adaptive research design using the following multiple data collection methods.

Process Evaluation – The process evaluation addresses the questions of *how well* the different programs are at achieving program participation and retention. This assessment of the implementation success of the ET controller programs/intervention methods has been budgeted at approximately \$50,000.

Implementing Staff Interviews - In-person focused interviews with agency staff responsible for implementation (program success, factors important in success, weaknesses, strengths, and areas for improvement.)

Other Water Agency Staff Interviews - In-person focused interviews with agency financial and managerial staff. (revenue effects, assessment of financial planning complications, program success, factors important in success, weaknesses, strengths, direct and indirect program costs, and areas for improvement.)

Interviews with other Stakeholders - In-person focused interviews with representatives of the green industry, landscape professionals, and environmental advocates.

Customer Satisfaction Survey – The results of the survey of customer perception of program (strengths, weakness, customer satisfaction, and suggestions for improvement) to be integrated into the process evaluation of program/intervention method effectiveness.

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

Impact Evaluation - The impact evaluation addresses the questions of whether the different programs achieve their *intended effect*. The impact evaluation has been budgeted at approximately \$200,000.

Water Use Analysis - Using historical account level water use records and multiple climatic measures, climate-adjusted estimates of water savings will be developed using regression methods. To the extent that comparable non-participants exist at some of the agencies, an assessment of net conservation could be attempted. The amount of additional effort allocated to this question will be determined after issues of data availability have been settled. This evaluation proposes providing the earliest possible indicators of differences in water savings by intervention method (Phase II). These results will be labeled as preliminary and subject to confirmation in the last year of the study (Phase III).

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Cost-Effectiveness Analysis - A cost-benefit analysis will be performed and presented in a form compatible with CUWCC CEA guidelines. This will explicitly address additional indirect benefits of reduced urban landscape runoff, seeking to define a methodological overlap with existing studies measuring urban runoff that could provide the necessary baseline data (IRWD study.)

Tasks

Task 1: Develop Final Research Plan This evaluation proposes developing a stratified sample of individual customers across the different program types and intervention methods. Traditionally, the bulk of the technical literature on developing sample has primarily focused on ensuring representativeness of a sample to the population from which it is drawn through randomization. Representativeness of a sample is, of course, an extremely important concern, but one that can be addressed through the methods of scientific sampling. A formal sampling plan will be developed in Phase I.

The evaluation will be coordinating with numerous water agencies having potentially different characteristics in terms of population, distribution of population among different customer classes, climate, and lot size. All of these factors affect water use patterns and have a bearing on the extent and type of intervention methods that are likely to succeed in each area. Because of these agency-specific differences, stratification by agency will improve representativeness for a given sample compared to a simple random sample.

Over time we have found that theoretical calculations of required sample size are misleading and risky for several practical reasons (see Chesnutt et al. 1998 “A primer on sample size calculations”). The theoretical calculations are misleading because the questions asked of the evaluation can be more involved than simply measuring a mean change in water use. How does the mean change in water saving itself change over time? How do different program participants save differently? What explains differences in water savings? The theoretical calculations are risky for a different reason. A certain fraction of water consumption histories will not prove usable. This data attrition can leave the evaluator with an insufficient sample to draw robust conclusions. The sampling plan developed in Phase I will account for these practical considerations in developing a sampling approach.

Task 2: Process Evaluation – The process evaluation combines data generated by program implementers (progress reports, customer surveys) with structured interviews of implementers, other water agency staff, and other stakeholders. These focused interviews target the agency staff responsible for implementation (program success, factors important in success, weaknesses, strengths, and areas for improvement), financial and management staff (revenue effects, assessment of financial planning complications, program success, factors important in success, weaknesses, strengths, direct and indirect program costs, and areas for improvement.), and other stakeholders including representatives of the green industry, landscape professionals, and environmental advocates. A complete sampling of the first two groups will be attempted (two dozen interviews.) The interview protocol with agency will end with a collection of

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agency-specific information. A list of individuals in the third group (other stakeholders) will be developed in cooperation with the project administrator and representatives from the agencies.

Task 3: Water Use Analysis and Cost-Effectiveness analysis. The water use analysis seeks to develop sound empirical answers to the following questions:

- What was the change in water use at one site attributable to ET controller installation?
- What explains the magnitude of the observed change?

The answer to the first question is simpler and requires less data (consumption records, the time of the change over). The answers to the second questions are necessarily more complex and require more data.

Using historical account level water use records and multiple climatic measures, the water use analysis would develop climate-adjusted estimates of water savings using panel data (time series cross section) regression methods. A comparable “control group” of non-participants must be developed to permit an assessment of net conservation. The amount of additional effort allocated to this question will be determined after issues of data availability have been settled. This evaluation proposes a cost-effective approach to water consumption sampling. It proposes to obtain a large sample consumption histories for participating customers. Appropriate panel data estimators can ensure that unbiased estimates of water savings can be made without cross-sectional data on customer characteristics. Data on customer characteristics would be added later to answer the additional and more involved questions of how the water savings vary across customers and intervention methods. In this way the analysis of water savings using consumption histories can be made independent of available measures of customer characteristics. This makes the impact evaluation more robust. Contrariwise, the measures of customer characteristics, where available, can powerfully explain differences in observed water savings.

The water use analysis in Phase II will provide the earliest possible evidence of differential savings effects for linkage back into ongoing program design. These results would be narrowly disseminated and clearly labeled as preliminary. The water use analysis in Phase III could confirm hypotheses developed in Phase II and test for broader threats to inferential validity and reliability. Phase III will also include a cost-benefit analysis conducted in a form compatible with CUWCC CEA guidelines.

Task 4: Report and Dissemination Draft and final report, including process and impact evaluations.

- Web sites and water planning conferences.
- Discuss opportunities for expansion and applicability to other service areas.
- Disseminate of study results will be done via:

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- Final report
- AWWA conferences
- CUWCC web site committees
- Agency boards of directors
- Press releases

Program Feedback and Mid-Course Changes

We fully expect that as implementation proceeds and the customers in the marketplace provide feedback to us, fine-tuning of the marketing, training, and installation processes will be required. This includes a possible re-focusing of efforts into areas more likely to (1) be more receptive to a direct install initiative and (2) yield higher water savings per Program dollar invested.

In addition, as our relationships with the controller industry solidify and mature, we also expect that their very enthusiastic support and assistance will become more evident.

Because this Program's outreach efforts will be tailored (by the implementing water agency) to the specific local area in which it is operating, significant benefits will accrue as successful marketing outreaches in one local geographic area are exported to other local areas and used by other Program implementers.

For these reasons, our Program calls for an ongoing (monthly) formal review of successes and failures in the areas of outreach and installation in order that the entire Program would operate at the most cost effective level possible.

4. *Preliminary Plans and Specifications and Certification Statements*

A project team will determine the exact product specifications of the ET controllers during the start-up phase of this program. However, there are certain basic requirements that will apply. Those include:

- Controller is self-adjusting based on Eto and/ or weather changes
- Local ET-based irrigation controller
- Multiple start-times
- Multiple stations/valves
- Adjustable test cycle
- Microclimate adjustments
- Accumulation feature

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- Residential grade models
- Commercial grade models

Technical Specifications

Basic technical specifications are as follows:

- Industry standard hook-ups (replaces any controller)
- Operating Ambient Temperature: 0 to 50° C
- Input operating voltage: 105 V a.c. to 135 V a.c.
- Output: 24 V ac
- Minimum number stations – residential grade: 6
- Minimum number stations – commercial grade controllers: 12
- Weather-proof case for outdoor installations (as required)
- Non-volatile memory
- 9 V battery back-up

Manufacturer Capabilities

Existing ET Controller manufacturers have been contacted regarding their abilities to meet the production targets outlined in this proposal. We have received assurances from the manufacturers that they have the necessary resources to ramp up their manufacturing operations and that they can meet the stated production goals.

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C. Qualifications of the Applicants and Cooperators

1. **Resumes**

RICHARD W. HARRIS, P.E.

Manager of Water Conservation

EAST BAY MUNICIPAL UTILITY DISTRICT

As Water Conservation Manager, Richard Harris oversees the development and implementation of EBMUD's Water Conservation Master Plan in support of long-term water supply and demand management goals. With an annual budget of more than \$5 million, and a total projected program budget of \$92 million, EBMUD's water conservation efforts represent one of the largest staffed and budgeted conservation programs among major water utilities in the state. Mr. Harris is a licensed civil engineer and has been at EBMUD for more than 11 years. Prior to joining the Water Conservation Division, he managed the District's Water Recycling Program. Mr. Harris continues to serve as a District spokesperson on water use efficiency. Mr. Harris also serves as the EBMUD Energy Conservation Coordinator to the California Flex Your Power Campaign. Mr. Harris has more than 17 years experience in the environmental systems planning, engineering and resource management, and worked a number of years in the private sector specifically in the environmental engineering and energy management fields for Combustion Engineering Environmental, Inc. and Guaranteed Energy Savings, Inc.

Key Experience:

4/99 – Pres. Manager of Water Conservation - EBMUD

Responsible for managing the District's Water Conservation Division and directing the planning and implementation of the Water Conservation Master Plan to achieve 34 million gallons per day in water savings by the year 2020. Manage 19 professional staff and administer a \$92 million capital and operating program budget, totaling in excess of \$5 million annually.

4/98 - 4/99 Senior Civil Engineer – EBMUD, DERWA

Supervisor of ten professional staff in the Office of Reclamation and Wastewater Planning Sections. Served as the Engineering Program Manager for the DSRSD-EBMUD Recycled Water Authority, responsible for supervising and implementing a joint \$90 million water recycling project. Served as a member of the Executive Management Board and Chair of the Finance Committee for the Bay Area Regional Water Recycling Program.

11/96 - 4/98 Supervising Administrative Engineer – EBMUD

Program Manager for \$120 million Water Recycling Program. Responsible for planning and administration of new capital projects (\$7M - \$60M), operating projects (\$38M) and consultant management. District spokesperson on all water recycling matters with the community and elected officials.

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7/87 - 7/89 Technical Engineer – Combustion Engineering Environmental, Inc.

Conducted environmental science and engineering field operations. Participated in all phases of the Materials Damage Study for the California Air Resources Board, including site installation and monitoring, sample preparation and processing, and report writing. A member of technical team conducting field services for the Rocketdyne Wastewater Sampling Program. Services included flow meter installation and calibration, channel design, field sampling, laboratory preparation and report writing.

1/85 - 11/86 Manager, Southern Pacific Region/Conservation Engineer - Guaranteed EnergySavings, Inc.

Responsible for field service activities in California, Arizona, New Mexico and Texas. Responsibilities included marketing, new project development, site surveys, and management support of energy conservation systems for contracts exceeding \$2 million. Performed computer system installation and complete electrical system support. Directed the work of the field electrical crews on energy savings programs; conducted contract negotiations.

Education:

Masters Degree, Civil Engineering, University of California, Los Angeles.

Bachelors Degree, Business Economics, University of California, Santa Barbara.

Bachelors Degree, Environmental Studies, University of California, Santa Barbara.

Affiliations:

Richard serves on the Board for the California Urban Water Conservation Council and is active in the American Water Works Association, Water Environment Federation and WaterReuse Association.

2. *Role of External Cooperators*

This program will be implemented in partnership with the water agencies listed below, as well as the California Urban Water Conservation Council. Each of the participating water agencies has been on the forefront of water conservation program implementation in the State. By partnering on this project, they bring their combined skills, experience and knowledge together in a dynamic way.

Water Agencies

Alameda County Water District

Contra Costa Water District

North Marin Water District

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City of Petaluma

Sacramento Regional Water Authority

(Program Participants Eligible for Prop. 13 Funding)

Carmichael Water District
Citrus Heights Water District
City of Folsom
City of Galt
City of Sacramento/Dept. of Utilities
County of Sacramento
Del Paso Manor Water District
Florin Resource Conservation District/Elk Grove Water System
Fair Oaks Water District
Orange Vale Water Company (incorporated mutual water company)
Placer County Water Agency
Rancho Murrieta CSD
Rio Linda/Elverta Water District (new Urban WMP)
San Juan Water District
Sacramento Suburban (formerly Arcade WD and Northridge WD)

Santa Clara Valley Water District

California Water Service Company
City of Gilroy
Great Oaks Water Company
City of Milpitas
City of Morgan Hill
City of Mountain View
City of Palo Alto
Purissima Hills Water District
San Jose Municipal Water System
San Jose Water Company
City of Sunnyvale
City of Santa Clara

City of Santa Rosa

City of Sonoma

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

California Urban Water Conservation Council

The California Urban Water Conservation Council was formed in 1991, as a result of the signing of the Memorandum of Understanding Regarding Urban Water Conservation. Since then the Council has played a key role in promoting statewide water use efficiency. Its membership includes water agencies, environmental organizations and other interested parties. The Council is a consensus organization and represents the interests of all its members. The majority of the participating agencies are signatories to the Urban MOU, and members of the CUWCC. Developing a program of this broad scope will require many of the skills that the Council brings to the table. The Council provides a forum for information transfer and coordination of resources amongst its members. The Council anticipates providing program co-ordination and support for this project.

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D. Benefits and Costs

1. Budget Breakdown and Justification

A detailed line-item budget for each of the implementation methods is shown in Section B.2 and **Appendix A**. In addition, line-item budgets for the start-up costs and ongoing central administration of the program are also found in **Appendix A**.

In summary, the 3-year budget for the elements of the program is as follows:

Start-up Costs (Year 1):

Certain start-up costs will be incurred during the first year to establish relationships with the equipment manufacturers and develop a technical specification covering the minimum requirements for the products to be used in the program. Anticipated costs are as follows:

Cost category	Cost
Development of product specifications and coordination of procurement practices and pricing options with manufacturers and vendors	\$10,750
Development of standard marketing templates for each of the six implementation methods	10,000
Database development; reporting and recordkeeping forms development	<u>37,500</u>
Total estimated start-up costs*	\$58,250
Amortized cost per ET Controller unit**	\$ 3.31

*-Represents one-half of the total start-up costs, the other one-half being borne by the MWD companion irrigation controller program

**-Total start-up costs of \$116,500 amortized over all 35,150 controllers planned for both companion programs.

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Central Program Administration:

Because of the geography of the program and the large number of water agencies participating, it will be cost-effective to perform certain common program functions through a central administrative office. Costs of those centralized functions are estimated as follows:

Cost Category	Cost
Central Program Coordinator	\$ 37,500
Database Administrator	15,000
Customer Service Administration	5,000
Industry Liaison	25,000
General Administration (Invoice prep)	16,500
Central Administrative Overhead	<u>20,000</u>
Total Central Program Administration*	\$119,000
Per Unit Administration**	\$ 6.77

**-Represents one-half of the total central program administration costs, the other one-half being borne by the MWD companion irrigation controller program*

*** -Total central program administration costs of \$238,000 amortized over all 35,150 controllers planned for both companion programs.*

Program Evaluation - Monitoring and Assessment

Ongoing monitoring and assessment during the period of program implementation is forecasted to cost \$500,000 for both companion programs, one-half of which has been allocated equally to each of the two programs.

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

Program Implementation and Operation

Costs of program implementation and operation are detailed by fiscal quarter within **Appendix A** and summarized as follows:

Cost Category	Cost
Materials/Installation	\$ 6,147,342
Administration	259,529
Planning	51,494
Other (includes Program marketing, user training, user workshops, field inspections of installed controllers)	<u>716,888</u>
Total Program Implementation and Operation*	\$ 7,175,253
Per Unit Program Implementation and Operation	\$489.78

**Cost includes pro-rata share of start-up costs and central program administration costs shown above and covers the installation of 14,650 controllers over the three-year program period.*

2. Cost-Sharing

Each of the participating Northern and Central California water agencies has committed a minimum of \$50 per controller unit as a program cost share.

In addition, customers receiving a controller under one of the direct install or small commercial implementation methods will be required to provide a co-payment as a condition for receiving a controller. Those co-payments are scheduled as follows:

Residential direct Install	\$60
Small commercial direct install (commercial grade controllers)	\$350
Small commercial self install or voucher (commercial grade controllers)	\$350

Therefore, program implementation costs will be partially offset through participant funding as follows:

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

<i>Cost/Funding Category</i>	<i>Costs & Co-Funding</i>
Total program implementation and operation	\$ 7,175,253
Program start-up (50% of \$116,500)	58,250
Program evaluation - assessment & monitoring	<u>250,000</u>
Sub-total: Program costs	\$7,483,503
Less: Participating water agency funding	(732,500)
Less: Customer funding (through co-payments)	<u>(2,511,700)</u>
Remainder - Grant Application	\$ 4,229,545

3. Benefit Summary and Breakdown

Expected benefits

The program of irrigation controller replacement will yield benefits to public and private entities over the expected 15-year useful life of the hardware:

- Substantial water savings
- Reduction in urban runoff, thereby reducing the requirement for pumping and treating this runoff prior to its disposition.

A quantification of two of these benefits (water savings and reduction in urban runoff) has been included in Appendix A. The present value of those benefits is calculated at \$17 million.

a. Quantified Project Outcomes and Benefits

Program implementation costs and benefits are summarized below. The program is locally cost-effective to the Applicant.

	<i>Undiscounted Value</i>	<i>Present Value</i>
Program benefits	\$18,634,378	\$17,005,309
Program costs	\$7,483,503	\$6,924,380
Benefit:Cost		2.46

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

b. Non-Quantified Project Outcomes and Benefits

There are multiple non-quantifiable benefits of this project as follows:

<i>Benefit</i>	<i>Beneficiary</i>
<p><i>Economies of Scale</i></p> <p>The water savings from this project will be achieved at a much lower cost to all parties than if each agency was to implement its own program. Economies of scale will be achieved in the costs associated with development, implementation, monitoring, administration and evaluation of this project.</p>	<ul style="list-style-type: none"> ▪ CALFED ▪ Society ▪ Water Agencies ▪ Customers.
<p><i>Market Transformation</i></p> <p>This project would result in a successful long-term market transformation for ET-based irrigation controllers. The scope of the project will provide the impetus to move the technology from incubation status to full production mode. The resultant installation of ET Controllers will provide long-term water savings and other benefits listed below.</p>	<ul style="list-style-type: none"> ▪ Vendors ▪ Manufacturers ▪ Water agencies ▪ Customers ▪ CALFED ▪ Society
<p><i>Reduced Urban Runoff and Non-point Source Pollution</i></p> <p>Over-irrigation is one of the major sources of urban runoff and non-point source pollution. ET-based controllers will apply the correct amount of water based on the site needs, and as result will lead to reductions in urban runoff.</p>	<ul style="list-style-type: none"> ▪ Aquatic environment including local creeks, streams, rivers, delta, bay and ocean ▪ Property Managers and Owners ▪ Municipalities and Counties throughout California ▪ Society
<p><i>Customer Cost Savings</i></p> <p>Reduced water costs and lower site maintenance costs as a result of installing ET-based controllers and irrigating based on site needs.</p>	<ul style="list-style-type: none"> ▪ Residential and Small Commercial Customers throughout California
<p><i>Improved Plant Health</i></p>	<ul style="list-style-type: none"> ▪ Residential and Small Commercial Customers throughout California
<p><i>Reduced Green Waste</i></p>	<ul style="list-style-type: none"> ▪ Municipalities and Counties throughout California ▪ Society

PROPOSITION 13 ET IRRIGATION CONTROLLER PROPOSAL

<i>Benefit</i>	<i>Beneficiary</i>
<p><i>Jobs and Training</i></p> <p>This project is anticipated to create jobs throughout the state. They include:</p> <ul style="list-style-type: none"> ▪ ET-Controller assembly and production workers ▪ ET-Controller installation crews ▪ Administration ▪ Data entry positions ▪ Out-sourced program implementation will require project coordinators, administrators etc. 	<ul style="list-style-type: none"> ▪ Society
<p><i>Economic Stimulus</i></p> <p>The additional jobs created, as well as the market transformation of this industry will create an economic stimulus.</p>	<ul style="list-style-type: none"> ▪ Society
<p><i>Improved Property Values</i></p> <p>Improved plant health and landscape appearance as a result of water appropriately, and not applying excessive fertilizers etc.</p>	<ul style="list-style-type: none"> ▪ Property Owners

E. Outreach, Community Involvement and Acceptance

The proposed project is regional in geographic scope and already has the commitment of the participating water agencies and the California Urban Water Conservation Council as external cooperators. The participating agencies will work together to identify other potential partners.

The budget for this project includes an industry liaison staff member who will work closely with the irrigation controller manufacturers and distributors, to address any concerns they may have and to develop their support for the program

Since this program incorporates a new technology, community outreach and education will be critical to its success. Several of the proposed implementation methods incorporate community outreach as a means to distribute the product. Workshops will be held to explain the technology to residential and commercial customers, as well as serve as a distribution channel. We are also proposing working in partnership with schools as an alternative distribution method.

This program is expected to provide jobs and training throughout the state. There is a need for overall program co-ordination and management, including a project coordinator, a database developer and an industry liaison. Some of the water agencies may choose to outsource the program implementation, in which case implementation contractors would be hired to administer and manage the program. ET controller installation crews will be trained to perform the direct installs. Landscape contractors will also be trained and certified to perform installations. The number of jobs created will depend on how the individual agencies plan to implement. However, the total projected direct install labor amounts to approximately 28,000 hours. In addition, the manufacturers of ET-Controllers will likely hire staff to in order to meet production targets.

11. PER UNIT COSTS AND BUDGET

Total Number of Units **35150**

Start Up Costs - Year One	Cost
StartUp (Product specs 1 month @ \$75/hr forms, manufacturer/industry coordination)	\$21,500
Standard Marketing Templates Development	\$20,000
	<u>\$75,000</u>
Total: Start-up Costs	\$116,500
Per Unit Start Up	\$3.31

Central Program Administration	Cost
Program Coordinator	\$75,000
Database Administration	\$30,000
Customer Service Administration	\$10,000
Industry Liasion	<u>\$50,000</u>
Sub-total central admin	\$165,000
Administration (Invoice prep)	\$33,000
Central Administration Overhead	<u>\$40,000</u>
Total Central Administration	\$238,000
Per Unit Administration	\$6.77

11. PER UNIT COSTS AND BUDGET (continued)

	PSP Budget Category	Baseline Cost for Task	IMPLEMENTATION METHOD & UNIT COST					
			Self-Install School Program	Self-Install Landscape Workshop	Direct Install Residential	Voucher Residential	Direct Install Small Commercial	Self Install or Voucher Small Commercial
			Up to 12 Station	Up to 12 Station	Up to 12 Station	Up to 12 Station	1 Clock 12, 16, 24, 32 or 48 station	1 Clock 12, 16, 24, 32 or 48 station
Volume Basis for Estimated Costs			1000	1000	1000	1000	1000	1000
Inspection Percentage			10%	10%	5%	10%	5%	10%
Product Cost (melded)	Materials/Installation		\$ 221.00	\$ 221.00	\$ 221.00	\$ 221.00	\$ 545.00	\$ 545.00
Installation cost (paid by agency on direct install only)	Materials/Installation		\$ -	\$ -	\$ 100.00		\$ 300.00	
Voucher Processing & Admin	Administration					\$ 10.00		
Vendor Negotiation	Administration	\$ 2,000.00				\$ 2.00		
Marketing	Other		\$ 11.00	\$ 0.25	\$ 25.00	\$ 35.00	\$ 40.00	\$ 60.00
Workshop - Marketing (\$750 X 30)	Other	\$ 22,500.00		\$ 22.50				\$ 30.00
Workshop- Development	Other	\$ 2,000.00	\$ 2.00	\$ 2.00				\$ 2.00
Workshop - Agency Staff (\$250 per 2 hr workshop)	Other	\$ 7,500.00	\$ 1.00	\$ 7.50				\$ 1.00
Additional Program Administration (Data Entry, Tracking, Phones, Customer Service, Reporting)	Administration		\$ 2.00	\$ 15.00				\$ 15.00
Mail Distribution - Marketing	Other	\$ 200.00		\$ 0.20				
Certified Contractor Workshop 1500 develop + 2 x \$800 workshop	Other	\$ 3,100.00	\$ 3.10	\$ 3.10		\$ 3.10		\$ 3.10
Customer Serv/Liability	Administration				\$ 6.00		\$ 6.00	
Unit Cost Per Inspection	Other	\$ 50.00	\$ 5.00	\$ 5.00	\$ 2.50	\$ 5.00	\$ 2.50	\$ 5.00
Customer Satisfaction - mail in postcard	Administration	\$ 600.00	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60
Sub-Total	-		\$ 245.70	\$ 277.15	\$ 355.10	\$ 276.70	\$ 894.10	\$ 661.70
Plus: Central Administration	Administration		\$ 6.77	\$ 6.77	\$ 6.77	\$ 6.77	\$ 6.77	\$ 6.77
Sub-total	-		\$ 252.47	\$ 283.92	\$ 361.87	\$ 283.47	\$ 900.87	\$ 668.47
Plus: Program Start-Up	Planning		\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31
Total Cost Per Unit (including start-up)			\$ 255.79	\$ 287.24	\$ 365.19	\$ 286.79	\$ 904.19	\$ 671.79
Costs By PSP Category >>>>	Materials/Installation		\$ 221.00	\$ 221.00	\$ 321.00	\$ 221.00	\$ 845.00	\$ 545.00
	Administration		\$ 9.37	\$ 22.37	\$ 13.37	\$ 19.37	\$ 13.37	\$ 22.37
	Planning		\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31	\$ 3.31

District

\$
\$
\$

Other	\$ 22.10	\$ 40.55	\$ 27.50	\$ 43.10	\$ 42.50	\$ 101.10	\$
TOTAL	\$ 255.79	\$ 287.24	\$ 365.19	\$ 286.79	\$ 904.19	\$ 671.79	\$

Duration (average)

351.73	82.82%
18.63	4.39%
3.31	0.78%

51.02	12.01%
424.70	100.00%

12. METROPOLITAN WATER DISTRICT - SAVINGS AND BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total potential value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	1600	1600	474.1	\$ 331,835	177.8	\$ 1,588	\$ 333,423	\$ 333,423
2	9500	11100	3762.8	\$ 2,633,942	1411.0	\$ 12,603	\$ 2,646,545	\$ 2,646,545
3	9400	20500	9362.5	\$ 6,553,745	3510.9	\$ 31,358	\$ 6,585,103	\$ 6,585,103
4		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 8,543,963
5		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 8,244,924
6		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 7,956,352
7		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 7,677,879
8		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 7,409,154
9		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 7,149,833
10		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 6,899,589
11		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 6,658,103
12		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 6,425,070
13		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 6,200,192
14		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 5,983,186
15		20500	12147.5	\$ 8,503,277	4555.3	\$ 40,686	\$ 8,543,963	\$ 5,773,774
		Total	159,369.8	\$ 111,558,844	59763.7	\$ 533,780	\$ 112,092,624	\$ 94,487,090

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)	\$ 68,833,632	62,794,182
SAVINGS BENEFIT PER ORIGINAL UNIT INSTALLED IN PROGRAM	\$ 3,357.74	\$ 3,063.13

Annual average water to be saved (afy) 10,625

SANTA CLARA VALLEY WATER DISTRICT - SAVINGS & BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	300	300	89	\$ 31,554	33	\$ 298	\$ 31,852	\$ 31,852
2	1300	1600	563	\$ 199,842	211	\$ 1,885	\$ 201,727	\$ 201,727
3	1400	3000	1363	\$ 483,828	511	\$ 4,565	\$ 488,392	\$ 488,392
4		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 637,033
5		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 614,737
6		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 593,221
7		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 572,459
8		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 552,423
9		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 533,088
10		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 514,430
11		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 496,425
12		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 479,050
13		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 462,283
14		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 446,103
15		3000	1778	\$ 631,079	667	\$ 5,954	\$ 637,033	\$ 430,490
		Total	23347	\$ 8,288,177	8755	\$ 78,196	\$ 8,366,373	\$ 7,053,713

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)

\$ 5,141,040 4,690,742

SAVINGS BENEFIT PER INSTALLED UNIT

\$ 1,714 \$ 1,563.58

CONTRA COSTA COUNTY WATER DIST - SAVINGS AND BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	150	150	22.2	\$ 7,777	8.3	\$ 74	\$ 7,852	\$ 7,852
2	650	800	140.7	\$ 49,257	52.8	\$ 471	\$ 49,728	\$ 49,728
3	700	1500	340.7	\$ 119,253	127.8	\$ 1,141	\$ 120,394	\$ 120,394
4		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 157,036
5		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 151,540
6		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 146,236
7		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 141,118
8		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 136,179
9		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 131,412
10		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 126,813
11		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 122,375
12		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 118,091
13		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 113,958
14		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 109,970
15		1500	444.4	\$ 155,548	166.7	\$ 1,489	\$ 157,036	\$ 106,121
		Total	5,836.7	\$ 2,042,860	2188.8	\$ 19,549	\$ 2,062,410	\$ 1,738,823

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)

\$ 1,267,327

1,156,323

SAVINGS BENEFIT PER INSTALLED UNIT

\$ 845

\$ 770.88

ALAMEDA COUNTY WATER - SAVINGS AND BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	25	25	3	\$ 1,500	1	\$ 11	\$ 1,511	\$ 1,511
2	125	150	23	\$ 10,499	9	\$ 78	\$ 10,578	\$ 10,578
3	150	300	60	\$ 26,999	22	\$ 201	\$ 27,200	\$ 27,200
4		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 36,266
5		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 34,997
6		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 33,772
7		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 32,590
8		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 31,449
9		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 30,349
10		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 29,286
11		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 28,261
12		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 27,272
13		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 26,318
14		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 25,397
15		300	80	\$ 35,998	30	\$ 268	\$ 36,266	\$ 24,508
		Total	1047	\$ 470,976	392	\$ 3,505	\$ 474,482	\$ 399,752

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)

\$ 290,982 265,347

SAVINGS BENEFIT PER INSTALLED UNIT

\$ 970 \$ 884.49

SONOMA COUNTY WATER - SAVINGS AND BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	475	475	70.4	\$ 56,293	26.4	\$ 236	\$ 56,529	\$ 56,529
2	1525	2000	366.6	\$ 293,319	137.5	\$ 1,228	\$ 294,547	\$ 294,547
3	1550	3550	822.2	\$ 657,745	308.3	\$ 2,754	\$ 660,499	\$ 660,499
4		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 844,962
5		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 815,388
6		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 786,850
7		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 759,310
8		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 732,734
9		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 707,088
10		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 682,340
11		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 658,458
12		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 635,412
13		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 613,173
14		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 591,712
15		3550	1051.8	\$ 841,439	394.4	\$ 3,523	\$ 844,962	\$ 571,002
		Total	13,880.8	\$ 11,104,628	5205.3	\$ 46,491	\$ 11,151,119	\$ 9,410,005

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)

\$ 6,870,110

\$ 6,272,834

SAVINGS BENEFIT PER INSTALLED UNIT

\$ 1,935

\$ 1,767.00

18. SONOMA COUNTY SUB-AGENCIES

	Number of Units by Method of Distribution/Installation					
	Voucher - Residential	Small Commercial & Multi-fam Self-Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops	Residential Direct Install
North Marin	500	175				
City Santa Rosa			150			1350
City Petaluma			150			850
City Sonoma			75			300
TOTALS	500	175	375	0	0	2500

	Units by Year			In-Kind Contributions				Hi
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Total	Year 1
Total Units								
675	100	300	275	\$ 7,400	\$ 7,400	\$ 7,400	\$ 22,200	\$ 5,000
1500	200	650	650	\$ -	\$ -	\$ -	\$ -	\$ 10,000
1000	150	400	450	\$ 12,000	\$ 9,000	\$ 9,000	\$ 30,000	\$ 7,500
375	25	175	175	\$ 4,000	\$ 4,000	\$ 4,000	\$ 12,000	\$ 1,250
3550	475	1525	1550	\$ 23,400	\$ 20,400	\$ 20,400	\$ 64,200	\$ 23,750

ard-Dollar Contributions

Year 2	Year 3	Total
\$ 15,000	\$ 13,750	\$ 33,750
\$ 32,500	\$ 32,500	\$ 75,000
\$ 20,000	\$ 22,500	\$ 50,000
\$ 8,750	\$ 8,750	\$ 18,750
\$ 76,250	\$ 77,500	\$ 177,500

SACRAMENTO - REGIONAL - SAVINGS AND BENEFITS

(2001 DOLLARS)

Year	Unit Installations	Cumulative Installed Units	Irrigation Water Savings (afy)	Value of Irrig Water Savings	Urban Runoff Savings (afy)	Value of Urban Runoff Savings	Total value of irrig & runoff savings	Reduced value after incorporating expected "drop-out" rate
1	100	100	23.7	\$ 3,792	0.0	\$ -	\$ 3,792	\$ 3,792
2	550	650	177.8	\$ 28,443	0.0	\$ -	\$ 28,443	\$ 28,443
3	550	1200	438.5	\$ 70,159	0.0	\$ -	\$ 70,159	\$ 70,159
4		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 91,018
5		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 87,832
6		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 84,758
7		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 81,791
8		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 78,929
9		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 76,166
10		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 73,500
11		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 70,928
12		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 68,445
13		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 66,050
14		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 63,738
15		1200	568.9	\$ 91,018	0.0	\$ -	\$ 91,018	\$ 61,507
		Total	7,466.3	\$ 1,194,607	0.0	\$ -	\$ 1,194,607	\$ 1,007,057

PRESENT WORTH OF TOTAL SAVINGS BENEFIT (6 PERCENT DISCOUNT RATE)

\$ 733,759 669,422

SAVINGS BENEFIT PER INSTALLED UNIT

\$ 611 \$ 557.85

Note: No urban runoff savings attributed due to lack of information

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1. PROGRAM PARTICIPATION BY AGENCIES

Geographic Region & Participating Agency Name	Total No. of ET Controllers Planned to Replace	Number of Units by Method of Distribution/Installation & Total Unit Cost				
		Voucher SF Residential	Small Commercial & Multi-Fam Self- Install or Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
		\$ 286.79	\$ 671.79	\$ 904.19	\$ 255.79	\$ 287.24
COASTAL - SOUTH						
Metropolitan Water District & 26 member agencies	20,500	0	3,000	0	0	9,000
COASTAL - NORTH						
East Bay Municipal Utility District	5,100	1,500	3,000	0	0	0
Santa Clara Valley Water District	3,000	0	2,120	230	0	550
Contra Costa Water District	1,500	1,200	300	0	0	0
Alameda County Water District	300	0	0	150	0	0
Sonoma County	<u>3,550</u>	<u>500</u>	<u>175</u>	<u>375</u>	<u>0</u>	<u>0</u>
TOTAL - NORTH	13,450	3,200	5,595	755	0	550
INLAND - CENTRAL						
Regional Water Authority-Sacramento & 18 member agencies	1,200	280	0	180	160	160
SUB-TOTAL UNITS: NORTH AND CENTRAL	14,650	3,480	5,595	935	160	710
TOTAL UNITS: ALL REGIONS & AGENCIES	35,150	3,480	8,595	935	160	9,710
	100.00%	9.90%	24.45%	2.66%	0.46%	27.62%

Note: Unit costs shown above are total costs, of which a portion will be collected from the small commercial and residential direct install categories. See "Program Costs and below.

2. PROGRAM CONTRIBUTIONS BY CUSTOMERS - SOUTH, NORTH, AND CENTRAL

	Total Co-payments By Customers	Residential Voucher	Small Commercial & Multi-Fam Self- Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
Co-payment by participating customers (commercial controllers only)	\$ 4,071,700	\$ -	\$ 3,008,250	\$ 327,250	\$ -	\$ -

Cost	
Residential Direct Install	

\$	365.19
	8,500
	600
	100
	0
	150
	<u>2,500</u>
	3,350
	420
	3,770
	12,270
	34.91%

ie customer on
Contributions"

L

Residential Direct Install	
\$	736,200

3. PROGRAM COSTS AND CONTRIBUTIONS

NORTH, SOUTH, & CENTRAL COMBINED	Total cost of program	Unit Costs and Total Costs by Method of Distribution/Installior				
		Residential Voucher	Small Commercial & Multi-Fam Self-Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
		\$ 286.79	\$ 671.79	\$ 904.19	\$ 255.79	\$ 287.24
HARD-DOLLAR COST OF IMPLEMENTATION	\$ 14,928,390	\$ 998,029	\$ 5,774,035	\$ 845,418	\$ 40,926	\$ 2,789,100
Less: Hard-dollar contributions by agencies	\$ 2,455,000					
Less: Hard-dollar contributions by customers	\$ 4,071,700	\$ -	\$ 3,008,250	\$ 327,250	\$ -	\$ -
SUB-TOTAL: Program Impelementation	\$ 8,401,690					
Plus: Evaluation - Monitoring and Assessment	\$ 500,000					
TOTAL: GRANT REQUEST	\$ 8,901,690					

SOUTH ONLY (MWD)	Total cost of program	Unit Costs and Total Costs by Method of Distribution/Installior				
		Residential Voucher	Small Commercial & Multi-Fam Self-Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
		\$ 286.79	\$ 671.79	\$ 904.19	\$ 255.79	\$ 287.24
HARD-DOLLAR COST OF IMPLEMENTATION	\$ 7,704,645	\$ -	\$ 2,015,370	\$ -	\$ -	\$ 2,585,160
Less: Hard-dollar contributions by agencies	\$ 1,722,500					
Less: Hard-dollar contributions by customers	\$ 1,560,000	\$ -	\$ 1,050,000	\$ -	\$ -	\$ -
SUB-TOTAL	\$ 4,422,145					
Plus: Evaluation - Monitoring and Assessment	\$ 250,000					
TOTAL: GRANT REQUEST	\$ 4,672,145					

		Unit Costs and Total Costs by Method of Distribution/Installior				
--	--	---	--	--	--	--

Residential Direct Install	
\$	365.19
\$	4,480,881
\$	736,200

Residential Direct Install	
\$	365.19
\$	3,104,115
\$	510,000

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Average Cost Per Installed Controller	Less: First Year Start-up Costs (note: these costs are amortized into total unit cost)	Per Unit Operational Cost
\$ 424.71	\$ 3.31	\$ 421.40
\$ 69.84	\$ -	\$ 69.84
\$ 115.84	\$ -	\$ 115.84
<u>\$ 239.02</u>	<u>\$ 3.31</u>	<u>\$ 235.71</u>

Average Cost Per Installed Controller	Less: First Year Start-up Costs (note: these costs are amortized into total unit cost)	Per Unit Operational Cost
\$ 375.84	\$ 3.31	\$ 372.53
\$ 84.02	\$ -	\$ 84.02
\$ 76.10	\$ -	\$ 76.10
<u>\$ 215.71</u>	<u>\$ 3.31</u>	<u>\$ 212.40</u>

Average Cost Per Installed Controller	Less: First Year Start-up Costs (note: these costs are amortized into total unit cost)	Per Unit Operational Cost
--	--	--------------------------------------

NORTH AND CENTRAL ONLY (6 AGENCIES)	Total cost of program	Residential Voucher	Small Commercial & Multi-Fam Self- Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
		\$ 286.79	\$ 671.79	\$ 904.19	\$ 255.79	\$ 287.24
HARD-DOLLAR COST OF IMPLEMENTATION	\$ 7,223,745	\$ 998,029	\$ 3,758,665	\$ 845,418	\$ 40,926	\$ 203,940
Less: Hard-dollar contributions by agencies	\$ 732,500					
Less: Hard-dollar contributions by customers	\$ 2,511,700	\$ -	\$ 1,958,250	\$ 327,250	\$ -	\$ -
SUB-TOTAL	\$ 3,979,545					
Plus: Evaluation - Monitoring and Assessment	\$ 250,000					
TOTAL: GRANT REQUEST	\$ 4,229,545					

Residential Direct Install
\$ 365.19
\$ 1,376,766
\$ 226,200

Average Cost Per Installed Controller	Less: First Year Start-up Costs (note: these costs are amortized into total unit cost)	Per Unit Operational Cost
\$ 493.09	\$ 3.31	\$ 489.78
\$ 50.00	\$ -	\$ 50.00
<u>\$ 171.45</u>	\$ -	<u>\$ 171.45</u>
\$ 271.64	\$ 3.31	\$ 268.33

4. BENEFITS & COSTS BY PARTICIPATING AGENCY & REGION

Geographic Region & Participating Agency Name		Number of Units, Unit Cost, Total Cost by Method of Distribution/Insta				
		Residential Voucher	Small Commercial & Multi-Fam Self-Install & Voucher	Small Commercial Direct-Install	Self-Install Through Schools	Self-Install Through Landscape Workshops
		\$ 286.79	\$ 671.79	\$ 904.19	\$ 255.79	\$ 287.24
SOUTH						
Metropolitan Water District & its 26 member agencies	Number of Units	0	3,000	0	0	9,000
	Total Cost & Benefit	\$ -	\$ 2,015,370	\$ -	\$ -	\$ 2,585,160
NORTH AND CENTRAL						
	Number of Units	3,480	5,595	935	160	710
	Total Cost & Benefit	\$ 998,029	\$ 3,758,665	\$ 845,418	\$ 40,926	\$ 203,940
TOTAL: ALL REGIONS & AGENCIES COMBINED		\$ 998,029	\$ 5,774,035	\$ 845,418	\$ 40,926	\$ 2,789,100

llation	
Residential Direct Install	

\$	365.19
	8,500
\$	3,104,115
	3,770
\$	1,376,766
\$	4,480,881

4. BENEFITS & COSTS (cont'd)

Plus: Cost of Evaluation - Monitoring and Assessment	TOTALS: Units and Costs		TOTAL: Benefit (discounted to PW at 6%)	TOTAL: Benefit Undiscounted	BENEFIT: COST
	Undiscounted	Discounted to PW at 6%			
	20,500				
\$ 250,000	\$ 7,945,040	\$ 7,342,880	\$ 62,794,182	\$ 68,833,632	8.55
	14,650				
\$ 250,000	\$ 7,483,504	\$ 6,924,380	\$ 17,005,309	\$ 18,634,378	2.46
\$ 500,000	\$ 15,428,544	\$ 14,267,260	\$ 79,799,491	\$ 87,468,010	5.59

5. WATER SAVINGS - URBAN RUNOFF REDUCTION - ENTIRE PROGRAM

WATER SAVINGS	Annual average (afy)	Total program (acre-feet)
SOUTH	10,625	159,370
NORTH-CENTRAL	5,287	79,306

REDUCTION IN URBAN RUNOFF	Annual average (afy)	Total program (acre-feet)	Reduced treatment reqd (MGD)
SOUTH	3,984	59,764	3.56
NORTH-CENTRAL	2,028	30,417	1.81

6. ANNUALIZED PROGRAM COSTS & FUNDING REQUESTS

Geographic Region & Participating Agency Name	Average Unit Cost of Implementation	YEAR 1					YEAR 2				
		Number of Units	Total Operational Cost	Less: Agency Contributions	Less: Customer Contributions	Funding Request	Number of Units	Total Operational Cost	Less: Agency Contributions	Less: Customer Contributions	Funding Request
PROGRAM START-UP (non-recurring expenditures; allocated 50% each to South and North-Central)			\$ 116,500			\$116,500					
PROGRAM EVALUATION: MONITORING AND ASSESSMENT (allocated 50% each to South and North-Central)			\$ 100,000			\$100,000		\$ 200,000			\$ 200,000
SOUTH											
Metropolitan Water District & 26 member	\$ 372.53	1,600	\$ 596,042	\$ 134,439	\$ 121,756	\$ 339,847	9,500	\$ 3,539,000	\$ 798,232	\$ 722,927	\$ 2,017,842
NORTH & CENTRAL											
East Bay Municipal Utility District		400					2,300				
Santa Clara Valley Water District		300					1,300				
Contra Costa Water District		150					650				
Alameda County Water District		25					125				
Sonoma County Water Regional Water Authority Sacramento & 18 member agencies		475					1,525				
TOTAL: NORTH & CENTRAL	\$ 489.78	1,450	\$ 710,179	\$ 72,500	\$ 248,598	\$ 389,080	6,450	\$ 3,159,071	\$ 322,500	\$ 1,105,834	\$ 1,730,737
TOTAL: ALL REGIONS & AGENCIES		3,050	\$ 1,522,721	\$ 206,939	\$ 370,354	\$ 945,427	15,950	\$ 6,898,071	\$ 1,120,732	\$ 1,828,761	\$ 3,948,579

6. ANNUALIZED PROGRAM COSTS & FUNDING REQUESTS (cont'd)

YEAR 3					TOTAL: ALL 3 YEARS				
Number of Units	Total Operational Cost	Less: Agency Contributions	Less: Customer Contributions	Funding Request	Number of Units	Total Operational Cost	Less: Agency Contributions	Less: Customer Contributions	Funding Request
									\$116,500
	\$ 200,000			\$ 200,000					\$500,000
9,400	\$ 3,501,748	\$ 789,829	\$ 715,317	\$ 1,996,601	20,500	\$ 7,636,790	\$ 1,722,500	\$ 1,560,000	\$ 4,354,290
2,400					5,100				
1,400					3,000				
700					1,500				
150					300				
1,550					3,550				
550					1,200				
6,750	\$ 3,306,004	\$ 337,500	\$ 1,157,268	\$ 1,811,236	14,650	\$ 7,175,254	\$ 732,500	\$ 2,511,700	\$ 3,931,054
16,150	\$ 7,007,752	\$ 1,127,329	\$ 1,872,585	\$ 4,007,838	35,150	\$ 14,812,044	\$ 2,455,000	\$ 4,071,700	\$ 8,901,844

7. PRESENT VALUE OF PROGRAM COSTS

	Total Program Costs				Program Costs To Present Value at 6%
	Year 1	Year 2	Year 3	Total	
SOUTH	\$ 704,292	\$ 3,639,000	\$ 3,601,748	\$ 7,945,040	\$ 7,342,880
NORTH & CENTRAL	\$ 818,429	\$ 3,259,071	\$ 3,406,004	\$ 7,483,504	\$ 6,924,380
TOTAL: ALL REGIONS & AGENCIES	\$ 1,522,721	\$ 6,898,071	\$ 7,007,752	\$ 15,428,544	\$ 14,267,260

8. QUARTERLY PROGRAM EXPENDITURES

	YEAR 1					YEAR 2				
	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	Total: Year 1	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	Total: Year 2
50% each to South and North-Central)	0	\$ 35,000	\$ 35,000	\$ 46,500	\$ 116,500	\$ -	\$ -	\$ -	\$ -	\$ -
PROGRAM EVALUATION: MONITORING AND ASSESSMENT (allocated 50% each to South and North-Central)	0	\$ -	\$ 50,000	\$ 50,000	\$ 100,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 200,000
SOUTH										
Materials/Installation	\$ -	\$ -	\$ 246,817	\$ 246,817	\$ 493,635	\$ 732,739	\$ 732,739	\$ 732,739	\$ 732,739	\$ 2,930,956
Administration	\$ -	\$ -	\$ 13,076	\$ 13,076	\$ 26,151	\$ 38,818	\$ 38,818	\$ 38,818	\$ 38,818	\$ 155,273
Planning	\$ -	\$ -	\$ 2,326	\$ 2,326	\$ 4,652	\$ 6,905	\$ 6,905	\$ 6,905	\$ 6,905	\$ 27,618
Other	\$ -	\$ -	\$ 35,802	\$ 35,802	\$ 71,605	\$ 106,288	\$ 106,288	\$ 106,288	\$ 106,288	\$ 425,153
TOTAL: SOUTH	\$ -	\$ -	\$ 298,021	\$ 298,021	\$ 596,042	\$ 884,750	\$ 884,750	\$ 884,750	\$ 884,750	\$ 3,539,000
NORTH & CENTRAL										
Materials/Installation	\$ -	\$ -	\$ 294,081	\$ 294,081	\$ 588,161	\$ 654,076	\$ 654,076	\$ 654,076	\$ 654,076	\$ 2,616,303
Administration	\$ -	\$ -	\$ 15,580	\$ 15,580	\$ 31,159	\$ 34,651	\$ 34,651	\$ 34,651	\$ 34,651	\$ 138,604
Planning	\$ -	\$ -	\$ 2,771	\$ 2,771	\$ 5,542	\$ 6,163	\$ 6,163	\$ 6,163	\$ 6,163	\$ 24,653
Other	\$ -	\$ -	\$ 42,658	\$ 42,658	\$ 85,316	\$ 94,878	\$ 94,878	\$ 94,878	\$ 94,878	\$ 379,511
TOTAL: NORTH & CENTRAL	\$ -	\$ -	\$ 355,089	\$ 355,089	\$ 710,179	\$ 789,768	\$ 789,768	\$ 789,768	\$ 789,768	\$ 3,159,071
TOTAL: ALL REGIONS & AGENCIES	\$ -	\$ 35,000	\$ 738,110	\$ 749,610	\$ 1,522,721	\$ 1,724,518	\$ 1,724,518	\$ 1,724,518	\$ 1,724,518	\$ 6,898,071

QUARTERLY PROGRAM EXPENDITURES, WITH ALLOCATION OF START-UP AND EVALUATION COSTS TO SOUTH AND NORTH-CENTRAL

SOUTH: including 50% share of Program Start-Up and Program Evaluation	\$ -	\$ 17,500	\$ 340,521	\$ 346,271	\$ 704,292	\$ 909,750	\$ 909,750	\$ 909,750	\$ 909,750	\$ 3,639,000
NORTH & CENTRAL: including 50% share of Program Start-Up and Program Evaluation	\$ -	\$ 17,500	\$ 397,589	\$ 403,339	\$ 818,429	\$ 814,768	\$ 814,768	\$ 814,768	\$ 814,768	\$ 3,259,071

8. QUARTERLY PROGRAM EXPENDITURES (cont'd)

YEAR 3					TOTAL: ALL 3 YEARS				
QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	Total: Year 3	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	Total: 3 Years
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 35,000	\$ 35,000	\$ 46,500	\$ 116,500
\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 200,000	\$100,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 500,000
\$ 725,026	\$ 725,026	\$ 725,026	\$ 725,026	\$ 2,900,103	\$ 1,457,765	\$ 1,457,765	\$ 1,704,582	\$ 1,704,582	\$ 6,324,694
\$ 38,410	\$ 38,410	\$ 38,410	\$ 38,410	\$ 153,639	\$ 77,228	\$ 77,228	\$ 90,304	\$ 90,304	\$ 335,064
\$ 6,832	\$ 6,832	\$ 6,832	\$ 6,832	\$ 27,328	\$ 13,737	\$ 13,737	\$ 16,062	\$ 16,062	\$ 59,598
\$ 105,169	\$ 105,169	\$ 105,169	\$ 105,169	\$ 420,678	\$ 211,458	\$ 211,458	\$ 247,260	\$ 247,260	\$ 917,435
\$ 875,437	\$ 875,437	\$ 875,437	\$ 875,437	\$ 3,501,748	\$ 1,760,187	\$ 1,760,187	\$ 2,058,208	\$ 2,058,208	\$ 7,636,790
\$ 684,498	\$ 684,498	\$ 684,498	\$ 684,498	\$ 2,737,991	\$ 1,338,573	\$ 1,338,573	\$ 1,632,654	\$ 1,632,654	\$ 5,942,455
\$ 36,263	\$ 36,263	\$ 36,263	\$ 36,263	\$ 145,051	\$ 70,914	\$ 70,914	\$ 86,493	\$ 86,493	\$ 314,814
\$ 6,450	\$ 6,450	\$ 6,450	\$ 6,450	\$ 25,800	\$ 12,613	\$ 12,613	\$ 15,384	\$ 15,384	\$ 55,996
\$ 99,291	\$ 99,291	\$ 99,291	\$ 99,291	\$ 397,162	\$ 194,168	\$ 194,168	\$ 236,826	\$ 236,826	\$ 861,989
\$ 826,501	\$ 826,501	\$ 826,501	\$ 826,501	\$ 3,306,004	\$ 1,616,269	\$ 1,616,269	\$ 1,971,358	\$ 1,971,358	\$ 7,175,254
\$ 1,751,938	\$ 1,751,938	\$ 1,751,938	\$ 1,751,938	\$ 7,007,752	\$ 3,376,456	\$ 3,376,456	\$ 4,029,566	\$ 4,029,566	\$ 15,428,544

Note: Some errors due to rounding and factoring and allocation of costs

\$ 900,437	\$ 900,437	\$ 900,437	\$ 900,437	\$ 3,601,748	\$ 1,810,187	\$ 1,827,687	\$ 2,150,708	\$ 2,156,458	\$ 7,945,040
\$ 851,501	\$ 851,501	\$ 851,501	\$ 851,501	\$ 3,406,004	\$ 1,666,269	\$ 1,683,769	\$ 2,063,858	\$ 2,069,608	\$ 7,483,504

SUMMARY

	Total Cost (include allocation of start-up and evaluation)	Less: Agency Contributions	Less: Customer Co-payments	Net Request: Grant Funding
SOUTH	\$ 7,945,040	\$ 1,722,500	\$ 1,560,000	\$ 4,662,540
NORTH & CENTRAL	\$ 7,483,504	\$ 732,500	\$ 2,511,700	\$ 4,239,304
TOTAL: ALL REGIONS	\$ 15,428,544	\$ 2,455,000	\$ 4,071,700	\$ 8,901,844

9. AGENCY CONTRIBUTIONS TO THE PROGRAM

Geographic Region & Participating Agency Name	Controllers Planned to Replace	HARD DOLLAR CONTRIBUTIONS				VALUE OF IN-KIND CONTRIBUTIONS				TOTAL - ALL AGENCY CONTRIBUTIONS	
		Year 1	Year 2	Year 3	Total	Year 1	Year 2	Year 3	Total	(total)	(per unit)
COASTAL - SOUTH Metropolitan Water District & 26 member agencies	20,500	\$ 134,439	\$ 798,232	\$ 789,829	\$ 1,722,500	\$ 230,000	\$ 235,000	\$ 230,000	\$ 695,000	\$ 2,417,500	\$ 117.93
COASTAL - NORTH											
East Bay Municipal Utility District	5,100	\$ 20,000	\$ 115,000	\$ 120,000	\$ 255,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 120,000	\$ 375,000	\$ 73.53
Santa Clara Valley Water District	3,000	\$ 15,000	\$ 65,000	\$ 70,000	\$ 150,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 150,000	\$ 300,000	\$ 100.00
Contra Costa Water District	1,500	\$ 7,500	\$ 32,500	\$ 35,000	\$ 75,000	\$ 35,000	\$ 35,000	\$ 35,000	\$ 105,000	\$ 180,000	\$ 120.00
Alameda County Water District	300	\$ 1,250	\$ 6,250	\$ 7,500	\$ 15,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000	\$ 45,000	\$ 150.00
Sonoma County Water	3,550	\$ 23,750	\$ 76,250	\$ 77,500	\$ 177,500	\$ 23,400	\$ 20,400	\$ 20,400	\$ 64,200	\$ 241,700	\$ 68.08
INLAND - CENTRAL											
Regional Water Authority-Sacramento & 18 member	1,200	\$ 5,000	\$ 27,500	\$ 27,500	\$ 60,000	\$ 3,500	\$ 3,500	\$ 3,500	\$ 10,500	\$ 70,500	\$ 58.75
TOTAL: ALL REGIONS & AGENCIE	35,150	\$ 206,939	\$ 1,120,732	\$ 1,127,329	\$ 2,455,000	\$ 391,900	\$ 393,900	\$ 388,900	\$ 1,174,700	\$ 3,629,700	103.26

Overall Program Per unit = \$ 69.84

Overall Program Per unit = \$ 33.42

HARD DOLLAR CONTRIBUTION PER CONTROLLER UNIT

Metropolitan Water District & 26 member agencies	\$ 84.02
East Bay Municipal Utility District	\$ 50.00
Santa Clara Valley Water District	\$ 50.00
Contra Costa Water District	\$ 50.00
Alameda County Water District	\$ 50.00
Sonoma County Water	\$ 50.00
Regional Water Authority-Sacramento & 18 member agencies	\$ 50.00
Northern & Central Agencies	\$ 50.00

2) Residential-type controllers will be capable of controlling the irrigation of up to 20,000 square feet of landscped area; parcels with irrigated area in excess of 20,000 square feet will require multiple controllers.