BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of the 2009-2011 Low Income Energy Efficiency and California Alternate Rates for Energy Programs and Budget (U 39 M)	A.08-05-022 (Filed May 15, 2008)
Application of San Diego Gas & Electric Company (U 902 M) for Approval of Low-Income Assistance Programs and Budgets for Program Years 2009-2011	A.08-05-024 (Filed May 15, 2008)
Application of Southern California Gas Company (U 904 G) for Approval of Low-Income Assistance Program and Budgets for Program Years 2009-2011	A.08-05-025 (Filed May 15, 2008)
Application of Southern California Edison Company (U 338-E) for Approval of Low-Income Assistance Programs and Budgets for Program Years 2009, 2010, and 2011	A.08-05-026 (Filed May 15, 2008)

RESPONSE OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) PURSUANT TO THE ASSIGNED COMMISSIONER'S RULING ORDERING LARGE INVESTOR OWNED UTILITIES TO COMPLY WITH PRIOR COMMISSION/COMMISSIONER DIRECTIVES

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Dated: **July 1, 2008**

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I.

INTRODUCTION

Pursuant to the *Assigned Commissioner's Ruling Ordering Large Investor-Owned Utilities to Comply with Prior Commission/Commissioner Directives*, dated June 13, 2008 (ACR), Southern California Edison Company (SCE) responds to the ACR's requests for additional information regarding the 2009-2011 low income assistance program applications of SCE, Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) (collectively, the "Utilities").

The ACR sets forth seven questions that it directs the Utilities to respond to. These questions relate to (1) a single statewide marketing campaign; (2) integration and leveraging; (3) the California Solar Initiative; (4) graphics summarizing the applications; (5) water conservation; (6) education; and (7) workforce education and training. SCE's responses are below.

II.

SCE'S RESPONSE

A. Item 1 – Single Statewide Marketing Campaign

The ACR directs the Utilities to provide additional details on a single statewide marketing campaign (i.e., develop a single tagline and a coordinated marketing campaign) for the Low Income Energy Efficiency (LIEE) program. Specifically, the ACR directs the Utilities to (a) describe the campaign in detail; (b) give the total budget of the campaign in a pie chart or other graphical format, and specify and detail the funding that will come from the LIEE program; and (c) identify all names and taglines under consideration and complete the process for selecting both so that other parties can comment.

SCE, PG&E, SoCalGas and SDG&E have jointly developed a statewide marketing campaign for the LIEE program. The Statewide Marketing Plan, including proposed budget information along with all of the names and taglines that were considered and the focus group report, is attached hereto as Attachment A.

In compliance with the requirement of D.07-12-051 and the ACR dated April 1, 2008, to develop a statewide LIEE tagline, twenty focus groups were held in early June throughout the Utilities' service areas to test low income customer responses to new names and taglines for the LIEE program. Focus groups were held in both English and Spanish with customers who had previously participated in the LIEE program and customers who have never participated in (and may never have heard of) the LIEE program.

B. Item 2 – Integration and Leveraging

The ACR directs the Utilities to each provide a list describing all new efforts to (a) integrate their various demand-side programs (integration); (b) employ all available resources and coordinate with others in pursuit of those resources (leveraging); and (c) provide a comparison document that contrasts what is now proposed and what has been done in the past, including past budgets and present budgets aimed at these efforts.

SCE submits, as Attachment B, a list of all new efforts to integrate and leverage various energy efficiency (EE) and demand-side management (DSM) programs, and a comparison document that contrasts new and existing practices. SCE has taken a unique integration and leveraging approach with EE and DSM programs and has expanded its distinctive leveraging approach with agencies in SCE's service territory that have contracts under the Low Income Home Energy Assistance Program (LIHEAP).

SCE's strategy with existing EE programs includes a leveraging strategy to integrate LIEE into a number of EE programs. Under the Multifamily Energy Efficiency Rebate Program (MFEER), Comprehensive Mobile Home Program (CMHP), and Efficient Affordable Housing Program (EAHP), SCE will first leverage available EE funds for the installation of energy efficient measures in low-income homes and follow-up with the installation of remaining eligible low-income measures in qualified customer residences. In the case where eligible customers do not own the appliances, increased incentives will be made available to property owners for the installation of energy efficient measures in low-income homes.

An additional EE integration/leveraging strategy to be employed by SCE will be with SCE's Energy Leader Partnerships (ELP), a program that supports local government organizations interested in energy efficiency in response to the California Energy Efficiency Strategic Plan (CEESP). Working with local governments, SCE will identify ELPs with concentrations of low-income residences and strive to utilize local resources to educate and enroll eligible customers in EE, DSM, LIEE and CARE programs. This will include activities such as:

- Assigning LIEE staff to each partnership kick-off meeting
- Including LIEE on the agenda and/or in the booth of the many ELP community events
- Co-branding LIEE marketing materials with the city (such as bill inserts, brochures, flyers, special events, radio spots, TV spots)
- Including an "LIEE corner" in partnership newsletters

Finally, SCE will expand its unique and "one-of-a-kind" leveraging agreement with community-based organizations operating LIHEAP programs administered by the California State Community Services Department. SCE will provide LIHEAP agencies eligible energy efficient appliances, at no cost to the agencies for installation into eligible SCE customer homes. This arrangement saves the capital expense for the LIHEAP agency of purchasing the equipment, thereby allowing saved funds to be expended to serve additional homes under LIHEAP. This arrangement also saves SCE and ratepayers the installation cost of appliances thereby allowing saved funds to be expended to serve additional homes under LIEE.

C. Item 3 – California Solar Initiative

The ACR directs the Utilities to provide additional details on how they will coordinate with the California Solar Initiative (CSI) efforts.

At the time of this filing, both the Low Income Single Family (LISF) program and the Low Income Multi-Family (LIMF) program have not been implemented. Nevertheless, SCE is ensuring that it will be compliant with D.07-11-046, which established the LISF program and rules for incorporating LIEE into that program. However, SCE cannot speculate at this time to what extent LIEE will be incorporated into the LIMF program, as the Commission has not yet issued a final decision on LIMF.

SCE provides the following additional detail regarding the integration of the CSI and the LIEE programs.

1. Low Income Single Family Program (LISF)

In D.07-11-046, which established the LISF, the Commission provided guidance to SCE about how to integrate LIEE into the LISF program. The integration of LIEE and LISF will require close coordination between SCE, who administers the LIEE program, and the Program Manager chosen by the Commission to implement the LISF program.

SCE plans to coordinate the LIEE program with the CSI program according to the direction provided in D.07-11-046. In that Decision, the Program Manager (not SCE) will be responsible for ensuring the LISF applicants apply to SCE to obtain an energy efficiency audit, enroll in SCE's LIEE program, if eligible, and have all feasible LIEE measures installed or be on the waiting list for installation prior to receiving solar incentives.[1] Once SCE receives the audit request, and the customers' eligibility for the LIEE program is confirmed, SCE will work with the customer to ensure that the appropriate LIEE measures are installed pursuant to current LIEE practices. If a backlog of participants accumulates, solar applicants will be required to be on the waiting list for LIEE installation. SCE is taking steps, however, to ensure that the appropriate level of staffing is available to minimize the potential for a backlog and avoid LIEE installation delays from deterring low-income solar applicants from participating.

At this point, it is unclear how many participants will need to be enrolled into LIEE and have measures installed as part of the LISF program. However, the Commission has estimated that roughly 500 checks per year per utility will need to be processed for the LISF program.[2] SCE will secure the proper resources to ensure that it can process and install measures in the range of 500 LIEE applicants per year, provided the customers are eligible.

The Energy Division has also been directed to explore methods to expedite the LIEE measure installation for low-income solar incentive applicants to avoid LIEE installation

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[1] *See* D.07-11-046, Conclusion of Law 11.
[2] *Id.* at p. 31, footnote 19.

delays from deterring low-income solar applicants.[3] SCE looks forward to further discussions with the Energy Division on this matter.

Finally, as ordered in D.07-11-046, SCE shall provide data on single-family homeowners enrolled in the LIEE program to the Program Manager, subject to confidentiality arrangements to protect customer privacy.[4] This data will be helpful for the Program Manager to identify potential CSI participants who may already be eligible for the LISF program.

2. Low Income Multi-Family Program (LIMF)

The Commission has not yet issued a proposed decision or final decision for the LIMF program. At this time, it is premature for SCE to speculate what LIEE requirements, if any, the Commission may want to include in the LIMF program. The Energy Division Staff Proposal indicated that the current CSI Program Administrators should administer the LIMF program. However, there is no final decision on this matter. Assuming that the Commission adopts SCE as the Program Administrator of the LIMF program, integration between the LIMF program and SCE's LIEE program will be much more streamlined. SCE will not have to coordinate with a third party to determine eligible LIEE candidates, but will be able to promote both the LIMF and LIEE programs at the same time to customers. Once the LIMF program is finalized, SCE will be in a better position to determine the necessary resources to ensure an expedient processing of LIEE applications and the installation of measures necessary to meet the program requirements.

D. Item 4 – Graphics Summarizing Applications

The ACR orders the Utilities to provide a number of color pie charts on certain aspects of their 2009-2011 applications. Attachment C hereto includes the requested color pie charts, with

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[3] *Id.* at p. 35.
[4] *Id.*, Ordering Paragraph 4.

the exception of a graph for new LIEE measures proposed for the 2009-2011 cycle, as SCE did not propose new measures for the 2009-2011 cycle.

E. Item 5 – Water Conservation

The ACR directs the Utilities, pursuant to D.06-12-038, to file specific program proposals for water conservation efforts. SCE has complied with D.06-12-038's directive through its *Application for Approval of Embedded Energy Efficiency Water Pilot Programs for 2007-2008*, A.07-01-024, filed on January 16, 2007. SCE is attaching A.07-01-024, the supporting testimony, and supplemental testimony (submitted on July 14, 2007), as Attachment D. On page 6 of SCE's testimony and on page 7 of SCE's supplemental testimony, SCE describes its compliance with D.06-12-038. Page 11 of SCE's supplemental testimony describes its Low Income Direct Install High Efficiency Toilet (HET) Program, which proposed HET installations for single and multi-family LIEE eligible households. In D.07-12-050, the Commission approved an SCE pilot and evaluation for HET installations in multifamily, low-income households.

F. Item 6 – Education

The ACR directs the Utilities to demonstrate compliance with D.06-12-038's guidance to include in energy education materials a discussion of the benefits of energy efficiency programs in efforts to reduce green house gases and promote water conservation. In compliance with D.06-12-038, in 2007, SCE and SoCalGas jointly developed a fact sheet, "Helping the Environment through Energy Efficiency" that has been distributed to all participating households in the LIEE program. The Fact Sheet is included in Attachment E.

G. Item 7 – Workforce Education and Training

The ACR indicates that the Low Income Oversight Board has established a Workforce Education and Training subcommittee to develop a proposal for inclusion in the statewide strategic plan to establish programs to train the future workforce for energy efficiency programs,

including the LIEE program. SCE looks forward to attending and participating in future task force meetings.

III.

CONCLUSION

SCE appreciates the opportunity to provide the requested additional information.

Respectfully submitted,

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July 1, 2008

Attachment A

Low Income Energy Efficiency (LIEE)
2009 to 2011 Statewide Marketing and Outreach Plan

1. Objective:

The objective of the statewide Low Income Energy Efficiency (LIEE) marketing and outreach plan is to help enable the enrollment of 25% of willing and eligible customers into the LIEE program, while leveraging opportunities to increase CARE participation. The marketing plan calls for expanded statewide coordination among the utilities, to avoid duplication of effort and increase the pie of available funding. In addition, the plan will leverage utility energy efficiency and California Solar Initiative (CSI) efforts to help promote the program.

2. Target Audience:

To generate awareness and participation in LIEE, among eligible residential customers, the marketing and outreach efforts may target customers by income, language preference (ie., English, Spanish, Chinese, Vietnamese, Korean, and Cambodian), and special needs (ie., TTY and large-font) as appropriate.

3. Strategy:

Consistent with the California Energy Efficiency Strategic Plan (CEESP) the LIEE marketing and outreach plan will leverage the statewide "brand," utility demand side management activities (such as EE and CSI), third parties, and other market actors to generate awareness and drive participation in the LIEE program. To effectively leverage the opportunities within each of these areas, the IOUs will coordinate closely with each other, third parties, and market actors such as: community based organizations, retailers, and local governments.

The IOUs will take the lead on developing and implementing a new brand (name) and message platform for LIEE that will be utilized statewide. The new name and message will provide a level of clarity and consistency around LIEE, which will help maintain awareness and improve participation among eligible customers who move between utilities within the state.

In addition to implementing a new statewide brand and message for LIEE, the IOUs will lead a coordinated marketing effort that will move consumers through a continuum from awareness, to attitude change, to action, to long-term behavior change (see Exhibit A below). Given the diversity of California's residential customers, the marketing and outreach plan will use an integrated, multi-layered, multi-channel marketing approach to effectively reach customers and drive them to action (see Exhibit B below).

The first layer – statewide branding – will build awareness of the benefits of an energy efficient lifestyle and will affect customer attitudes. The IOUs will leverage the statewide branding efforts but will not duplicate them.

The second layer – individual utility efforts– will provide customers with bundled and targeted solutions to move them from awareness to action. Bundled messaging involves pulling together relevant LIEE, energy efficiency, demand response and California Solar

Initiative (CSI) programs. Program bundling will help deliver awareness of relevant solutions, to provide consumers with holistic energy management solutions.

The third layer – highly targeted, grass roots marketing— will provide an opportunity to generate awareness and participation among hard to reach customers, by coordinating closely with: third parties, community based organizations, retailers, local cities and governments. For example, grass roots efforts may provide an opportunity to reach ethnic groups by participating in ethnic events and providing information on LIEE in-language.

In addition to conducting a coordinated marketing effort, the IOUs will continue to explore opportunities for simplifying the enrollment and participation process.

Exhibit A: Path to Action - Moving Customers through a Continuum

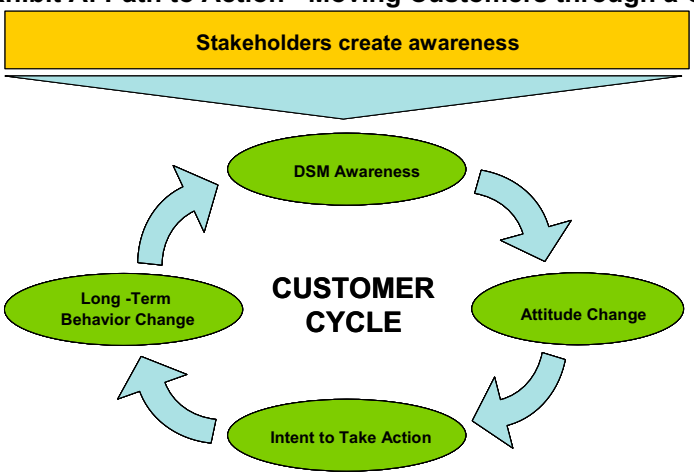
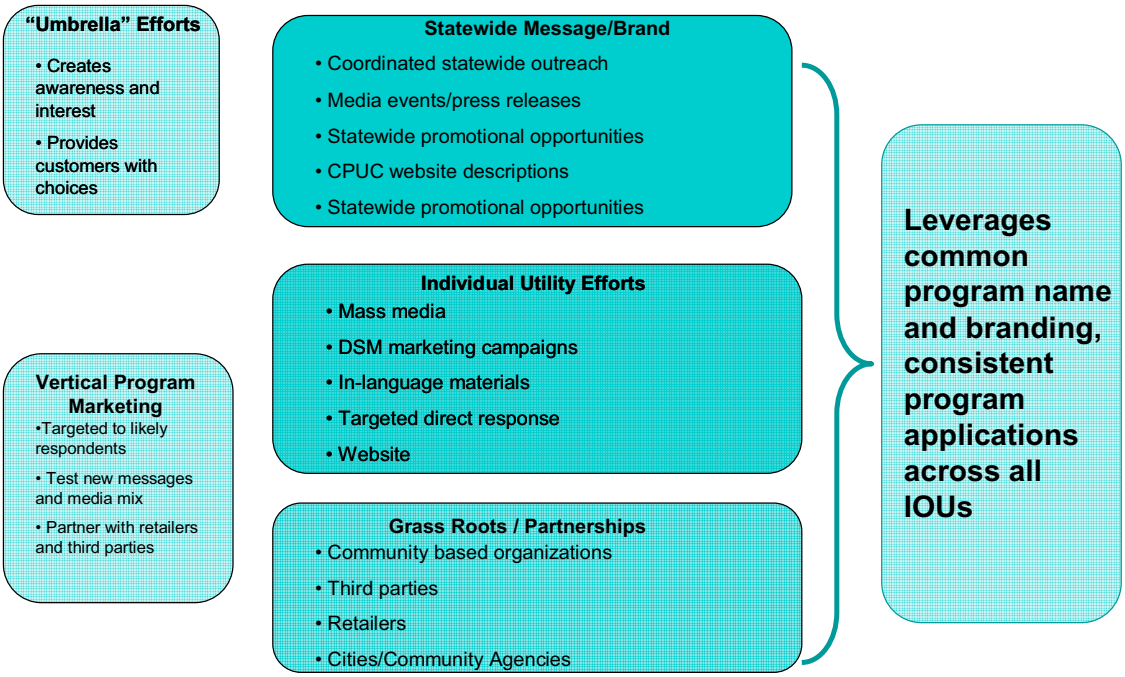


Exhibit B: Multi-layered, Multi-channel Marketing Approach



4. Tactics:

The LIEE marketing and outreach plan will use an integrated, multi-layered, multi-channel marketing approach to effectively reach customers and drive them to action. Creating awareness, interest, and name recognition will be accomplished through activities like: media events and press releases at the statewide and local level, statewide promotional opportunities with retailers and government agencies, and developing material like a brochure, which can be used statewide.

In addition, the marketing and outreach plan will move customers from intent to action by leveraging individual utility marketing campaigns, such as: mass media (print, radio, bill inserts/onserts, online) targeted direct response and in-language efforts to reach likely respondents. The various partnerships established with local community agencies, community based organizations, non-profit organizations, cities and communities and retailers will also be leveraged to increase awareness and participation in LIEE programs and expand opportunities to increase CARE participation.

5. Coordination Efforts:

The IOUs will continue to coordinate LIEE marketing and outreach efforts. Coordination efforts may include: regular low income marketing and outreach meetings, coordination with the statewide energy efficiency marketing and outreach effort, and on-going coordination with third parties and other market actors like:

- Community Based Organizations
- Community Agencies
- Retailers
- Cities/Communities
- Non-profit Organizations
- Public Housing Authority
- Low Income Home Energy Assistance Program (LIHEAP)

6. Branding and Messaging:

Beginning in April 4, 2008, the four IOUs began working together to develop recommendations for a common program name and program description (tagline) for their LIEE programs.1 SoCalGas, on behalf of the other large IOUs, hired an advertising agency and a market research firm to develop potential program names and to conduct market research (respectively) to gain a better understanding of what would best describe this program to and resonate with the target audience. Based on the results of the study, the four large IOUs support the report's recommendations to utilize the program name "Energy Savings Assistance Program" and the tagline "A no-cost energy-saving program for qualified renters and homeowners."

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[1] In. D. 07-12-051, the Commission adopted a recommendation by PacifiCorp for the development of a single statewide marketing campaign for the LIEE program and determined that this and other ME&O matters would be addressed in workshops to be convened by the Commission to implement the Decision. The workshops were also to address the development of a brand name for the LIEE programs to be used as a tag line that each utility would add to its own program name. The Commission workshop to discuss the statewide M&E and Program Delivery was held on March 28, 2008.

7. Branding and Messaging Research:

Doyle, Dane and Bernbach (DDB), is an advertising agency currently working on Southern California Edison's account. Based on their expertise and competitive cost, we hired DDB to develop an initial list of names for consideration, and then worked with the four IOUs to jointly narrow down the list of names to a shorter list to evaluate in focus groups (Attachment A). A total of 20 focus groups were conducted from June 4 – 12 in Los Angeles, Orange County, San Diego, and San Francisco Bay Area (Concord) with income-qualified customers (both participants and non-program participants) residing in each of the utilities service territories as follows:

	Per Utility	Total
English speaking/non-senior- program participants	1 group	4 groups
English speaking/non-senior – non program participants	1 group	4 groups
English speaking seniors (60-79) – both program participants and non-program participants	1 group	4 groups
Spanish speaking – program participants	1 group	4 groups
Spanish speaking – non program participants	1 group	4 groups
Total	5 groups	20 groups

Note: In the case of SoCalGas and SCE, two geographically different locations were used (Garden Grove and Los Angeles) with approximately half the sessions for each utility conducted in each of the two locations.

Twelve of the groups were conducted among English-speaking utility customers, and the remaining eight were conducted among Spanish-speaking utility customers. Seven program names were tested monadically among utility customers and six descriptors of the program were also tested monadically among the same groups of customers.2

Details regarding the research methodology, focus group participant selection criteria, conclusions and recommendations are contained in Attachment B.

KEY FINDINGS

Program Name

Among the program names tested, the three that utility customers select as the best fit and most enticing for the LIEE program are (in rank order):

- Energy Savings Assistance Program
- Home Energy Savings Solutions

[2] Travis Research moderated the focus group sessions. An experienced Spanish language moderator was used for the Spanish-language sessions. The moderator guide was developed jointly by Travis Research and the IOUs.

- California Energy Assistance

The top ranked name “Energy Savings Assistance Program” includes two components that customers find most appealing: savings and assistance. The inclusion of “program” ensures that the prospective participants understand what it is. While the preferred program names are comparatively lengthy, customers feel they best highlight the main program benefits (savings, assistance, solutions).

Program Descriptors/Tagline

Participants ranked “No-cost energy-saving home improvements for renters and homeowners” and “A no-costs energy-saving home improvement program for income-qualified households” as the best fit for the program, providing comprehensive information and featuring the main perceived program benefits (no-cost, energy saving, home improvement).

Best Combinations

The top two descriptors were also selected by utility customers select as the best fit with the top two preferred names. They both feature the important benefits to customers of “no-cost, energy-saving home improvements.” While the former descriptor clarifies that renters, in addition to homeowners, are eligible to participate, the latter includes mention of the income requirements that customers ultimately believe is more important to convey to prospective participants.

Word Observations

Across the utility groups, customers are consistent in their interpretation of works or phases in the proposed names and descriptions. Participant feedback uncovers points that can be important when establishing language for the LIEE program. Page 10 of the final report provides a complete summary of how customers interpreted key words and phrases discussed in the study. The following provides important insights on how customers may react to certain terminology and phrases:

- “Californians” - Those who were born outside of California do not necessarily consider themselves “Californians” even if they have lived here for decades. Therefore, they are unsure if they are eligible for the program if “Californians” appears in the title or the description. This is especially true of Spanish-speaking customers.

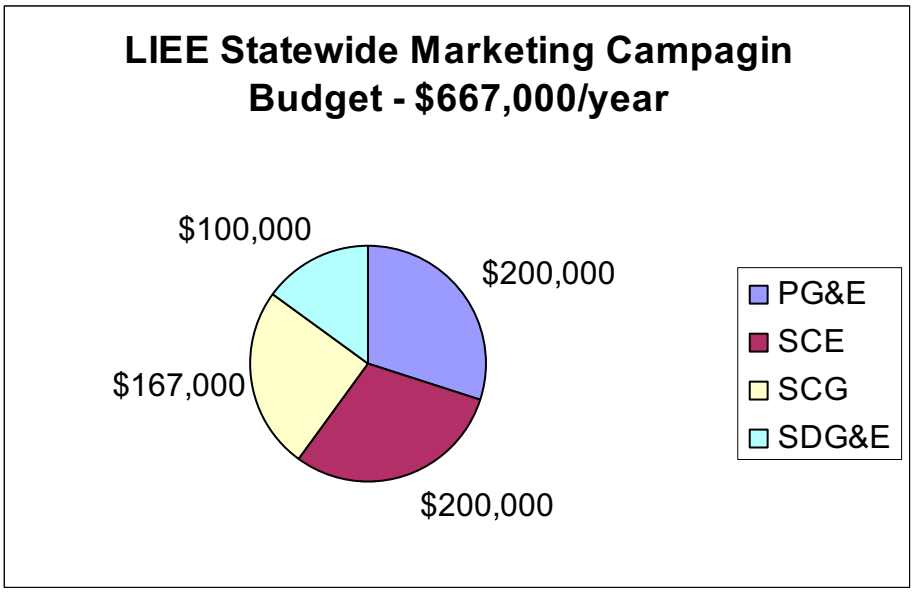
- “Alliance” – It is interesting to note that while many English-speaking customers take issue with the word “alliance” [in California Energy Alliance], Spanish-speaking customers do not seem to have the same concerns. The term appears to be more common place and less confusing in Spanish, based on the different comments between the English-language groups and the Spanish-language groups.

- “Renters and Homeowners” – Unless specified, many renters assume they are not eligible for the program because they do not own the property to which the home improvements will be made. Consequently, renters especially appreciate making this clarification in the description. (They know, however, that they will need to get approval from the landlord or building manager to have these improvements made.)

- “Income-qualified” - The term can be uncomfortable and objectionable to some, even if they do fall into this income bracket, but others appreciate the term being included in the description to avoid wasting time for those people who likely not qualify. When some see this phase, they automatically presume they are not eligible for the program because they have been denied for other programs due to exceeding the income qualifications.

Based on the findings of the research, the report recommends that the combination of statewide program name “Energy Savings Assistance Program” and “A no-cost, energy-saving home improvement program for qualified homeowners and rents” tag line would appeal to a broad range of utility customers because the combination includes all benefits and aspects of the LIEE program that customers identify as most important and motivating to them.3

8. Budget



[3] The report found that while most customers agree that it is important to stipulate that the program has qualifications, there are enough who take issue with or object to “income-qualified” that caution should be used in using this term.

Attachment A

List of Initial Program Names

Cal Save Energy Partnership

California Energy Alliance**

California Energy Assistance**

California Energy Subsidy

California Utility Solutions

Californians Saving Energy**

Californians Saving Energy at Home**

CHEER (California Households for Energy Efficient Resources)

Energize California Homes

Energy Assistance Initiative

Energy Efficiency Partnership

Energy Partners**

Energy Partners Programs

Energy Plus Assistance

Energy-Saving Assistance**

Energy-Saving Home Improvement Project

Flexible Home Energy Solutions

Helping Californians (in Need) Save Energy

Home Energy Efficiency Upgrade Program

Home Energy Plus

Home Energy Savings Solutions**

LEAP (Low-income Energy Assistance Program)

LEEP (Leveraging for Energy Efficiency Program)

REACH (Resources for Energy Assistance in California Households)

Saving California's Energy

The California Energy Saver Home Improvement Program

The California Gold Home Energy Saver Program

The California Gold Home Save Energy Program

Vital California Home Program

** Final List of Program Names Included in Market Research

Initial Program Descriptors/Tagline

A free program for income-qualified households to receive energy-saving home Improvements

A no-cost, energy-saving home improvement program for income-qualified households

Empowering income-qualified households with free money-saving solutions

Energy savings for income-qualified homes**

Energy-saving assistance for income-qualified households

Energy-saving programs for income-qualified households

Free money-saving measures for income-qualified households

Helping income-qualified households receive free energy-saving home improvements

Income-qualified energy services

Keeping homes across California more energy efficient**

Making California homes more efficient

No-cost energy measures for income-qualified households

No-cost energy saving home improvements for qualified Californians**

No-cost energy solutions for income-qualified California households**

No-cost, energy-saving home improvements for renters and homeowners**

No-cost, energy-saving measures for income-qualified households**

Providing free money-saving solutions for income-qualified households

** Final List of Program Descriptors/Taglines Included in Market Research

Attachment B

C:LIEE Tagline Name
Report 08-060-- 06-1

Low Income Energy Efficiency (LIEE) Program Name/Description Qualitative Research

Results of Research

June 19, 2008

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08-060
(06-19-08)

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BACKGROUND AND OBJECTIVES

All four of the major utilities in California currently provide their (income-qualified) residential customers with no-cost weatherization services and energy-saving products/services through the LIEE program. Each utility offers the program under a unique name:

PG&E	Energy Partners Program
Southern California Edison (SCE)	Energy Management Assistance (EMA)
SDG&E	Energy Team
Southern California Gas (SCG)	DAP

The utilities, in conjunction with the California PUC, have decided that uniformity across utilities will better meet the goal of achieving a reduction in residential energy usage and greater participation in the no-cost program. Therefore, the four utilities are working together to establish a single program promoted under a common name and description. DDB was selected as the firm to develop names and descriptions for the program. Of the names and descriptions developed by DDB, the utilities jointly narrowed them down to a shorter list to evaluate in the focus groups.

Market research was conducted with customers residing in the areas served by the utilities to gauge their reactions to potential names/descriptions for the program. The research also serves to:

- Identify the energy saving methods customers are currently using (aside from those in the programs presently sponsored by their utility)
- Probe awareness and understanding of the LIEE program
- Gain insight as to customer impressions of the LIEE program.

METHODOLOGY

Research Methodology

- A total of 20 focus groups were conducted in Los Angeles, Orange County, San Diego and the San Francisco Bay Area (Concord) with income-qualified utility customers on June 4-12, 2008 as follows:

	PER UTILITY	*TOTAL*
English speaking/non-senior – program participants	1 group	4 groups
English speaking/non-senior – non-program participants	1 group	4 groups
English speaking seniors (60-79) – both program participants and non-program participants	1 group	4 groups
Spanish speaking – program participants	1 group	4 groups
Spanish speaking – non-program participants	1 group	4 groups
Total	**5 groups**	**20 groups**

Note: In the case of SCG and SCE, two geographically different locations were used (Garden Grove and Los Angeles, near LAX), with approximately half of the sessions for each utility conducted in each of the two locations.

Screening Criteria

Respondents were screened to meet the following criteria:

…Participants…

- Participated in the LIEE program within the past year

…Non-Participants…

- Has not participated in the LIEE program
- Falls into an eligible FPG Tier (household size/income) OR participates in a similar lower income assistance program, such as Medi-Cal, Food Stamps, Healthy Families, etc.

…All…

- Has at least joint responsibility for reviewing and paying household utility bills
- Has at least joint responsibility for decisions regarding household's participation in Public Assistance programs
- Speaks either English or Spanish (depending on session)
- (Spanish Groups) Those whose communications and daily media is primarily Spanish + total media consumption (TV, radio) is 50% or more in Spanish language.
- Does not work in sensitive industry
- Good mix of ages (depending on session, 21-79)
- Good gender mix
- Has not participated in a focus group within the past 6 months.

METHODOLOGY (continued)

Focus Group Moderation	▪ The English language groups were moderated by Mark Frey, Executive Vice President and Gaye Allan, Vice President of Travis Research Associates. ▪ The Spanish sessions were conducted by Walter Meneses, an experienced Spanish language moderator. ▪ The moderator guide was jointly developed by Travis Research and the four utilities.
Limitations of Qualitative Research	▪ Focus groups seek to develop insight and direction rather than to provide quantitatively precise or absolute findings. This is due to the limited size of the sample of respondents and the means by which they are recruited. It must be understood that the results reported here are qualitative in nature and not projectable to a larger population.

SUMMARY OF FINDINGS

SUMMARY OF FINDINGS

Introduction

The following provides a summary of findings for the 20 focus groups that were conducted among LIEE program participants and non-participants in Los Angeles, Orange County (Garden Grove), San Diego and the San Francisco Bay Area (Concord) from June 4 to June 12, 2008. Twelve of the groups were conducted among English-speaking utility customers, and the remaining eight were conducted among Spanish-speaking customers.

Names

Seven names were tested monadically among utility customers with the following results:

MOST WELL RECEIVED	WELL RECEIVED	NOT WELL RECEIVED
▪ Energy Savings Assistance Program (Q9) ▪ Home Energy Savings Solutions (R4)	▪ California Energy Assistance (P7)	▪ Californians Saving Energy at Home (K2) ▪ Californians Saving Energy (J5) ▪ California Energy Alliance (T3) ▪ Energy Partners (S6)

Descriptions

Six descriptions of the program were also tested monadically among the same groups of customers with the following results:

MOST WELL RECEIVED	LESS WELL RECEIVED	LEAST WELL RECEIVED
▪ No-cost energy-saving home improvements for renters and homeowners (28) ▪ A no-cost energy-saving home improvement program for income-qualified households (16)	▪ No-cost energy solutions for income-qualified California households (49) ▪ Energy-saving assistance for income-qualified households (97) ▪ No-cost energy-saving home improvements for qualified Californians (83)	▪ Keeping homes across California more energy efficient (51)

More detailed findings are on the pages to follow.

SUMMARY OF FINDINGS

Program Name Evaluations

Energy Savings Assistance Program (Q9) and Home Energy Savings Solutions (R4) resonate best with utility customers, who see them as the strongest fit with the LIEE program. While they are comparatively lengthy names, customers feel they best highlight the main program benefits (savings, assistance, solutions).

Most Well Received ⟷ **Least Well Received**

	Energy Savings Assistance Program (Q9)	***Home Energy Savings Solutions (R4)***	***California Energy Assistance (P7)***	***Californians Saving Energy at Home (K2)***	***Californians Saving Energy (J5)***	***California Energy Alliance (T3)***	***Energy Partners (S6)***
Strengths	▪ Fits well with program ▪ Informative/ comprehensive ▪ Attention getting concept ▪ Implies saving money, not just energy ▪ Assistance implies help, not just tips ▪ Easy acronym: ESAP	▪ Fits well with program ▪ "Solutions" is a positive term, providing answers ▪ Attention getting concept	▪ Fits with program ▪ Brevity, short name ▪ Memorable name	▪ Fits with program ▪ Attention getting concept	▪ Brevity, short name ▪ Some connect as Californians	▪ Idea of alliance or union	▪ Implies partnership with utility ▪ Brevity, short name
Weaknesses	▪ Too long, wordy ▪ Dry, bland name	▪ "Solutions" can suggest tips vs. actual assistance ▪ Does not sound like program ▪ Too long	▪ Not enough information ▪ Lacks mention of savings ▪ Can imply assistance for state vs. individual households ▪ Uninteresting name	▪ Name sounds like statement, not program ▪ "Californians" can alienate those not originally from the state ▪ Not enough information ▪ No indication of help	▪ Name sounds like statement, not program ▪ Name implies eligibility for *all* California customers ▪ "Californians" can alienate those not originally from the state ▪ Not enough information	▪ Poor fit with program ▪ "Alliance" implies to some: ✓ union of companies ✓ military or political alliance ▪ Alienate those unfamiliar with term ▪ Not enough information ▪ Uninteresting name	▪ Does not fit with program ▪ Not enough information ▪ Partnership with utility unbelievable to some ▪ Confusion over term "partners"

SUMMARY OF FINDINGS

Program Description Evaluations

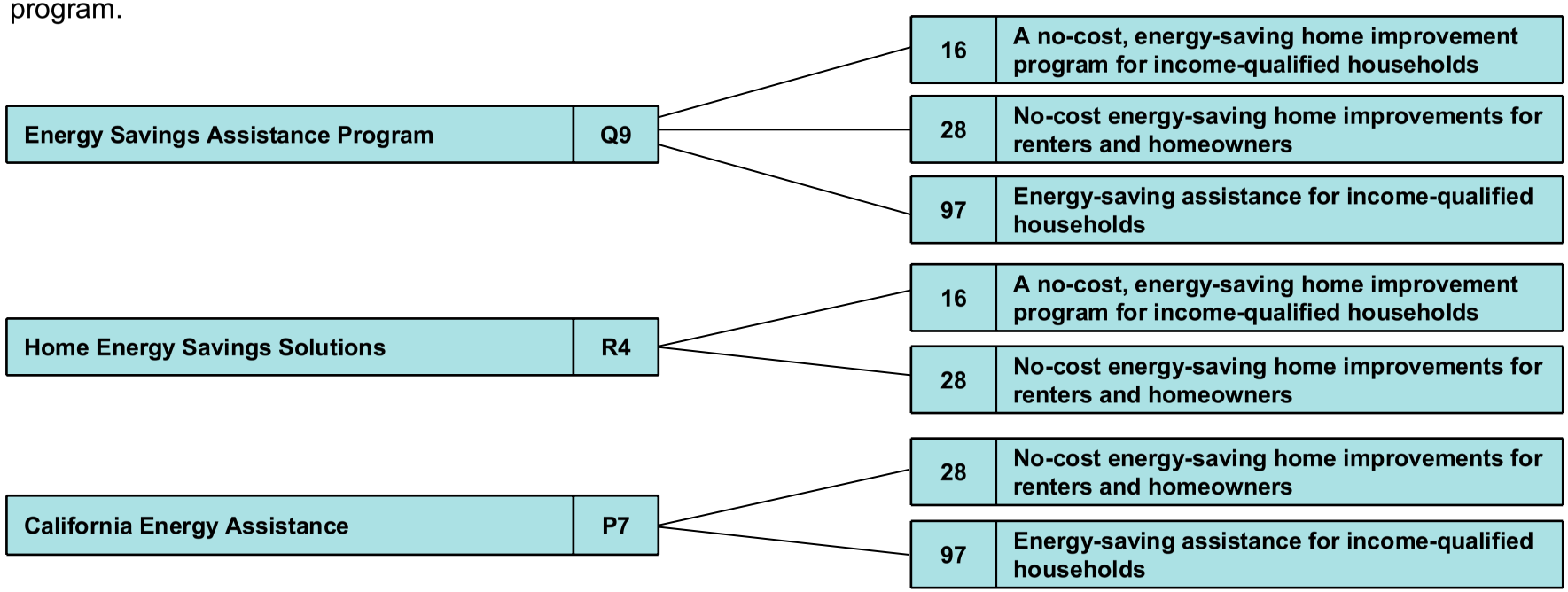
Utility customers select "A no-cost, energy-saving home improvement program for income-qualified households" (16) and "No-cost energy-saving home improvements for renters and homeowners" (28) as the best fit for the program, providing comprehensive information and featuring the main perceived program benefits (no cost, energy saving, home improvement).

Most Well Received ⟷ **Least Well Received**

	No-cost energy-saving home improvements for renters and homeowners (28)	***A no-cost, energy-saving home improvement program for income-qualified households (16)***	***No-cost energy solutions for income-qualified California households (49)***	***Energy-saving assistance for income-qualified households (97)***	***No-cost energy-saving home improvements for qualified Californians (83)***	***Keeping homes across California more energy efficient (51)***
Strengths	▪ Comprehensive description of program ▪ Clarification of renter eligibility ▪ Mention of "no-cost"	▪ Comprehensive description of program ▪ Specifies who will be saving	▪ Good description of program ▪ "Solutions" is appealing to some	▪ Good description of program	▪ Good description of program ▪ "Qualified" better than "income-qualified"	▪ Sounds nice
Weaknesses	▪ No mention of income qualifications ▪ Does not sound like a program ▪ Some feel "renters and homeowners" is unnecessary because it is assumed	▪ Some assume renters are excluded ▪ "Income-qualified" leads some to presume they are ineligible	▪ No mention of home improvements ▪ "Income-qualified" is objectionable to some ▪ "Income-qualified" leads some to presume they are ineligible ▪ "Solutions" implies passive assistance ▪ Not enough information	▪ "Income-qualified" leads some to presume they are ineligible ▪ "Assistance" is objectionable to some ▪ No mention of "no-cost" ▪ Not enough information	▪ "Qualified" suggests a lot of work and restrictions to some ▪ "Californians" can alienate those not originally from the state ▪ No mention of savings	▪ Does not fit with or sound like program ▪ Implies open to all in California ▪ No mention of savings ▪ No mention of income qualifications ▪ No mention of help ▪ Not enough information

Best Combinations

Below shows, in rank order, the combinations of names and descriptions that utility customers feel work best for the LIEE program.



The top two descriptions that utility customers select as the best fit with the top two preferred names (Q9 and R4) are:

- 16 – A no-cost, energy-saving home improvement program for income-qualified households
- 28 – No-cost energy-saving home improvements for renters and homeowners

These two are the descriptions that are also the most preferred descriptions when they are evaluated individually. They both feature the important benefits to customers of "no-cost, energy-saving home improvements." While Description 28 clarifies that renters, in addition to homeowners, are eligible to participate, Description 16 includes mention of the income requirements that customers ultimately believe is more important to convey to prospective participants.

Description 97 (Energy-saving assistance for income-qualified households) is selected as another strong combination, although some caution that the wording in this description is repetitive with both Names Q9 and P7.

Wording Observations

Across the utility groups, customers are consistent in their interpretation of words or phrases in the proposed names and descriptions. Their feedback is interesting and uncovers points that can be important when establishing language for the LIEE program.

Word/Phrase	*Comment*
Assistance	Most customers believe "assistance" is a positive word that implies actual help versus suggestions or tips. Some, however, associate "assistance" with "public assistance" programs, in particular welfare, and have a negative impression of the word. A few point out, though, that when "assistance" is combined with "energy" that the welfare connotation is mitigated.
Solutions	Some perceive "solutions" as a positive term, providing answers to problems or questions. Others believe the term implies suggestions or advice, as opposed to actual help or assistance.
Program	Many think the inclusion of "program" in "Energy Savings Assistance Program" helps to define what it is and confirm that it is an official program.
Californians	While some are proud to be residents of the state and define themselves as Californians, many who were not born here do not perceive themselves as Californians and are confused when the term is included in a name or description. Some find the term "corny," conjuring up images of the Beverly Hillbillies or goldminers.
California	Likewise, "California" raises questions (Is this a program benefiting the state or me? Why is this program exclusive only to California?) that customers likely would not ask if it were not included in the name or description.
Alliance	The term "alliance" conjures up a number of impressions to customers that have nothing to do with energy conservation (e.g., mergers and acquisitions, military alliances, political alliance). Some are unfamiliar with the term or think others would not be familiar with the term and, therefore, would not pursue the program.
Partners	While some see "partners" as a positive, consumer-friendly term, others are confused by the use of the word in this context. Some associate the term with business partners or a business partnership in which they would have to contribute funds. Others are cynical about the term, stating they do not believe they could be partners with a large company, like a utility.
Savings	Customers define "energy savings" as saving money, while "energy saving" implies saving energy. Although they would like to save energy, this target group is more interested in the bottom line… saving money.
Income-qualified	The term "income-qualified" can be uncomfortable and objectionable to some, even if they do fall into this income bracket, but others appreciate the term being included in the description to avoid wasting time for those people who would likely not qualify. When some see this phrase, they automatically presume that they are not eligible for the program because they have been denied for other programs due to exceeding the income qualifications.
Renters	Many renters do not believe that they would be able to participate in this type of home improvement program because they do not own their homes. Given the income-qualified target, it is likely that many participants would be renters.

Differences Among Segments

Across the various groups, customers tend to practice conserving energy at home in similar ways. As for the LIEE program, most utility customers have similar awareness levels and impressions of the program. That said, there are a few variations among the groups.

Conserving Energy at Home

- General market and Hispanic customers conserve energy at home in similar ways (e.g., turning lights off, using fans, replacing incandescent bulbs with compact fluorescent bulbs), although Hispanic customers seem to rely more heavily on electricity than gas. Spanish-speaking customers tend to be more comfortable with electricity. They explain that, in their home countries, gas was either not available or very costly.

Awareness

- Where gas and electric utilities are combined, customers seem to be more aware of the sponsor for the program. In the areas where the utilities are separate (SCG and SCE), there tends to be some confusion. Even among participants, some are not sure if the sponsor of the program is the gas company, the electric company or a public service agency.
- Most customers are unaware of the name of the LIEE program in their area, except in San Diego, where many SDG&E customers call the program by name: Energy Team.

Impressions

- PG&E and SDG&E participants are especially complimentary of the contractors who came to their homes and provided the services included in the LIEE program.

Differences Among Segments (continued)

Across the various groups, customers agree much more than disagree on their reactions to the names and descriptions. There are, however, a few notable differences.

…"Californians"…

Those who were born outside of California do not necessarily consider themselves "Californians," even if they have lived here for decades. Therefore, they are unsure if they are eligible for the program if "Californians" appears in the title or description. This seems to be especially true of Spanish-speaking customers.

…"Alliance"…

It is interesting to note that while many English-speaking customers take issue with the word "alliance" [in California Energy Alliance (T3)], Spanish-speaking customers do not seem to have the same concerns. The term appears to be more commonplace and less confusing in Spanish, based on the differences in comments between the English-language groups and the Spanish-language groups.

…"Renters and Homeowners"…

Unless specified, many renters assume they are not eligible for the program because they do not own the property to which the home improvements will be made. Consequently, renters especially appreciate making this clarification in the description. (They know, however, that they will need to get approval from the landlord or building manager to have these improvements made.)

Conclusions

Names

Among the names tested, the three that utility customers select as the best fit and most enticing for the LIEE program are (in rank order):

- Energy Savings Assistance Program (Q9)
- Home Energy Savings Solutions (R4)
- California Energy Assistance (P7)

The top ranked name, "Energy Savings Assistance Program" (Q9) includes the two components that customers find most appealing: savings and assistance. The inclusion of "program" ensures that prospective participants understand what it is.

In addition to "savings," the term "solutions" appeals to many customers in "Home Energy Savings Solutions" (R4). That said, many think "assistance" is a stronger word and implies more help than "solutions."

Lastly, customers appreciate the relative brevity of "California Energy Assistance" (P7) as well as the inclusion of the word "assistance." Overall, however, they find "California" unnecessary or confusing and would prefer to include "savings."

Descriptions

Among the descriptions tested, the two that customers choose as the best fit and most enticing language for the LIEE program are:

- No-cost energy-saving home improvements for renters and homeowners (28)
- A no-cost energy-saving home improvement program for income-qualified households (16).

Both descriptions include the elements customers find most alluring: no cost, saving and home improvements.

Description 28 explains that renters are included in the program, which certainly appeals to those renters who would otherwise presume that only homeowners are eligible.

Description 16 clarifies that there are income requirements for the program that suggest to prospective participants that this is a program for lower income households.

Conclusions (continued)

Combinations

The combinations of names and descriptions that, overall, customers feel are the best fit for the top two names are:

Energy Savings Assistance Program	**Q9**	**A no-cost, energy-saving home improvement program for income-qualified households**	**16**
		No-cost energy-saving home improvements for renters and homeowners	**28**
Home Energy Savings Solutions	**R4**	**A no-cost, energy-saving home improvement program for income-qualified households**	**16**
		No-cost energy-saving home improvements for renters and homeowners	**28**

While Description 28 is slightly favored over Description 16 when evaluated individually, customers ultimately feel that including the income qualifier in the description is more important than specifying eligibility for renters.

Recommendations

Among the names tested in this study, "Energy Savings Assistance Program" appears to be the strongest candidate as a statewide name for the LIEE program. While there are two descriptions that test well among customers, "A no-cost energy-saving home improvement program for income-qualified households" (16) and "No-cost energy-saving home improvements for renters and homeowners" (28), neither is a clear winner.

Based on the findings from this research, we recommend the following guidelines be used to assist in the development of a statewide name and description for the LIEE program:

RECOMMENDED WORDS	
Assistance	Implies active help and, when combined with "energy," does not connote public assistance or welfare
Savings	Conveys to customers that they will save money, a strong motivator, especially for this target group
Qualified	Communicates that there are qualifications to the program but does not limit them to income-based, which alienates those who find the term "income-qualified" objectionable and those who presume their income is too high to be eligible
Renters	Specifies that renters are included in the program, which is not generally assumed for home improvement assistance programs
Program	Spells out that this is a program and not a statement, political group, conglomerate or business partnership

RECOMMENDED WORD WITH CAUTION	
Income-Qualified	As mentioned above, can alienate those who find the term objectionable as well as those who believe they will not qualify because they presume their income exceeds the requirements for the program

WORDS/PHRASES TO AVOID	
California or Californians	Introduces images or restrictions that otherwise would not come to mind if not included
Alliance	Evokes thoughts of business mergers, political groups, and military alliances that take customers down a path that has nothing to do with energy conservation or savings
Partners	Similarly, evokes thoughts of business partnerships or owners and can confuse prospective participants

Recommendations (continued)

Based on the findings from this research, a possible combination that would appeal to a broad range of utility customers might be:

Energy Savings Assistance Program + **A no-cost, energy-saving home improvement program for (income) qualified renters and homeowners**

This combination includes all benefits and aspects of the program that customers identify as most important and motivating to them.

While most customers agree that it is important to stipulate that the program has qualifications, there are enough who take issue with or object to "income-qualified" that caution should be used in using this term.

DETAILED FINDINGS

ENERGY CONSERVATION

PROGRAM AWARENESS AND IMPRESSIONS

NAME EVALUATIONS

DESCRIPTION EVALUATIONS

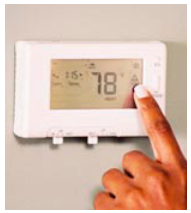
COMBINATIONS

Conserving Energy At Home

Utility customers are currently conserving energy at home in the following ways:

Lights

- Turn off lights when leaving room or home
- Convert to compact fluorescent light bulbs
- Install sensor lights that turn off when no activity in room
- Use candles



Air/Heat

- Open windows or use fans instead of using air conditioning
- Use more blankets and layer clothing instead of using heater
- Keep windows closed (warm air inside) during winter
- Use fireplace instead of heater
- Turn the heater pilot off during the summer
- Install solar panels

Laundry

- Use cold water to wash
- Hang clothes to dry
- Do laundry in the evenings

Appliances

- Purchase Energy Star products
- Run dishwasher only when full
- Handwash dishes
- Unplug or turn off items that drain electricity when not in use
- Keep water heater on warm
- Cover water heater with blanket

Insulation

- Insulate attic
- Seal doors and windows
- Install double-pane windows

Shower

- Take quick showers
- Shower at gym

Customers across the four utility companies make similar efforts to conserve energy at home.

General market and Hispanic customers also conserve energy at home in similar ways, although Hispanic customers rely more heavily on electricity. Those who speak Spanish as their primary language tend to be more comfortable with electricity. They explain that, in their home countries, gas was either not available or very costly.

DETAILED FINDINGS

ENERGY CONSERVATION

PROGRAM AWARENESS AND IMPRESSIONS

NAME EVALUATIONS

DESCRIPTION EVALUATIONS

COMBINATIONS

Awareness

Awareness of the program is fairly strong among utility customers, especially among participants, who praise the program as a service for customers. When non-participants are exposed to the program, they agree that it is a helpful program for the utility companies to offer to customers who most need the assistance.

- Not surprisingly, participants in the LIEE programs are more aware of the programs than those who are not participating.
- Some non-participants acknowledge getting flyers with their bills but admit to discarding them without reading them.
- Many SCG non-participants pay their bills online, and while most still receive paper bills, they do not usually review them or the inserts.
- Where gas and electric utilities are combined, customers seem to be aware of the local sponsor for the program. In the areas where the utilities are separate (SCG and SCE), there is some confusion. Even among participants, some are not sure if the sponsor of the program is the gas company, the electric company or a public service agency (or possibly multiple sponsors if they participate in more than one program).
- Most customers are not aware of the name of the LIEE program in their area, except in San Diego, where many SDG&E customers call the program by name: Energy Team

DESIGNED TO EARN THE ENERGY STAR
The estimated energy performance for this design meets US EPA criteria. The building will be eligible for ENERGY STAR after maintaining superior performance for one year.

Impressions of Programs

- Nearly all participants have positive comments regarding their local program, expressing their appreciation for the home improvements, new no-cost appliances and reduction in their utility bills.
- PG&E and SDG&E participants are especially complimentary of the contractors who came to their homes and provided the services included in the LIEE program.
- Only a few participants have criticisms of the program:
  - ✓ While most say the work is done quickly, some are still waiting for follow-up work or delivery of their refrigerator
  - ✓ Some feel that (once having seen the program description) more work could have been done to their home
  - ✓ A few mention that, while they were told their new refrigerator would be the same size as their old one, the replacement refrigerator is smaller than their previous unit
  - ✓ A few have not noticed a reduction yet in their utility bill.
- Most non-participants are interested in the program once they hear about it. Only a few have concerns:
  - ✓ Renters are unsure if they are eligible or may not want to work with building manager/owner
  - ✓ Some wonder about the quality/brands of the replacement appliances.

DETAILED FINDINGS

ENERGY CONSERVATION

PROGRAM AWARENESS AND IMPRESSIONS

NAME EVALUATIONS

DESCRIPTION EVALUATIONS

COMBINATIONS

Rating of Names

Seven names were tested monadically among utility customers with the following results:

MOST WELL RECEIVED	WELL RECEIVED	NOT WELL RECEIVED
▪ Energy Savings Assistance Program (Q9) ▪ Home Energy Savings Solutions (R4)	▪ California Energy Assistance (P7)	▪ Californians Saving Energy at Home (K2) ▪ Californians Saving Energy (J5) ▪ California Energy Alliance (T3) ▪ Energy Partners (S6)

DETAILED FINDINGS – NAME EVALUATIONS

"Energy Savings Assistance Program" (Q9)

By far, the name "Energy Savings Assistance Program" (Q9) is the most appealing to utility customers, who see it as the best fit for the program and the most comprehensive name overall.

STRENGTHS	
Fits With Program	*"Dead on in the description [of the program]." (SCG, OC, Non-Part., 21-59)* *"This clearly explains the program." (SCE, OC, Participants, 21-59)* *"It leaves no questions. It explains itself." (PG&E, Non-Part., 21-59)* *"It refers to the program; it defines what the program is." (SDG&E, Spanish, Non-Part. 21-79)*
Informative/ Comprehensive	*"It's letting you know that you're going to be saving energy." (SCG, LA, Spanish, Non-Part., 21-79)* *"'Assistance' implies they are going to help you with it, not just tell you what to do." (PG&E, Participants, 21-59)* *"The name tells you they're going to help you, assist you in saving money." (SDG&E, Spanish, Participants, 21-79)*
Attention Getting	*"This grabs you. It gets to the point." (SCG, LA, Participants, 21-59)* *"This invites you to participate." (SCG, LA, Spanish, Non-Part., 21-79)* *"It's like an invitation." (PG&E, Spanish, Non-Part., 21-79)* *"I would have given it an eleven, but it's not available." (SDG&E, Spanish, Non-Part. 21-79)*
Sounds Good	*"It flows well." (SCG, LA, Participants, 21-59)* *"[There's a] nice ring to it; it flows." (PG&E, Participants, 21-59)* *"I like the way it sounds." (SDG&E, Mixed Part., 60-79)*
Implies Saving Money, Not Just Energy	*"The 's' in 'savings' denotes money." (PG&E, English, Mixed Part., 60-79)* *"When it says 'saving,' that means saving energy, but when it says 'savings,' that means saving money." (SDG&E, Mixed Part., 60-79)* *"It tells you both how to save energy… and money." (PG&E, Non-Part., 21-59)*
Easy Acronym	*"We even gave it a nickname – ESAP." (SCG, LA, Participants, 21-59)* *"Winner! Great acronym… ESAP." (SCE, LA, Non-Part., 21-59)*
WEAKNESSES	
Length	*"It's too wordy." (SCE, OC, Participants, 21-59)* *"Bit long." (SCG, OC, Non-Part., 21-59)* *"Too long, too wordy." (PG&E, English, Mixed Part., 60-79)*
Dry Name	*"Cut and dry. Bureaucratic, institutional." (SCE, LA, Mixed Participants, 60-79)* *"It's not catchy." (SCE, OC, Participants, 21-59)*

"Home Energy Savings Solutions" (R4)

Utility customers find "Home Energy Savings Solutions" (R4) the next most appealing name. There are mixed reactions, however, to the word "solutions," which some consider a positive term, providing answers, while others interpret as tips or suggestions as opposed to actual assistance.

STRENGTHS	
Fits With Program	*"It tells it like it is." (SCG, OC, Mixed Part., 60-79)* *"If fits really well as a name." (SCE, OC, Spanish, Participants, 21-79)* *"All the key words are there… That's exactly what the program is." (PG&E, English, Mixed Part., 60-79)* *"It's straight to the point." (SDG&E, Participants, 21-59)*
"Solutions" Provide Answers	*"'Solutions' is positive, proactive, an answer to your problems." (SCG, OC, Non-Part., 21-59)* *"That [solutions] is what all consumers are looking for." (SCE, OC, Spanish, Non-Part., 21-79)* *"I like solutions to problems." (PG&E, Participants, 21-59)* *"Solutions is the most attractive word of them all." (SDG&E, Spanish, Participants, 21-79)*
Attention Getting	*"It would catch your attention… What kinds of solutions? What are we saving?" (SCG, LA, Participants, 21-59)* *"It arouses your curiosity." (SCG, LA, Participants, 21-59)* *"[This] name stands out." (SCG, OC, Mixed Part., 60-79)*

WEAKNESSES	
Does Not Sound Like a Program	*"Not really a program." (SCG, OC, Non-Part., 21-59)* *"Sounds banky." (SCE, LA, Non-Part., 21-59)* *"Doesn't sound like a name for a company's program." (SDG&E, Spanish, Participants, 21-79)*
"Solutions" Suggests Passive Assistance	*"'Solutions' doesn't imply that somebody's coming out to help you." (SCE, OC, Participants, 21-59)* *"I think it's more for tips. It would give solutions, not assistance." (PG&E, Non-Part., 21-59)* *"'Solutions' [means they] tell you and you do it yourself. They suggest rather than do something." (SDG&E, Non-Part., 21-59)*
Length	*"It's too long." (SCG, OC, Mixed Part., 60-79)* *"Too long." (SDG&E, Mixed Part., 60-79)*

DETAILED FINDINGS – NAME EVALUATIONS

"California Energy Assistance" (P7)

"California Energy Assistance" (P7) ranks third among the potential program names. While its brevity appeals to utility customers, the name leaves them with many questions and wanting more information.

STRENGTHS	
Fits With Program	*"It says what it is." (SCE, OC, Participants, 21-59)* *"It lets you know help is available." (PG&E, Non-Part., 21-59)*
Brevity	*"It's short and to the point." (SCG, LA, Participants, 21-59)* *"Rolls off your tongue." (SDG&E, Participants, 21-59)*
Memorable	*"It's easy to remember." (SCG, LA, Participants, 21-59)* *"You're less likely to forget something like this." (PG&E, Participants, 21-59)*

WEAKNESSES	
Not Enough Information	*"For a person who wants to know about this, I wouldn't get it." (SCG, LA, Participants, 21-59)* *"The name… it doesn't really relate to me what they're doing." (SCG, GG, Spanish Participants)* *"Not specific enough." (SCE, GG, Eng Non-Participants)* *"Who gives the assistance? PG&E? California? The governor?" (PG&E, English, Mixed Part., 60-79)* *"I don't like it because it doesn't include the whole program. It's not complete." (PG&E, Spanish, Non-Part., 21-79)* *"I don't think it reflects everything the program encompasses. It's incomplete." (SDG&E, Spanish, Participants, 21-79)*
Lacks Mention of Savings	*"Nothing about saving." (SCG, LA, Participants, 21-59)* *"Doesn't have 'savings' [in it]." (SDG&E, Participants, 21-59)*
Implies Assistance for State	*"[Sounds like] for the state, not your home." (SCG, OC, Mixed Part., 60-79)* *"[Sounds like] a government agency." (SDG&E, Participants, 21-59)*
Uninteresting Name	*"Boring." (SCG, OC, Non-Part., 21-59)* *"Needs to be catchy." (SCG, OC, Non-Part., 21-59)* *"The name doesn't interest me." (PG&E, Spanish, Non-Part., 21-79)*

"Californians Saving Energy at Home" (K2)

As with "Californians Saving Energy" (J5), utility customers do not perceive "Californians Saving Energy at Home" (K2) as a *program* name. The use of "Californians" alienates many who feel the name disqualifies and discriminates against them.

STRENGTHS	
Fits With Program	*"I like it. At least it describes something about saving energy. It has saving energy at home." (SCG, LA, Participants, 21-59)* *"It would fit very well." (SCG, LA, Participants, 21-59)* *"It says what it intends to do." (PG&E, Non-Part., 21-59)*
Attention Getting	*"It would be something that people would look at." (SCG, LA, Participants, 21-59)*

WEAKNESSES	
Does Not Sound Like a Program	*"Sounds like a campaign." (SCG, LA, Participants, 21-59)* *"It still just sounds like a club. It doesn't indicate that they're going to help." (SCG, LA, Participants, 21-59)* *"It sounds like a statement." (SCE, OC, Participants, 21-59)* *"Like it as a statement but doesn't fit as a name." (PG&E, Participants, 21-59)* *"It sounds like a news segment – 'News at 11.'" (SDG&E, Non-Part., 21-59)*
Discrimination in Term "Californians"	*"I may not be from California. I'm from Belize. Maybe it's just for Americans or California people." (SCG, LA, Participants, 21-59)* *"Many people will think that only if you were born in California will it be for us." (SCE, OC, Spanish, Non-Part., 21-79)* *"I guess I'm not a Californian. I wasn't born and raised in California." (PG&E, Participants, 21-59)* *"A lot of people who live here don't consider themselves to be Californians." (PG&E, Spanish, Participants, 21-79)*
Not Enough Information	*"It doesn't indicate that they're going to help me. They might just want to teach me." (SCG, LA, Participants, 21-59)* *"It doesn't state what it's all about." (SCE, OC, Participants, 21-59)* *"It says nothing about any qualifications." (PG&E, English, Mixed Part., 60-79)* *"It doesn't fit the program. It doesn't define who is saving or how." (PG&E, English, Mixed Part., 60-79)*
Not Attention Getting	*"It doesn't have a good grab." (PG&E, Non-Part., 21-59)* *"It's not catchy enough." (SDG&E, Participants, 21-59)*

DETAILED FINDINGS – NAME EVALUATIONS

"Californians Saving Energy" (J5)

Overall, utility customers do not perceive "Californians Saving Energy" (J5) as a *program* name. The use of "Californians" confuses some by implying the program is open to all residents of the state. While the use of "Californians" resonates with some who feel the name speaks to them, the term alienates others, especially Hispanic customers, who feel the name disqualifies and discriminates against them.

STRENGTHS	
Brevity	*"Short and simple." (SCE, OC, Participants, 21-59)* *"It's concise." (SDG&E, Mixed Part., 60-79)*
California Connection	*"This speaks to me as a Californian." (SCE, LA, Non-Part., 21-59)* *"I like it because it involves citizens, and everyone wants to save." (PG&E, English, Mixed Part., 60-79)*

WEAKNESSES	
Does Not Sound Like a Program	*"Sounds too much like a statement. It doesn't sound like a program." (SCG, LA, Participants, 21-59)* *"Sounds like an activist group." (SCG, OC, Non-Part., 21-59)* *"[Sounds like a] statement, not a program." (SCE, OC, Participants, 21-59)* *"It sounds more like a slogan than a name." (SCE, LA, Non-Part., 21-59)* *"It's an energy idea but not a program." (PG&E, Non-Part., 21-59)* *"Sounds like something to do, not a title." (SDG&E, Participants, 21-59)* *"Sounds like a political action committee." (SDG&E, Non-Part., 21-59)*
Not Enough Information	*"The name doesn't fit. There should be more." (PG&E, Participants, 21-59)* *"It doesn't define the program. It's ambiguous." (PG&E, English, Mixed Part., 60-79)* *"The name is not getting your attention that they are going to help you." (SDG&E, Spanish, Participants, 21-79)*
Name Implies Eligibility for All California Customers	*"I really don't like this name because it says "California," and there are people in California who aren't getting this kind of help." (SCG, LA, Spanish, Participants, 21-79)* *"Sounds like it's for all Californians." (SCE, LA, Mixed Participants, 60-79)* *"Seems like it includes the whole state." (PG&E, Participants, 21-59)* *"Some save and some don't, [but] Californians refers to everyone." (SDG&E, Spanish, Participants, 21-79)*

DETAILED FINDINGS – NAME EVALUATIONS

"Californians Saving Energy" (J5) (continued)

WEAKNESSES (continued)	
Discrimination in Term "Californians"	*"When you see that [term 'Californians'], you assume you need to be documented, so I wouldn't be qualified." (PG&E, Spanish, Non-Part., 21-79)* *"Even if you live here, a lot of people don't consider themselves Californians." (PG&E, Spanish, Participants, 21-79)* *"'Californians' makes people think that it's not them because they were born somewhere else." (SDG&E, Spanish, Participants, 21-79)* *"There are people from other places, and they don't feel like Californians." (SDG&E, Spanish, Participants, 21-79)*
Not Attention Getting	*"It's not grabbing." (SCG, LA, Participants, 21-59)* *"It's not going to attract that much attention." (SCE, OC, Spanish, Participants, 21-79)* *"Sounds too commonplace." (PG&E, English, Mixed Part., 60-79)*
Not Enough Information	*"It doesn't tell you that anyone is going to help you." (SCG, LA, Participants, 21-59)* *"It's not telling me that you're offering a program." (SCG, OC, Mixed Part., 60-79)* *"The name is short, but the idea is vague." (SCG, LA, Spanish, Participants, 21-79)* *"Not specific enough." (SCE, LA, Non-Part., 21-59)* *"It's open to too many interpretations." (SDG&E, Mixed Part., 60-79)*

DETAILED FINDINGS – NAME EVALUATIONS

"California Energy Alliance" (T3)

While the idea of an alliance in "California Energy Alliance" (T3) appeals to some utility customers, the term "alliance" raises a number of issues that confuse, mislead and alienate others.

STRENGTHS

Idea of Alliance	*"Like the alliance part. Usually an alliance means it's mutually beneficial." (SCG, LA, Participants, 21-59)* *"It shows that people are united, and people are trying to save energy as a united group." (SCG, LA, Spanish, Non-Part., 21-79)* *"It's an agreement among everybody." (SCE, OC, Spanish, Participants, 21-79)* *"It sounds good. We need to be allied to save energy." (SCE, OC, Spanish, Non-Part., 21-79)* *"PG&E is a big corporation, but [they are] working together with us." (PG&E, Participants, 21-59)*

WEAKNESSES

Does Not Fit With Program	*"It sounds like something from history class." (SCG, LA, Participants, 21-59)* *"'Alliance' doesn't sound like it's going to help you." (SCG, OC, Non-Part., 21-59)* *"It sounds like a big corporation coming together to help themselves." (PG&E, Participants, 21-59)* *"'Alliance' sounds like the military, political." (SCE, LA, Mixed Participants, 60-79)* *"'Alliance' denotes a political organization." (PG&E, English, Mixed Part., 60-79)* *"'Alliance' throws everyone off." (SDG&E, Non-Part., 21-59)*
"Alliance" Implies a Union of Companies	*"Sounds like an alliance among the companies. I don't see the consumer." (SCE, OC, Spanish, Participants, 21-79)* *"[Sounds like] energy companies coming together. Not for the people." (SDG&E, Mixed Part., 60-79)*
Term "Alliance" Can be Alienating	*"Many wouldn't know what the word means." (SCG, OC, Mixed Part., 60-79)* *"I didn't understand alliance." (SCG, LA, Spanish, Non-Part., 21-79)* *"Not everyone's going to get it." (SCE, OC, Participants, 21-59)* *"What the hell does 'alliance' mean?" (PG&E, Non-Part., 21-59)*

"California Energy Alliance" (T3) (continued)

WEAKNESSES (continued)	
"Alliance" Over-Used Term	*"Everyone has an alliance." (SCG, LA, Participants, 21-59)* *"'Alliance' is a word that is used often." (SCE, LA, Non-Part., 21-59)* *"'Alliance' is ordinary, common." (SDG&E, Mixed Part., 60-79)*
Not Enough Information	*"Too ambiguous. How is it making me a part of it?" (SCE, OC, Participants, 21-59)* *"Doesn't say 'energy saving.' Need that." (SCE, LA, Non-Part., 21-59)* *"It says nothing about savings." (PG&E, Participants, 21-59)* *"It doesn't tell you who… or how." (PG&E, Non-Part., 21-59)*
Uninteresting Name	*"It doesn't catch your eye." (SCG, LA, Participants, 21-59)* *"Makes me not want to read it at all!" (SCG, OC, Non-Part., 21-59)* *"It doesn't have a lot of spark." (PG&E, Spanish, Participants, 21-79)*
Name Too Long	*"It's too long." (SCE, LA, Eng Participants)* *"Too long. Too many words." (PG&E, English, Mixed Part., 60-79)* *"The name is quite long and complicated." (SDG&E, Spanish, Non-Part. 21-79)*

DETAILED FINDINGS – NAME EVALUATIONS

"Energy Partners" (S6)

While the idea of a partnership in "Energy Partners" (S6) appeals to some utility customers, the term "partners" seems to raise more questions and confuse customers about the program.

STRENGTHS	
Implies Partnership With Utility	*"With this program, they're offering to partner with us." (SCG, LA, Participants, 21-59)* *"[Sounds like] we're all in it together." (SCE, LA, Mixed Participants, 60-79)* *"For me, it would be partnered between us and them." (PG&E, Spanish, Non-Part., 21-79)* *"It's inviting us to partner up. We're going to be partners to solve it, about the environment." (SDG&E, Spanish, Non-Part. 21-79)*
Brevity	*"I want short and simple." (SCG, GG, Spanish Participants)* *"It's concise and to the point." (SDG&E, Mixed Part., 60-79)*

WEAKNESSES	
Does Not Fit With Program	*"Too business-like. It doesn't say to me anything about assistance." (SCG, LA, Participants, 21-59)* *"Sounds like a law firm." (SCE, OC, Participants, 21-59)* *"It's too corporate." (PG&E, Participants, 21-59)* *"It sounds like an investment firm." (SDG&E, Participants, 21-59)*
Not Enough Information	*"There's nothing there." (SCG, OC, Mixed Part., 60-79)* *"It doesn't say that they're trying to save you money." (SCE, GG, Eng Non-Participants)* *"It's totally ambiguous. It doesn't attract your interest. It's just another noun flying by." (PG&E, English, Mixed Part., 60-79)* *"Doesn't specify what kind of partnership and how it's going to benefit you." (SDG&E, Spanish, Participants, 21-79)*
Not Believable	*"Doesn't sound true." (SDG&E, Mixed Part., 60-79)* *"I don't believe it." (SDG&E, Non-Part., 21-59)*
Confusion Over Term "Partners"	*"'Partners' kind of throws me off." (SCG, LA, Participants, 21-59)* *"'Partners' [implies] a financial commitment." (SCG, OC, Non-Part., 21-59)* *"For me, being partners is like being an owner, and we're consumers." (PG&E, Spanish, Participants, 21-79)* *"It leads you in the wrong direction." (PG&E, Non-Part., 21-59)*

Differences Among Segments

Across the various groups, customers agree much more than disagree on their reactions to the names. There are, however, a couple of notable differences.

…"Californians"…

Customers who are not native to California tend not to perceive themselves as "Californians" and question their eligibility. Many Spanish-speaking customers, especially those who are not documented in the U.S., are put off by the term "Californians" for this reason.

…"Alliance"…

English-speaking customers associate the term "alliance" with a merger of companies or an alliance among military or political groups, which takes them down a path that has little to do with energy conservation. Thus they object to the word being used in this context. Spanish-speaking customers, however, do not seem to associate "alliance" in the same way and, consequently, do not have the same objections to the word.

DETAILED FINDINGS

ENERGY CONSERVATION

PROGRAM AWARENESS AND IMPRESSIONS

NAME EVALUATIONS

DESCRIPTION EVALUATIONS

COMBINATIONS

Rating of Names

Six descriptions of the program were also tested monadically among the same groups of customers with the following results:

MOST WELL RECEIVED	LESS WELL RECEIVED	LEAST WELL RECEIVED
▪ No-cost energy-saving home improvements for renters and homeowners (28) ▪ A no-cost energy-saving home improvement program for income-qualified households (16)	▪ No-cost energy solutions for income-qualified California households (49) ▪ Energy-saving assistance for income-qualified households (97) ▪ No-cost energy-saving home improvements for qualified Californians (83)	▪ Keeping homes across California more energy efficient (51)

"No-cost energy-saving home improvements for renters and homeowners" (28)

This description is rated highest as a good fit for the program, primarily because it includes the benefits that appeal most to customers (no cost, energy saving, home improvements). Many especially appreciate the phrase "for renters and homeowners" because home improvement programs are often not available to renters. Some, however, feel that this description should include mention of the program's income qualifications.

STRENGTHS	
Comprehensive Description of Program	*"It says everything." (PG&E, Non-Part., 21-59)* *"It describes what it is." (SDG&E, Participants, 21-59)*
Clarification of Renter Eligibility	*"It benefits everybody, homeowners and renters." (SCG, LA, Spanish, Non-Part., 21-79)* *"A lot of renters don't know they can get this." (PG&E, Participants, 21-59)* *"They are going to help renters and homeowners. It includes everyone." (PG&E, Spanish Non-Participants)* *"Usually renters don't get the breaks." (SDG&E, Non-Part., 21-59)*
Mention of No Cost	*"It's free!" (SCG, LA, Participants, 21-59)* *"To the point… it says 'no-cost.'" (SCG, OC, Non-Part., 21-59)* *[Moderator: "What do you like about this?"] "No cost!" (SDG&E, Non-Part., 21-59)*

"No-cost energy-saving home improvements for renters and homeowners" (28) (continued)

WEAKNESSES	
No Mention of Income Qualifications	*"It doesn't say anything about income." (SCG, LA, Participants, 21-59)* *"The only negative is that it doesn't mention that there is an income qualification." (SCG, LA, Participants, 21-59)* *"It needs [to say] 'income-qualified.'" (SCG, LA, Non-Part., 21-59)* *"The word 'qualified' is missing." (PG&E, Eng Non-Participants)* *"Doesn't tell you who qualifies." (SDG&E, Non-Part., 21-59)*
Does Not Sound Like a Program	*"It doesn't say anything about income." (SCG, LA, Participants, 21-59)* *"The only negative is that it doesn't mention that there is an income qualification." (SCG, LA, Participants, 21-59)* *"It needs [to say] 'income-qualified.'" (SCG, LA, Non-Part., 21-59)* *"The word 'qualified' is missing." (PG&E, Eng Non-Participants)* *"Doesn't tell you who qualifies." (SDG&E, Non-Part., 21-59)*
Some Feel it is Unnecessary to Call Out "Renters and Homeowners"	*"We assume it's available to renters and homeowners anyway." (SCE, Eng Seniors)* *"Doesn't need to say 'renters and homeowners.' 'Household' is simpler." (PG&E, English, Mixed Part., 60-79)*

"A no-cost, energy saving home improvement program for income-qualified households" (16)

Utility customers appreciate the comprehensiveness of this description, which includes aspects of the program that are important to them (no cost, energy saving, home improvement). Some, however, feel that the lack of mention of renter eligibility will lead customers to assume the program is strictly for homeowners. In addition, because of the phrase "income-qualified," many say they would presume they would not qualify for the program.

STRENGTHS	
Comprehensive Description of Program	*"It's more complete. It really explains the program." (SCG, GG, Spanish Participants)* *"Covers all the bases." (SCG, OC, Non-Part., 21-59)* *"Excellent [description]. It explains what the program is about." (SCE, LA, Mixed Participants, 60-79)* *"It specifies more who's going to receive the savings." (SCE, OC, Spanish, Non-Part., 21-79)* *"Very informative… It says all the right things." (PG&E, Non-Part., 21-59)* *"This explains it all." (SDG&E, Participants, 21-59)*

WEAKNESSES	
Some Assume Renters are Excluded	*"It's not really helping everybody. It's just for homes." (SCG, LA, Participants, 21-59)* *"It doesn't let you know it's for renters and homeowners." (PG&E, Participants, 21-59)* *"'Households'… this one is not for renters." (SDG&E, Non-Part., 21-59)*
"Income-Qualified" Suggests to Some They are Not Eligible	*"[If it just said qualified], there would be a higher possibility that you would qualify." (SCG, OC, Non-Part., 21-59)* *"[Income-qualified]... I don't think I qualify." (SCG, OC, Participants, 21-59)* *"'Income-qualified' throws me off." (PG&E, Participants, 21-59)* *"[Income-qualified]... I wouldn't qualify." (SDG&E, Non-Part., 21-59)*
"Home Improvement" Confuses Some	*"You're going to remodel my house?" (PG&E, English, Mixed Part., 60-79)*

"No-cost energy solutions for income-qualified California households" (49)

While some find the description complete, many feel it raises questions about the program because it lacks mention of savings (monetary or energy) and home improvements. Also, many take issue with the phrase "income-qualified," which puts off some and makes others feel they would not be eligible for the program.

STRENGTHS	
Good Description of Program	*"Describes exactly what it is." (SCG, OC, Mixed Part., 60-79)* *"It's very specific." (SCE, OC, Spanish, Non-Part., 21-79)* *"It seems more complete." (PG&E, Spanish, Participants, 21-79)* *"It's quite complete." (SDG&E, Spanish, Participants, 21-79)*
"Solutions" is Appealing to Some	*"I like the fact [that] they put 'solutions' [in the description]." (SCE, OC, Spanish, Non-Part., 21-79)* *"The word 'solutions' sounds positive." (PG&E, Spanish, Participants, 21-79)* *"I like the 'no-cost' and 'solutions.'" (SDG&E, Spanish, Non-Part., 21-79)*

WEAKNESSES	
Not Enough Information	*"It doesn't say home improvements." (SCG, LA, Participants, 21-59)* *"'Solutions' is not very concrete. All the information is not really complete and concise." (SCG, LA, Spanish, Participants, 21-79)* *"Needs savings." (PG&E, Non-Part., 21-59)* *"For 'California households.' It's not specifying." (SDG&E, Spanish, Non-Part., 21-79)*
"Income-Qualified" is Objectionable to Some	*"'Income-qualified' puts me off." (PG&E, Participants, 21-59)* *"'Income-qualified' is negative, don't know if they're doubting you." (SDG&E, Non-Part., 21-59)*
"Income-Qualified" Suggests to Some They are Not Eligible	*"It's limiting. Some who qualify might not think they could use it." (PG&E, Non-Participants)* *"You may not think you qualify because your income is too high." (SDG&E, Participants, 21-59)*
"Solutions" Implies Passive Assistance to Some	*"The word 'solutions' [vs. home improvement] looks like a list." (PG&E, Non-Part., 21-59)* *"Sounds more like a 'how to' list." (PG&E, Non-Part., 21-59)*
"California" Not Necessary	*"'California' isn't needed in the description if it's in the title." (SCG, OC, Non-Part., 21-59)*
Some Assume Renters are Excluded	*"'California households' means houses [not renters]." (SCG, OC, Participants, 21-59)*

DETAILED FINDINGS – DESCRIPTION EVALUATIONS

"Energy-saving assistance for income-qualified households" (97)

Some find the description comprehensive, but others feel it lacks mention of two important program benefits: no-cost and home improvements. The phrases "income-qualified" and "assistance" are resisted by some who associate these terms with welfare or government aid programs. Again, some interpret "income-qualified" as very low income, and thus they presume they would not qualify and not want to pursue the program.

STRENGTHS	
Good Description of Program	*"Says it all." (SCG, OC, Mixed Part., 60-79)* *"It explains very nicely, very nicely said." (SCE, OC, Spanish, Participants, 21-79)* *"Short, sweet and says it all." (PG&E, English, Mixed Part., 60-79)* *"Clear and to the point." (SDG&E, Mixed Part., 60-79)*

WEAKNESSES	
"Income-Qualified" Suggests to Some They are Not Eligible	*"I don't feel like calling. I'm probably not qualified." (SCG, OC, Non-Part., 21-59)* *"['Income-qualified']... some people will read this and think this is not for me." (SDG&E, Spanish, Non-Part., 21-79)*
"Income-Qualified" is Objectionable to Some	*"I would stop reading as soon as I read 'income-qualified.'" (SCG, LA, Spanish, Non-Part., 21-79)*
"Qualified" Implies a Lot of Work to Some	*"You have to go out of your way [to find out if you're qualified]." (SCG, GG, Non-Participants)*
Not Enough Information	*"There's no "no-cost." (SCG, LA, Non-Part., 21-59)* *"How low income do I need to be to qualify?" (SCE, LA, Mixed Participants, 60-79)* *"What do they do? There is nothing about home improvements." (PG&E, Participants, 21-59)* *"It seems less complete. Would be better to say 'program.'" (PG&E, Spanish, Participants, 21-79)*
"Assistance" is Objectionable to Some	*"I didn't like the word 'assistance.' We're not asking for welfare." (PG&E, Spanish, Participants, 21-79)* *"'Assistance' doesn't sound enticing." (SDG&E, Non-Part., 21-59)*

DETAILED FINDINGS – DESCRIPTION EVALUATIONS

"No-cost energy-saving home improvements for qualified Californians" (83)

Some perceive the description to be concrete, but it raises questions and obstacles for others. The phrase "qualified Californians" suggests restrictions and hassle (in the application process) that seem prohibitive to many. Customers also notice the absence of monetary savings in the description that they believe to be an important program benefit.

STRENGTHS	
Good Description of Program	*"Everything's right there." (SCG, OC, Mixed Part., 60-79)* *"I really understood this a lot better." (SDG&E, Spanish, Non-Part., 21-79)*
"Qualified" Better than "Income-Qualified"	*"Qualified" is nicer." (PG&E, Participants, 21-59)* *"Not as discriminating." (SDG&E, Participants, 21-59)*

WEAKNESSES	
"Qualified" Suggests Restrictions and Limitations	*"'Qualified Californians' sounds discriminatory. It doesn't grab the majority of people." (SCG, LA, Participants, 21-59)* *"Makes you think you're not going to qualify." (PG&E, Spanish, Non-Part., 21-79)* *"I like everything but requirements. I'm not going to qualify." (SDG&E, Spanish, Participants, 21-79)*
"Qualified" is Unclear	*"'Qualified'? How would I qualify?" (PG&E, Non-Part., 21-59)*
"Qualified" Implies a Lot of Work to Some	*"'Qualified' is like going out and getting a loan." (SCG, LA, Participants, 21-59)* *"['Qualified'] sounds like a big process… grilling and humiliating." (SCG, OC, Participants, 21-59)*
Not Enough Information	*"Leaves much to interpretation." (PG&E, English, Mixed Part., 60-79)* *"It doesn't say what it covers." (PG&E, English, Mixed Part., 60-79)*
No Mention of Savings	*"It's not talking about saving money. It's talking about saving energy." (SCE, OC, Spanish, Non-Part., 21-79)* *"Sounds like more for improvements versus [reduction] on the bill." (PG&E, Non-Part., 21-59)*
Some Do Not Perceive Themselves as Californians	*"We all reside here, but some will take it another way." (PG&E, Spanish, Non-Part., 21-79)*
Some Assume Renters are Excluded	*"[This is for] homeowners only." (SDG&E, Mixed Part., 60-79)*

DETAILED FINDINGS – DESCRIPTION EVALUATIONS

"Keeping homes across California more energy efficient" (51)

While the language in this description sounds good, it lacks the information that many are seeking, including that the program is no-cost, offers home improvements, saves money and energy and is open to income-qualified customers.

STRENGTHS	
Sounds Nice	*"I like the sound of it." (SCE, OC, Spanish, Participants, 21-79)* *"It attracted my attention… 'keeping homes energy efficient.'" (SCE, OC, Spanish, Participants, 21-79)*

WEAKNESSES	
Does Not Fit as a Description for the Program	*"[This is] not a description. It's more like a slogan." (SCG, OC, Non-Part., 21-59)* *"Good catch phrase, but doesn't help you." (SCG, OC, Participants, 21-59)* *"It doesn't say what they do." (PG&E, Participants, 21-59)* *"The other ones say they are going to help you." (PG&E, Spanish, Non-Part., 21-79)* *"[Sounds like it's] more for a campaign – like stop smoking or save water." (SDG&E, Spanish, Participants, 21-79)*
Not Enough Information	*"It's missing 'savings' and 'program.'" (SCG, LA, Participants, 21-59)* *"I think they should specify more." (SCG, LA, Spanish, Non-Part., 21-79)* *"It doesn't say if you're going to get a discount. It's not complete." (SCE, OC, Spanish, Non-Part., 21-79)* *"They're not saying it's for people with low income." (SCE, OC, Spanish, Non-Part., 21-79)* *"It's only part of the picture." (PG&E, English, Mixed Part., 60-79)* *"This really doesn't tell you you're going to save." (SDG&E, Spanish, Participants, 21-79)*
Implies Open to All in California	*"[Sounds like] it would help everybody save energy." (SCG, LA, Participants, 21-59)* *"This is just directed to certain people, not across California." (SCG, LA, Spanish, Participants, 21-79)*

Differences Among Segments

Across the various groups, customers overall agree more than disagree on their reactions to the descriptions. There is, however, one notable difference.

…"Renters and Homeowners"…

While homeowners assume they are eligible for this program, many renters assume they are not eligible, because they do not own the property where they live. Some homeowners think it unnecessary to qualify "renters and homeowners" in the description, but renters appreciate this specification. (They know, however, that they will need to get approval from the landlord or building manager to have these improvements made.)

DETAILED FINDINGS

ENERGY CONSERVATION

PROGRAM AWARENESS AND IMPRESSIONS

NAME EVALUATIONS

DESCRIPTION EVALUATIONS

COMBINATIONS

Leading Combinations

Utility customers select "A no-cost, energy-saving home improvement program for income-qualified households" (16) as the best to work in combination with the names that are most favorable to them (Q9 and R4). The next best combination is with "No-cost energy-saving home improvements for renters and homeowners" (28). Utility customers select "Energy-saving assistance for income-qualified households" (97) as their third-choice combination with the top names.

Energy Savings Assistance Program	Q9

1) A no-cost, energy-saving home improvement program for income-qualified households (16)
2) No-cost energy-saving home improvements for renters and homeowners (28)
3) Energy-saving assistance for income-qualified households (97)

Home Energy Savings Solutions	R4

1) A no-cost, energy-saving home improvement program for income-qualified households (16)
2) No-cost energy-saving home improvements for renters and homeowners (28)

California Energy Assistance	P7

1) No-cost energy-saving home improvements for renters and homeowners (28)
2) Energy-saving assistance for income-qualified households (97)

Reasons for selecting these combinations mirror the reasons for preferring these descriptions when they are evaluated on their own. These descriptions highlight the perceived key benefits to the program (no cost, energy saving, home improvement) and best complement the preferred names.

In considering combinations of names and descriptions, customers caution against too much repetition in wording. For example, "Energy Saving Assistance Program" (Q9) and "Energy-saving assistance for income-qualified households" (97) start off with almost identical language (i.e., Energy Savings Assistance and Energy-saving assistance).

APPENDIX

APPENDIX
DISCUSSION GUIDE

travisresearch

June 2008

Project No. 08-060-6
(06/06/08)

LIEE NAMING FOCUS GROUPS
Discussion Guide
[English Version]

Introduction (5-10 minutes)

- Introduction of moderator
- Purpose of research – energy issues
- Discussion of procedures: recording, viewers, etc.
- Introduction of respondents
  - ✓ Name
  - ✓ City/where life
  - ✓ Members in household
  - ✓ Occupation of self/other adults in household
  - ✓ Number of years in current home
  - ✓ Type of housing (i.e., apt, condo, house)

Warm-up/Energy Conservation (5-10 minutes)

As I mentioned, today/tonight we are going to be talking about energy issues in your home. To start our discussion, I'd like you to think about the steps you may be taking to conserve energy and help reduce your (PGE/SCE/SCG/SDGE) bill. Please use the paper and pencil we have provided to record your thoughts. Once everyone has had a chance to quickly do this, we will talk about it together as a group. (MODERATOR TO EXPLAIN EXERCISE AS NECESSARY, ALLOWING RESPONDENTS A MOMENT TO RECORD THEIR COMMENTS.)

- Open discussion of above
- What sorts of things have you done? What else?
- How satisfied have you been with the results?
- What other sorts of energy-saving techniques, if any, are you familiar with? What others?

-2-

PG&E – Energy Partners Program
SCE – Energy Management Assistance (EMA)
SCG - DAP
SDG&E – Energy Team

LIEE Program (5-10 minutes)

- How familiar are you with programs sponsored by (PG E/SCE/SCG/SDG&E) that offer energy savings programs to some customers? (MODERATOR TO DIRECT CONVERSATION TO LIEE PROGRAM)
  - ✓ Does anyone know what any of these programs are called?
  - ✓ Which ones are you familiar with?
  - ✓ What can you tell me about the program(s)? What else?
    - ➢ Have you participated in the program(s)?

...Description...

Just to make sure we're all the same page, I'd like to pass out a handout that describes this program. (MODERATOR TO DISTRIBUTE PROGRAM DESCRIPTION HANDOUT AND READ IT ALOUD. RESPONDENTS WILL BE ASKED TO KEEP COMMENTS TO THEMSELVES UNTIL OPEN FOR GROUP DISCUSSION.)

NOTE: DESCRIPTIONS VARY BY UTILITY.

- Now that we have reviewed this summary, how many of you had previously heard about this program?
- (CLARIFY AS NEEDED:) How many of you have participated in this program at any point in the past?

Impressions of Program (10 minutes)

- Based on what you know/have heard about it, how would you describe the program to someone unfamiliar with it?
- What are your impressions of the program?
- What do you see as the most important aspects of the program?
- (PARTICIPANTS:)
  - ✓ What do you like most about the program?
  - ✓ What, if anything, do you not like about the program?
  - ✓ How easy was it for you to sign up for the program?
- (NON-PARTICIPANTS)
  - ✓ Now that you know more about it, what do you think about it?
  - ✓ What do you see as the strongest benefits of the program?
  - ✓ What drawbacks, if any, do you see?
  - ✓ (AS APPROPRIATE:) Why have you not taken advantage of the program?

08-060

APPENDIX

DISCUSSION GUIDE (continued)

-3-

Name Evaluation (30-35 minutes)

An important purpose of our research today/tonight is to identify an alternative name for this program. The hope is to find one that could be used across the state, regardless of the utility offering it. We are going to be looking at several alternative names for this statewide program and will be reviewing and talking about them one at a time. However, please keep your verbal comments to yourself until we open up for group discussion. (MODERATOR TO DESCRIBE EXERCISE AS NECESSARY.)

R4	Home Energy Savings Solutions	P7	California Energy Assistance
G9	Energy Savings Assistance Program	J5	Californians Saving Energy
K2	Californians Saving Energy at Home	T3	California Energy Alliance
S6	Energy Partners		

(FOR EACH NAME:)

- ✓ (1-10 rating)
- ✓ Overall impressions
- ✓ Strengths
- ✓ Weaknesses
- ✓ Fit with the program
- ✓ Fit with your image of the utility... and their advertising/communications

(REPEAT FOR EACH NAME)

...Top Names...

(ONCE ALL NAMES EVALUATED:)

Now I'd like you to select your top two names. (MODERATOR TO PROVIDE INSTRUCTION AS NECESSARY, ENCOURAGING THE PARTICIPANTS TO REVIEW ALL SEVEN NAMES.)

- (MODERATOR TO POLL RESPONDENTS)
- Why is this name among your most preferred? Why else?
- (ULTIMATELY NEED TOP TWO-THREE NAMES FOR USE LATER IN GROUP)

-4-

Program Descriptions (20-25 minutes)

In addition to considering another name for the program, the utilities in California are considering *descriptions* that could be used to promote it. I'd like to review a few of these with you and get your impressions. Keep in mind that we are talking about the same program – these are just alternative descriptions of it. (MODERATOR TO DISCUSS DESCRIPTIONS ONE AT A TIME.)

97	Energy-saving assistance for income-qualified households
49	No-cost energy solutions for income-qualified California households
16	A no-cost, energy-saving home improvement program for income-qualified households
83	No-cost energy-saving home improvements for qualified Californians
28	No-cost energy-saving home improvements for renters and homeowners
51	Keeping homes across California more energy efficient

(FOR EACH DESCRIPTION:)

- ✓ (1-10 rating)
- ✓ Overall impressions
- ✓ Strengths
- ✓ Weaknesses
- ✓ How well does the description capture what is important to you about it?

(REPEAT FOR EACH NAME)

Name/Description Combination

We first discussed the names and this group selected a couple of them that were well rated. Now I'd like us to look at the most popular names and see what *descriptions* best fits with the name. I would like you to identify the combination of name and description that works best.

(MODERATOR TO PRESENT ONE TOP-RATED NAME AT A TIME AND ASK RESPONDENTS TO SELECT THE BEST FITTING OF THE SIX DESCRIPTIONS.)

- Which description best fits with this program name? Why is this description and name combination more effective?

APPENDIX

DISCUSSION GUIDE (continued)

-5-

(Time Permitting) Sources of Information (5-10 minutes)

(IF PROGRAM KNOWN PRIOR TO GROUPS:) Now I'd like to get a little more information regarding the program…

- How did you first hear about this energy savings program?

  (PROBE AS NECESSARY:)

  - ✓ (PG&E/SCE/SDG&E/SCG) bill insert
  - ✓ Letter in the mail (not part of bill)
  - ✓ Community Event
  - ✓ TV/radio news
  - ✓ Utility website
  - ✓ Word of mouth (family, friends, neighbors, etc.)
  - ✓ Phone call
  - ✓ Someone came to your home

(Time Permitting) Barriers to Program Participation (5-10 minutes)

It turns out there are quite a few people who qualify for this program, but have not joined it.

- Why do you think that is? Why do some people choose not to enroll in the program? What barriers discourage people from participating?

  (PROBE AS NECESSARY:)

  - ✓ Lack of awareness
  - ✓ Not sure if qualified
  - ✓ Not sure how to sign-up
  - ✓ Cost savings not enough
  - ✓ Don't want to prove income eligibility
  - ✓ Not able to take time off from work
- What do you think would encourage more people to join this program? What else?
- What changes can you recommend that would improve the program? What else?

(Time Permitting) SCE vs. SCG Programs (5 minutes)

(FOR SCE AND SCG GROUPS ONLY)

- Are you aware of a similar energy efficiency program offered by the (gas/electric) Company in town (Southern California Gas/Southern California Edison)?
  - ✓ What can you tell me about it?
  - ✓ How are the two programs similar/different? How else?

Wrap-up: (5 minutes)

(MODERATOR TO CHECK FOR QUESTIONS FROM BACK ROOM.)

- Final thoughts
- Thank participants

APPENDIX
DESCRIPTIONS

Pacific Gas and Electric Company®

Name: _____

ENERGY PARTNERS PROGRAM

PG&E's Energy Partners program helps income-qualified customers reduce their energy consumption and costs while increasing their comfort, health, and safety. The program provides free home weatherization, energy efficient appliances, and energy education services to income-qualified PG&E customers throughout PG&E's service area. Free weatherization and appliances can include: ceiling insulation, low flow showerheads, water heater blanket, door weather-stripping, caulking, refrigerator replacement, hardwired compact fluorescent features, duct testing and sealing, and minor home repairs. For homeowners where the furnace fails the safety test, PG&E will repair or replace the furnace. Both home owners and renters qualify as well as all housing types are eligible for the program: multi-family, single family, and mobile homes.

SOUTHERN CALIFORNIA EDISON

Name: _____

ENERGY MANAGEMENT ASSISTANCE PROGRAM

Southern California Edison helps income-qualified homeowners and renters conserve energy and lower their electric bills. Customers who qualify may get the following for free:

- A replacement central air-conditioner or replacement wall/window room air-conditioning unit
- An energy efficient evaporative cooler (also called a "swamp cooler")
- An energy saving refrigerator to replace their older model (must be manufactured prior to 1993)
- Weatherization services
- Compact Fluorescent Light Bulbs (CFLs)
- Replacement porchlight fixtures with CFLs
- Replacement energy-efficient torchiere floor lamp

All work is completed by licensed contractors.

APPENDIX
DESCRIPTIONS

Name: _____

ENERGY TEAM PROGRAM

SDG&E offers no-cost, energy-saving home improvements, energy education and limited appliance repair/replacement to qualified customers. Free appliances/improvements include:

- Refrigerators
- Low-flow showerheads & faucet aerators
- Ceiling insulation
- Caulking and weather-stripping
- Energy-saving light bulbs
- Porch light fixtures

All work is completed by licensed contractors.

Name: _____

DAP PROGRAM

The Gas Company offers no-cost weatherization improvements and furnace repair or replacement services for qualified limited-income customers.

- Ceiling insulation
- Door weather-stripping
- Caulking
- Low-flow shower heads
- Water heater blankets
- Evaporative cooler covers and A/C covers
- Switch and outlet gaskets and covers
- Pipe insulation
- Faucet aerators
- Minor repairs to exterior doors and/or windows
- Energy education
- Furnace repair or replacement services (homeowners only)

All work is completed by licensed contractors

Attachment B

SCE's LIEE Integration and Leveraging Comparison Document						
		Existing/ New	Existing Budget	New Budget		
Integration			2008	2009	2010	2011
	Home Energy Efficiency Rebates (HEER)	New	$0	$0	$0	$0
	Multifamily Energy Efficiency Rebate Program (MFEER)	New	$0	$0	$0	$0
	California New Homes Program	New	$0	$0	$1,000,000	$3,000,000
	Comprehensive Mobile Home Program (CMIP)	New	$0	$0	$0	$0
	Home Energy Efficiency Survey (HEES)	New	$0	$0	$0	$0
	Efficient Affordable Housing (EAH)	New	$0	$0	$0	$0
	WE&T School Program	New	$0	$0	$0	$0
	Mobile Energy Unit (MEU)	New	$0	$0	$0	$0
	Community Language Outreach Program (CLEO)	New	$0	$0	$0	$0
	Energy Leader Partnership (ELP)	New	$0	$0	$0	$0
	Summer Discount Plan (SDP)	New	$0	$0	$0	$0
	Advanced Metering Infrastructure	New	$0	$0	$0	$0
	Medical Baseline	New	$0	$0	$0	$0
	Energy Assistance Fund (EAF)	New	$0	$0	$0	$0
Leveraging						
	Other Utility LIEE Programs	Existing	$0	$0	$0	$0
	Other Programs and Entities - LIHEAP	Existing	$325,000	$705,500	$705,500	$705,500
	California Solar Initiative	New	$0	$0	$0	$0
	Codes and Standards	Existing	$0	$0	$0	$0

Note: Integration efforts promote the simultaneous delivery of multiple program opportunities to eligible customers. Other than the California New Homes Program, they will not require additional budget resources.

Note: SCE does not forecast any budget increases in order to leverage its LIEE program with other utility LIEE Programs, CSI, and Codes and Standards. SCE's current program structure allows seamless integration of the previously mentioned programs through its outreach and enrollment process. SCE currently practices the sharing of data with the other Utilities' LIEE programs which avoids duplication of costs by following the current procedures stated in Chapter 2, section 2.3.2 of the LIEE Statewide Policies and Procedures manual.

SCE's New DSM Integration and Leveraging Strategies

INTEGRATION	**Home Energy Efficiency Rebates (HEER)** The HEER program encourages residential customers to make an energy-efficient choice when purchasing and installing household appliances and equipment through the use of education materials and rebate or incentive payments.	SCE seeks to integrate its LIEE programs with HEER by including information and marketing material about SCE's LIEE, CARE, and FERA programs in the HEER materials, where appropriate. SCE's integration strategy is designed to ensure that potentially eligible low-income residential customers are aware of the availability of free energy-efficiency services and appliances through LIEE prior to spending their limited income on similar services or appliances. In turn, SCE seeks to make all low-income customers aware of rebates available for those appliances not offered through LIEE.
INTEGRATION	**Multifamily Energy Efficiency Rebate Program (MFEER)** The MFEER program is designed specifically to motivate multifamily property owners/managers to install energy-efficient products. With product offerings suitable for the multifamily complex and incentive levels that help alleviate the split incentive, the MFEER is effectively designed to drive this customer segment toward participation in energy efficiency.	SCE seeks to integrate the LIEE and MFEER programs. Where a measure is not offered through LIEE (either at no cost or with an incentive through the form of a small co-payment which provides a greater incentive to the customer than what is provided through MFEER) the customer will be provided information on the availability of incentives through MFEER for installation of those measures. This will provide property owners increased incentives for installing energy-efficient measures in qualified low-income tenant units while providing energy efficiency services and appliances at no cost to these same qualified tenants. Additionally, as part of the MFEER program, property owners, managers and low-income tenants will be provided with information and marketing material on SCE's LIEE, CARE, and FERA programs.
INTEGRATION	**California New Homes Program (CANHP)** The California New Homes Program (CANHP) is designed to encourage single and multi-family builders, of all production volumes, to construct homes that exceed California's Title 24 energy efficiency standards by a minimum of 10%. This goal will be achieved	SCE will integrate and leverage LIEE into CANHP resulting in increased housing opportunities for LIEE/CARE eligible customers, increased efficiency of appliances installed in low-income designated units and increased overall efficiency of new housing construction. SCE will target builders involved in construction projects subject to state-mandated housing goals and/or housing elements of local city and county strategic plans. These projects often have negotiated a "set-aside" of a certain number of units for various income classifications to meet low- and moderate-income housing goals. For those units designated by the builder for low-income occupants, LIEE will pay the full incremental cost of installing higher-efficiency equipment, such as 16.0 SEER HVAC systems and refrigerators. Without the incentive, builders are less inclined to increase the

SCE's New DSM Integration and Leveraging Strategies

	through a combination of incentives, technical education, design assistance, and verification. CANHP supports the ambitious goals of the CEESP: (1) 100% of residential new construction will be at net zero by 2020, and (2) 50% of residential new construction will meet Tier II standards of the New Solar Homes Program by 2011.	energy efficiency of any new housing units. CANHP will pay the standard calculated incentives for all other measures currently not offered through LIEE that are installed in units designated for low-income occupants. Eligibility for housing in affordable housing projects is based on household size and income and must fall within guidelines set by the U.S. Department of Housing and Urban Development (HUD) based on the federal Area Median Income estimates of the county for each state. These guidelines are updated each fiscal year. Incremental payments to builders for installed electric appliances will only be approved for housing units designated for occupancy by LIEE income-eligible SCE customers. To ensure eligibility, builders will be required to: • Designate homes receiving LIEE appliances for occupancy by LIEE-eligible households; and • Restrict occupancy to families whose income is at the 30% (Extremely-Low) or 50% (Very-Low) level established by HUD. These levels are below LIEE guidelines. In effect, this collaboration will provide benefits to developers and low-income occupants by encouraging the development of more below-market-rate low-income units by developers, increase participation in CANHP based on the combined higher incentives, and increase the overall energy efficiency of affordable housing projects. LIEE measures are typically installed quickly after a home has been assessed for services. CANHP will commit funds for housing units that may not be constructed for several years after the commitment. SCE is requesting authorization to allow funds committed through CANHP to be reserved, as necessary, into the next program cycle beginning in 2012.
INTEGRATION	**Comprehensive Mobile Home Program** The residential CMHP provides energy efficiency incentive equipment and services at no cost to the customer. The program's intent is to install energy-efficient products in the mobile home and common areas of the mobile home parks. The program seeks to enhance customer energy efficiency knowledge and program	The CMHP offers a unique opportunity to leverage energy efficiency funds with LIEE funds in order to increase the energy efficiency of low-income mobile homes. While tenants and owners of mobile homes are being serviced under CMHP, potentially eligible residents will be provided information and marketing material on SCE's LIEE, CARE, and FERA programs. SCE's integration strategy is to offer and install eligible LIEE measures to CMHP income-qualified customers that are not offered under CMHP. These measures include energy-efficient refrigerators, room air conditioners, evaporative coolers, central air conditioners, weatherization services and other energy-efficient measures.

SCE's New DSM Integration and Leveraging Strategies

	participation within this market segment. CMHP provides HVAC Diagnostic and Tune-Up, Duct Sealing, Exterior/Interior Hardwired Fluorescent Fixtures, and CFLs.	
INTEGRATION	**Home Energy Efficiency Survey (HEES)** The 2009-2011 HEES program is the primary residential energy efficiency marketing tool for outreaching to customers. The program is delivered in five languages (English, Spanish, Chinese, Vietnamese, and Korean) and through four delivery channels (mail-in, on-line, in-home and phone surveys). This multi-faceted approach enhances the program's ability to reach Southern California's diverse culture. One of the aims of the HEES program is to provide "no cost" and "low cost" energy savings recommendations to gain participation of customers who are otherwise unwilling to make energy efficiency investments.	SCE will use a cross-cutting approach for coordinating HEES with SCE's low-income assistance programs by providing information and marketing material about SCE's LIEE, CARE, and FERA programs. Direct referrals from HEES to EMA will be a goal of SCE's integration strategy. As customer surveys are returned for review and processing, SCE will review customer account information and if the customer is on the CARE rate, they will automatically be referred to EMA to have their home assessed for eligible energy-efficient appliances.
INTEGRATION	**Efficient Affordable Housing** The EAH program is a performance-based approach to encourage qualifying property owners to choose the most cost-effective measures that will achieve a 20 percent energy improvement over existing building conditions.	SCE seeks to integrate the LIEE and EAH programs. Where a measure is not offered through LIEE (either at no cost or with an incentive through the form of a small co-payment which provides a greater incentive to the customer than what is provided through the EAH program) the customer will be provided information on the availability of incentives through the EAH program for installation of those measures. This will provide property owners increased incentives for installing energy-efficient measures in qualified low-income tenant units while offering energy-efficient services and appliances to these same qualified tenants at no charge. Additionally, property owners and tenants will be provided information and

SCE's New DSM Integration and Leveraging Strategies

	Energy education workshops, designed for owners and tenants, will provide information regarding retrofits and energy efficiency topics. Measures to reduce building energy usage may include, but will not be limited to, package air conditioners or heat pumps, windows, and attic insulation.	marketing material on SCE's LIEE, CARE, and FERA programs. This will be a key component of energy education workshops offered to tenants.
INTEGRATION	**WE&T School Program** SCE's EARTH School Program is an education and information program that effectively integrates energy efficiency, demand response, renewable energy, and water conservation to address the barriers faced by the school's market. Each program component will leverage existing incentives, available through energy efficiency and demand response, to achieve immediate and long-term energy savings and demand reduction in the schools, universities and homes of the students. SCE will mainstream the three education programs (Green Schools, Green Campus and Livingwise) into its 2009-2011 EE program portfolio.	SCE will integrate the EARTH School Program by providing information and marketing material on SCE's LIEE, CARE, and FERA programs as part of the EARTH School Program. The integration will provide information about free services and products for low-income customer homes through another service delivery vehicle: visiting schools and reaching out to homeowners and tenants through their school children.
INTEGRATION	**Mobile Education Unit (MEU)** The MEU is a converted 35-foot Winnebago recreational vehicle equipped with program literature,	SCE will integrate information and marketing material on SCE's LIEE, CARE, and FERA programs into the MEU. Where possible, measures/products installed under the LIEE program will be placed in exhibits and demonstrated to familiarize customers with energy-efficient products. SCE will seek to target MEU availability to all communities in SCE's

SCE's New DSM Integration and Leveraging Strategies

	educational materials and energy efficiency technologies and displays. The second unit ("Tent") is an indoor or outdoor display tent, which features technologies and showcases SCE's energy efficiency rebate and incentive programs.	service territory including economically-disadvantaged communities where the MEU will be used to overcome market barriers related to insufficient information and product knowledge regarding energy-efficient products and technologies.
INTEGRATION	**Community Language Outreach Program (CLEO)** CLEO is a residential energy efficiency marketing, outreach, education and training program specifically targeted to Vietnamese-, Indian-, Chinese- and Korean-speaking customers.	As part of its integration plan, SCE will include information and marketing material on SCE's LIEE, CARE, and FERA programs in the CLEO program. Such integration will increase SCE's ability to outreach to hard-to-reach, low-income customers living in culturally diverse communities where English is a second language, thereby increasing enrollment in SCE's low-income programs.
INTEGRATION	**Energy Leader Partnerships** SCE's ELP programs support local government organizations interested in energy efficiency in response to the CEESP. SCE's ELP portfolio includes city, county, and other local government organizations that have a vision for sustainability and a desire to provide leadership to their communities. Partners will lead by example. They will take action in their own facilities and provide opportunities for constituents to take action in their homes and businesses.	SCE seeks to leverage the unique roles that local governments can play in leading the way to a sustainable future by getting these partners to recognize that cost-effective energy efficiency is the resource of first choice. The ELP supports the policy set forth in D.05-01-055, which notes that "[c]urrent or future partnerships between IOUs and local governments can take advantage of the unique strengths that both parties bring to the table to deliver cost-effective energy efficiency services …" In D.07-10-032, the Commission "emphasized that local government partnerships can play a key role in energy efficiency programs". The Commission has included local governments in the CEESP in recognition of their ability to impact local codes and to implement policies and outreach activities that influence employees and constituents. SCE will take advantage of groundwork laid by energy efficiency programs in introducing energy efficiency into the homes of city, county and local community residents. SCE will integrate information and marketing material on SCE's LIEE, CARE, and FERA programs into its ELP efforts. Working with local communities, information and marketing material on low-income programs will be distributed at ELP events. Local CBOs providing LIEE and CARE/FERA services for SCE will be encouraged to work with ELPs to coordinate outreach events and sign-up eligible customers.
INTEGRATION	**Summer Discount Plan (SDP)** SDP is offered to SCE's residential and commercial customers,	SCE will integrate information and marketing material on SCE's LIEE, CARE, and FERA programs into literature and marketing material provided to SDP participants, with cross-referrals being a goal of this effort.

SCE's New DSM Integration and Leveraging Strategies

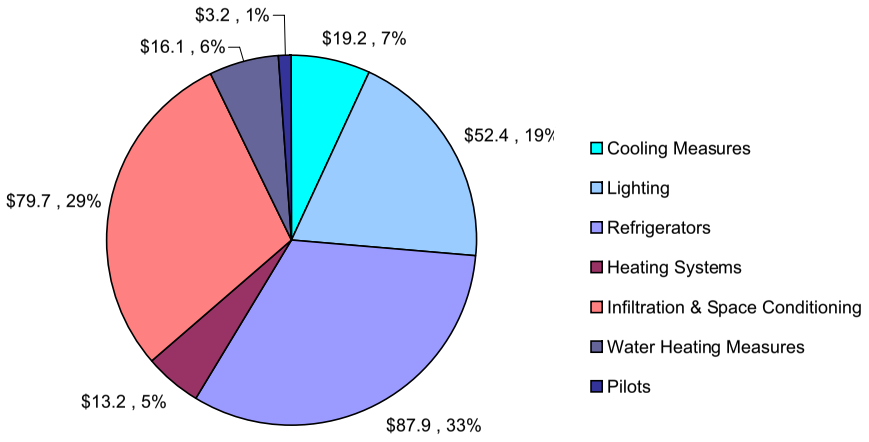
	allowing SCE to periodically turn-off the customer's air-conditioner during periods of peak energy demand in exchange for credits on summer season electric bills.	Additionally, during installation and maintenance of HVAC systems under the EMA program, the contractor will provide customers with information on SDP and will be encouraged to assist customers in completing SDP applications. Contractors involved in SDP will also provide information to potentially eligible customers on all low-income programs.
INTEGRATION	**Advanced Metering Infrastructure** SCE's AMI program offers the opportunity to provide customers with information on their energy use and real-time opportunities to manage their energy consumption.	The CEESP includes near-term actions of identifying and assessing the benefits of Advance Metering Infrastructure (AMI) for low-income customers and enabling the deployment of equipment in low-income households. SCE had considered an LIEE pilot for the purpose of testing in-home display units for low-income customers to display information that would not otherwise be available on the meter itself. However, in alignment with the CEESP, SCE's AMI rollout will include testing of in-home displays for all residential customers. Therefore, in lieu of proposing a separate LIEE pilot, SCE will instead leverage upon this company-wide effort by ensuring that CARE customers are included in the selection of customers for testing in-home displays.
INTEGRATION	**Medical Baseline** Customers who require certain medical equipment for life support or to treat specific illnesses can receive an additional baseline energy allowance (Medical Baseline) to help manage their energy needs. Qualified SCE customers receive an additional 16.5 kWh per day at the lowest baseline rate. The Medical Baseline allocation is provided year-round, and specific renewal conditions apply.	SCE will integrate information and marketing material on SCE's LIEE, CARE, and FERA programs into the Medical Baseline application process. Customers applying for Medical Baseline will be made aware of SCE's EMA, CARE and FERA programs and encouraged to enroll to receive no-cost energy-efficient appliances and rate discounts.
INTEGRATION	**The Energy Assistance Fund (EAF)/Rate Relief Assistance Program** In an effort to provide financial relief to its income-qualified customers, SCE offers assistance through EAF. Income-qualified	As part of its integration plans, SCE will provide information and marketing material regarding SCE's LIEE, CARE, and FERA programs through EAF.

SCE's New DSM Integration and Leveraging Strategies

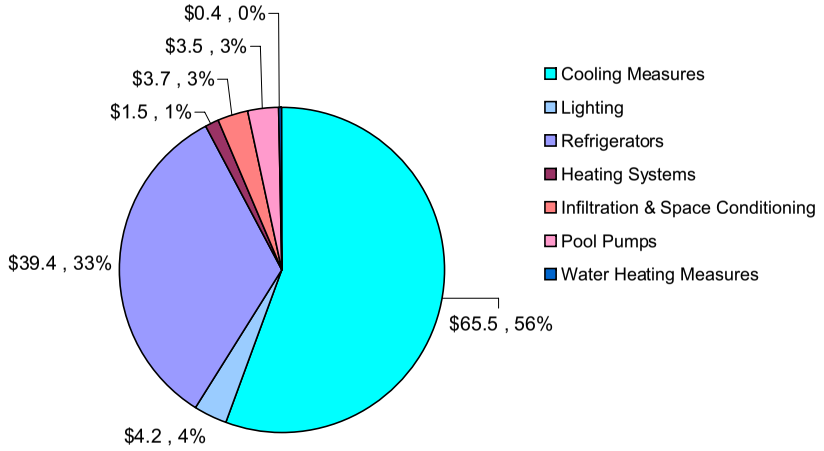
	customers may receive up to a $150 payment toward their SCE energy bill. Payments are available to eligible customers once in a 12-month period.	
LEVERAGING	**California Solar Initiative (CSI)** Low Income customers will be enrolled in the LIEE program before receiving solar incentives.	As part of its leveraging plans, SCE will coordinate Low Income Energy Efficiency (LIEE) program with the Low Income Single Family (LISF) Program Manager to ensure that LISF applicants apply to SCE to obtain an energy efficiency audit, enroll in the LIEE program, and have all feasible measures installed or be on the waiting list to receive such feasible measures prior to receiving solar incentives. In addition, SCE will provide data on Single Family homeowners already enrolled in the LIEE program to the LISF Program Manager in order to identify potential CSI participants who may already be eligible for the LISF program. Once the Commission has issued a final decision on the Low Income Multi-Family (LIMF) Program and program details are established, SCE will be able to determine what resources are required to expedite the installation of measures necessary to meet program mandates.

Attachment C

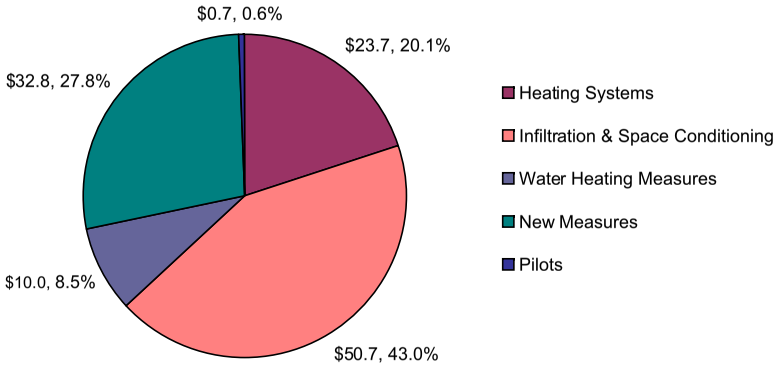
Pacific Gas & Electric 2009-11 LIEE Program
Measure And Installation Costs by Measure Group
(Total = $271.8 million)



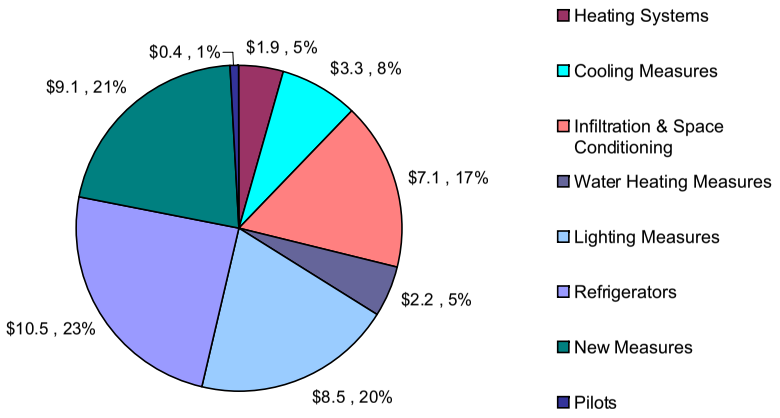
Southern California Edison 2009-11 LIEE Program
Measure And Installation Costs by Measure Group
(Total = $118.1 million)



Southern California Gas 2009-11 LIEE Program
Measure And Installation Costs by Measure Group
(Total = $117.9 million)

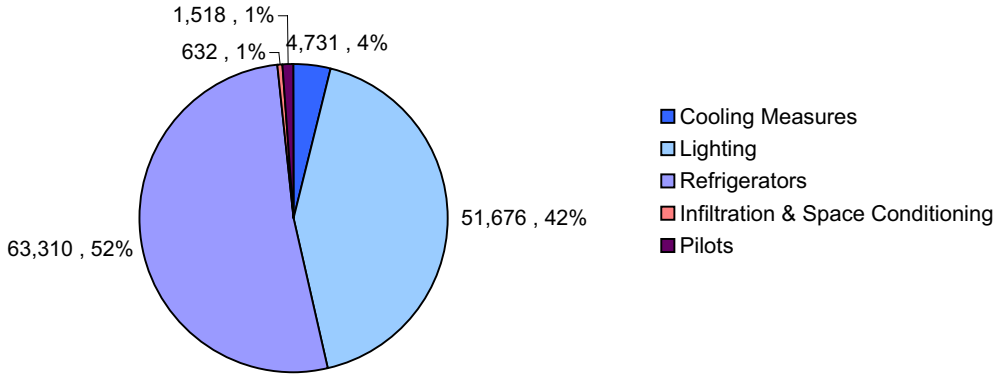


San Diego Gas & Electric 2009-11 LIEE Program
Measure And Installation Costs by Measure Group
(Total = $43.1 million)

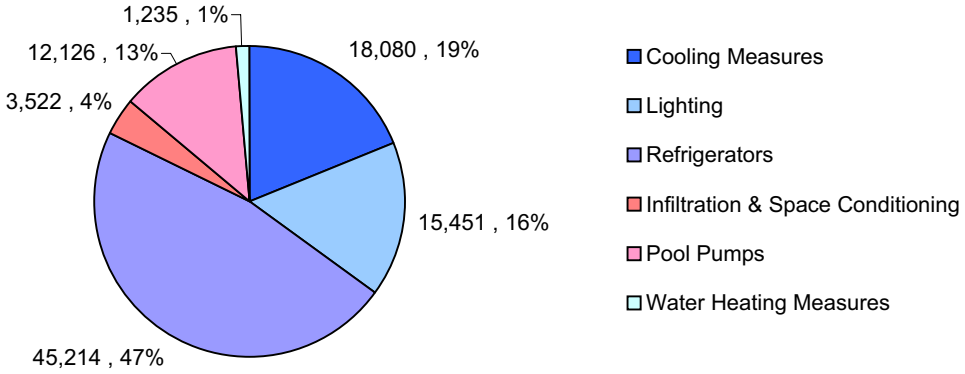


Question 4E (B)

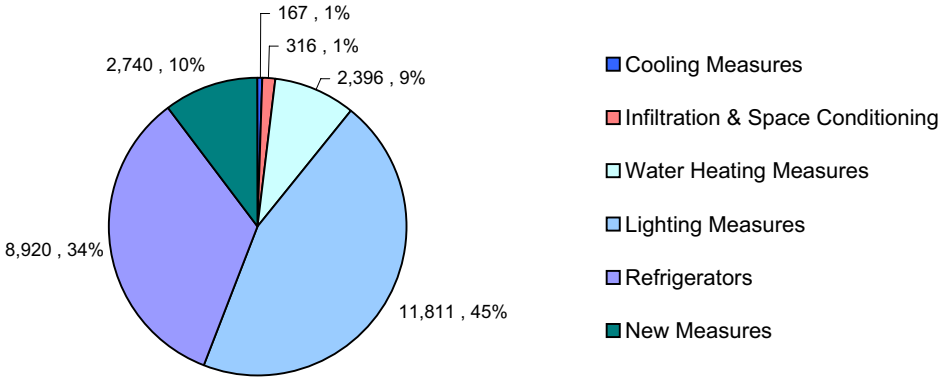
Pacific Gas & Electric 2009-11 LIEE Program
MWh Reduction by Measure Group

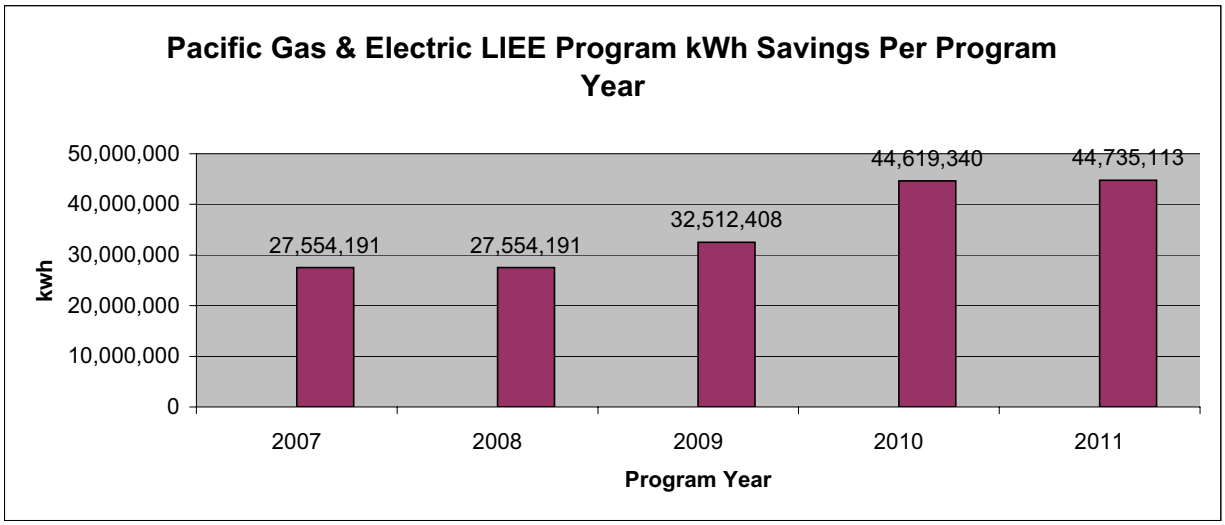


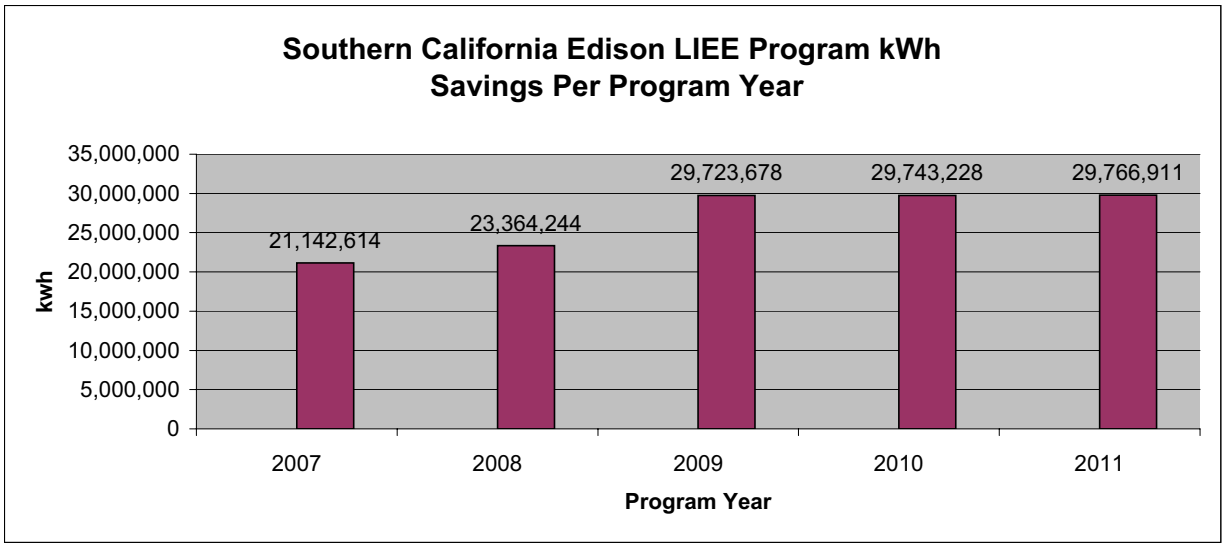
Southern California Edison 2009-11 LIEE Program
MWh Reduction by Measure Group

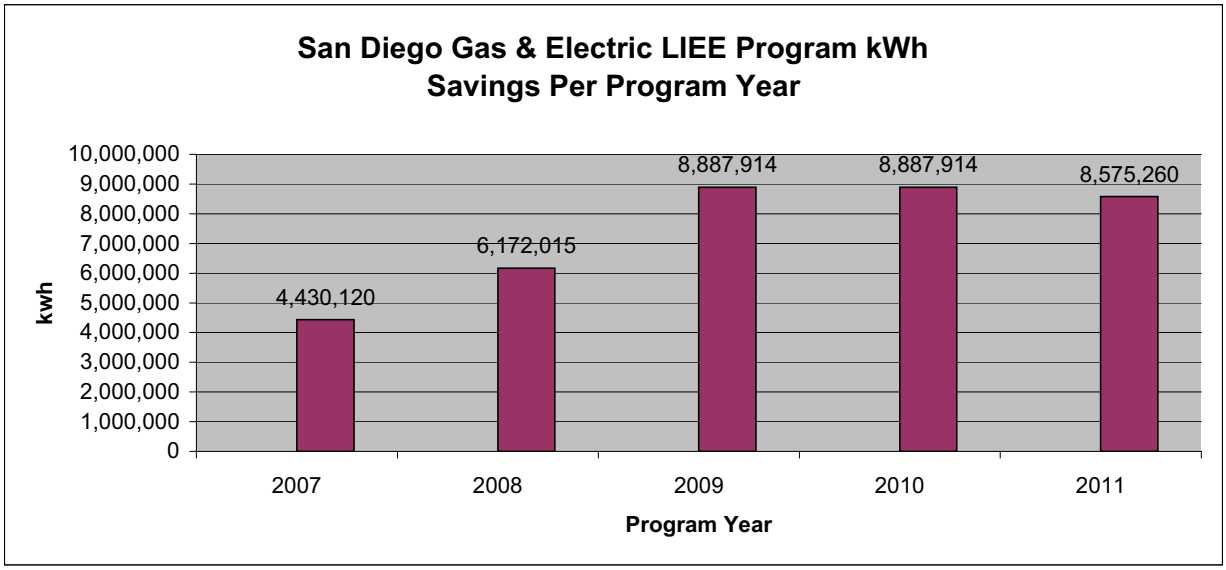


San Diego Gas & Electric 2009-11 LIEE Program
MWh Reduction by Measure Group



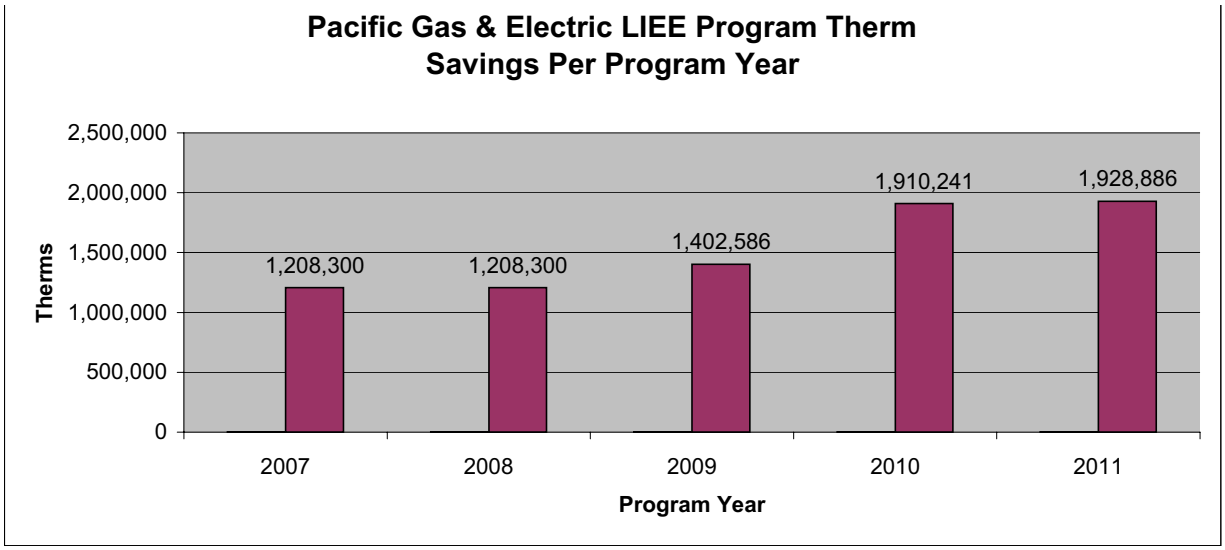


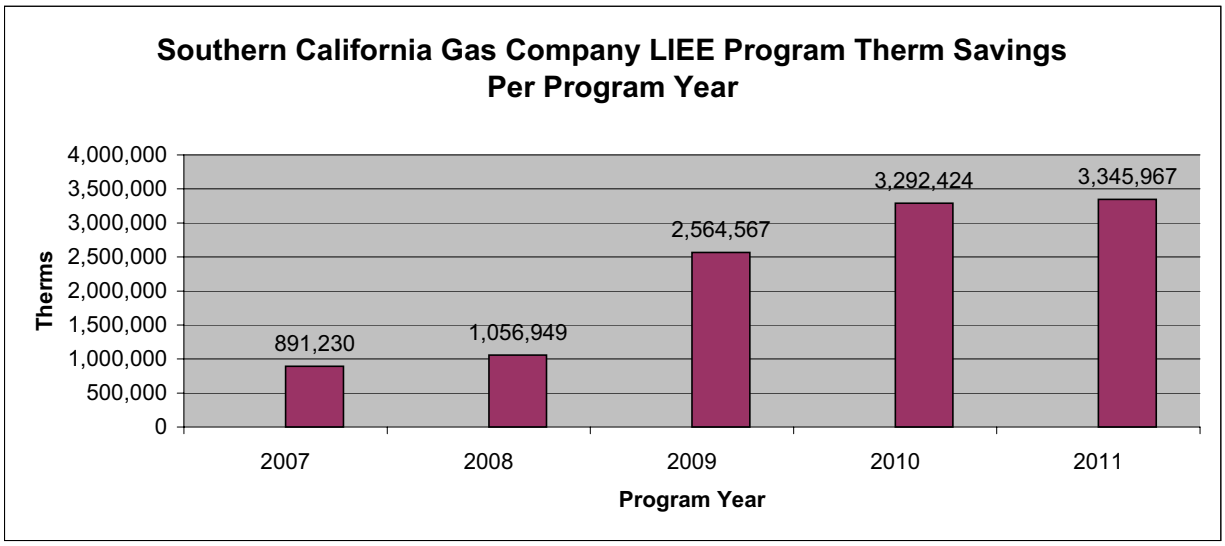


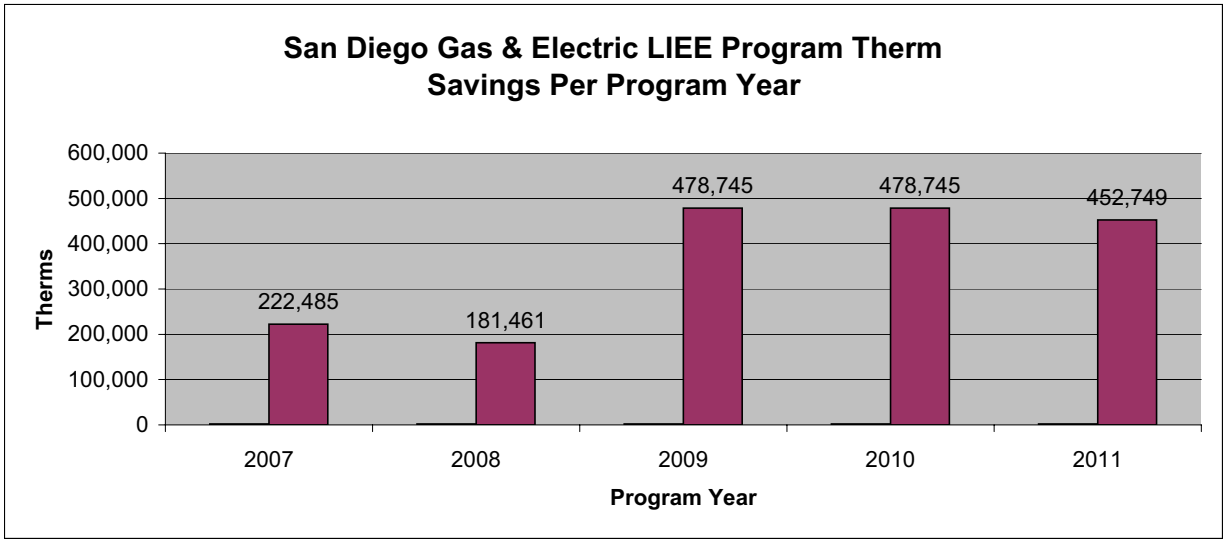


Pacific Gas & Electric LIEE Program Therm

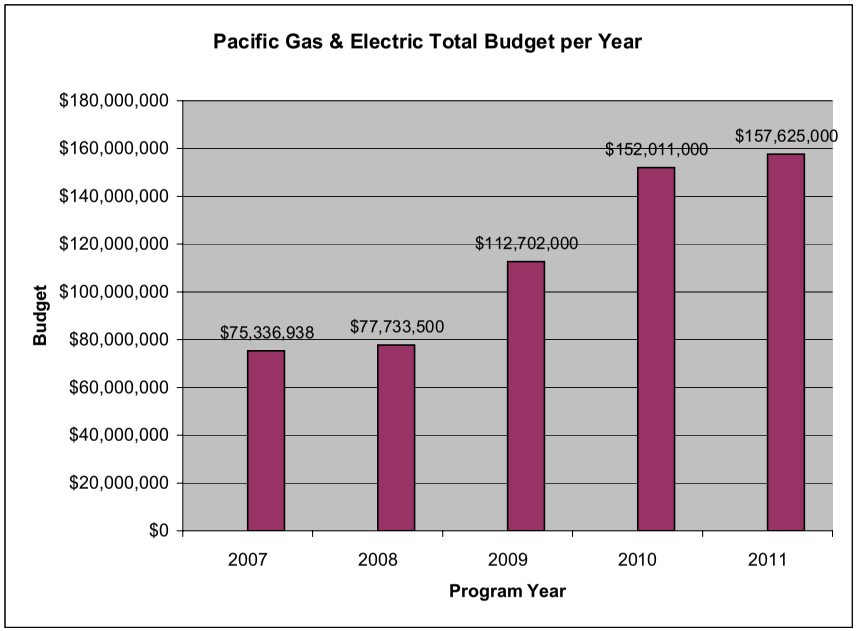
Question 4E (C)







Q-E (D)


Pacific Gas & Electric Total Budget per Year
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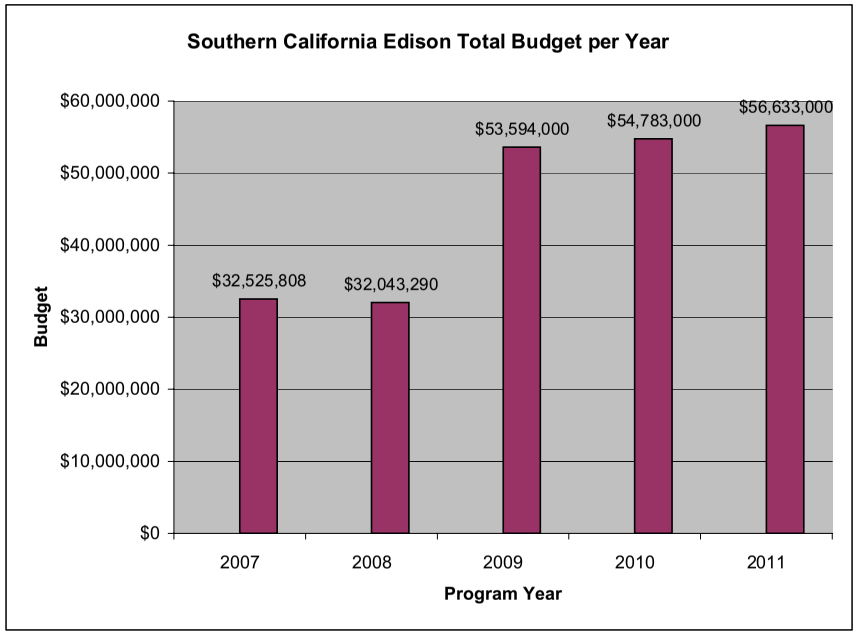
$160,000,000
$140,000,000
$120,000,000
$100,000,000
$80,000,000
$60,000,000
$40,000,000
$20,000,000
$0
Budget
$75,336,938
$77,733,500
$112,702,000
$152,011,000
$157,625,000
2007
2008
2009
2010
2011
Program Year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$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
Budget
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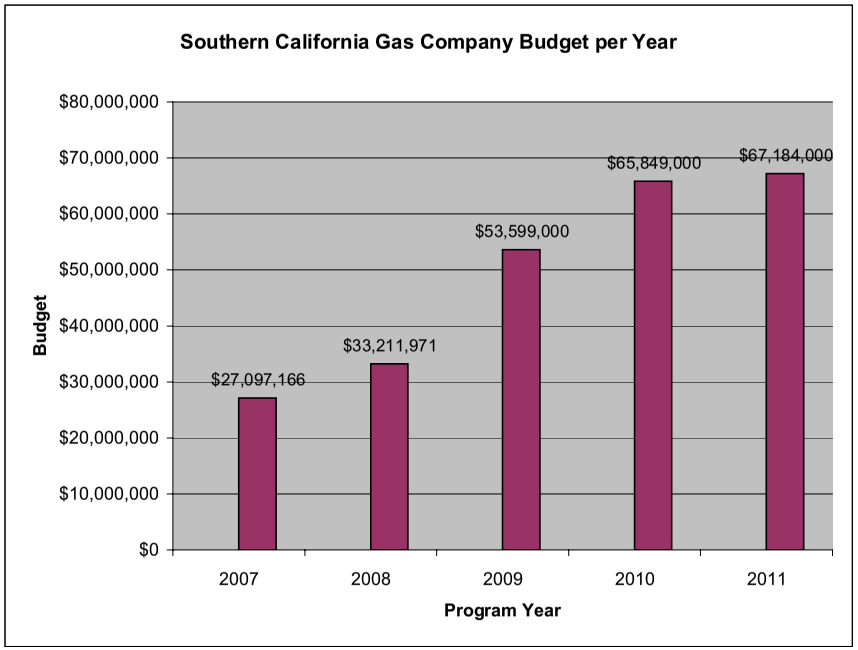
$32,043,290
$53,594,000
$54,783,000
$56,633,000
2007
2008
2009
2010
2011
Program Year


Southern California Gas Company Budget per Year
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$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
Budget
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$53,599,000
$65,849,000
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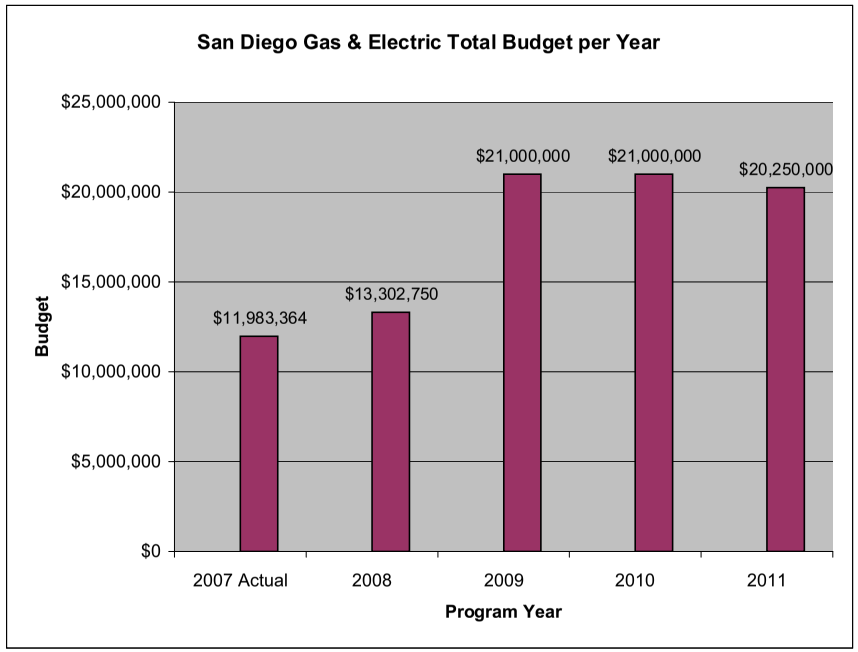
2007
2008
2009
2010
2011
Program Year


San Diego Gas & Electric Total Budget per Year
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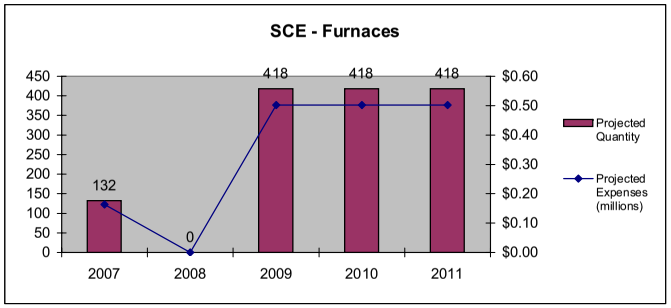
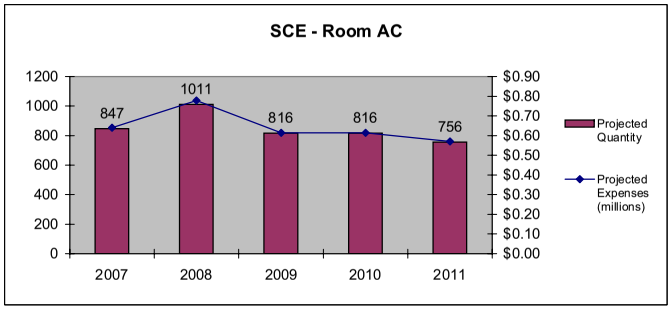
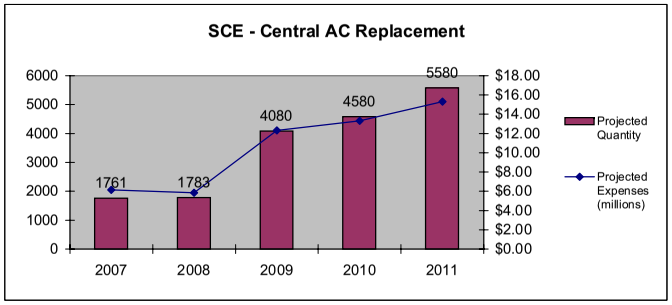
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$0
Budget
$11,983,364
$13,302,750
$21,000,000
$21,000,000
$20,250,000
2007 Actual
2008
2009
2010
2011
Program Year

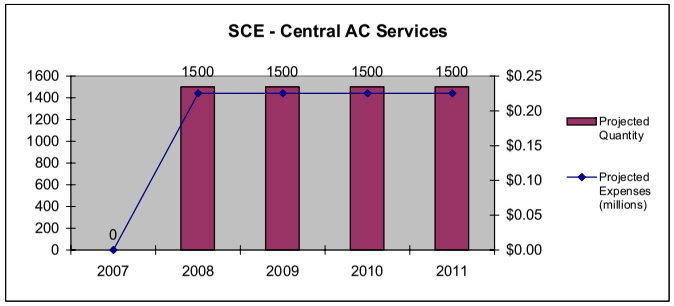
Furnaces	Qty Units	Expenses	in millions
2007	132	$163,007	$0.16
2008	0	$0	$0.00
2009	418	$501,565	$0.50
2010	418	$501,565	$0.50
2011	418	$501,565	$0.50
			$0.00
A/C Replacement - Room			$0.00
2007	847	$639,604	$0.64
2008	1011	$778,052	$0.78
2009	816	$614,645	$0.61
2010	816	$614,645	$0.61
2011	756	$569,451	$0.57
			$0.00
			$0.00
			$0.00
A/C Replacement - Central			$0.00
2007	1761	$6,153,511	$6.15
2008	1783	$5,832,692	$5.83
2009	4080	$12,315,179	$12.32
2010	4580	$13,315,179	$13.32
2011	5580	$15,314,262	$15.31
			$0.00
			$0.00
A/C Services - Central			$0.00
2007	0	$0	$0.00
2008	1500	$225,000	$0.23
2009	1500	$225,000	$0.23
2010	1500	$225,000	$0.23
2011	1500	$225,000	$0.23
			$0.00
			$0.00
			$0.00
Heat Pump			$0.00
2007	120	$457,456	$0.46
2008	192	$433,810	$0.43
2009	100	$301,843	$0.30
2010	100	$301,843	$0.30
2011	100	$301,843	$0.30
			$0.00
Evaporative Coolers			$0.00
2007	6286	$5,443,412	$5.44
2008	6710	$5,901,702	$5.90
2009	7982	$6,863,434	$6.86
2010	7982	$6,863,434	$6.86
2011	7930	$6,818,721	$6.82
			$0.00
			$0.00
			$0.00
Evaporative Cooler Maintenance			$0.00
2007	0	$0	$0.00
2008	4000	$300,000	$0.30
2009	2000	$150,000	$0.15
2010	2000	$150,000	$0.15
2011	2000	$150,000	$0.15
			$0.00
Envelope and Air Sealing Measures			$0.00
2007	N/A[1]	N/A[1]	#VALUE!
2008	1336	N/A[1]	#VALUE!
2009	1377	$481,950	$0.48
2010	1377	$481,950	$0.48
2011	1377	$481,950	$0.48

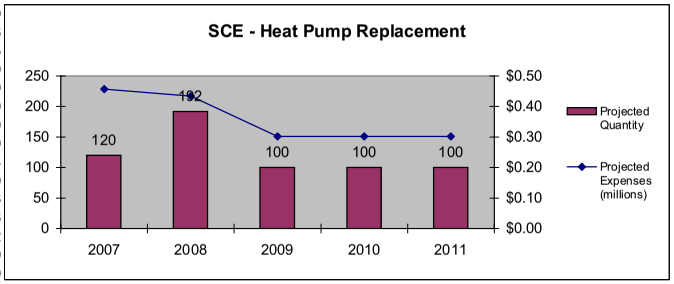
1) Not tracked at this level in this year.

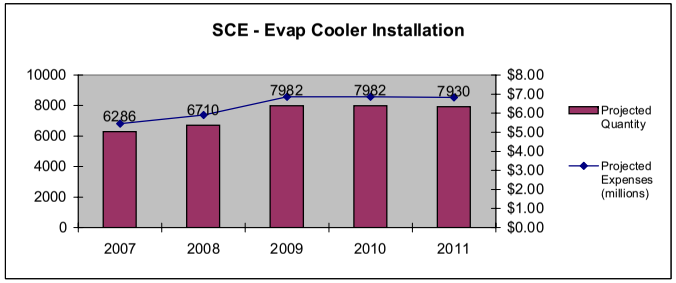


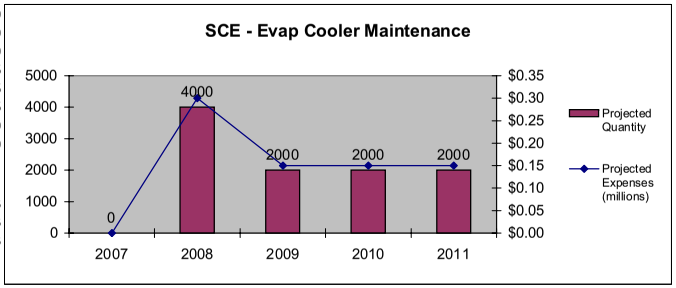


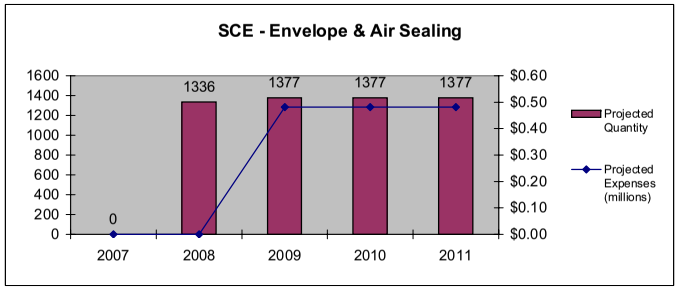




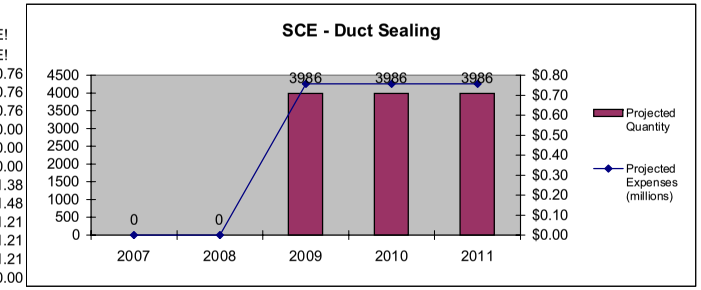


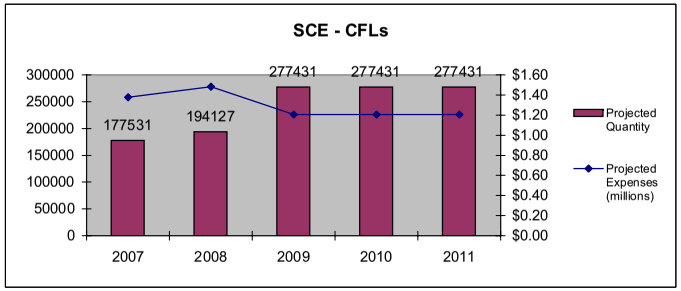


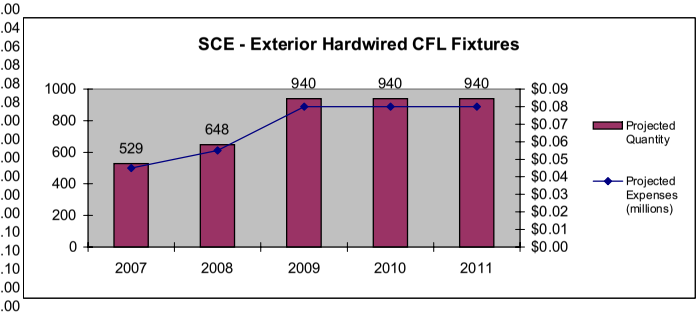


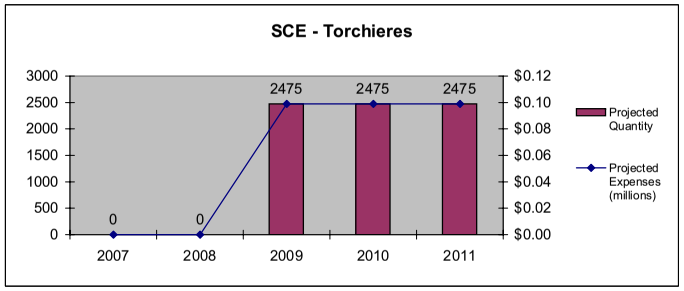


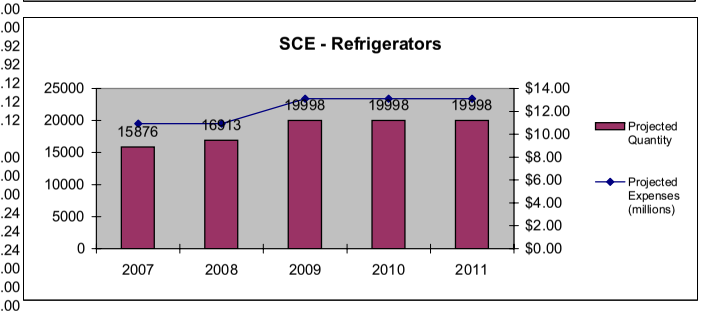
Duct Sealing			
2007	N/A[1]	N/A[1]	#VALUE!
2008	N/A[1]	N/A[1]	#VALUE!
2009	3986	$757,340	$0.76
2010	3986	$757,340	$0.76
2011	3986	$757,340	$0.76
			$0.00
			$0.00
CFLs			$0.00
2007	177531	$1,375,807	$1.38
2008	194127	$1,482,642	$1.48
2009	277431	$1,206,825	$1.21
2010	277431	$1,206,825	$1.21
2011	277431	$1,206,825	$1.21
			$0.00
Exterior Hard wired CFL fixtures			$0.00
2007	529	$44,965	$0.04
2008	648	$55,111	$0.06
2009	940	$79,900	$0.08
2010	940	$79,900	$0.08
2011	940	$79,900	$0.08
			$0.00
			$0.00
Torchiere			$0.00
2007	0	$0	$0.00
2008	0	$0	$0.00
2009	2475	$99,000	$0.10
2010	2475	$99,000	$0.10
2011	2475	$99,000	$0.10
			$0.00
			$0.00
Refrigerators			$0.00
2007	15876	$10,921,684	$10.92
2008	16913	$10,919,558	$10.92
2009	19998	$13,118,032	$13.12
2010	19998	$13,118,032	$13.12
2011	19998	$13,118,032	$13.12
(Includes Primary and Secondary from below)			
Refrigerators -Primary			$0.00
2007			$0.00
2008			$0.00
2009	17141	$11,244,027	$11.24
2010	17141	$11,244,027	$11.24
2011	17141	$11,244,027	$11.24
Refrigerators - secondary			$0.00
2007			$0.00
2008			$0.00
2009	2857	$1,874,005	$1.87
2010	2857	$1,874,005	$1.87
2011	2857	$1,874,005	$1.87
			$0.00
			$0.00
Pool Pumps			$0.00
2007	0	$0	$0.00
2008	213	$170,623	$0.17
2009	1237	$1,162,780	$1.16
2010	1237	$1,162,780	$1.16
2011	1237	$1,162,780	$1.16

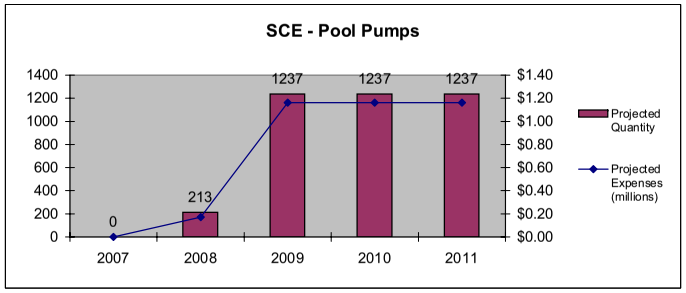












Attachment D

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Southern California Edison Company's Application For Approval of Embedded Energy Efficiency Pilot Programs for 2007-2008.	)))	A._____ (Filed January 16, 2007)

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) APPLICATION FOR APPROVAL OF EMBEDDED ENERGY EFFICIENCY WATER PILOT PROGRAMS FOR 2007-2008

MICHAEL D. MONTOYA
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OLIVIA SAMAD

Attorneys for
SOUTHERN CALIFORNIA EDISON COMPANY

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E-mail: larry.cope@sce.com

Dated: **January 16, 2007**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Southern California Edison Company's Application For Approval of Embedded Energy Efficiency Pilot Programs for 2007-2008.	)))	A._____ (Filed January 16, 2007)

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) APPLICATION FOR APPROVAL OF EMBEDDED ENERGY EFFICIENCY WATER PILOT PROGRAMS FOR 2007-2008

I.

OVERVIEW OF SCE'S WATER ENERGY EFFICIENCY PILOT PROGRAM PROPOSALS FOR 2007

In accordance with the Commission's directives as set forth in the Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency dated October 16, 2006 in R.06-04-010 (ACR), Southern California Edison Company (SCE) hereby files this application requesting approval of its Proposed 2007 Pilot Partnership Program (Pilot) to determine embedded energy savings. The Pilot consists of five component program strategies.

The concurrently-submitted supporting testimony set forth in what has been preliminarily marked for identification as Exhibit SCE-1, discusses SCE's proposed partnership with the Metropolitan Water District of Southern California (MWD), its member agencies and the Lake Arrowhead Community Services District (LACSD), as well as details concerning the partners and SCE's proposed Pilot for implementation in July of 2007. The testimony describes the water

pilot program, the proposed funding, the program preparation and implementation, and the proposed Evaluation, Measurement, and Verification (EM&V) methodologies.

In D.06-12-038, the Commission directed the utilities "to incorporate water savings measures that could enhance the overall cost-effectiveness of the energy conservation programs while providing additional benefits to low-income customers."[1] As part of this Application, SCE also proposes to implement two energy efficiency water conservation program strategies within its Pilot program that will benefit low-income customers. The first strategy targets high efficiency toilets (HETs) for customers in single and multi-family dwelling units in low-income neighborhoods, and the second strategy targets HETs in schools with dense low-income populations.

The supporting testimony also describes SCE's proposed funding approach for the pilot program.

II.

ORGANIZATION OF SCE'S TESTIMONY

The testimony submitted in support of the 2007 Water Energy Efficiency Pilot Program Application, which has preliminarily been marked for identification as Exhibit SCE-1, comprises five sections.

Section I is an overview and simply discusses the context for this filing, along with a short summary of SCE's requests and a brief description of SCE's proposed partners. Gene Rodrigues is SCE's witness for this section.

Section II provides an overview discussion of water conservation and embedded energy savings, SCE's Proposed Pilot Program goals and objectives, partnering, low-income pilots and a brief explanation why any energy savings or demand reduction should count towards the

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[1] Decision 06-12-038, *Order Adopting Utility Budgets For Low-Income Energy Efficiency Programs And California Alternate Rate For Energy,* pp. 16-17. ("This order directs all four applicant utilities each to file a specific program proposal for water conservation efforts. Each proposal shall identify specific ways to implement such energy efficiency water conservation programs for low-income customers, whether and how they might dovetail with other non-LIEE programs, which agencies they will work with, and a budget. . . .")

Commission's aggressive ten-year energy efficiency goals set for SCE. This Section is supported by SCE witness Gene Rodrigues.

In Section III, SCE provides the details and estimated costs for the proposed Pilot program and five component strategies. SCE's witnesses supporting the testimony in Section III are David Bruder and John Nall.

In Section IV, SCE provides a discussion of its proposal for demonstrating savings potential and costs and also for evaluating the Pilot program and measuring the savings. SCE's witness for this section is Marian Brown.

In Section V, SCE provides details concerning SCE's proposed funding levels and flexibility for the Water Pilot. SCE also explains its method for funding the 2007 Water Energy Efficiency Pilot Program. SCE's witness for this section is Thomas Calabro.

III.

SUMMARY OF SCE'S REQUESTS

In this Application, SCE requests Commission approval of SCE's Partnership with MWD (its member agencies) and LACSD and our proposed Pilot program designed to encourage water conservation and to measure the embedded energy efficiency. Also, SCE requests that the energy savings and demand reduction resulting from the Water Energy Efficiency Pilot Program count toward the Commission's aggressive ten-year energy efficiency goals for SCE's service territory.

First, SCE seeks approval of its proposed Pilot program and five component strategies and the proposed budget. SCE has proposed five program strategies within its Pilot program to further the Commission's goals. Adoption of SCE's proposed Pilot will further the Commission's objective of ensuring the implementation and support of appropriate water and energy efficient programs and encouraging the strategic integration of water and energy conservation and efficiency efforts.

Second, SCE is proposing a methodology for evaluating, measuring and verifying the actual energy savings derived through the implementation of each of the proposed program strategies. SCE urges the Commission to adopt SCE's EM&V proposals.

Third, in this Application, SCE seeks authorization to use unspent, uncommitted energy efficiency funding from previous program cycles to fund SCE's proposed $3.4 million budget. The $3.4 million budget is not currently addressed in the 2006-2008 Energy Efficiency Decision. Moreover, the adoption of the proposed water efficiency Pilot will increase the energy efficiency total costs, even if only slightly, but by using unspent energy efficiency funds from the previous program cycle, there will be no rate impact on SCE's customers.

In summary, SCE has presented detailed descriptions of its proposed 2007 water efficiency Pilot and expenditures that SCE submits are reasonable. As such, SCE respectfully requests approval of its proposed plan and budget.

IV.

SCE'S WATER EFFICIENCY PILOT PROGRAM

SCE's proposed Pilot is an integrated suite of five coordinated program strategies. It will promote indirect energy savings through water conservation and educational outreach. The Pilot reflects extensive partnering with local and regional water agencies and will use multiple delivery channels to reach varied customer segments, including low-income customers.

A. Water Pilot Partnership Proposal

SCE proposes to partner with both MWD and LACSD to offer five creative program strategies in an innovative one-year jointly-funded Pilot program. SCE's proposal relies on a combination of proven technologies and creative applications.

1. Low-Income Direct Install High Efficiency Toilets Program

SCE will partner with MWD to deliver the direct installation of High Efficiency Toilets (HETs) for single- and multi-family households, in low-income areas within mutual MWD and SCE territories. SCE will identify potential low-income customers and other multi-

family opportunities. SCE will also work closely with MWD member water agencies to identify and reach target customers. SCE will rely on a network of contractors to install HETs.

2. Industrial Process Water Efficiency Program

SCE will also partner with the Municipal Water District of Orange County (MWDOC), a member agency of MWD, to deliver audits and recommendations for industrial processes to conserve water. MWDOC has a program that targets textiles, food processing, metal plating, and electronics.

SCE's proposed pilot will expand MWDOC's program. SCE will provide funding to deliver audits and recommendations while MWD and MWDOC will fund all incentives.

3. Express Water Efficiency Program

SCE will partner with the MWD to deliver advanced PH controllers to commercial customers with HVAC and/or large irrigation systems. SCE will incorporate these measures into the existing Express Efficiency non-residential retrofit rebate program. This will provide delivery avenues to customers previously unavailable to MWD. MWD was unable to provide technical assistance or design recommendations to customers. SCE will provide outreach education, marketing and administration necessary to leverage the existing Express Efficiency program to deliver water conservation measures.

4. Lake Arrowhead Water Conservation Program

SCE will partner with the Lake Arrowhead Community Services District (LACSD) to deliver indoor water-conserving devices to year-round residents and outdoor retrofits to the largest residential water consumers. SCE will co-fund LACSD's proposed program to expand the number of homes that can be served. LACSD will identify candidates and coordinate delivery while SCE will supplement LACSD's contribution to purchase of the devices.

5. Green Schools/Green Campus With Water Efficiency

SCE will partner with MWD to deliver water conservation education for K-12 and college students. The partners will also install HETs in schools located in mutual SCE and MWD service territories; especially targeting low-income areas. SCE's existing Integrated School-Based Program will be expanded to incorporate the Green Schools and Green Campus energy efficiency programs with this pilot program for water conservation. MWD will provide a contribution of $165 per HET to offset cost of the direct install in school facilities.

B. Demonstrating Pilot Savings Potential And Expected Costs

The ACR directed SCE, and other IOUs, to implement a pilot program designed to maximize embedded energy savings per dollar of program cost. SCE presents embedded energy savings assumptions for each proposed strategy within the pilot. SCE believes this is reasonable for an initial pilot and adequately demonstrates to the Commission an expected level of embedded energy savings from the proposed pilot.

V.

EVALUATING WATER PILOT PARTNERSHIP

SCE will coordinate with the other IOUs and the Advisory Panel in identifying issues to properly and accurately measure and evaluate the embedded energy efficiency savings derived from the IOUs proposed water conservation pilot programs. SCE's proposal would address data collection, analysis, and development of measurement and valuation protocols to guide the future EM&V work.

VI.

APPROVAL OF SCE'S PROPOSED PILOT PROGRAM COSTS AND FUNDING PROPOSAL

The ACR dated October 16, 2006, recommends the total cost for all of the IOUs pilots be limited to $10 million. SCE has developed its pilot program with this budget recommendation.

SCE has also proposed more specific budgets for the various parts of its pilot proposal. Additionally, SCE has proposed funding the water pilot program from uncommitted funds from prior program periods.

A. Proposed Funding Levels And Flexibility For Water Pilot Partnership

SCE, in close collaboration with its proposed water partner providers, has identified both and overall budget as well as individual program strategy budgets for the one-year pilot. SCE proposes an overall pilot funding amount not to exceed $3.427 million. The initial estimates of funding, participation and energy savings for each program strategy within the pilot are detailed in the Testimony and Appendices.

However, SCE foresees these initial program strategy budgets may need to be adjusted during program implementation in order to reach to changes in the forecasted participation levels in the strategies or other unforeseen events (e.g., partner withdrawal, increases to EM&V budget, Commission policy changes, etc.). Thus, SCE would like the authority to shift funds between pilot programs as the need arises. Finally, SCE is seeking clarification that it can enter into agreements during the one-year implementation period and honor those agreements, with pilot funds, after the one-year implementation period has concluded, if necessary.

B. SCE's Proposed Water Pilot Funding Proposal

The ACR determined that the total cost for these pilot programs would be $10 million, and that the funding would be separate and apart from the funding established for the 2006-2008 energy efficiency programs. As discussed in the supporting testimony, the IOUs met and prorated the $10 million among SCE, PG&E, SoCalGas and SDG&E based on 2006-08 Energy Efficiency Budgets. As a result of this proration, SCE was allocated $3.4 million for its pilot programs. SCE requests the Commission approve the $3.4 million budget for SCE's water efficiency Pilot.

SCE identified $23.37 million in Public Goods Charge, Pre-1998 DSM and Procurement Energy Efficiency funds collected by SCE for Commission-authorized energy efficiency (EE)

activities in prior program cycles that, as of December 31, 2005, remained unspent and uncommitted. The amount includes interest accrued as of December 31, 2005 in SCE's Procurement Energy Efficiency Balancing Account, the Public Goods Charge Balancing Account and the Pre-1998 DSM Balancing Account. SCE has proposed to use a portion of the unspent funds for its proposed Palm Desert Project, however, there will be sufficient unspent funds remaining to effectively fund SCE's proposed Water Pilot Program.

SCE proposes to use this unspent/uncommitted energy efficiency funding to fund the proposed 2007 Water Pilot Program. Specifically, in this Application, SCE proposes to fund the Pilot at a total budget of $3.4 million. A detailed discussion of the proposal is set forth below and in the accompanying testimony.

SCE seeks approval to supplement program expenditures funded through SCE's currently-authorized 2006-08 programs by up to an additional $3.4 million for its Water Pilot Program for 2007. These funds have previously been approved by the Commission for energy efficiency programs and collected from SCE's ratepayers such that, as of December 31, 2005, sufficient funds remain unspent and uncommitted. This funding is sufficient to cover SCE's proposed pilot program implementation costs for 2007. SCE requests authority to record up to $3.4 million in pilot program project expenditures for 2007 in SCE's PEEBA to pay for the pilot program costs.

VII.

STATUTORY AND PROCEDURAL REQUIREMENTS

A. Statutory And Procedural Requirements

This Application is made pursuant to the Commission's Order Instituting Rulemaking to Examine the Commission's Future Energy Efficiency Policies, Administration, and Programs in R.06-04-010, the Commission's Rules of Practice and Procedure and the California Public Utilities Code. SCE's authority for this request includes, but is not limited to, Sections 382, 399.2, 399.9, 451, 491, 701, 702, 739.1, 739.2, and 739.4 of the California Public Utilities Code,

and prior decisions, orders and resolutions of this Commission. SCE's request complies with Rules 2 and 3.2 of the Commission's Rules of Practice and Procedure, which specify the procedures for the filing of applications.[2]

B. SB 960 Requirements – Rule 2.1(c)

Rule 2.1(c) requires that applications "shall state in the application the proposed category for the proceeding, the need for hearing, the issues to be considered, and a proposed schedule." These requirements are discussed below.

C. Proposed Categorization

SCE proposes to characterize this proceeding as "ratesetting" as defined in Rules 1.3(a), (d), (e) and 7.1.

D. Need For Hearings/Schedule For Resolution Of Issues

SCE believes that its proposals submitted herein and set forth in the supporting testimony constitute a sufficient record for the Commission to rule on pilot program plans and budgets without the need for evidentiary hearings. SCE also believes that all interested parties can comment and express their views through written protests and comments.

If workshops and/or hearings are deemed necessary, however, SCE requests that such proceedings be expedited and the schedule be designed and maintained so that a final decision will be rendered by June of 2007 to avoid any substantial delays in program rollout. Implementing the pilot program as soon as possible will substantially benefit all parties during the utility workshops required by the ACR.

SCE proposes the following schedule:

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[2] As instructed in the Commission's *Order Instituting Rulemaking* dated October 16, 2006, SCE is serving this application on the service list established for R.06-04-010.

Utilities file Applications	January 16, 2007
Interested Parties file Comments or Protests	February 5, 2007
Utilities file Reply Comments	February 20, 2007
Workshop	February 26, 2007
Prehearing Conference (if necessary)	March 5, 2007
Hearings or Workshops (if necessary)	March/April 2007
Commission issues Proposed Decision	May 1, 2007
Commission issues Final Decision	June 1, 2007

E. Issues To Be Considered

The Commission must consider whether to approve SCE's partnership with MWD and LACSD, our jointly co-funded water and embedded energy efficiency pilot program plans, budgets, and our proposed funding sources and approach for the pilot.

F. Legal Name And Correspondence – Rules 2.1(a)

Southern California Edison Company is an electric public utility organized and existing under the laws of the State of California. The location of SCE's principal place of business is 2244 Walnut Grove Avenue, Post Office Box 800, Rosemead, California 91770. SCE's attorneys in this matter are R. Olivia Samad and Larry Cope. Correspondence or communications regarding this application should be addressed to:

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G. Articles Of Incorporation – Rule 2.2

A copy of SCE's Certificate of Restated Articles of Incorporation, effective on March 2, 2006, and as presently in effect, certified by the California Secretary of State, was filed with the Commission on March 14, 2006, in connection with Application No. 06-03-020[3] and is incorporated herein by reference pursuant to Rule 2.2 of the Commission's Rules of Practice and Procedure.

VIII.

CONCLUSION

SCE respectfully requests that the Commission:

1. Approve SCE's proposed Embedded Energy Efficiency Pilot Program for 2007-2008;

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[3] A.06-03-020 was filed on March 14, 2006, regarding approval of early transfer of Anaheim's share of SONGS 2&3 to SCE.

2. Approve SCE's proposed funding mechanisms and budgets for the proposed Embedded Energy Efficiency Pilot Program;

3. Approve SCE's proposal for evaluating and measuring the Pilot Program; and

4. Approve SCE's request that any energy savings achieved should be counted toward the Commission's current adopted energy efficiency goals.

5. Grant such other further or different relief as the Commission finds just and reasonable.

Dated this 15th day of January, 2007, at Rosemead, California.

Respectfully submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

/s/ LYNDA ZIEGLER

By: Lynda Ziegler
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January 15, 2007

VERIFICATION

I am an officer of the applicant corporation herein, and am authorized to make this verification on its behalf. I am informed and believe that the matters stated in the foregoing document are true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this **15th day of January, 2007**, at Rosemead, California.

/s/ LYNDA ZIEGLER

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Commission's Rules of Practice and Procedure, I have this day served a true copy of SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) APPLICATION FOR APPROVAL OF EMBEDDED ENERGY EFFICIENCY WATER PILOT PROGRAMS FOR 2007-2008 on all parties identified on the attached service list(s). Service was effected by one or more means indicated below:

Transmitting the copies via e-mail to all parties who have provided an e-mail address. First class mail will be used if electronic service cannot be effectuated.

Executed this **16th day of January, 2007**, at Rosemead, California.

/s/ JENNIFER ALDERETE _____

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Exhibit No.: SCE-1

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SOUTHERN CALIFORNIA
EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Programs for 2007-2008

Before the

Public Utilities Commission of the State of California

Rosemead, California

January 16, 2006

LAW-#1326083

Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Programs for 2007-2008

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I.

OVERVIEW OF SCE'S WATER ENERGY EFFICIENCY PILOT PROGRAM PROPOSALS FOR 2007-2008

Pursuant to the Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency dated October 16, 2006 in Rulemaking 06-04-010 (ACR), Southern California Edison Company (SCE) requests the California Public Utilities Commission's (Commission) approval to: (1) jointly implement SCE's proposed co-funded 2007-2008 water efficiency pilot to determine embedded electric energy savings; and (2) fund the pilot using $3.427 million of previously recognized uncommitted funds from pre-2006 energy efficiency programs.

This Testimony describes SCE's partnerships with the Metropolitan Water District of Southern California and its member agencies and the Lake Arrowhead Community Services District. The Testimony describes SCE's proposed one-year water efficiency pilot, the proposed funding, the pilot preparation and implementation in July of 2007, and the proposed Evaluation, Measurement, and Verification (EM&V) methodologies.

II.

INTRODUCTION

SCE proposes a creative one-year pilot to implement a jointly-funded water efficiency pilot with local water providers designed to maximize water-related embedded (or indirect) electric energy savings per dollar of program costs. The pilot relies on an innovative combination of proven technologies and applications directed at a broad range of customer segments and delivery channels, including a focus on the low income customer segment. It uses five program strategies jointly-funded by local water partners as summarized in Section III of this Testimony and detailed in the proposed implementation plan presented in Attachment A.

To prepare this proposal, SCE closely collaborated with the Metropolitan Water District of Southern California (MWD), its member agencies and the Lake Arrowhead Community Services District (LACSD) to develop program approaches that rely upon proven water

conservation measures to capture embedded (indirect) electric energy savings. SCE proposes to use this pilot to incorporate additional water efficiency into the SCE 2007-2008 low-income energy efficiency program. SCE will leverage its existing local government relationships, such as SCE's South Bay and Ventura partnerships, to demonstrate effective government outreach to communities, including low income residents. Additionally, SCE will implement program strategies in the nonresidential sector focused on reducing electric demand during peak periods. SCE will also leverage the existing Flex Your Power campaign to introduce statewide promotion of water efficiency and conservation.

In addition, SCE coordinated with Pacific Gas and Electric (PG&E) and the Sempra Utilities[1] to limit the amount of program duplication among the investor-owned utilities (IOUs) water efficiency pilot proposals. The IOUs also agreed to a $10 million statewide pilot budget suggested by the ACR[2] and the allocation of the proposed statewide budget among the IOUs as described more detail in Section V of this Testimony.

A. Water Conservation And Electric Embedded Energy Savings Overview

California consumes an estimated 250 billion kilowatt-hours (kWh) of energy annually. Water usage can be up to 50 billion kWh of the state's annual electric energy consumption or about 20%. Water-related energy use typically falls into three different use categories:

- Customer End-uses – heating, cooling, on-site pumping
- Upstream uses – surface conveyance, groundwater pumping, treatment, distribution
- Downstream uses – waste water pumping and treatment

Upstream and downstream water-related energy use (energy consumed up- and downstream of the customer) in California is about 12.5 billion kWh annually. In Southern

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[1] Sempra Utilities is the parent corporation for San Diego Gas and Electric and Southern California Gas Company.

[2] Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency dated October 16, 2006, Ordering Paragraph No. 3, p. 3.

California, the majority of the up- and downstream energy consumption is due to water conveyance from the Northern California Sierras or out of state. The aqueducts and pumping systems used to deliver water to Southern California are energy intensive and largely sourced outside of SCE's service territory.

As for water-related savings, electric energy savings can be categorized into direct or indirect savings. Direct energy savings are those savings that appear on the customer's energy meter. Conversely, indirect energy savings are those savings that do not appear on the customer's energy meter. These indirect savings occur upstream and downstream of the customer's energy meter. If the customer (i.e., end-user) conserves water, then the electric energy embedded in the upstream and downstream stages can be reduced or saved. In sum, direct water savings by the end-use customer equals indirect (or embedded) energy savings.

Energy efficiency programs traditionally have only pursued and claimed direct energy savings. To date, opportunities to indirectly save energy by directly reducing water consumption have not generally been pursued for various reasons. The reasons include unknown energy savings potential, regulatory constraints, and the unknown amount of embedded energy savings in the water supply chain both in and outside energy utilities' service territories.

B. Pilot Goals And Objectives

The overall goal of the pilot is to identify a reasonable basis by which SCE can capture embedded (or indirect) electric energy savings associated with water conservation applications in time to inform the 2009-11 energy efficiency program planning cycle. In order to achieve this overall goal, there are several desired outcomes of the pilot including:

- Affirmation of a proof-of-concept that saving water saves electric energy;
- Collaboration among energy utilities and water provider partners demonstrating an increase in water conservation;
- Additional public awareness of the water conservation and energy savings connection;
- Identification of geographically specific kilowatt-hour savings per million gallon estimates;

- Greater understanding of the impact on electric peak demand by reducing water consumption during electric peak demand periods;
- Development of more precise definition of cost-effectiveness for programs that produce electric embedded (or indirect) energy savings; and
- Creation of a framework for tracking and crediting cross-territory embedded electric energy savings.

C. Key Planning Considerations

Consistent with SCE's overall goal of the pilot to find a reasonable basis to claim embedded electric energy savings, SCE identified several key considerations. First, and foremost, SCE looked for creative approaches to delivering water efficiency and conservation. Additionally, SCE took into consideration the brief planning timeframe coupled with the need for a feasible and executable pilot deliverable in a short 12-month period. In response to these first two considerations, SCE looked to leverage existing program designs from either SCE's and/or the water partner's program portfolios. SCE also focused on proven water efficiency measures based on input from SCE's water provider partners.

Another key consideration was to design a pilot that could test consumer interest from a variety of customer groups including low income customers. In response, SCE developed a pilot that served a wide spectrum of customer segment from residential to low income to commercial to industrial.

The final key consideration for SCE was to partner with a water provider, in SCE's service territory, willing to co-fund the pilot. This consideration is consistent with the ACR directive to develop a co-funded pilot with local water providers.[3]

D. Partnering With Multiple Water Providers Under One Pilot Proposal

The ACR directed the IOUs to form a partnership with one large water provider to implement a jointly-funded pilot. SCE's pilot investigates five creative and promising program strategies with two different water providers under one pilot.

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[3] *Id*, Ordering Paragraph No. 2, p. 3.

First, SCE proposes a partnership with Metropolitan Water District of Southern California (MWD) in SCE and MWD's shared service territories. MWD is a consortium of 26 cities and water districts that provide water to nearly 18 million people in the Southern California region. MWD estimates that it delivers an average of 1.7 billion gallons water a day to their service territory. MWD serves approximately 75% of SCE customers so there is significant overlap of service territories with an ideal opportunity to test creative applications of a variety of program strategies among a broad spectrum of customer groups to uncover embedded electric energy savings opportunities.

Second, SCE proposes to partner with a member of MWD, the Municipal Water District of Orange County (MWDOC), in the promotion and delivery of their existing Industrial Water Use Reduction Program. Their current program (active since Fall 2006) follows a very similar program and delivery model as SCE's existing 2006-2008 Industrial Energy Efficiency Program. Both programs utilize third party contractors to identify potential customers, conduct audits, and provide analysis and recommendations. Both programs also provide incentives for customers to implement the recommendations. Due to the obvious similarities between these programs, SCE and MWDOC have been collaborating since September to cross-promote each other's programs and share leads. The proposed water pilot strategy here builds on this existing relationship.

Finally, SCE also proposes to partner in this pilot with the Lake Arrowhead Community Services District (LACSD). LACSD provides water service to the Lake Arrowhead community located the San Bernardino's mountains in Southern California. Due to LACSD unique regional location, it is estimated that LACSD has one of the highest embedded energy intensity factors for urban water conveyance in the state of California.[4] It is estimated that LACSD embedded energy intensity is 20,200 kilowatt hours per million gallons (kWh/mg). In contrast, in other areas of Southern California, on average, the embedded energy intensity is estimated at 13,000 kWh/mg

[4] California Energy Commission, "Refining Estimates of Water-Related Energy Use in California" (December 2006).

and in Northern California the average is approximately 5,400 kWh/mg.[5] For this reason, SCE believes a partnership with LACSD is an ideal opportunity to develop creative ways to capture embedded energy savings in this community.

SCE believes its proposal to partner with two water providers meets the ACR's intent to investigate the potential of future programs to capture water-related embedded energy savings although it goes beyond the ACR's specific directive to partner with one local water provider.

E. Investigating Embedded Energy Savings In The Low Income Customer Segment

Decision (D.) 06-12-038 directed the utilities "to incorporate water savings measures that could enhance the overall cost effectiveness of the energy conservation programs while providing additional benefits to low income customers."[6] Conclusion of Law 6 of D.06-12-038 provides that "[t]he utilities should begin work on proposals for low income energy efficiency programs that promote water conservation for the Commission's future consideration."

In response, SCE proposes an integrated pilot program that promotes water conservation and energy efficiency while benefiting low-income customers. As part of the pilot, and in addition to other water saving measures proposed in this Application, SCE proposes to target High Efficiency Toilets (HETs) for customers in single and multi-family dwelling units in low-income areas. HETs use a minimum of 20% less water than standard (1.6 gallons per flush, gpf) toilets and significantly less than older 3.5 gpf units typically found in older housing stock.

Through this pilot and SCE's current Low-Income Energy Efficiency (LIEE) program, SCE and MWD hope to convert significant missed opportunities to install HETs in under-penetrated low income and multi-family market segments. MWD has had difficulty identifying and assessing the need for HETs among these segments and therefore has had limited success in

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[5] *Id.*

[6] D.06-12-038, *Order Adopting Utility Budgets For Low Income Energy Efficiency Programs and California Alternate Rate For Energy*, pp. 16-17 ("This order directs all four applicant utilities each to file a specific program proposal for water conservation efforts. Each proposal shall identify specific ways to implement such energy efficiency water conservation programs for low income customers, whether and how they might dovetail with other non-LIEE programs, which agencies they will work with, and a budget …"); Finding of Fact 10 ("It is the Commission's policy to promote energy efficiency programs that also promote water conservation").

penetrating this market. SCE plans to leverage its current LIEE program infrastructure to better target HETs opportunities. Through the LIEE program, SCE conducts an up-front assessment of a home to determine which of the eligible LIEE measures are feasible for installation in that home. SCE will add HETs to the current measures that are assessed during in-home assessments. If significant opportunities for HET installations arise from these assessments, SCE and MWD will partner to fund the direct installations of HETs. Installations of HETs will be performed by a network of experienced providers. A summary of the Direct Install HET program offering is shown in Section III of this Testimony and detailed in the corresponding program implementation plan shown in Attachment A.

Additionally, SCE proposes to expand SCE's current Green Schools/Green Campus energy efficiency program offering to include the promotion of water efficiency and conservation. SCE plans to target areas with high concentrations of low income customers in the shared service territories of SCE and MWD. This program strategy will also offer installation of HETs in these school facilities. The Green Schools Water Efficiency program offering is shown in Section III of this Testimony and detailed in the corresponding program implementation plan shown in Attachment A.

F. Leveraging Current Local Government Partnerships

Over the past several years, SCE has cultivated partnerships with a variety of local governments to leverage their unique relationships with customers to promote energy efficiency and conservation. SCE proposes to test, on a limited basis with select number of local government partnerships, such as SCE's South Bay and Ventura partnerships, the effectiveness of such local government partnerships on the promotion and adoption of HETs in multi-family dwelling units as well as other applicable water efficiency program strategies within the pilot.

G. Investigating Opportunities For Reducing Electric Peak Demand

SCE is anxious to uncover opportunities to reduce electric system peak demand. Therefore, SCE proposes the Express Water Efficiency program strategy to promote efficient cooling tower technologies and the Industrial Water Efficiency strategy with MWDOC to

improve the efficiency of industrial processes which tend to have significant peak demand opportunities. With these proposals, SCE can investigate water efficiency applications focused on reducing water consumption during electric peak periods as well as applications traditionally tied to electric peak savings such as HVAC systems.

H. Leveraging The Current Flex Your Power Campaign To Promote Water Efficiency And Conservation Awareness

The current statewide Flex Your Power campaign promotes awareness of energy efficiency and conservation to consumers in California. SCE proposes to leverage the existing Flex Your Power campaign to promote water efficiency and conservation. Consumers of both energy and water can be exposed to common and consistent messaging about the benefits of efficiency and conservation. SCE is prepared to work with the Flex Your Power statewide team to identify ways to leverage the 2007 energy efficiency campaign to promote water efficiency and conservation as effectively as possible.

I. Applying Energy Savings Towards The Commission's Currently Adopted Energy Efficiency Goals

SCE requests clarification by the Commission whether the electric energy savings achieved by the pilot can be counted towards the Commission's current energy efficiency goals. The ACR directed the IOUs to not seek credit for the pilot's embedded energy savings as part of any rewards or penalties related to 2006-2008 period.[7] This directive implies the IOUs cannot include the pilot's embedded energy savings in the IOUs calculation of net benefits tied to a potential shareholder earnings claim. However, SCE believes this directive does not preclude it from counting such energy savings towards the achievement of the Commission's current adopted energy efficiency goals.[8] As part of this pilot, SCE will be directing valuable resources, including key personnel, that otherwise would be working on other energy efficiency programs,

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[7] ACR, Ordering Paragraph No. 4, p. 4.

[8] Decision 04-09-060, Ordering Paragraph No. 2, p. 51.

to the planning and implementation of the water efficiency pilot. SCE believes counting the pilot's energy savings results towards the achievement of the Commission's current adopted energy efficiency goals sends the right message that both the energy efficiency portfolio and the water efficiency pilot is important and necessary.

III.

SCE'S WATER EFFICIENCY PILOT PROGRAM

SCE proposes an innovative one-year jointly-funded pilot program designed to maximize embedded energy savings per dollar of program costs. The proposal is directed at a broad range of customer segments and delivery channels, including the low income customer segment. SCE plans to partner with the Metropolitan Water District of Southern California (MWD), its member agencies and the Lake Arrowhead Community Services District (LACSD) to offer five creative program strategies contained within the one program pilot. SCE expects that the successful implementation of this proposed pilot will demonstrate that SCE, in partnership with local water providers, can effectively deliver efficiency and conservation programs that capture embedded energy savings opportunities.

SCE's proposed pilot is composed of five program strategies with varying levels of activities. The mix presented here provides a good variety and basis to evaluate the potential embedded energy savings of several creative program strategies. However, if the pilot proves a success in both implementation and the affirmation of embedded energy savings, a full water efficiency program portfolio mix, including funding levels, may be very different than what SCE presents in this proposed pilot. For example, there may be significant embedded energy savings opportunities in the commercial program offering while significantly less in the residential multi-family offering. Any future program portfolio will focus on optimizing the embedded energy savings opportunities and less on testing the feasibility of such program strategies.

A. Water Pilot Partnership Proposal

The Pilot is an integrated suite of five coordinated program strategies. The objective of the Pilot is to promote and realize indirect energy savings through water conservation and

educational outreach on the relationship between water conservation and energy in California. The Pilot reflects extensive partnering with local and regional water agencies and will use multiple delivery channels both internal and external to SCE to reach a variety of customer segments, including low-income customers.

1. Low-Income Direct Install High Efficiency Toilet Program

SCE will partner with MWD to deliver the direct installation of High Efficiency Toilets (HETs) for single- and multi-family households in low-income areas within mutual MWD and SCE service territories. SCE will leverage existing LIEE contractors as well as existing local government partnerships, such as the South Bay and Ventura partnerships, to identify potential low-income customers and other multi-family opportunities. SCE will also work closely with MWD member water agencies with large low-income and multi-family customer bases, such as the Central Basin Municipal Water District (CBMWD), to identify and reach target customers. The CBMWD services 24 cities such as Compton, Bellflower, Southgate and Carson in the southeast Los Angeles County. SCE will rely on a network of contractors to install HETs. MWD will provide an incentive of $165 per HET to offset costs of the direct install while SCE proposes to fund the remaining installation cost currently estimated at $70-115 per HET and the incremental costs associated with assessing homes for HETs. This program strategy complements a Southern California Gas Company (SCG) proposal to deliver a similar program in municipal electric utility service territories.

Further detail on the proposed Direct Install HET program strategy is presented in the program implementation plan in Attachment A.

SCE's Low-Income Direct Install HET Budget:	$1.693 million
Estimated Energy Savings:	1,316,250 kWh of annual embedded energy savings

2. Industrial Water Efficiency Program

SCE will partner with the Municipal Water District of Orange County (MWDOC), a member agency of MWD, to deliver technical audits and recommendations for

water consuming industrial processes to industrial water users in mutual SCE and MWDOC service territories. MWDOC's existing Industrial Process Water Use Reduction program targets industrial customers across four segments: textiles, food processing, metal plating, and electronics. The program offering provides technical audits and recommendations to customers to improve the water efficiency of their industrial processes. If the customer follows the recommendations, upon verification of water savings, MWDOC, in partnership with the MWD, provides rebates to offset the cost of implementing the audit recommendations. These rebates are $3.00 per 1000 gallons saved from MWD, and $1.37 per 1000 gallons saved from MWDOC, plus program administration and marketing.

SCE's proposed pilot will allow an expansion of MWDOC's Industrial Process Water Use Reduction program. SCE will provide funding to allow MWDOC to hire a second program implementer to deliver audits and recommendation to additional industrial customer segments. MWD and MWDOC will fund all incentives provided to the participating customers.

SCE and will also leverage internal delivery channels by enlisting SCE's customer account representatives to identify additional interested customers. This will also provide an opportunity to coordinate program delivery with SCE's Industrial Energy Efficiency program, which targets the same customer group and follows a similar program model. Coordinated delivery of SCE's current IEE program and the proposed Industrial Water Efficiency program strategy will allow direct energy savings, and indirect energy savings through water conservation to be obtained simultaneously. Additionally, this coordinated effort will allow SCE to identify opportunities to reduce peak demand since many industrial processes are used during SCE's peak periods. Finally, this will also present unique opportunities to compare the approaches through the evaluation, measurement and verification process.

Further detail on the proposed Industrial Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Industrial Process Budget:	$0.308 million
Estimated Energy Savings:	429,000 kWh of annual embedded energy savings

3. Express Water Efficiency Program

SCE will partner with the MWD to deliver advanced PH controllers for cooling towers and Weather Based Irrigation Controllers (WBIC) to commercial customers with chilled water HVAC and/or large landscape irrigation systems in mutual SCE and MWD service territories. SCE will incorporate these measures into the existing Express Efficiency non-residential retrofit rebate program, which is a prescriptive component of the Business Incentives and Services package of energy efficiency programs. This will provide channels to deliver these water efficiency measures to customers previously unavailable to MWD. MWD is able to provide rebates for specific water conservation measures, but does not have funding approval to provide technical assistance or design recommendations to customers. MWD will provide rebates to offset the cost of the PH Controllers and the WBICs in the amounts of $1900 per cooling tower controller and $630 per irrigated acre controlled by the WBIC. SCE, through its customer account representatives, as well as through other delivery channels available to the Express Efficiency program, will provide the assistance necessary to outreach and educate customers on the benefits of installing these cost-effective water conservation measures. SCE will also provide the marketing and administration necessary to leverage existing Express Efficiency program to deliver water conservation measures; no additional customer incentive, beyond MWD's proposed levels, will be provided through this offering.

Further detail on the proposed Express Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Express Water Efficiency Budget:	$0.133 million
Estimated Energy Savings:	390,000 kWh of annual embedded energy savings

4. Lake Arrowhead Water Conservation Program

SCE will partner with the Lake Arrowhead Community Services District (LACSD) to deliver indoor water-conserving devices to year-round residents and outdoor landscaping retrofits to the 1,000 largest residential consumers of water, as identified by

LACSD. Indoor measures will include High Efficiency Toilets, low-flow shower heads, and sink aerators, while outdoor measures will include ET/Smart controllers and sprinkler head retrofits. SCE will co-fund LACSD's proposed program to expand the number of homes that can be served. LACSD will identify candidate homes, coordinate delivery of the program and provide funding to purchase the water conserving devices, with a contribution from SCE to complete the purchase of the devices. The customer will be responsible for installation, and LACSD will verify that eligible customers have installed the equipment.

Further detail on the proposed Lake Arrowhead Water Conservation program strategy is presented in the program implementation plan in Attachment A.

SCE's Lake Arrowhead Water Conservation Budget:	$0.308 million
Estimated Energy Savings:	808,500 kWh of annual embedded energy savings

5. Green Schools/Green Campus with Water Efficiency

SCE will partner with MWD to deliver water conservation education for K-12 and college students and the direct installation of HETs for their schools in mutual SCE and MWD service territories. The program strategy will target low-income areas. SCE's existing Integrated School-Based Program currently utilizes the Alliance to Save Energy to deliver the Green Schools and Green Campus energy efficiency programs, which will be expanded through this pilot program to incorporate a water conservation message into the current student education and school toilet retrofit efforts. MWD will provide an incentive of $165 per HET to offset costs of the direct install in school facilities.

Further detail on the proposed Green Schools Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Green Schools Water Efficiency Budget:	$0.282 million
Estimated Energy Savings:	52,000 kWh of annual embedded energy savings

IV.

SCE'S PROPOSED DEMONSTRATION OF PILOT SAVINGS AND EVALUATION, MEASUREMENT AND VERIFICATION OF WATER PILOT EFFICIENCY

A. Demonstrating Pilot Savings Potential And Expected Costs

The ACR directed SCE, and other IOUs, to implement a pilot designed to maximize embedded energy savings per dollar of program cost.[9] Using a recent California Energy Commission (CEC) study,[10] SCE presents embedded energy savings assumptions for each proposed strategy within the pilot. Specifically, SCE uses a proxy values from the CEC study for estimating embedded energy savings identified for the Southern California region. Based on the information available, SCE believes this proxy is reasonable for an initial pilot and adequately demonstrates to the Commission an expected level of embedded energy savings from the proposed pilot.

As for a traditional showing of program cost effectiveness using the current E3 energy efficiency calculator, SCE believes the current calculator would not completely demonstrate the costs or benefits from the proposed water efficiency measure. Nevertheless, SCE does provide to the Commission, as directed by the ACR, an embedded energy savings per dollar of program cost as summarized below.

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[9] *Id*, Ordering Paragraph No. 2, p. 3.

[10] California Energy Commission, "Refining Estimates of Water-Related Energy Use in California" (December 2006).

Table IV-1
Technical Assumptions – Energy Intensity Proxies

Embedded kWh/MG (million gallons) Values From CEC Study[1]
Southern California Indoor
13,000
Estimated Embedded kWh/MG (million gallons) Values in Lake Arrowhead CSD[2]
Southern California Indoor
20,200

[1] California Energy Commission, Refining Estimates of Water-Related Energy Use In California, (December 2006).
[2] Embedded energy for Lake Arrowhead includes an extra 2400 kWh/AF (7200 kWh/MG) due to lift from Silverwood reservoir.

Table IV-2
Forecasted Annual Embedded Energy Savings And Proposed Pilot Funding

Strategy Name	SCE Proposed Funding[1]	Water Savings, Million Gallons (MG)	Embedded Annual Energy Savings (kWh)
Low-Income Direct Install HET Program	$1,692,600	101.25	1,316,250
Industrial Water Efficiency Program	$308,000	33	429,000
Express Water Efficiency Program	$133,000	30	390,000
Lake Arrowhead Water Conservation Partnership[2]	$308,000	42	808,500
Green Schools/Green Campus w/Water Efficiency[3]	$282,000	4	52,000
20% Set-aside for EM&V and Technical Studies	$703,400	n/a	n/a
Total	$3,427,000	210.25	2,995,750

Notes:
[1] Proposed Budget includes all SCE costs such program implementation, planning, SCE administration, marketing, etc. SCE budget does not include Partner funding contributions. Expected Partner funding is presented in Attachment B, Table B-2.
[2] Embedded energy for Lake Arrowhead includes an extra 2400 kWh/AF (7200 kWh/MG) due to lift from Silverwood reservoir.
[3] $/kWh for HETs only; education funding omitted from calc since no kWh is claimed for this component.

B. Evaluation, Measurement and Verification Component of the Water Energy Efficiency Pilot

1. Statewide Coordination of Work

Because three electric utilities are developing pilot programs and program research efforts, the evaluation, measurement and verification (EM&V) work in SCE's pilot

must be closely coordinated with that of SDG&E and PG&E to avoid duplication and assure optimal coverage of all the issues that should be addressed. This can be accomplished either by doing the EM&V work on a statewide study basis or by coordinating the planning of the work so that all issues are appropriately covered, with each utility retaining the flexibility to cover issues of particular concern to it. Because of the multiplicity of types of programs and of EM&V activities required, it will be necessary to contract for the services of multiple research and measurement organizations. However, the utilities are exploring the wisdom of jointly contracting with one organization to oversee and coordinate all of the work.

2. Establishment of an Advisory Panel

The working group that provided a forum for the development of these pilots has already been useful in raising issues that need to be considered in the EM&V component. To assure continued input, a statewide advisory panel or research working group should be established. With good participation, such a panel will assure that the pilot M&E work builds fully on the information already gathered and benefits from the expertise of people who have already studied this issue. This research must build on studies conducted by the Commission, the California Energy Commission, California utilities and water agencies, and other entities. An advisory panel can also assure that the issues of greatest concern and uncertainty are appropriately addressed. SCE proposes that the three utilities be directed to establish an advisory panel to provide substantial input on overall research design, specific issues to be addressed, and research methods.

Members of this advisory panel should be chosen for their expertise in the fields of water efficiency, hydrology, water delivery, energy efficiency, and program evaluation. This panel would include representatives with these types of expertise from the three electric utilities, the major water partners, the CPUC, the CEC, and other energy/water experts as needed.

3. Objectives of the EM&V Component of the Pilot Program

The primary purpose of this pilot is to gather sufficient information to determine whether some water usage reduction programs save sufficient embedded energy at a cost that

justifies their becoming a mainstream part of future energy efficiency program portfolios. Consequently, five objectives of the evaluation, measurement and verification component of the pilot are:

1. To form a strong foundation for accurately estimating the value of energy savings achievable from water-saving programs, for use in future program planning;

2. To assess the annual energy savings and peak load reductions derived from the pilot program initiatives and the lifecycle costs, benefits, and cost-effectiveness of these programs;

3. To identify what water efficiency program structures and operational processes have worked well, what can be improved, and what doesn't work.

4. To develop preliminary protocols for the measurement and valuation of indirect energy savings and peak load reductions derived from water-saving programs; and

5. To identify next steps in data collection, analysis, and development of measurement and valuation protocols, to guide future work.

The EM&V work must help to further develop methodologies for accurately identifying the precise sources and load shapes of the electricity savings derived from reducing water usage in a variety of water end uses and geographic locations. State policy on longer-term funding sources for water/energy efficiency programs and peak demand reduction programs needs to take this information into account.

4. Data Collection and Analysis Methods

Objective 1 requires the development of methodologies and preliminary estimates of the technical potential for embedded energy savings achievable from water usage reduction measures. This will require previous experience in developing estimates of energy efficiency and/or water efficiency potential, and familiarity with the data sources that can be used to develop these estimates.

Data collection, estimating the energy savings and peak load reductions of the pilot programs (Objective 2) will require literature review to identify available data sources, collection of available data from water/wastewater agencies and energy utilities, and data

collection at both participating water end use sites and water source/processing sites. Needed water agency and energy utility data will include end use customer water usage and data on location, amount, timing, and cost of energy usage required for water supply or processing, and costs of the pilot programs. Significant engineering data collection and analysis will likely be necessary, including substantial water flow and energy usage measurement and monitoring at both end use and water system sites.

The development of program theories for each of the pilot programs (Objective 3) includes end uses, goals, rationale, strategies, delivery channels and tactics, outcomes, and expected impact. These may be developed by the utilities or an EM&V contractor. Building from these, process evaluation of the pilot programs can be conducted. Review of strong existing evaluations of other water conservation programs will provide a basis for comparison of the pilot programs with other good programs. This work should be carried out by entities experienced in process evaluation of energy and/or water efficiency programs.

The development of draft impact evaluation and cost-effectiveness analysis protocols (Objective 4) requires expertise in energy and water program impact analysis methods and in cost-benefit analysis. It will involve selective review of previous water usage, water efficiency, water cost, energy efficiency, and embedded energy efficiency studies, plus the studies being conducted in this pilot.

Both the impact evaluation (Objective 2) and protocol development work can contribute to Objective 5 by identifying future data collection, analyses, and methodology development activities that need to be carried out in order to provide more reliable energy/peak load savings estimates and cost-effectiveness data.

V.

APPROVAL OF SCE'S PROPOSED PILOT PROGRAM COSTS AND FUNDING SOURCE PROPOSAL

The ACR recommends that the total aggregate cost for all of the four IOU's pilots be limited to $10 million.[11] The ACR directed separate funding, apart from the funding established for the 2006-2008 energy efficiency programs.[12]

A. Proposed Funding Levels And Flexibility For Water Pilot Partnership

As part of the pilot planning process, SCE, in close collaboration with its proposed water partner providers, has identified both an overall budget as well as individual program strategy budgets for the one-year pilot. As discussed in more detail in Section V of this Testimony, SCE proposes an overall pilot funding amount not to exceed $3.427 million.

1. SCE's Proposed Funding Level For Water Pilot Partnership

SCE has investigated the initial market potential of each program strategy against the limited one-year timeframe to develop preliminary participation levels and estimated electric energy savings for each program strategy within the pilot. The initial estimates of funding, participation and energy savings for each program strategy within the pilot are detailed in Attachment A of this Testimony. A budget summary of SCE's planned contribution to the pilot is summarized below.

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[11] *Id*, Ordering Paragraph No. 3, p. 3.

[12] *Id.*

Table V-3
SCE's Proposed Water Efficiency Pilot Budget

Program Strategies	SCE Proposed 2007-8 Budget[1]
Low Income Direct Install HETs	$1,692,600
Industrial Water Efficiency	$ 308,000
Express Water Efficiency	$ 133,000
Lake Arrowhead Water Conservation	$ 308,000
Green Schools Water Efficiency	$ 282,000
EM&V Set Aside	$ 703,400
Total - SCE Pilot Budget	$3,427,000

1 - Proposed Budget includes all SCE costs such program implementation, planning, SCE administration, marketing, etc. and does not include Partner funding contributions.

2. Funding Flexibility Within Program Pilot And Beyond The Funding Period

SCE has identified initial budgets for each of the program strategies as part of the water efficiency pilot. However, SCE foresees these initial program strategy budgets may need to be adjusted during program implementation in order to react to changes in the forecasted participation levels in the strategies or other unforeseen events (e.g., partner withdrawal, increases to EM&V budget, Commission policy changes, etc.). Thus the individual program strategy budgets may need to be adjusted throughout the pilot implementation cycle in order to meet unexpected program implementation challenges that arise from such pilot efforts.

Additionally, SCE proposes program strategies that may extend beyond the one-year pilot period envisioned by the ACR. For example, SCE's proposed Industrial Water Efficiency program strategy may include installation and site-specific verification work which may extend beyond the one-year period. SCE plans to aggressively implement its proposed pilot immediately following Commission approval and to complete all implementation activities within the one-year period as envisioned by the ACR.[13] However, SCE may find instances

[13] ACR, Ordering Paragraph No. 1, p. 3.

where it may have post-installation activities such as inspections, project verification, contractor payments and reporting. There may also be instances where the customer has signed a contractual agreement with SCE and/or the water partner during the one-year pilot period but has not completed installation. These wrap-up activities may extend beyond the one-year pilot timeframe. Consequently, SCE is seeking clarification that it can enter into agreements during the one-year implementation period and honor those agreements, with pilot funds, after the one-year implementation period has concluded.

B. SCE's Proposed Funding Level For Water Efficiency Pilot

The ACR also directed the IOUs to develop a common funding approach.[14] In response, the IOUs met and discussed the ACR's recommendation to limit the statewide IOU cost for the pilots to $10 million. The IOUs also agreed to allocate the proposed $10 million among SCE, PG&E, SDG&E and SoCalGas based on the weighted size of the current 2006-8 energy efficiency program portfolio budgets approved in Decision 05-09-043.[15] As a result of this allocation, SCE's proposed share of the water energy efficiency pilot program is $3.427 million as shown below. Thus SCE requests the Commission approve the $3.427 million allocation for SCE's one-year water efficiency pilot.

Table V-4
Authorized 2006-2008 Energy Efficiency Budgets and Proposed Water Efficiency Budget

IOU	2006-8 Program Budgets	Proposed	
		Allocation	Budget
PG&E	$867,468,243	44%	4,406,160
SCE	$674,831,998	34%	3,427,696
SDG&E	$257,540,565	13%	1,308,134
SoCalGas	$168,921,633	9%	858,010
Total	$1,968,762,439	100%	$ 10,000,000

[14] *Id.*

[15] Attachment 4.

C. SCE's Funding Source For The Proposed Water Efficiency Pilot

SCE seeks approval to use unspent/uncommitted energy efficiency funding from prior program cycles to fund the proposed 2007-2008 water efficiency pilot. SCE identified a net $23.370 million in Public Goods Charge, Pre-1998 DSM and Procurement Energy Efficiency funds collected by SCE for Commission-authorized energy efficiency activities in prior program cycles that, as of December 31, 2005, remained unspent and uncommitted. The amount includes interest accrued as of December 31, 2005 in SCE's Procurement Energy Efficiency Balancing Account, the Public Goods Charge Balancing Account and the Pre-1998 DSM Balancing Account. SCE has received authorization to use a portion of these unspent funds for its proposed Palm Desert Project,[16] however, there will be sufficient unspent funds remaining to effectively fund SCE's proposed water efficiency pilot. In this Testimony, SCE proposes to fund the proposed water efficiency pilot in 2007-2008 at a total budget not to exceed $3.427 million. Specifically, SCE requests authority to record up to $3.427 million in pilot program project expenditures for 2007-2008 in SCE's PEEBA to pay for the pilot program costs.

[16] Decision 06-12-013, dated December 14, 2006, Ordering Paragraph No. 27.

Attachment A

Program Implementation Plans

Water – Energy Pilot

Projected Program Budget **$3,427,000**

Projected Program Impacts

MWh 5.168

MW (Summer Peak) Unknown

Program Cost Effectiveness

TRC Unknown

PAC Unknown

4. Program Descriptors

Market Sector: Cross-cutting (residential/nonresidential)

Program Classification: Local

Program Status: Pilot

5. Program Statement

The Water – Energy Pilot is an integrated suite of coordinated program strategies designed to promote water conservation to a variety of customer segments, through a variety of delivery channels both internal and external to SCE, while partnering extensively with local and regional water agencies. Objectives of this Pilot are to achieve indirect energy savings through water conservation, specifically serving low-income customers, and providing educational outreach to inform the public on the value of water conservation and also the relationship between water and energy in California.

6. Program Rationale

Water use in California is very energy intensive. A recent study commissioned by the California Energy Commission (CEC) estimates that up to 20% of the state's total annual electricity consumption is related to water use. This water-related energy use amounts to about 50 Billion kWh/yr. Water-related energy use breaks down into two major categories; end uses, and embedded inputs. End uses are those in which energy is expended on water by the water customers. Examples

of end uses include heating and cooling water, as well as on-site pumping. Embedded inputs are those that occur upstream and downstream of the water user. Examples of embedded energy inputs include surface conveyance, groundwater pumping, treatment, distribution, and waste-water pumping and treatment. This upstream and downstream water-related energy use amounts to about 12.5 Billion kWh/yr in California.

In Southern California the majority of the energy embedded in water is due to the conveyance, or importing of water into Southern California. With little natural water available locally, Southern California imports between two-thirds and three-fourth of the water used. This water is imported via several aqueduct systems, some hundreds of mile in length, and often requiring pump stations to lift the water thousands of feet in elevation.

Traditional energy efficiency efforts have attempted to save energy by encouraging more efficient end use energy inputs. These traditional energy savings are known as direct savings, and they appear on a customer's energy meter. A second type of energy savings are indirect savings, which do not appear on a customer's energy meter, but do accrue upstream and downstream, and thus positively impact California's electric grid. In the case of water, these indirect energy savings result when a water customer reduces water consumption. Thus, energy embedded in water upstream and downstream of a water customer can be saved if that customer reduces their water use.

The CEC's study referenced earlier, estimates that an average 13,000 kWh/MG is embedded upstream and downstream of water customers in Southern California. This is a regional average, surely lower in same location, and certainly higher in others. For all but one program, this pilot will use this value as a proxy until such time as more geographically specific values for embedded energy are developed. One program proposed here targets the Lake Arrowhead area of the San Bernardino mountains, specifically water used there has an estimated embedded energy content of 20,000 kWh/MG.

Energy efficiency programs have traditionally only pursued and claimed direct energy savings because indirect opportunities were constrained by uncertain savings potential, perceived low cost-effectiveness, regulatory prohibitions, and complications in assessing accrued benefits

because embedded energy inputs to water often occur outside the service territory of the energy utility serving the water user. Events of the past few years have provided the impetus and means to overcome many of these obstacles. The CEC's continued study of the topic has raised awareness regarding the tremendous amount of energy embedded in the delivery and treatment of water and waste water, while lingering effects of the 2001 energy crisis combined with forecasts of growing demand and shrinking reserves have led policy-makers to explore innovative approaches to energy efficiency. The rising cost of energy has rendered previously costly strategies more cost effective through increased avoided costs to offset implementation costs. The California Public Utilities Commission (Commission), recognizing both the synergies inherent in a coordinated approach to saving water and energy, and the simultaneous benefits of achieving greenhouse gas emissions reductions in support of the Governor's initiatives on the environment, has helped overcome some of the regulatory hurdles by asking for this pilot proposal and tentatively approving funding. Finally, awareness exists that the territorial issues between utilities can be resolved through a statewide framework for tracking and appropriately crediting cross-territory savings, although such a framework has not yet been fully conceptualized or put into place.

7. Program Outcomes

Desired outcomes of the Water – Energy Pilot include the following:

Proof-of-concept (directly saving water results in indirect (upstream and downstream) energy savings that can be quantified and benefit California)

- Successful partnerships with water agencies
- Public awareness of the water-energy connection
- Geographically specific kWh/MG estimates
- Better understanding of peak energy demand impacts associated with water use
- More precise definition of cost-effectiveness for programs that indirectly save energy
- A statewide framework for tracking and crediting cross-territory energy savings

A technical and procedural basis for the integration of cost-effective water conservation measures into the 2009-11 Energy Efficiency program cycle

Stakeholders with an interest in some or all of these outcomes include the California Public Utilities Commission (Commission), the California Energy Commission (CEC), the Natural Resources Defense Council (NRDC), the California Urban Water Conservation Council (CUWCC), investor-owned energy utilities, local and regional water agencies, and water and energy customers in California.

8. Program Strategy

The Water – Energy Pilot consists of the following five specific program strategies:

- Low Income Direct Install High Efficiency Toilet Program
- Industrial Water Efficiency Program
- Express Water Efficiency Program
- Lake Arrowhead Water Conservation Program
- Green Schools/Green Campus w/ Water Efficiency

The following detailed program descriptions list the contributing program partner or partners, anticipated measures and/or approaches to saving water, targeted market segments and locations, implementation strategies and delivery channels, and expected contributions from partners for each program comprising the Pilot.

8.1 *Low Income Direct Install High Efficiency Toilet Program*

SCE will partner with Metropolitan Water District of Southern California (MWD) to target single- and multi-family households in low-income mutual MWD and SCE service territories for the direct installation of High Efficiency Toilets (HETs). SCE will leverage existing Low-Income Energy Efficiency (LIEE) contractors as well as existing relationships such as the South Bay and Ventura partnerships to identify potential low-income customers and other multi-family opportunities. SCE will also work closely with local water agencies with large low-income and multi-family customer bases, such as the Central Basin Municipal Water District (CBMWD) to identify and reach target customers. SCE will then use dedicated plumbing contractors and qualified community-based organizations to perform direct install of the HETs. MWD will provide an incentive of $165 per HET to offset cost of the direct install. This program complements a Southern

California Gas Company program proposing to deliver the same program in municipal electric utility service territories.

8.2 *Industrial Water Efficiency Program*

SCE will partner with the Municipal Water District of Orange County (MWDOC) to deliver technical audits and recommendations for water consuming industrial processes to industrial water users in mutual SCE and MWDOC service territories. MWDOC's existing Industrial Process Water Use Reduction Program targets industrial customers across four segments: textiles, food processing, metal plating, and electronics. The program provides technical audits and recommendations to customers to improve the water efficiency of their industrial processes. If the customer follows the recommendations, upon verification of water savings, MWDOC, in partnership with the Metropolitan Water District of Southern California (MWD), provides rebates to offset the cost of implementing the audit recommendations. These rebates are $3.00 per 1000 gallons saved from MWD, and $1.37 per 1000 gallons saved from MWDOC, plus program administration and marketing. This pilot program will allow an expansion of MWDOC's Industrial Process Water Use Reduction Program. SCE will provide funding to allow MWDOC to deliver audits and recommendation to additional industrial customer segments (segments TBD w/ input from MWDOC). SCE will leverage internal delivery channels by enlisting SCE customer account representatives to identify additional interested customers. This will also provide an opportunity to coordinate program delivery with SCE's Industrial Energy Efficiency Program which follows a similar program model. Coordinated delivery of these programs will allow direct energy savings, and indirect energy savings through water conservation to be obtained simultaneously. This will also present unique opportunities to compare the approaches through the EM&V process.

Please see Attachment A-2 for more information on MWDOC's existing program, as well as potential market sectors to be served as a part of this pilot.

8.3 *Express Water Efficiency Program*

SCE will partner with the MWD to deliver advanced PH controllers for cooling towers and Weather Based Irrigation Controllers (WBIC) to commercial customers with chilled water HVAC

and/or large landscape irrigation systems in mutual SCE and MWD service territories. SCE will incorporate these measures into the existing Express Efficiency nonresidential retrofit rebate program, which is a prescriptive component of the Business Incentives and Services package of energy efficiency programs. This will provide channels to deliver these measures to customers previously unavailable to MWD. MWD is able to provide rebates for specific water conservation measures, but does not have funding approval to provide technical assistance or design recommendations to customers. MWD will provide rebates to offset the cost of the PH Controllers and the WBICs in the amounts of $1900 per cooling tower controller and $630 per irrigated acre controlled by the WBIC. SCE, through its customer account representatives, as well as through other delivery channels available to the Express Efficiency program, will provide the assistance necessary to educate and convince customers to install these cost-effective water conservation measures. SCE will provide the marketing and administration necessary to leverage existing Express Efficiency program to deliver water conservation measures; no additional customer incentive will be provided through this program.

8.4 *Lake Arrowhead Water Conservation Partnership*

SCE will partner with the Lake Arrowhead Community Services District (LACSD) to deliver indoor water-conserving devices to year-round residents and outdoor landscaping retrofits to a portion of the largest residential consumers of water, as identified by LACSD. Indoor measures will include High Efficiency Toilets (HETs), low-flow shower heads, and sink aerators, while outdoor measures will include ET/Smart controllers and sprinkler head retrofits. SCE will co-fund LACSD's proposed program to expand the number of homes that can be served. LACSD will identify candidate homes, coordinate delivery of the program and provide funding to purchase the water conserving devices, with a contribution from SCE to complete the purchase of the devices. The customer will be responsible for installation, and LACSD will verify that eligible customers have installed the equipment.

Please see Attachment A-3 for more information on this proposed program, including detailed descriptions of the indoor and outdoor retrofit components of the program.

8.5 *Green Schools/Green Campus With Water Efficiency*

SCE will partner with MWD to deliver water conservation education for K-12 and college students and the direct installation of High Efficiency Toilets (HETs) for their schools in mutual SCE and MWD service territories; especially targeting low income areas. SCE's existing Integrated School-Based Program currently utilizes the Alliance to Save Energy to deliver the Green Schools and Green Campus energy efficiency programs, which will be expanded through this pilot program to incorporate a water conservation message into their current student education and school toilet retrofit efforts. MWD will provide an incentive of $165 per HET to offset cost of the direct install.

Please see Attachment A-4 for more information on this proposed program, including detailed descriptions of all elements of the education component.

9. Program Objectives

The coordinated program strategies (or programs) comprising the Water – Energy Pilot are designed to serve a variety of customer segments, through a variety of delivery channels both internal and external to SCE, while partnering extensively with local and regional water agencies. Four specific policy objectives will be achieved by the implementation of this pilot:

- Significant embedded energy savings through large water-use reductions
- Program delivery to low-income customers
- Penetration of water conservation measures into the residential multi-family market, which water agencies have traditionally struggled to achieve
- Educational outreach to inform the public about water conservation and the water – energy relationship

At the same time, this Pilot will strive for levels of cost-effectiveness to compare favorably with traditional energy efficiency offerings, technical rigor to ensure the accuracy and reliability of the expected impacts on embedded energy inputs, and documented energy utility influence over the water use reductions recorded as a result a of this Portfolio to prevent free-ridership.

Program Implementation

Please see detailed program descriptions in Section 8 above.

11. Customer Description

Please see detailed program descriptions in Section 8 above.

12. Customer Interface

Please see detailed program descriptions in Section 8 above.

13. Energy Measures and Program Activities

Measures Information

Measure information and assumptions are provided in the corresponding detailed Pilot workbook shown in Attachment B. Note that in the absence of a Commission-approved cost effectiveness calculator designed specifically for assessing indirect energy savings obtained through water conservation, SCE presents the expected total program cost per kilowatt-hour (kWh). All water-saving measures offered in this Pilot are shown in Attachment B.

The proxy value for embedded energy per unit of water in Southern California, 13,000 kWh/MG, has been used to determine the kWh impacts associated with the implementation of each measure for all programs except the Lake Arrowhead Water Conservation Program. Data obtained from the program partner, the Lake Arrowhead Community Services District, indicates that an additional 7,200 kWh/MG is embedded by lifting water up to the Lake Arrowhead area from the Silverwood Reservoir along the East Branch of the State Water Project. This supplemental energy input can be considered additive to the proxy value for Southern California, because those embedded energy inputs will still occur. Thus the embedded energy per unit of water value used for the cost effectiveness calculations for the Lake Arrowhead Water Conservation Program is 20,200 kWh/MG.

13.2 Energy Savings and Demand Reduction Level Data

Embedded energy savings for all applicable measures and for the Pilot are presented in the Pilot workbook shown in Attachment B. Demand reduction impacts are unknown at this time; one of the anticipated outcomes of this pilot is a better understanding of peak energy demand impacts associated with water use reduction. A portion of the funding approved for this pilot will be set aside for studying peak impacts.

13.3. Non-energy Activities (Audits, Trainings, etc.)

In addition to the direct water conservation measures offered, a number of non-embedded energy activities will take place. These are summarized below by program.

13.3.1 *Industrial Water Efficiency Program*

Before providing rebates from the water agency partners, this program utilizes a contractor to perform an audit of water-consuming production activities in which the customer is engaged and make recommendations to improve the water efficiency of these production processes. Forecasted impacts of water use reductions are also provided. The customer can then make an informed decision about whether to purchase and install the recommended process enhancements. For additional information, please see Attachment A-2.

13.3.2 *Green Schools/Green Campus w/ Water Efficiency*

This program has two components; a direct install component for High Efficiency Toilets in participating schools, and an educational component. The educational component consists of integrating water conservation content with the energy efficiency content already provide through the Integrated School-Based Program already offered by SCE in the 2006-2008 program cycle. For additional information, please see Attachment A-4.

13.4. Subcontractor Activities

Subcontractor activities will occur in the following programs as follows:

13.4.1 *Low Income Direct Install High Efficiency Toilet Program*

Please see detailed program descriptions in Section 8 above.

13.4.2 *Industrial Water Efficiency Program*

Please see Attachment A-2 for more information on subcontractor activities associated with this program.

13.4.3 *Lake Arrowhead Water Conservation Program*

Please see Attachment A-3 for more information on this proposed program.

13.4.4 *Green Schools/Green Campus w/ Water Efficiency*

The Alliance to Save Energy is the subcontractor for this program. Please see Attachment A-4 for more information on subcontractor activities for this program.

13.5. Quality Assurance and Evaluation Activities

Statewide Coordination of Work

Since three electric utilities are developing pilot programs and program research efforts, it is clear that the evaluation, measurement and verification (EM&V) work in SCE's pilot must be closely coordinated with that of SDG&E and PG&E, to avoid duplication and assure optimal coverage of all the issues that should be addressed. This can be accomplished either by doing the EM&V work on a statewide study basis or by coordinating the planning of the work so that all issues are appropriately covered, with each utility retaining the flexibility to cover issues of particular concern to it. Because of the multiplicity of types of programs and of EM&V activities required, it is clear that it will be necessary to contract for the services of multiple research and measurement organizations. However, the utilities are exploring the wisdom of jointly contracting with one organization to oversee and coordinate all of the work.

Establishment of an Advisory Panel

The working group that has provided a forum for the development of these pilots has already been very useful in raising issues that need to be considered in the EM&V component. To assure that such input continues to be provided, a statewide advisory panel or research working group should be established. With good participation, such a panel will assure that the pilot M&E work builds fully on the information already gathered and benefits from the expertise of people who have already studied this issue. This research must build on studies conducted by the CPUC, the California Energy Commission, California utilities and water agencies, and other entities. An advisory panel can also assure that the issues of greatest concern and uncertainty are appropriately addressed. SCE proposes that the three utilities be directed to establish an advisory panel to provide substantial input on overall research design, specific issues to be addressed, and research methods.

Members of this advisory panel should be chosen for their expertise in the fields of water efficiency, hydrology, water delivery, energy efficiency, and program evaluation. This panel would

include representatives with these types of expertise from the three electric utilities, the major water partners, the CPUC, the CEC, and other energy/water experts as needed.

Objectives of the EM&V Component of the Pilot Program

The primary purpose of this pilot is to gather sufficient information to determine whether some water usage reduction programs save sufficient embedded energy at a cost that justifies their becoming a mainstream part of future energy efficiency program portfolios. Consequently, five objectives of the evaluation, measurement and verification component of the pilot are:

To form a strong foundation for accurately estimating the value of energy savings achievable from water-saving programs, for use in future program planning;

To assess the annual energy savings and peak load reductions derived from the pilot program initiatives and the lifecycle costs, benefits, and cost-effectiveness of these programs;

To identify what water efficiency program structures and operational processes have worked well, what can be improved, and what doesn't work.

To develop preliminary protocols for the measurement and valuation of indirect energy savings and peak load reductions derived from water-saving programs; and

To identify next steps in data collection, analysis, and development of measurement and valuation protocols, to guide future work.

It is important that the EM&V work help to further develop methodologies for accurately identifying the precise sources and load shapes of the electricity savings derived from reducing water usage in a variety of water end uses and geographic locations. State policy on longer-term funding sources for water/energy efficiency programs and peak demand reduction programs needs to take this information into account.

Data Collection and Analysis Methods

Objective 1 requires the develop of methodologies and preliminary estimates of the technical potential for embedded energy savings achievable from water usage reduction measures. This will require previous experience in developing estimates of energy efficiency and/or water efficiency

potential, including some familiarity with the data sources that can be used to develop these estimates.

Data collection for Objective 2, estimating the energy savings and peak load reductions of the pilot programs, will require literature review to identify available data sources, collection of data available from water/wastewater agencies and energy utilities, and data collection at both participating water end use sites and water source/processing sites. Needed water agency and energy utility data will include end use customer water usage and data on location, amount, timing, and cost of energy usage required for water supply or processing, and costs of the pilot programs. Significant engineering data collection and analysis will likely be necessary, including substantial water flow and energy usage measurement and monitoring at both end use and water system sites. Analysis methods

Objective 3 requires development of program theories for each of the pilot programs, including end uses, goals, rationale, strategies, delivery channels and tactics, outcomes, and expected impact. These may be developed by the utilities or an EM&V contractor. Building from these, process evaluation of the pilot programs can be conducted. Review of strong existing evaluations of other water conservation programs will provide a basis for comparison of the pilot programs with other good programs. This work should be carried out by entities experienced in process evaluation of energy and/or water efficiency programs.

The development of draft impact evaluation and cost-effectiveness analysis protocols (Objective 4) requires expertise in energy and water program impact analysis methods and in cost-benefit analysis. It will involve selective review of previous water usage, water efficiency, water cost, energy efficiency, and embedded energy efficiency studies, plus the studies being conducted in this pilot.

Both the impact evaluation (Objective 2) and protocol development work can contribute to Objective 5 by identifying future data collection, analyses, and methodology development activities that need to be carried out in order to provide more reliable energy/peak load savings estimates and cost-effectiveness data.

13.5.1. Expected Number/Percent of Inspections (planned percent of projects)

The Pilot will adopt a rigorous inspection plan that will ensure that itemized measures are installed and operational and the program activities are conducted appropriately. The proposed program strategies, with the exception of the Lake Arrowhead Water Conservation offering, are tied directly with SCE's current energy efficiency programs. The proposed pilot strategies will follow the same program inspection protocols as are in place for the corresponding energy efficiency program. SCE will work with LACSD to ensure the appropriate oversight and inspections occur within the Lake Arrowhead Water Conservation offering.

Marketing Activities

SCE will investigate ways to leverage the current Flex Your Power campaign to incorporate water efficiency and conservation messaging to the general public. However, most of the marketing efforts to support the proposed Pilot will be focused on local efforts targeted to specific customer groups. These Marketing activities will occur in the following programs as follows:

13.6.1 *Low Income Direct Install High Efficiency Toilet Program*

Marketing efforts will consist of identifying eligible low-income households. SCE will leverage the current LIEE contractors for this purpose. SCE will also work with water agencies and existing local government partnerships with large low-income populations to perform outreach to these customers. For example, the Central Basin Municipal Water District, where a significant portion of the population may be considered disadvantaged, offers multiple delivery channels and access points to reach these customers.

13.6.2 *Industrial Water Efficiency Program*

Marketing will occur through several channels for this program. The contractor MWDOC secures with the pilot funding will market the program in coordination with MWD and SCE. SCE will also utilize its customer account representatives promote the program along with SCE's Industrial Energy Efficiency Program. Please see Attachment A-2 for more information on marketing activities associated with this program.

13.6.3 *Express Water Efficiency Program*

Marketing for this program will occur through the established delivery channels already in place for the Express Efficiency component of SCE's Business Incentives and Services energy efficiency program. These channels include SCE's customer representatives and marketing activities already underway for Express Efficiency.

13.6.4 *Lake Arrowhead Water Conservation Program*

Marketing for this program will be provided by SCE's partner in this program, the Lake Arrowhead Community Services District. If necessary to increase participation, SCE may provide marketing support. Please see Attachment A-3 for more information on this proposed program.

13.6.5 *Green Schools/Green Campus w/ Water Efficiency*

Marketing for this program will be provided through SCE's subcontractor for this program, The Alliance to Save Energy. Please see Attachment A-4 for more information on marketing activities for this program.

Attachment A-2

Municipal Water District of Orange County

Industrial Process Water Use Reduction Program

The program provides local industries with water use efficiency recommendations and financial incentives to implement process changes. Customer assistance is a critical component of the program and is necessary to ensure industries implement water saving recommendations. The Municipal Water District of Orange County (MWDOC) retained a Consultant to conduct marketing, on site surveys and provide technical support to industrial customers in the following sectors:

- Food Processors
- Textile Manufactures
- Electronics Manufactures
- Metal Plating Companies

The anticipated water savings for this project totals 246 acre-feet per year, or 1,723 acre-feet over the assigned seven-year project life. Therefore, the cost of water saved through implementation of this project is $475 per acre-foot.

Program Description

MWDOC received a grant through the 2004 Water Use Efficiency Program from the California Department of Water Resources (DWR). For the authorized funding, MWDOC is implementing an Industrial Process Water Use Reduction Program to assist qualified local industrial customers with identification and implementation of operating modifications in order to reduce process water use, thus reducing flows to wastewater treatment plants. The targeted program participants are in the following high water use industrial sectors: food processors, textile manufacturers, electronics manufacturers, and metal plating companies.

The Orange County Sanitation District (OCSD) and South Orange County Wastewater Authority (SOCWA) compiled a list of 106 of their permitted discharges in the four targeted sectors. This list is the basis of program marketing.

MWDOC recognizes that process change will only occur if a customer supports the selected retrofit. For this reason, the program will include two levels of surveys: the Focused Survey and the Comprehensive Survey. Up to 50 industrial water customers will receive Focused Surveys and of these, up to 12 will go on to receive a full Comprehensive Survey.

The Focused Surveys will consist of screening audits to identify major water uses and potential water saving measures. Following completion of the Focused Surveys, more detailed Comprehensive Surveys will be conducted for up to 12 industrial water customers that express a strong interest in implementing water saving improvements. The Comprehensive Surveys will include on-site inspections and flow measurements to develop preliminary engineering designs and cost estimates for recommended water saving improvements.

A separate Survey Report is prepared for each of the industrial customers for which a Focused or Comprehensive Survey is conducted. The reports summarize survey results and include recommended retrofits, upgrades, and changes to operating practices that will result in significant water savings. Estimated costs, savings and payback information are also included along with "next steps" on how to implement the recommended improvements. The report content is customized to the specific industrial sector, process and site, as well as the level of survey conducted. Incentive payments will be offered to companies successfully implementing long-term process improvements.

Surveys began in November 2007, and the first reports are expected to be delivered to customers within two weeks of the survey date.

Financial Incentives

Financial incentives are available to qualified industrial companies to implement the water saving improvements recommended in the Comprehensive Survey Reports. The incentives are comprised of funding from the Metropolitan Water District of Southern California (MWD) and California Department of Water Resources (DWR) grant funds.

MWDOC's Industrial Process Water Use Reduction Program will use the framework and follow the guidelines developed by MWD for its Industrial Process Improvements (IPI) Program.

The IPI program offers financial assistance to industries to encourage investment in water-saving process improvements.

Based on project cost and water savings, MWD will pay the lesser of:

$3.00 per 1,000 gallons of actual water saved for a one (1) year monitoring period (equivalent to $195 per acre-foot for five (5) years; or

Fifty (50) percent of the project's water-related process improvement costs; or

Buy down of project cost to reduce the simple pay-back period to two (2) years (project cost minus twice the estimated annual water and wastewater savings).

In addition to the MWD provided incentive, MWDOC will offer Comprehensive Survey participants a supplemental incentive. The MWDOC program supplements MWD's $195 per acre-foot with an additional $55 per acre-foot (or $1.37 per 1,000 gallons saved) to offer $250. Payment is made in two steps. The first payment is made upon verification of equipment installation and startup/operation of the project. Final payment will be made after a 12-month monitoring period of water saved.

Program Partnership

This program is made possible through a partnership of State, regional and local agencies. The California Department of Water Resources is providing a Proposition 50 Water Use Efficiency Grant. At the regional level, MWD will provide Conservation Credits Program funds through their Industrial Process Improvement Program; the Orange County Sanitation District and the South Orange County Wastewater Authority will provide technical assistance and help with program marketing and MWDOC will provide overall project administration. At the local level, retail water agencies and cities in Orange County will provide marketing assistance and water consumption data.

Southern California Edison and the Water – Energy Pilot

SCE is proposing to provide funding sufficient for MWDOC to expand the size and reach of the program by hiring a second Consultant to deliver the program to additional market sectors.

- The expansion will offer Comprehensive surveys to other industrial sectors that may include:
- Paper manufacturers/processors

- Commercial laundries
- Petroleum Extraction
- Pharmaceutical
- Hospitals
- Other sectors are that currently being researched

Since MWDOC will continue to provide in-kind services and Metropolitan will continue to offer financial incentives for process changes to save water, funding support from SCE will provide technical assistance to identify water saving opportunities through technical audits, propose process water use modifications via a complete set of recommendations, and conduct cost benefit analysis. The purpose of the Comprehensive Survey is to provide participating sites with a technical report with sufficient information for the site to make a decision to proceed with process modifications. These Comprehensive Surveys and reports have an estimated cost of $10,000 to $20,000 each. Approximately ten of these surveys can be completed in a twelve month period.

It is anticipated that an expansion of this project could produce similar water savings of 100 acre-feet per year, or 700 acre-feet over the assigned seven-year project life. Due to data limitations for forecasting, this estimate does not include hospitals.

Attachment A-3

Lake Arrowhead Water Conservation Partnership

Indoor/Outdoor Retrofit Program

The Lake Arrowhead Community Services District (District or LACSD) would like to partner with the SCE Water Energy Efficiency Pilot program in an Indoor/Outdoor Retrofit Program. The indoor portion of the program would apply to Lake Arrowhead, California homes built prior to 1992 which presents a potential market of approximately 6,500 homes. These homes are most likely to have older fixtures that are predominantly inefficient in both water use and energy use. The outdoor portion of the program would apply to the homes which use approximately 1/3 of the District's annual water supply, presenting a potential market of approximately 1,000 homes. Retrofitting those homes would provide a substantial water and energy savings.

The following retrofits would be included in the program:

<u>Indoor</u>

Retrofit 5 gallons per flush toilets with efficient 1.3 gallons per flush toilets with a lifetime savings of 0.76 AF per toilet (22.5 year lifetime)

Retrofit older shower heads from 4.5 gpm to 2.0 gpm with a lifetime savings of 0.24 AF per showerhead (5 year lifetime)

Retrofit with high efficiency clothes washer machine resulting in a lifetime savings of 0.314 acre feet per machine (14 year lifetime)

Retrofit sink aerators with new water saving aerators

Install ET/Smart Controllers offering approximately 28 percent water savings (10 year lifetime)

Retrofit sprinkler hardware with estimated water savings of 5 to 10 percent (5-year lifetime)

For the indoor portion of the program, the District will target full-time residents of homes built prior to 1992. For the outdoor portion of the program, the District will target all homes with outdoor irrigation systems. The dual public outreach campaign will include, but not be limited to,

direct mail, advertisements, newsletter articles, billing inserts and website information. Individuals may also contact the District, based on media exposure of the program, and request that their houses be retrofitted.

The District will contract with a qualified vendor to oversee program coordination, quality control checking, and post-installation inspections. Participating residents will receive complete reimbursement for all of the retrofit equipment offered (except the high efficiency clothes washer; the rebate is limited to $200 for this appliance) upon verification by the program contractor that the equipment has been installed. Participating residents may either pay for installation of the equipment or install the equipment themselves. This option will allow a choice between having the District install the equipment at a cost to the resident of up to $700 per house or to complete the installation of the indoor retrofit components themselves, provided they agree to an inspection by District personnel. All outdoor retrofit components will be installed by the District's vendor.

The District plans on creating a long-term certification program as an incentive to homeowners. Any home that is completely retrofitted will be designated as a "Lake Arrowhead Water Star, sponsored by the LACSD and Southern California Edison", which could have an impact on and potentially increase the home's market value. The District is also investigating the possibility of offering preferential rates to homes that are designated as a "Lake Arrowhead Water Star, sponsored by the LACSD and Southern California Edison"

The purpose of SCE funding is to effectively reduce the amount of electricity required to pump water from Northern California to the Southern California mountain area of Lake Arrowhead by reducing the total quantity of acre-feet required to be pumped. It will also aid in the conservation efforts that are imperative to this area. This funding will allow the District to implement the Retrofit Program on a more aggressive scale, thereby realizing the increase in energy and water savings in a timelier manner.

Indoor Retrofits

Total indoor equipment cost for the program per retrofitted home will be $508.70 per household, based on 2 toilets, 2 showers, 3 sink aerators, and 1 clothes washing machine.

Indoor = $508.70 per household

2 toilets @ $150 per toilet = $300.00

2 shower heads @ $2.85 each = $5.70

3 sink aerators @ $1.00 each = $3.00

1 clothes washer @ $700 each = $200.00

Additionally, clothes washer machines are more energy efficient, resulting in 506 kWh directly saved per full time household per year.

Outdoor Retrofits

Total outdoor equipment cost for the program per retrofitted home will be $520 per household, based on 1 enviro-transpiration controller, 1 shutoff hose nozzle, and 8 high efficiency sprinkler head replacements.

Outdoor = $520 per household

1 ET controller addition = $400

1 Shutoff Hose Nozzle = $8.00

8 sprinkler heads @ $14.00 each = $112.00

The District estimates that water use for outdoor irrigation is approximately 1,000 acre feet per year. It is also estimated that approximately 1,000 homes are the primary consumers of that water.

In 2003, the District conducted the ET Controller Pilot Program. The purpose of the program was to field test, under local conditions, the effectiveness, reliability and potential irrigation water savings that could result from the District-wide implementation of ET Controller technology. Sixty ET controllers (43 residential and 17 commercial) were installed and achieved an average of 28 percent water savings.

Based on that study, the District estimates that 280 acre fee per year will be saved if 1,000 homes with irrigation systems are retrofit with ET controllers. Given the lifetime of ET controllers, that equates to a lifetime savings of more than 2,000 acre feet.

The savings from retrofitting sprinkler hardware is not well established, but estimated in the 5-10 percent of outdoor water usage (Vickers, *Handbook of Water Use and Conservation*). That represents approximately 50 acre feet of water saved each year by retrofitting 1,000 homes with irrigation systems, which is another 250 acre feet over the lifetime of the sprinkler hardware.

Embedded Energy Savings

The projected energy savings of the project are based on 2004 energy costs compiled by the Crestline-Lake Arrowhead Water Agency (CLAWA). These figures represent only the kWh savings for processing and pumping the water locally. This data only includes the cost of getting water from Lake Silverwood to CLAWA and does not include a more accurate overall kWh savings from the Bay-Delta area, to Devil Canyon Power Plant, and locally within the District's distribution system.

The kWh per AF savings from Lake Silverwood to the District are estimated at an average of 2,439 kWh per AF.

This does not include the savings to be realized in pumping the water from the Bay-Delta to Lake Silverwood nor the savings to be realized within the District's Distribution system.

The District estimates 165 kWh per AF is currently used for its distribution system (17 pump stations).

Attachment A-4

Energy and Water Efficiency Pilot Program – Green Schools

Southern California Edison

Program Objective

SCE proposes to build on its existing Green Schools and Green Campus Programs to develop and implement a pilot program to demonstrate and measure the benefits of educating students and their families, and other residential households, about water and energy efficiency activities through schools. This initiative would incorporate lessons learned by the Alliance's Watergy Program, which the Alliance has operated for 10 years internationally to achieve energy savings through water efficiency, and work in close coordination with the Metropolitan Water District (MWD) and their member agencies in Southern California Edison's (SCE) territory.

Summary of Pilot Program strategy

The pilot program entails two major activities:

First, it will educate students, their parents, and the community about water efficiency as part of the Green Schools and Green Campus Programs. This will include utilizing students in schools to educate their parents and the public about the benefits of water efficiency. Outreach to home and garden stores will also be included.

Second, a retrofit component will consist of implementation of shower heads, toilets, and other water conservation measures in the schools and residences of the students. This will include utilizing the current Green School Program to do direct installation of popular water conservation measures in schools. The Direct Installation of these measures will be funded through the pilot program and standard MWD rebates. Water efficiency measures will be finalized in coordination with MWD and SCE. This will allow the pilot program to have some specific sites where measures are installed – thus resulting in more accurate measurement and evaluation studies.

The key strategy will be to include water efficiency in a majority of the components of the current Green Schools Program, and to integrate water efficiency into the Green Campus Program. These activities will be closely coordinated with MWD in the SCE service territory.

Program Timing

July, 2007 through June, 2008 (12 months)

Pilot Program Activities

1: Incorporating Water into the Green Schools and Green Campus Programs

The Green Schools Program educates students K-12 about energy and the link between energy and the environment. It is a natural addition to add water into this activity, incorporating water efficiency into instruction and involving students in identifying water waste and developing solutions that increase water efficiency. The program will develop or provide instructional materials that are standards-based for math, science and language arts, not simply correlated to the California Standards of learning; this resource will help ensure that teachers will be able to use these lessons as part of their normal instructional time and processes. Examples of potential activities include:

School Water Audits – Train students to conduct water audits of schools and campuses, including:

Faucets -- Students can measure the amount of water leaking per unit time in the leaking faucets to add up the water waste

Toilets – Students will learn to test the school toilets for leaks and do so at home as well; they will compare water saving toilets and standard toilets to understand the potential savings

Home Water Audits – students can conduct home audits and make recommendations to parents for replacements and repairs.

Landscaping – students can plant small xeriscape gardens at school or visit a xeriscape garden in their community. They can conduct an inventory of low-water-use plants in their home or neighborhood gardens.

The program will incorporate water efficiency into the following Green Schools activities for 10-12 schools already participating in Green Schools:

Add one dedicated teacher to water efficiency activities at each participating school – Green Schools team at each school consist of 1-3 teachers and a custodian. In order to maintain the focus on energy while adding a water efficiency component, one teacher will be added to each

participating school team. This teacher will be part of the school team and supported by the Program.

Provide Instructional Materials – The Program will conduct a survey of water efficiency lessons available and make the best of those available to participating teachers. All materials will be standards-based. In addition, teachers will be encouraged to develop and submit their own lesson plans that include benefits of water conservation.

Add Water to Green Schools Professional Development Workshops -- The Program will add a water component to its professional development workshops. These workshops will train and prepare school teams consisting of teachers and custodians in K-12 schools to educate students about water and energy and the connection between water/energy efficiency and the environment, and to involve students in activities that will save water in their school facilities. Activities will include communicating energy and water efficiency goals and objectives jointly to the participating schools. Each school team will incorporate water into their five-strand plans. The five strands are 1) integrating water into instruction, 2) taking action to save water in schools, 3) involving the whole school, 4) taking the message home, and 5) involving custodians.) This will result in the professional workshops being more comprehensive for the participating school districts.

School Site Support Visits – Program staff will visit schools monthly to support schools' water and energy savings activities. The visits to the participating schools will include communication of information about water efficiency, and schools will be encouraged to participate in the various energy and water efficiency efforts. Monthly visits will be more comprehensive and involve more teachers in order to support both energy and water activities.

School Team Stipends – An additional stipend will be paid to the extra water-focused team member from each participating Green School.

Mid- and End-of-year Meetings – At the Mid-year Meeting, school teams will share success stories from their fall water and energy education activities, and will plan their activities for the spring semester. The Program will use this opportunity to reinforce the water message and provide new resources and information about water efficiency. The End-of-year Meeting will

celebrate successes and recognize achievements as well as set the stage for the following year's activities.

School Energy Audit Training – The training and audit components of the Program's Student Energy Auditor Training (SEAT) will be modified to incorporate water efficiency measures. The training will include teaching students about the benefits of water efficiency and methods to look for common retrofits. Auditor training will prepare students to look for and analyze water conservation opportunities. Student team will actually conduct a water and energy audit of part of their school and develop recommendations for efficiency improvements, which will be presented to the school board or other administrative audience.

Home Water Efficiency activities – Students will take their water efficiency learning home to their families through lessons in which students and parents conduct a water audit of their home. Water conservation information, brochures or flyers that can be distributed to the community by the students. Tie water conservation into our community outreach effort with museum/library displays. Financial support for student organizations, like environmental clubs, to take on some school/community awareness projects. Joint energy and water efficiency presentations by students in meetings and events where parents are present.

Recognition Program – the Program, in conjunction with SCE, MWD and other involved water utilities, will design a recognition program for students and schools that do an exceptional job at integrating water efficiency activities into their schools and at home.

Shower Head Exchange – The Program will leverage our current CFL exchange program to facilitate the distribution of water-efficient shower heads, faucet aerators and other low-cost, self-install residential measures. The Green Schools CFL exchange was a tremendous success with schools and provided SCE with "hard savings" far exceeding the original goals.

Partnering with Retailers to Generate and Meet Demand for Water Conserving Products -- Students (participants in the Green Schools and Green Campus Programs) will work with area retailers to educate customers about the benefits of water-efficient devices and encourage the selection of these models. Examples of target retailers are Sears, Home Depot, Lowe's, Wal-

Mart, Ace Hardware and True Value. To prepare for this, The Program Team (including college interns) will research area retailers to see what water conserving devices currently appear in their inventory—such as low-flow showerheads, low-flush toilets, toilet displacement tank bank bags, faucet aerators, front loading washing machines, and hot water recirculation pumps. We will then work with the companies to introduce them to the water efficiency campaign the students are involved with and discuss ways the students can promote the benefits of water conserving products to their customers. This might include items that are new to their current line of water-using products. By casting this as a student activity or campaign, we predict that retailers will be more open to this effort to educate their customers.

For example, students from the Green Schools program (with adult supervision) could staff water conservation help desks at various stores to help draw attention to the water conserving opportunities being offered. The desks will be supplied with succinct, colorful brochures on water conservation created by the Team.

Partnering with Nurseries to Increase the Sale of Xeriscape Plants -- This component is similar to that for the home supply retailers but instead the Team will target those area nurseries that offer a wide selection of xeriscape plants. We will discuss the goals of the program with them and identify stores that are willing to work with us to raise awareness of this product line. For example, on the weekends an information desk can be staffed by both Green School students, who will help draw attention to the desk, as well as a nursery staff member. The Program will develop, if necessary, or use existing brochures providing names, photos and basic information on drought tolerant plants that do well in the area.

Energy Green Campus Program

The Green Campus Program, operating in a selection of University of California (UC) and California State University (CSU) campuses during the 2006-2007 academic year, has demonstrated that college students can greatly influence energy use on campuses and have a great potential to do the same with water efficiency.

The Program will incorporate water efficiency into the following Green Campus activities for UC Santa Barbara, CSU San Bernardino, and Cal Poly Pomona:

Campus Water Efficiency -- With the training, support and supervision provided by the Program, paid student interns have an enormous potential to reduce water waste on campus, through collaborations with campus energy and facility managers. Spray nozzle and waterless urinals are among new technologies that student involvement can help put on a fast-track. The Green Campus Program can also add water-conserving behaviors to the energy-conserving behaviors that the Green Campus Program promotes, in particular reducing water waste in showers and sinks in campus resident halls. Students on each of the Save Energy Green Campuses in SCE territory are already in place, and the relationships and procedures that conserve energy on campus will facilitate water efficiency as well.

College Interns Educating the Residential Community -- In addition to water savings on campus, the Green Campus interns can play an important role in educating the residential community around their campuses about water saving opportunities and facilitate their purchase of water-efficient appliances and their water-conserving habits. As described above under the Retailers and Nurseries section, college interns can play two important roles. First, students can become involved in the community outreach component of the pilot directly, by conducting the inventory of water-efficient products in stores and nurseries, identifying the water efficient products and plant that are available in different stores. They can also be an important part of the team that works with retailers, coordinating working closely with the Program staff, by helping conduct, they can also be they can be actively involved in educating customers about water-efficient choices. Secondly, they can help K-12 students educate their communities about water efficiency, again through retailers and also by providing support to students performing water audits of small businesses. Having college students mentor K-12 students directly, with appropriate adult supervision, will increase the cache of the activity to the younger students and is a good use of program resources.

2: Retrofit Component

The Program will provide retrofit services if desired by SCE, to replace inefficient toilets and other measures in the residential, school, and possibly the college campus market.

Direct Implementation of Toilets and Other Water Conservation Measures – The pilot program will primarily target completing direct installation of 300 toilets in the participating schools. Other water conservation measures including waterless urinals will also be considered. These toilets will be retrofitted at no cost to the school. Incentives for the water efficient toilets from MWD and other water agencies will be leveraged to reduce the cost of installation of these toilets. Other popular water saving measures may be considered for this component. This will allow the pilot program to have some specific sites where measures are installed – thus resulting in more accurate measurement and evaluation studies.

Budget for Retrofit Component

On the retrofit component, we anticipate being able to work with 30 schools and replacing 10 toilets each, for a total of 300 total toilets. A tentative budget for retrofits assumes the following:

Installed cost per toilet: $280.

MWD rebate per toilet: $165.

SCE cost per toilet $115.

Total implementation budget for 300 toilets is $34,500. SCE cost per unit is estimated and may vary.

Attachment B

Energy Savings Forecast

Attachment B
Table B-1
Proposed SCE Water Efficiency Pilot Budget and Energy Savings

Program Strategy	SCE 2007-2008 Budget $	Water Savings (MG)	Embedded kWh Savings	$/kWh
Low-Income Direct Install HET	1,692,600	1.01.25	1,316,250	1.29
Industrial Water Efficiency	308,000	33	429,000	0.72
Express Water Conservation	133,000	30	390,000	0.34
Lake Arrowhead Water Conservation[1]	308,000	42	808,500	0.38
Green Schools/Green Campus Water Efficiency[2]	282,000	4	52,000	5.42
EM&V Set-aside	703,400	-	-	-
Totals	$3,427,000	210.25	2,995,750	1.14

Notes:
[1] Embedded energy for Lake Arrowhead includes an extra 2,400 kWh/AF (7,200 kWh/MG) due to lift from Silverwood reservoir.
[2] $/kWh for HETs only; education funding omitted from calculation since no kWh is claimed for this component.

Attachment B
Table B-2
Proposed Water Efficiency Pilot Budget – SCE and Water Partner

Program Strategy	**SCE 2007-2008 Budget $**	**Partner 2007-2008 Budget[3] $**	**Total Budget $**
Low-Income Direct Install HET	1,692,600	1,237,500	2,930,100
Industrial Water Efficiency	308,000	144,210	452,210
Express Water Conservation	133,000	190,000	323,000
Lake Arrowhead Water Conservation	308,000	249,600	557,600
Green Schools/Green Campus Water Efficiency	282,000	49,500	331,500
EM&V Set-aside	703,400	-	703.400
Totals	$3,427,000	1,870,810	5,297,810

Attachment C

Detailed Summary Pilot Budget

Attachment C

Southern California Edison
2007-2008 – Proposed Water Efficiency Pilot Budget - Detail

Program Name	Proposed Pilot Budget	Total Administrative Budget	Marketing/ Advertising/ Outreach Budget	Direct Implementation Budget	EMV
Low-Income Direct Install HETs	$1,692,600	$194,000	$111,100	$1,387,500	$ -
Industrial Process Water Use Reduction	$308,000	$48,000	$60,000	$200,000	$ -
Express Water Efficiency	$133,000	$43,400	$89,600	$ -	$ -
Lake Arrowhead Water Conservation	$308,000	$32,900	$15,100	$260,000	$ -
Green Schools Water Efficiency	$282,000	$32,200	$14,800	$235,000	$ -
EMV Set Aside	$703,400	$ -	$ -	$ -	$703,400
SCE Total	$3,427,000	$350,500	$290,600	$2,082,500	$703,400

Attachment D

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF GENE E. RODRIGUES

Q. Please state your name and business address for the record.

A. My name is Gene E. Rodrigues, and my business address is 2131 Walnut Grove Avenue, Rosemead, CA 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Director of Energy Efficiency for SCE. In that capacity, I have direct oversight of SCE's portfolio of energy efficiency programs, low-income energy efficiency programs, the California Alternate Rates for Energy (CARE) program, the self generation incentives program, and the measurement & evaluation and regulatory support functions for these areas.

Q. Briefly describe your educational and professional background.

A. I received a Bachelor of Science degree in Education from Northern Arizona University in 1980 and a Juris Doctor degree from the University of California, Hastings College of Law in 1988. Before coming to SCE, I taught high school in Arizona and practiced law with a civil litigation firm in Los Angeles. In 1990, I joined SCE's regulatory law department, where I provided legal support for SCE's energy efficiency programs, among other things. Since moving to the business side of SCE, I have held various positions within the Customer Service Business Unit, managing energy efficiency policy, operations and regulatory functions. My current position is Director of Energy Efficiency. I have previously practiced law and testified before the Commission.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor Sections I and II of Exhibit SCE-1, entitled *Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008*, as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

1 Q. Insofar as this material is factual in nature, do you believe it to be correct?

2 A. Yes, I do.

3 Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

4 A. Yes, it does.

5 Q. Does this conclude your qualifications and prepared testimony?

6 A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF JOHN F. NALL

Q. Please state your name and business address for the record.

A. My name is John F. Nall, and my business address is 2131 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Manager of Residential Energy Efficiency and Low Income Programs for SCE. My responsibilities include management and administration of energy audit, rebate, lighting, refrigerator recycling, Low-Income Energy Efficiency, the California Alternate Rates for Energy (CARE), and Cool Center programs.

Q. Briefly describe your educational and professional background.

A. I graduated from Ball State University in 1970, with a Bachelor of Science in Education. I also received an MFA degree from Indiana University in 1977. Prior to working at SCE, I held energy efficiency program management positions with the California State Department of Community Services – formerly California State Office of Economic Opportunity and Development – and Foothill Area Community Services, in Pasadena.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Section III of Exhibit SCE-1, entitled *Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007-2008,* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

1 Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best
2 judgment?
3 A. Yes, it does.
4 Q. Does this conclude your qualifications and prepared testimony?
5 A. Yes, it does

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF DAVID M. BRUDER

Q. Please state your name and business address for the record.

A. My name is David M. Bruder, and my business address is 2131 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Manager of Non-Residential Energy Efficiency Programs for SCE. My responsibilities include management and administration of SCE's portfolio of energy efficiency programs for non-residential customers.

Q. Briefly describe your educational and professional background.

A. I graduated from Cal Poly San Luis Obispo in 1982, with a Bachelor of Science in Environmental Engineering.

I am a licensed mechanical engineer with over 20 years of experience in analysis and design of energy systems for commercial and industrial facilities.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Section III of Exhibit SCE-1, entitled *Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007-2008*, as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

1 A. Yes, it does.

2 Q. Does this conclude your qualifications and prepared testimony?

3 A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF MARIAN V. BROWN

Q. Please state your name and business address for the record.

A. My name is Marian V. Brown, and my business address is 2131 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am the manager of Measurement and Evaluation. My primary responsibilities are planning, supervising staff, and supervising projects involving measurement, market assessment, and evaluation of energy efficiency, low-income, and demand response programs.

Q. Briefly describe your educational and professional background.

A. I received a Doctor of Philosophy (Ph.D.) degree in Economics from Stanford University in 1979 and a Bachelor of Arts (B.A.) degree in Economics from Pomona College in 1968. Prior to joining SCE in 1986, I was an Assistant Professor of Economics at Pomona College from 1977 to 1986, a Visiting Scholar to the Social Security Administration in 1984-1985, and a Senior Research Analyst at the National Bureau of Economic Research--West from 1975-1977.

I have been SCE's witness for program measurement and evaluation issues in energy efficiency and demand response proceedings since the early 1990s. I am SCE's representative to the California DSM Measurement Advisory Committee (CADMAC) and the California Measurement Advisory Council (CALMAC) and chair both groups in some years, in rotation with the other two utilities. I am a life member and past president of the Association of Energy Services Professionals.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Sections IV of Exhibit SCE-1, entitled *Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007-2008* , as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF THOMAS CALABRO

Q. Please state your name and business address for the record.

A. My name is Thomas Calabro, and my business address is 2244 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I the Director of Finance for the Customer Service Business Unit and I have responsibility for budgeting, payroll/administration, financial analysis, internal controls, and technology for the business unit.

Q. Briefly describe your educational and professional background.

A. I graduated from the University of California, Irvine in 1980 with a Bachelor of Science degree in Biology. I have a Masters of Science in Public Health degree in Epidemiology from UCLA, received in 1982. My experience prior to joint Edison includes two years as an analyst at the RAND Corporation. I participated in the 1988 General Rate Case as a consultant from 1984 through 1986. Since joining Edison in 1986, I have held the positions of Revenue Requirement Analyst, Health Care Systems Analyst, Property Accounting Analyst, Capital Recovery Supervisor and Manager as part of the Property Accounting Department, Manager in Accounting Systems, Corporate Budgets, Strategy & Business Planning and Regulatory Compliance prior to assuming my present position in 2006.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor Section V of Exhibit SCE-1, entitled *Testimony of Southern California Edison Company Supporting Application for*

1 *Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008*, as
2 identified in the Table of Contents thereto.

3 Q. Was this material prepared by you or under your supervision?

4 A. Yes, it was.

5 Q. Insofar as this material is factual in nature, do you believe it to be correct?

6 A. Yes, I do.

7 Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best
8 judgment?

9 A. Yes, it does.

10 Q. Does this conclude your qualifications and prepared testimony?

11 A. Yes, it does.

Application No.: 07-01-024

Exhibit No.: SCE-1

Witnesses:
G. Rodrigues
J. Nall
D. Bruder
M. Brown
T. Calabro

SOUTHERN CALIFORNIA
EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Programs for 2007-2008

Before the

Public Utilities Commission of the State of California

Rosemead, California

June 14, 2007

Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Programs for 2007-2008

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I.

OVERVIEW OF SCE'S WATER ENERGY EFFICIENCY PILOT PROGRAM PROPOSALS FOR 2007-2008

Pursuant to the Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency dated October 16, 2006 in Rulemaking 06-04-010 (2006 ACR), Southern California Edison Company (SCE) submitted an application and supporting testimony to the California Public Utilities Commission (Commission) on January 16, 2007. SCE sought approval to: (1) jointly implement SCE's proposed co-funded 2007-2008 water efficiency pilot to determine embedded electric energy savings; and (2) fund the pilot using up to $3.427 million of previously recognized uncommitted funds from pre-2006 energy efficiency programs. Based on Commissioner Grueneich's April 23, 2007 Ruling[1] (2007 ACR) requesting that the applicants submit supplemental testimony, SCE modifies and supplements its prior submittal with this one. This supersedes and replaces SCE's January 2007 filing.

This Testimony describes SCE's partnerships with the Metropolitan Water District of Southern California and its member agencies and the Lake Arrowhead Community Services District. The Testimony describes SCE's proposed one-year water efficiency pilot, the proposed funding, the pilot preparation and implementation in late 2007 or early 2008, a detailed cost effectiveness assessment using the water-energy cost effectiveness calculator provided by the Commission, and the proposed statewide Evaluation, Measurement, and Verification (EM&V) plan.

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[1] Assigned Commissioner Ruling and Scoping Memo dated April 23, 2007, *modified by* Administrative Law Judge's Ruling After the Scoping Memo Correcting and Augmenting the Schedule dated April 30, 2007 (*hereinafter* 2007 ACR).

II.

INTRODUCTION

SCE proposes a creative one-year pilot to implement a jointly-funded water efficiency pilot with local water providers designed to maximize water-related embedded (or indirect) electric energy savings per dollar of program costs. The pilot relies on an innovative combination of proven technologies and applications directed at a broad range of customer segments and delivery channels, including a focus on the low income customer segment. It uses five program strategies jointly-funded by local water partners as summarized in Section III of this Testimony and detailed in the proposed implementation plan presented in Attachment A.

To prepare this proposal, SCE closely collaborated with the Metropolitan Water District of Southern California (MWD), its member agencies, and the Lake Arrowhead Community Services District (LACSD) to develop program approaches that rely upon proven water conservation measures to capture embedded (indirect) electric energy savings. SCE proposes to use this pilot to incorporate additional water efficiency into the SCE 2007-2008 low income energy efficiency program. SCE will leverage its existing local government relationships, such as SCE's South Bay and Ventura partnerships, to demonstrate effective government outreach to communities, including low income residents. Additionally, SCE will implement program strategies in the nonresidential sector focused on reducing electric demand during peak periods. SCE will also leverage the existing Flex Your Power campaign to introduce statewide promotion of water efficiency and conservation.

In addition, SCE coordinated with Pacific Gas and Electric (PG&E) and the Sempra Utilities[2] to limit the amount of program duplication among the investor-owned utilities (IOUs) water efficiency pilot proposals. The IOUs also agreed to a maximum $10 million statewide

[2] Sempra Utilities is the parent corporation for San Diego Gas and Electric and Southern California Gas Company.

pilot budget suggested by the 2006 ACR[3] and the allocation of the proposed statewide budget among the IOUs as described more detail in Section V of this Testimony.

Thus, SCE's program design and strategies address the objectives of the 2006 ACR and explore the statewide potential of embedded energy savings through water efficiency. SCE meets the objectives of the April 2007 ACR through this supplemental testimony. This supplemental testimony contains cost effectiveness calculations requested by the Commission[4] as well as an updated joint inter-utility Evaluation, Measurement and Verification plan.[5] SCE notes that the 2007 ACR has evolved from the broader idea of pilot exploration of inter-utility embedded energy efficiency and focuses purely on the benefits within each utility's territory. For the same reasons that SCE has concerns about the water-embedded-energy cost-effectiveness calculator,[6] SCE is concerned that the evolving direction of the pilot will not satisfy the initial intent of the 2006 ACR.

A. Water Conservation and Electric Embedded Energy Savings Overview

California consumes an estimated 250 billion kilowatt-hours (kWh) of energy annually. Water-related energy usage can be up to 50 billion kWh of the state's annual electric energy consumption or about 20%. Water-related energy use typically falls into three different use categories:

- Customer End-uses – heating, cooling, on-site pumping
- Upstream uses – surface conveyance, groundwater pumping, treatment, distribution
- Downstream uses – waste water pumping and treatment

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[3] Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency dated October 16, 2006, Ordering Paragraph No. 3, p. 3.

[4] *See* Section IV; Attachment E.

[5] *See* Section IV, C; Attachment F.

[6] *See* Section IV, B.

Upstream and downstream water-related energy use (energy consumed up- and downstream of the customer) in California is about 12.5 billion kWh annually. In Southern California, the majority of the up- and downstream energy consumption is due to water conveyance from the Northern California Sierras or out of state. The aqueducts and pumping systems used to deliver water to Southern California are energy intensive and largely sourced outside of SCE's service territory.

As for water-related savings, electric energy savings can be categorized into direct or indirect savings. Direct energy savings are those savings that appear on the customer's energy meter. Conversely, indirect energy savings are those savings that do not appear on the customer's energy meter. These indirect savings occur upstream and downstream of the customer's energy meter. If the customer (i.e., end-user) conserves water, then the electric energy embedded in the upstream and downstream stages can be reduced or saved. In sum, direct water savings by the end-use customer equals indirect (or embedded) energy savings.

Energy efficiency programs traditionally have only pursued and claimed direct energy savings. To date, opportunities to indirectly save energy by directly reducing water consumption have not generally been pursued for various reasons. The reasons include unknown energy savings potential, regulatory constraints, and the unknown amount of embedded energy savings in the water supply chain both in and outside energy utilities' service territories.

B. Pilot Goals and Objectives

The overall goal of the pilot is to identify a reasonable basis by which SCE can capture embedded (or indirect) electric energy savings associated with water conservation applications in time to inform the 2009-11 energy efficiency program planning cycle. In order to achieve this overall goal, there are several desired outcomes of the pilot including:

- Affirmation of a proof-of-concept that saving water saves electric energy;
- Collaboration among energy utilities and water provider partners demonstrating an increase in water conservation;
- Additional public awareness of the water conservation and energy savings connection;

- Identification of geographically specific kilowatt-hour savings per million gallon estimates;
- Greater understanding of the impact on electric peak demand by reducing water consumption during electric peak demand periods;
- Development of more precise definition of cost-effectiveness for programs that produce electric embedded (or indirect) energy savings; and
- Creation of a framework for tracking and crediting cross-territory embedded electric energy savings.

C. Key Planning Considerations

Consistent with SCE's overall goal of the pilot to find a reasonable basis to claim embedded electric energy savings, SCE identified several key considerations. First, and foremost, SCE looked for creative approaches to delivering water efficiency and conservation. Additionally, SCE took into consideration the brief planning timeframe coupled with the need for a feasible and executable pilot deliverable in a short 12-month period. In response to these first two considerations, SCE looked to leverage existing program designs from either SCE's and/or the water partner's program portfolios. SCE also focused on proven water efficiency measures based on input from SCE's water provider partners.

Another key consideration was to design a pilot that could test consumer interest from a variety of customer groups including low income customers. In response, SCE developed a pilot that served a wide spectrum of customer segments from residential to low income to commercial to industrial.

The final key consideration for SCE was to partner with a water provider, in SCE's service territory, willing to co-fund the pilot. This consideration is consistent with the Oct. 2006 ACR directive to develop a co-funded pilot with local water providers.[7]

---

[7] *Id*, Ordering Paragraph No. 2, p. 3.

D. Partnering with Multiple Water Providers Under One Pilot Proposal

The October 2006 ACR directed the IOUs to form a partnership with one large water provider to implement a jointly-funded pilot. SCE's pilot investigates five creative and promising program strategies with two different water providers under one pilot.

First, SCE proposes a partnership with Metropolitan Water District of Southern California (MWD) in SCE and MWD's shared service territories. MWD is a consortium of 26 cities and water districts that provide water to nearly 18 million people in the Southern California region. MWD estimates that it delivers an average of 1.7 billion gallons of water a day to their service territory. MWD serves approximately 75% of SCE customers so there is significant overlap of service territories. This creates an ideal opportunity to test creative applications of a variety of program strategies among a broad spectrum of customer groups to uncover embedded electric energy savings opportunities.

Second, SCE proposes to partner with a member of MWD, the Municipal Water District of Orange County (MWDOC), in the promotion and delivery of their existing Industrial Water Use Reduction Program. Their current program (active since Fall 2006) follows a very similar program and delivery model as SCE's existing 2006-2008 Industrial Energy Efficiency Program. Both programs utilize third party contractors to identify potential customers, conduct audits, and provide analysis and recommendations. Both programs also provide incentives for customers to implement the recommendations. Due to the obvious similarities between these programs, SCE and MWDOC have been collaborating since September 2006 to cross-promote each other's programs and share leads. The proposed water pilot strategy here builds on this existing relationship.

Finally, SCE also proposes to partner in this pilot with the Lake Arrowhead Community Services District (LACSD). LACSD provides water service to the Lake Arrowhead community located in the San Bernardino's mountains in Southern California. Due to LACSD unique regional location, it is estimated that LACSD has one of the highest embedded energy intensity

factors for urban water conveyance in the state of California.[8] It has been estimated that LACSD embedded energy intensity is 20,200 kilowatt hours per million gallons (kWh/mg). In contrast, in other areas of Southern California, on average, the embedded energy intensity is estimated at 13,000 kWh/mg and in Northern California the average is approximately 5,400 kWh/mg.[9] For this reason, SCE believes a partnership with LACSD is an ideal opportunity to develop creative ways to capture embedded energy savings in this community.

SCE believes its proposal to partner with two water providers meets the 2006 ACR's intent to investigate the potential of future programs to capture water-related embedded energy savings although it goes beyond the 2006 ACR's specific directive to partner with one local water provider.

E. Investigating Embedded Energy Savings in the Low Income Customer Segment

Decision (D.) 06-12-038 directed the utilities "to incorporate water savings measures that could enhance the overall cost effectiveness of the energy conservation programs while providing additional benefits to low income customers."[10] Conclusion of Law 6 of D.06-12-038 provides that "[t]he utilities should begin work on proposals for low income energy efficiency programs that promote water conservation for the Commission's future consideration."

In response, SCE proposes an integrated pilot program that promotes water conservation and energy efficiency while benefiting low income customers. As part of the pilot, and in addition to other water saving measures proposed in this Application, SCE proposes to target High Efficiency Toilets (HETs) for customers in single and multi-family dwelling units in low

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[8] California Energy Commission, "Refining Estimates of Water-Related Energy Use in California" (December 2006).

[9] *Id.*

[10] D.06-12-038, *Order Adopting Utility Budgets For Low Income Energy Efficiency Programs and California Alternate Rate For Energy*, pp. 16-17 ("This order directs all four applicant utilities each to file a specific program proposal for water conservation efforts. Each proposal shall identify specific ways to implement such energy efficiency water conservation programs for low income customers, whether and how they might dovetail with other non-LIEE programs, which agencies they will work with, and a budget …"); Finding of Fact 10 ("It is the Commission's policy to promote energy efficiency programs that also promote water conservation").

income areas. HETs use a minimum of 20% less water than standard (1.6 gallons per flush, gpf) toilets and significantly less than older 3.5 gpf units typically found in older housing stock.

Through this pilot and SCE's current Low Income Energy Efficiency (LIEE) program, SCE and MWD hope to convert significant missed opportunities to install HETs in under-penetrated low income and multi-family market segments. MWD has had difficulty identifying and assessing the need for HETs among these segments and therefore has had limited success in penetrating this market. SCE plans to leverage its current LIEE program infrastructure to better target HETs opportunities. Through the LIEE program, SCE conducts an up-front assessment of a home to determine which of the eligible LIEE measures are feasible for installation in that home. SCE will add HETs to the current measures that are assessed during in-home assessments. If significant opportunities for HET installations arise from these assessments, SCE, MWD, and one or more of MWD's member agencies such as Central Basin Municipal Water District (CBMWD) will partner to fund the direct installations of HETs. Installations of HETs will be performed by a network of experienced providers. A summary of the Direct Install HET program offering is shown in Section III of this Testimony and detailed in the corresponding program implementation plan shown in Attachment A.

Additionally, SCE proposes to expand SCE's current Green Schools/Green Campus energy efficiency program offering to include the promotion of water efficiency and conservation. SCE plans to target areas with high concentrations of low income customers in the shared service territories of SCE and MWD. This program strategy will also offer installation of HETs in these school facilities. The Green Schools Water Efficiency program offering is shown in Section III of this Testimony and detailed in the corresponding program implementation plan shown in Attachment A.

F. Leveraging Current Local Government Partnerships

Over the past several years, SCE has cultivated partnerships with a variety of local governments to leverage their unique relationships with customers to promote energy efficiency and conservation. SCE proposes to test, on a limited basis with select number of local

government partnerships, such as SCE's South Bay and Ventura partnerships, the effectiveness of such local government partnerships on the promotion and adoption of HETs in multi-family dwelling units as well as other applicable water efficiency program strategies within the pilot.

G. Investigating Opportunities for Reducing Electric Peak Demand

SCE is anxious to uncover opportunities to reduce electric system peak demand. Therefore, SCE proposes the Express Water Efficiency program strategy to promote efficient cooling tower technologies and the Industrial Water Efficiency strategy with MWDOC to improve the efficiency of industrial processes which tend to have significant peak demand opportunities. With these proposals, SCE can investigate water efficiency applications focused on reducing water consumption during electric peak periods as well as applications traditionally tied to electric peak savings such as HVAC systems.

H. Leveraging the Current Flex Your Power Campaign to Promote Water Efficiency and Conservation Awareness

The current statewide Flex Your Power campaign promotes awareness of energy efficiency and conservation to consumers in California. SCE proposes to leverage the existing Flex Your Power campaign to promote water efficiency and conservation. Consumers of both energy and water can be exposed to common and consistent messaging about the benefits of efficiency and conservation. SCE is prepared to work with the Flex Your Power statewide team to identify ways to leverage the 2007 energy efficiency campaign to promote water efficiency and conservation as effectively as possible.

I. Applying Energy Savings Towards the Commission's Currently Adopted Energy Efficiency Goals

SCE requests clarification by the Commission whether the electric energy savings achieved by the pilot can be counted towards the Commission's current energy efficiency goals. The 2006 ACR directed the IOUs to not seek credit for the pilot's embedded energy savings as

part of any rewards or penalties related to 2006-2008 period.[11] This directive implies the IOUs cannot include the pilot's embedded energy savings in the IOUs calculation of net benefits tied to a potential shareholder earnings claim. However, SCE believes this directive does not preclude it from counting such energy savings towards the achievement of the Commission's current adopted energy efficiency goals.[12] As part of this pilot, SCE will be directing valuable resources, including key personnel, that otherwise would be working on other energy efficiency programs, to the planning and implementation of the water efficiency pilot. SCE believes counting the pilot's energy savings results towards the achievement of the Commission's current adopted energy efficiency goals sends the right message that both the energy efficiency portfolio and the water efficiency pilot are important and necessary.

III.

SCE'S WATER EFFICIENCY PILOT PROGRAM

SCE proposes an innovative one-year jointly-funded pilot program designed to maximize embedded energy savings per dollar of program costs. The proposal is directed at a broad range of customer segments and delivery channels, including the low income customer segment. SCE plans to partner with the Metropolitan Water District of Southern California (MWD), its member agencies and the Lake Arrowhead Community Services District (LACSD) to offer five creative program strategies contained within the one program pilot. SCE expects that the successful implementation of this proposed pilot will demonstrate that SCE, in partnership with local water providers, can effectively deliver efficiency and conservation programs that capture embedded energy savings opportunities.

SCE's proposed pilot is composed of five program strategies with varying levels of activities. The mix presented here provides a good variety and basis to evaluate the potential embedded energy savings of several creative program strategies. However, if the pilot proves a

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[11] 2006 ACR, Ordering Paragraph No. 4, p. 4.

[12] Decision 04-09-060, Ordering Paragraph No. 2, p. 51.

success in both implementation and the affirmation of embedded energy savings, a full water efficiency program portfolio mix, including funding levels, may be very different than what SCE presents in this proposed pilot. For example, there may be significant embedded energy savings opportunities in the commercial program offering while significantly less in the residential multi-family offering. Any future program portfolio will focus on optimizing the embedded energy savings opportunities and less on testing the feasibility of such program strategies.

A. Water Pilot Partnership Proposal

The Pilot is an integrated suite of five coordinated program strategies. The objective of the Pilot is to promote and realize indirect energy savings through water conservation and educational outreach on the relationship between water conservation and energy in California. The Pilot reflects extensive partnering with local and regional water agencies and will use multiple delivery channels both internal and external to SCE to reach a variety of customer segments, including low-income customers.

1. Low Income Direct Install High Efficiency Toilet Program

SCE will partner with MWD and one or more of its member agencies to deliver the direct installation of High Efficiency Toilets (HETs) for single- and multi-family households in low income areas within mutual MWD and SCE service territories. SCE will leverage existing LIEE contractors as well as existing local government partnerships, such as the South Bay and Ventura partnerships, to identify potential low income customers and other multi-family opportunities. SCE will also work closely with MWD member water agencies with large low income and multi-family customer bases, such as the Central Basin Municipal Water District (CBMWD), to identify and reach target customers. The CBMWD services 24 cities such as Compton, Bellflower, Southgate and Carson in the southeast Los Angeles County. SCE will rely on a network of contractors to install HETs. MWD will provide an incentive of $165 per HET and each of its member agencies choosing to participate will contribute $50 per HET to offset costs of the direct install while SCE proposes to fund the remaining installation cost currently estimated at $70-115 per HET and the incremental costs associated with assessing homes for

HETs. SCE anticipates that the added contribution from member agencies will allow this program to potentially deliver up to 10,000 HETs instead of the maximum 7,500 originally planned. This program strategy complements a Southern California Gas Company (SCG) proposal to deliver a similar program in municipal electric utility service territories.

Further detail on the proposed Direct Install HET program strategy is presented in the program implementation plan in Attachment A.

SCE's Low-Income Direct Install HET Budget:	Up to $1.693 million
Estimated Energy Savings:	Up to 414,542 kWh of annual SCE embedded energy savings

2. Industrial Water Efficiency Program

SCE will partner with the Municipal Water District of Orange County (MWDOC), a member agency of MWD, to deliver technical audits and recommendations for water consuming industrial processes to industrial water users in mutual SCE and MWDOC service territories. MWDOC's existing Industrial Process Water Use Reduction program targets industrial customers across four segments: textiles, food processing, metal plating, and electronics. The program offering provides technical audits and recommendations to customers to improve the water efficiency of their industrial processes. If the customer follows the recommendations, upon verification of water savings, MWDOC, in partnership with the MWD, provides rebates to offset the cost of implementing the audit recommendations. These rebates are $3.00 per 1000 gallons saved from MWD, and $1.37 per 1000 gallons saved from MWDOC, plus program administration and marketing.

SCE's proposed pilot will allow an expansion of MWDOC's Industrial Process Water Use Reduction program. SCE will provide funding to allow MWDOC to hire a second program implementer to deliver audits and recommendation to additional industrial customer segments. MWD and MWDOC will fund all incentives provided to the participating customers.

SCE will also leverage internal delivery channels by enlisting SCE's customer account representatives to identify additional interested customers. This will also provide an

opportunity to coordinate program delivery with SCE's Industrial Energy Efficiency program, which targets the same customer group and follows a similar program model. Coordinated delivery of SCE's current IEE program and the proposed Industrial Water Efficiency program strategy will allow direct energy savings, and indirect energy savings through water conservation to be obtained simultaneously. Additionally, this coordinated effort will allow SCE to identify opportunities to reduce peak demand since many industrial processes are used during SCE's peak periods. Finally, this will also present unique opportunities to compare the approaches through the evaluation, measurement and verification process.

Further detail on the proposed Industrial Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Industrial Process Budget:	$0.308 million
Estimated Energy Savings:	98,736 kWh of annual SCE embedded energy savings

3. Express Water Efficiency Program

SCE will partner with the MWD to deliver advanced PH controllers for cooling towers and Weather Based Irrigation Controllers (WBIC) to commercial customers with chilled water HVAC and/or large landscape irrigation systems in mutual SCE and MWD service territories. SCE will incorporate these measures into the existing Express Efficiency non-residential retrofit rebate program, which is a prescriptive component of the Business Incentives and Services package of energy efficiency programs. This will provide channels to deliver these water efficiency measures to customers previously unavailable to MWD. MWD is able to provide rebates for specific water conservation measures, but does not have funding approval to provide technical assistance or design recommendations to customers. MWD will provide rebates to offset the cost of the PH Controllers and the WBICs in the amounts of $1900 per cooling tower controller and $630 per irrigated acre controlled by the WBIC. SCE, through its customer account representatives, as well as through other delivery channels available to the Express Efficiency program, will provide the assistance necessary to outreach and educate

customers on the benefits of installing these cost-effective water conservation measures. SCE will also provide the marketing and administration necessary to leverage the existing Express Efficiency program to deliver water conservation measures; no additional customer incentive, beyond MWD's proposed levels, will be provided through this offering.

Further detail on the proposed Express Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Express Water Efficiency Budget:	$0.133 million
Estimated Energy Savings:	140,644 kWh of annual SCE embedded energy savings

4. Lake Arrowhead Water Conservation Program

SCE will partner with the Lake Arrowhead Community Services District (LACSD) to deliver indoor water-conserving devices to year-round residents and outdoor landscaping retrofits to the 1,000 largest residential consumers of water, as identified by LACSD. Indoor measures will include High Efficiency Toilets, low-flow shower heads, and sink aerators, while outdoor measures will include ET/Smart controllers and sprinkler head retrofits. SCE will co-fund LACSD's proposed program to expand the number of homes that can be served. LACSD will identify candidate homes, coordinate delivery of the program and provide funding to purchase the water conserving devices, with a contribution from SCE to complete the purchase of the devices. The customer will be responsible for installation, and LACSD will verify that eligible customers have installed the equipment.

Further detail on the proposed Lake Arrowhead Water Conservation program strategy is presented in the program implementation plan in Attachment A.

SCE's Lake Arrowhead Water Conservation Budget:	$0.308 million
Estimated Energy Savings:	367,374 kWh of annual SCE embedded energy savings

5. Green Schools/Green Campus with Water Efficiency

SCE will partner with MWD to deliver water conservation education for K-12 and college students and the direct installation of HETs for their schools in mutual SCE and MWD service territories. The program strategy will target low income areas. SCE's existing Integrated School-Based Program currently utilizes the Alliance to Save Energy to deliver the Green Schools and Green Campus energy efficiency programs, which will be expanded through this pilot program to incorporate a water conservation message into the current student education and school toilet retrofit efforts. MWD will provide an incentive of $165 per HET to offset costs of the direct install in school facilities.

Further detail on the proposed Green Schools Water Efficiency program strategy is presented in the program implementation plan in Attachment A.

SCE's Green Schools Water Efficiency Budget:	$0.282 million
Estimated Energy Savings:	11,968 kWh of annual SCE embedded energy savings

IV.

SCE'S PROPOSED DEMONSTRATION OF PILOT SAVINGS AND EVALUATION, MEASUREMENT AND VERIFICATION OF WATER PILOT EFFICIENCY

A. Demonstrating Pilot Savings Potential and Expected Costs

The October 2006 ACR directed SCE, and other IOUs, to implement a pilot designed to maximize embedded energy savings per dollar of program cost.[13] Using a recent California Energy Commission (CEC) study,[14] SCE previously presented embedded energy savings

[13] *Id*, Ordering Paragraph No. 2, p. 3.

[14] California Energy Commission, "Refining Estimates of Water-Related Energy Use in California" (December 2006).

assumptions for each proposed strategy within the pilot. Specifically, SCE used a proxy values from the CEC study for estimating embedded energy savings identified for the Southern California region. Based on the information available, SCE believed this proxy was reasonable for an initial pilot and adequately demonstrated to the Commission an expected level of embedded energy savings from the proposed pilot.

B. The Cost-Effectiveness Calculator Underestimates the Benefits of the Pilot.

However, in the April 2007 ACR, the Commission decided that only the energy savings occurring within the service territory of the IOU offering the water conservation measures can be counted in the calculation of cost effectiveness for the water-energy pilot. The Commission has provided the IOUs with a water-energy cost effectiveness calculator modeled on the E3 energy efficiency calculator containing numerous default assumptions, such as embedded energy within each IOU territory. SCE used the "SCE-typ" default assumptions of 2992 kWh/MG embedded SCE energy for indoor measures and 1842 kWh/MG embedded SCE energy for outdoor measures for all of the proposed pilot strategies except the Lake Arrowhead Partnership. For this strategy, SCE used the "Crestline+Arrowhead (SWP water)" default embedded energy assumptions of 9,322 kWh/MG indoor and 8,172 kWh/MG outdoor. SCE provides its extensive cost effectiveness calculations in Attachment E and the concurrently served "Attachment E – Cost Calculations Water Measures" served in its native excel spreadsheet format.

SCE appreciates the Commission's direction omitting the water agency partner contributions to administration, marketing, and direct implementation from the cost side of the equation. As SCE pointed out in its response to an earlier data request, it is not a fair measure of costs and benefits to consider both IOU and water agency costs but only IOU benefits. SCE commends the Commission for configuring the calculator to only consider the IOU costs in the calculation of cost effectiveness.

SCE also has a number of concerns about the assumptions used in developing the cost calculator. The calculator too narrowly defines benefits, and this results in what SCE believes are artificially low TRC values for the five program strategies SCE is proposing. SCE is

concerned about assessing programs on the basis of this cost-effectiveness calculation alone because it is based on a false and narrowly proscribed precision and appears to be a departure from the stated goals of the 2006 ACR to explore statewide and inter-utility savings.

First, the limitation of avoided cost to only embedded energy savings occurring within SCE territory leaves approximately 75% of the energy embedded in water unaccounted for. This figure corresponds to the energy used in the conveyance of water from Northern California and/or the Colorado River to MWD's service territory. While the energy savings associated with reduced conveyance do not directly impact SCE procurement requirement, they do positively benefit the State, and support the Governor's initiatives to reduce carbon emissions.

Second, the embedded energy figure that should be used for avoided cost calculation is not the average energy intensity but rather the intra-marginal energy intensity. The embedded energy figures -- 2,992 kWh/MG for indoor use and 1,842 kWh/MG for outdoor use -- were calculated as average energy intensity by dividing total water agency energy consumption by total water deliveries on an annual basis. The intra-marginal energy intensity is that which corresponds to the last increment of supplied water to meet the demand. This can be considered to be the most expensive source, since an economically rational entity would seek to reduce procurement of the most costly source in the face of reduced demand before curtailing procurement of less costly supply options. For example, the intra-marginal source of energy during peak events is peaker plants. For water agencies, the intra-marginal source of water is State Water Project water imported from Northern California via the California Aqueduct and the pumping stations that lift that water over the Tehachapi Mountains.

Third, to determine the cost effectiveness of pilot programs, the question should not be whether the proposed pilot strategies are cost effective in their implementation when compared to existing traditional energy efficiency programs, but rather whether the pilot will cost-effectively provide sufficient information to inform decision makers as to whether the strategies piloted should be implemented on a portfolio-level basis. SCE believes that these are two distinct

concepts, and that the cost-effectiveness calculator provided by the Commission is designed for the prior case rather than the latter.

Table IV-1
Technical Assumptions – Energy Intensity Proxies

Embedded kWh/MG (million gallons) Values From the Water-Energy Cost Effectiveness Calculator[1]
Southern California Indoor/Outdoor
2,992/1,842
Estimated Embedded kWh/MG (million gallons) Values in Lake Arrowhead CSD[2]
Southern California Indoor/Outdoor
9,322/8,172

[1] California Public Utilities Commission, Water-Energy Cost Effectiveness Calculator, (May 2007).
[2] California Public Utilities Commission, Water-Energy Cost Effectiveness Calculator, (May 2007). Embedded energy for Lake Arrowhead includes an extra 6330 kWh/MG due to lift from Silverwood reservoir.

Table IV-2
Forecasted Annual Embedded Energy Savings And Proposed Pilot Funding

Strategy Name	SCE Proposed Funding[1]	Water Savings, Million Gallons (MG)	SCE Embedded Annual Energy Savings (kWh)
Low Income Direct Install HET Program	Up to $1,692,600	Up to 138.55	Up to 414,542
Industrial Water Efficiency Program	$308,000	33	98,736
Express Water Efficiency Program	$133,000	57	140,644
Lake Arrowhead Water Conservation Partnership[2]	$308,000	42	367,374
Green Schools/Green Campus w/Water Efficiency[3]	$282,000	4	11,968
20% Set-aside for EM&V and Technical Studies	$703,400	n/a	n/a
Total	Up to $3,427,000	Up to 274.55 MG	Up to 1,033,264 kWh

Notes:
[1] Proposed Budget includes all SCE costs such program implementation, planning, SCE administration, marketing, etc. SCE budget does not include Partner funding contributions. Expected Partner funding is presented in Attachment B, Table B-2.
[2] Embedded energy for Lake Arrowhead includes an extra 6330 kWh/MG due to lift from Silverwood reservoir.

C. Evaluation, Measurement and Verification Component of the Water Energy Efficiency Pilot.

1. Investor Owned Utilities Create a Joint Plan for Evaluation, Measurement, and Verification of the Pilot

The four utilities (PG&E, SCE, SDG&E and SoCalGas) have coordinated efforts to develop a joint plan for the evaluation, measurement and verification (EM&V) of the Embedded Energy pilot. With the assistance of EM&V consultants knowledgeable in both the water and energy arenas, the utilities have developed a detailed EM&V plan that responds to all of the information requests identified in the 2007 ACR.

The EM&V plan is attached to this supplemental testimony.[15] The first section provides an overview of the studies to be done. Appendix B identifies constituent studies that can address the following: the pilot program objectives listed in the Ruling; the desired specific descriptions of study characteristics; the intervenors' questions listed in the 2007 ACR; and the utilities' questions on the technical, economic, and programmatic potential of water-embedded energy programs. Appendix C contains several parts -- the statewide plan and each IOU's plan. Appendices A and B are concurrently served with this supplemental testimony in their native excel format.

2. Response to the Requirement to Provide the Information Identified in the Ruling's Categories II, III, and IV.

The 2007 ACR asked for more information about the utilities' EM&V plans as follows: descriptions of the "paper studies" that the utilities plan to undertake; descriptions of the before/after measurements that would be performed to demonstrate program effectiveness; and revised budgets that would reserve 18% of the pilot budget for impact evaluation work. The remaining 2% of the 20% that the utilities allocated for EM&V will be allocated to process evaluations.[16]

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[15] *See* Attachment F.

[16] 2007 ACR, pages 16-18.

There are two specific requirements for which the EM&V studies may not always provide data at the level identified in the 2007 ACR because to do so would be cost-prohibitive and/or unnecessary. Based on this, we believe that the Commission will determine that the proposed study plans will be sufficient to meet its underlying objectives. These two specific requirements are III.C. and D., which request "Participant water data on a daily, weekly, and seasonal basis" and "Water agency energy use data including energy use profiles on a daily, weekly, and seasonal basis."

The usual practice for water or energy efficiency program studies, including these, is to gather and provide data for time periods consistent with the water or energy utility's meter reading schedule. In many cases, the meters accumulate monthly data only, irrespective of when the commodity was consumed (hourly, daily or weekly). On the water-energy side, the utilities will solicit information that may be available for more finely divided time periods. The information gathered will often be sufficient to develop the estimates that the Commission has requested. The utilities will ask their consultants to undertake the costly alternative of installing interval meters to gain hourly, daily, or weekly usage and flows under the following conditions: where there is a need for these more detailed data in order to develop reliable estimates; where the value of the more reliable estimates is high enough to warrant the cost; and to the extent that the additional data collection can be accomplished within the overall EM&V budget limits.

V.

APPROVAL OF SCE'S PROPOSED PILOT PROGRAM COSTS AND FUNDING SOURCE PROPOSAL

The 2006 ACR recommends that the total aggregate cost for all of the four IOU's pilots be limited to $10 million.[17] It directed separate funding, apart from the funding established for the 2006-2008 energy efficiency programs.[18]

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[17] *Id*, Ordering Paragraph No. 3, p. 3.

[18] *Id.*

A. Proposed Funding Levels and Flexibility for Water Pilot Partnership

As part of the pilot planning process, SCE, in close collaboration with its proposed water partner providers, has identified both an overall budget as well as individual program strategy budgets for the one-year pilot. As discussed in more detail in Section V of this Testimony, SCE proposes an overall pilot funding amount not to exceed $3.427 million.

1. SCE's Proposed Funding Level for Water Pilot Partnership

SCE has investigated the initial market potential of each program strategy against the limited one-year timeframe to develop preliminary participation levels and estimated electric energy savings for each program strategy within the pilot. The initial estimates of funding, participation and energy savings for each program strategy within the pilot are detailed in Attachment A of this Testimony. A budget summary of SCE's planned contribution to the pilot is summarized below.

Table V-3
SCE's Proposed Water Efficiency Pilot Budget

Program Strategies	SCE Proposed 2007-8 Budget[1]
Low Income Direct Install HETs	Up to $1,692,600
Industrial Water Efficiency	$ 308,000
Express Water Efficiency	$ 133,000
Lake Arrowhead Water Conservation	$ 308,000
Green Schools Water Efficiency	$ 282,000
EM&V Set Aside	$ 703,400
Total - SCE Pilot Budget	Up to $3,427,000

1 - Proposed Budget includes all SCE costs such program implementation, planning, SCE administration, marketing, etc. and does not include Partner funding contributions.

2. Funding Flexibility Within Program Pilot and Beyond the Funding Period

SCE has identified initial budgets for each of the program strategies as part of the water efficiency pilot. However, SCE foresees these initial program strategy budgets may need to be adjusted during program implementation in order to react to changes in the forecasted participation levels in the strategies or other unforeseen events (e.g., partner withdrawal,

increases to EM&V budget, Commission policy changes, etc.). Thus the individual program strategy budgets may need to be adjusted throughout the pilot implementation cycle in order to meet unexpected program implementation challenges that arise from such pilot efforts.

Additionally, SCE proposes program strategies that may extend beyond the one-year pilot period envisioned by the 2006 ACR. For example, SCE's proposed Industrial Water Efficiency program strategy may include installation and site-specific verification work which may extend beyond the one-year period. SCE plans to aggressively implement its proposed pilot immediately following Commission approval and to complete all implementation activities within the one-year period as envisioned by the 2006 ACR.[19] However, SCE may find instances where it may have post-installation activities such as inspections, project verification, contractor payments and reporting. There may also be instances where the customer has signed a contractual agreement with SCE and/or the water partner during the one-year pilot period but has not completed installation. These wrap-up activities may extend beyond the one-year pilot timeframe. Consequently, SCE is seeking clarification that it can enter into agreements during the one-year implementation period and honor those agreements, with pilot funds, after the one-year implementation period has concluded.

B. SCE's Proposed Funding Level For Water Efficiency Pilot

The 2006 ACR also directed the IOUs to develop a common funding approach.[20] In response, the IOUs met and discussed the 2006 ACR's recommendation to limit the statewide IOU cost for the pilots to $10 million. The IOUs also agreed to allocate the proposed $10 million among SCE, PG&E, SDG&E and SoCalGas based on the weighted size of the current 2006-8 energy efficiency program portfolio budgets approved in Decision 05-09-043. As a result of this allocation, SCE's proposed share of the water energy efficiency pilot program is up

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[19] 2006 ACR, Ordering Paragraph No. 1, p. 3.

[20] *Id.*

to $3.427 million as shown below. Thus SCE requests the Commission approve the $3.427 million allocation for SCE's one-year water efficiency pilot.

Table V-4
Authorized 2006-2008 Energy Efficiency Budgets and Proposed Water Efficiency Budget

IOU	2006-8 Program Budgets	Proposed	
		Allocation	Budget
PG&E	$867,468,243	44%	4,406,160
SCE	$674,831,998	34%	3,427,696
SDG&E	$257,540,565	13%	1,308,134
SoCalGas	$168,921,633	9%	858,010
Total	$1,968,762,439	100%	$ 10,000,000

C. SCE's Funding Source for the Proposed Water Efficiency Pilot

SCE seeks approval to use unspent/uncommitted energy efficiency funding from prior program cycles to fund the proposed 2007-2008 water efficiency pilot. SCE identified a net $23.370 million in Public Goods Charge, Pre-1998 DSM and Procurement Energy Efficiency funds collected by SCE for Commission-authorized energy efficiency activities in prior program cycles that, as of December 31, 2005, remained unspent and uncommitted. The amount includes interest accrued as of December 31, 2005 in SCE's Procurement Energy Efficiency Balancing Account, the Public Goods Charge Balancing Account and the Pre-1998 DSM Balancing Account. SCE has received authorization to use a portion of these unspent funds for its proposed Palm Desert Project,[21] however, there will be sufficient unspent funds remaining to effectively fund SCE's proposed water efficiency pilot. In this Testimony, SCE proposes to fund the proposed water efficiency pilot in 2007-2008 at a total budget not to exceed $3.427 million. Specifically, SCE requests authority to record up to $3.427 million in pilot program project expenditures for 2007-2008 in SCE's PEEBA to pay for the pilot program costs.

[21] Decision 06-12-013, dated December 14, 2006, Ordering Paragraph No. 27.

Attachment A

Program Implementation Plans

Attachment A

Program Implementation Plans

Projected Program Budget	**Up to $3,427,000**
Projected Program Impacts	
MWh	5.168
MW (Summer Peak)	Unknown
Program Cost Effectiveness	
TRC	0.10
PAC	Unknown

1. Program Descriptors

Market Sector: Cross-cutting (residential/nonresidential)

Program Classification: Local

Program Status: Pilot

2. Program Statement

The Water-Energy Pilot is an integrated suite of coordinated program strategies designed to promote water conservation to a variety of customer segments, through a variety of delivery channels both internal and external to SCE, while partnering extensively with local and regional water agencies. Objectives of this Pilot include achieving indirect energy savings through water conservation, specifically serving low income customers, and providing educational outreach to inform the public on the value of water conservation and also the relationship between water and energy in California.

3. Program Rationale

Water use in California is very energy intensive. A recent study commissioned by the California Energy Commission (CEC) estimates that up to 20% of the state's total annual electricity

consumption is related to water use. This water-related energy use amounts to about 50 Billion kWh/yr. Water-related energy use breaks down into two major categories; end uses, and embedded inputs. End uses are those in which energy is expended on water by the water customers. Examples of end uses include heating and cooling water, as well as on-site pumping. Embedded inputs are those that occur upstream and downstream of the water user. Examples of embedded energy inputs include surface conveyance, groundwater pumping, treatment, distribution, and waste-water pumping and treatment. This upstream and downstream water-related energy use amounts to about 12.5 Billion kWh/yr in California.

In Southern California, the majority of the energy embedded in water is due to the conveyance, or importing of water into Southern California. With little natural water available locally, Southern California imports between two-thirds and three-fourth of the water used. This water is imported via several aqueduct systems, some hundreds of miles in length, and often requiring pump stations to lift the water thousands of feet in elevation.

Traditional energy efficiency efforts have attempted to save energy by encouraging more efficient end use energy inputs. These traditional energy savings are known as direct savings, and they appear on a customer's energy meter. A second type of energy savings are indirect savings, which do not appear on a customer's energy meter, but do accrue upstream and downstream, and thus positively impact California's electric grid. In the case of water, these indirect energy savings result when a water customer reduces water consumption. Thus, energy embedded in water upstream and downstream of a water customer can be saved if that customer reduces their water use.

The CEC study referenced earlier estimates that an average 13,000 kWh/MG is embedded upstream and downstream of water customers in Southern California. This is a regional average, surely lower in same locations, and certainly higher in others. However, the water-energy cost effectiveness calculator provided by the Commission incorporates new default embedded energy assumptions that differ from those in the aforementioned CEC study. Not withstanding SCE's concerns about these value given earlier in Section IV, B, the cost effectiveness analysis performed

for this pilot will use the Commission's' values as proxies until such time as more geographically specific values for embedded energy are developed.

Energy efficiency programs have traditionally only pursued and claimed direct energy savings because indirect opportunities were constrained by uncertain savings potential, perceived low cost-effectiveness, regulatory prohibitions, and complications in assessing accrued benefits because embedded energy inputs to water often occur outside the service territory of the energy utility serving the water user. Events of the past few years have provided the impetus and means to overcome many of these obstacles. The CEC's continued study of the topic has raised awareness regarding the tremendous amount of energy embedded in the delivery and treatment of water and waste water, while lingering effects of the 2001 energy crisis combined with forecasts of growing demand and shrinking reserves have led policy-makers to explore innovative approaches to energy efficiency. The rising cost of energy has rendered previously costly strategies more cost effective through increased avoided costs to offset implementation costs. The California Public Utilities Commission (Commission), recognizing both the synergies inherent in a coordinated approach to saving water and energy, and the simultaneous benefits of achieving greenhouse gas emissions reductions in support of the Governor's initiatives on the environment, has helped overcome some of the regulatory hurdles by asking for this pilot proposal and tentatively approving funding. Finally, awareness exists that the territorial issues between utilities can be resolved through a statewide framework for tracking and appropriately crediting cross-territory savings, although such a framework has not yet been fully conceptualized or put into place.

4. Program Outcomes

Desired outcomes of the Water-Energy Pilot include the following:

Proof-of-concept (directly saving water results in indirect (upstream and downstream) energy savings that can be quantified and benefit California)

- Successful partnerships with water agencies
- Public awareness of the water-energy connection
- Geographically specific kWh/MG estimates

- Better understanding of peak energy demand impacts associated with water use
- More precise definition of cost-effectiveness for programs that indirectly save energy
- A statewide framework for tracking and crediting cross-territory energy savings
- A technical and procedural basis for the integration of cost-effective water conservation measures into the 2009-11 Energy Efficiency program cycle

Stakeholders with an interest in some or all of these outcomes include the California Public Utilities Commission (Commission), the California Energy Commission (CEC), the Natural Resources Defense Council (NRDC), the California Urban Water Conservation Council (CUWCC), investor-owned energy utilities, local and regional water agencies, and water and energy customers in California.

5. Program Strategy

The Water-Energy Pilot consists of the following five specific program strategies:

- Low Income Direct Install High Efficiency Toilet Program
- Industrial Water Efficiency Program
- Express Water Efficiency Program
- Lake Arrowhead Water Conservation Program
- Green Schools/Green Campus w/ Water Efficiency

The following detailed program descriptions list the contributing program partner or partners, anticipated measures and/or approaches to saving water, targeted market segments and locations, implementation strategies and delivery channels, and expected contributions from partners for each program comprising the Pilot.

5.1 *Low Income Direct Install High Efficiency Toilet Program*

SCE will partner with Metropolitan Water District of Southern California (MWD) and an as-yet undetermined number of its member agencies to target single- and multi-family households in low income mutual MWD and SCE service territories for the direct installation of High Efficiency Toilets (HETs). SCE will leverage existing Low Income Energy Efficiency (LIEE) contractors as well as existing relationships such as the South Bay and Ventura partnerships to identify potential

low income customers and other multi-family opportunities. SCE will also work closely with local water agencies with large low income and multi-family customer bases, such as the Central Basin Municipal Water District (CBMWD) to identify and reach target customers. SCE will then use dedicated plumbing contractors and qualified community-based organizations to perform direct install of the HETs. MWD will provide an incentive of $165 per HET and their member agencies choosing to participate will agree to provide $50 per HET to offset cost of the direct install. To maintain a cost-effective geographic distribution, member agencies wishing to participate will need to commit to contribute at least $20,000 (400 HETs) and no more than $200,000 (4,000 HETs). The lower limit will prevent cost-ineffective installations of small numbers of HETs while the upper limit will prevent any one agency from monopolizing the program. It is anticipated that a call for participants will be issued through MWD in mid-June. The approval process for each interested member agency typically requires a vote by that water agency's board of directors, so the final roster of participating water agencies and the total SCE budget for this program strategy is not expected to be known until August. SCE anticipates that the added contribution from member agencies will allow this program to potentially deliver up to 10,000 HETs instead of the maximum 7,500 originally planned. This program complements a Southern California Gas Company program proposing to deliver the same program in municipal electric utility service territories.

5.2 *Industrial Water Efficiency Program*

SCE will partner with the Municipal Water District of Orange County (MWDOC) to deliver technical audits and recommendations for water consuming industrial processes to industrial water users in mutual SCE and MWDOC service territories. MWDOC's existing Industrial Process Water Use Reduction Program targets industrial customers across four segments: textiles, food processing, metal plating, and electronics. The program provides technical audits and recommendations to customers to improve the water efficiency of their industrial processes. If the customer follows the recommendations, upon verification of water savings, MWDOC, in partnership with the Metropolitan Water District of Southern California (MWD), provides rebates to offset the cost of implementing the audit recommendations. These rebates are $3.00 per 1000 gallons saved from

MWD, and $1.37 per 1000 gallons saved from MWDOC, plus program administration and marketing. This pilot program will allow an expansion of MWDOC's Industrial Process Water Use Reduction Program. SCE will provide funding to allow MWDOC to deliver audits and recommendations to additional industrial customer segments (segments TBD w/ input from MWDOC). SCE will leverage internal delivery channels by enlisting SCE customer account representatives to identify additional interested customers. This will also provide an opportunity to coordinate program delivery with SCE's Industrial Energy Efficiency Program which follows a similar program model. Coordinated delivery of these programs will allow direct energy savings, and indirect energy savings through water conservation to be obtained simultaneously. This will also present unique opportunities to compare the approaches through the EM&V process.

Please see Attachment A-2 for more information on MWDOC's existing program, as well as potential market sectors to be served as a part of this pilot.

5.3 *Express Water Efficiency Program*

SCE will partner with the MWD to deliver advanced PH controllers for cooling towers and Weather Based Irrigation Controllers (WBIC) to commercial customers with chilled water HVAC and/or large landscape irrigation systems in mutual SCE and MWD service territories. SCE will incorporate these measures into the existing Express Efficiency nonresidential retrofit rebate program, which is a prescriptive component of the Business Incentives and Services package of energy efficiency programs. This will provide channels to deliver these measures to customers previously unavailable to MWD. MWD is able to provide rebates for specific water conservation measures, but does not have funding approval to provide technical assistance or design recommendations to customers. MWD will provide rebates to offset the cost of the PH Controllers and the WBICs in the amounts of $1900 per cooling tower controller and $630 per irrigated acre controlled by the WBIC. SCE, through its customer account representatives, as well as through other delivery channels available to the Express Efficiency program, will provide the assistance necessary to educate and convince customers to install these cost-effective water conservation measures. SCE will provide the marketing and administration necessary to leverage existing

Express Efficiency program to deliver water conservation measures; no additional customer incentive will be provided through this program.

5.4 *Lake Arrowhead Water Conservation Partnership*

SCE will partner with the Lake Arrowhead Community Services District (LACSD) to deliver indoor water-conserving devices to year-round residents and outdoor landscaping retrofits to a portion of the largest residential consumers of water, as identified by LACSD. Indoor measures will include High Efficiency Toilets (HETs), low-flow shower heads, and sink aerators, while outdoor measures will include ET/Smart controllers and sprinkler head retrofits. SCE will co-fund LACSD's proposed program to expand the number of homes that can be served. LACSD will identify candidate homes, coordinate delivery of the program and provide funding to purchase the water conserving devices, with a contribution from SCE to complete the purchase of the devices. The customer will be responsible for installation, and LACSD will verify that eligible customers have installed the equipment.

Please see Attachment A-3 for more information on this proposed program, including detailed descriptions of the indoor and outdoor retrofit components of the program.

5.5 *Green Schools/Green Campus with Water Efficiency*

SCE will partner with MWD to deliver water conservation education for K-12 and college students and the direct installation of High Efficiency Toilets (HETs) for their schools in mutual SCE and MWD service territories; especially targeting low income areas. SCE's existing Integrated School-Based Program currently utilizes the Alliance to Save Energy to deliver the Green Schools and Green Campus energy efficiency programs, which will be expanded through this pilot program to incorporate a water conservation message into their current student education and school toilet retrofit efforts. MWD will provide an incentive of $165 per HET to offset cost of the direct install.

Please see Attachment A-4 for more information on this proposed program, including detailed descriptions of all elements of the education component.

6. Program Objectives

The coordinated program strategies (or programs) comprising the Water-Energy Pilot are designed to serve a variety of customer segments, through a variety of delivery channels both internal and external to SCE, while partnering extensively with local and regional water agencies. Four specific policy objectives will be achieved by the implementation of this pilot:

- Significant embedded energy savings through large water-use reductions
- Program delivery to low income customers
- Penetration of water conservation measures into the residential multi-family market, which water agencies have traditionally struggled to achieve
- Educational outreach to inform the public about water conservation and the water – energy relationship

At the same time, this Pilot will strive for levels of cost-effectiveness to compare favorably with traditional energy efficiency offerings, technical rigor to ensure the accuracy and reliability of the expected impacts on embedded energy inputs, and documented energy utility influence over the water use reductions recorded as a result a of this Portfolio to prevent free-ridership.

7. Program Implementation

Please see detailed program descriptions in Section 5 above.

8. Customer Description

Please see detailed program descriptions in Section 5 above.

9. Customer Interface

Please see detailed program descriptions in Section 5 above.

10. Energy Measures and Program Activities

10.1 *Measures Information*

Measure information and assumptions are provided in the corresponding detailed Pilot workbook shown in Attachment B. All water-saving measures offered in this Pilot are shown in Attachment B.

The proxy values for embedded energy per unit of water in SCE territory, provided as default values in the water-energy cost effectiveness calculator provided by the Commission are 2,992 kWh/MG for indoor use and 1,842 kWh/MG for outdoor use, have been used to determine the kWh impacts associated with the implementation of each measure for all programs except the Lake Arrowhead Water Conservation Program. Data obtained from the program partner, the Lake Arrowhead Community Services District, indicates that an additional 7,200 kWh/MG is embedded by lifting water up to the Lake Arrowhead area from the Silverwood Reservoir along the East Branch of the State Water Project. This supplemental energy input can be considered additive to the proxy value for Southern California, because those embedded energy inputs will still occur. Thus the embedded energy per unit of water value used for the cost effectiveness calculations for the Lake Arrowhead Water Conservation Program is 10,192 kWh/MG.

10.2 *Energy Savings and Demand Reduction Level Data*

Embedded energy savings for all applicable measures and for the Pilot are presented in the Pilot workbook shown in Attachment B. Demand reduction impacts are unknown at this time; one of the anticipated outcomes of this pilot is a better understanding of peak energy demand impacts associated with water use reduction. A portion of the funding approved for this pilot will be set aside for studying peak impacts.

10.3 *Non-energy Activities (Audits, Trainings, etc.)*

In addition to the direct water conservation measures offered, a number of non-embedded energy activities will take place. These are summarized below by program.

10.3.1 *Industrial Water Efficiency Program*

Before providing rebates from the water agency partners, this program utilizes a contractor to perform an audit of water-consuming production activities in which the customer is engaged and make recommendations to improve the water efficiency of these production processes. Forecasted impacts of water use reductions are also provided. The customer can then make an informed decision about whether to purchase and install the recommended process enhancements. For additional information, please see Attachment A-2.

10.3.2 ***Green Schools/Green Campus w/ Water Efficiency***

This program has two components; a direct install component for High Efficiency Toilets in participating schools, and an educational component. The educational component consists of integrating water conservation content with the energy efficiency content already provided through the Integrated School-Based Program already offered by SCE in the 2006-2008 program cycle. For additional information, please see Attachment A-4.

10.4. ***Subcontractor Activities***

Subcontractor activities will occur in the following programs as follows:

10.4.1 ***Low Income Direct Install High Efficiency Toilet Program***

Please see detailed program descriptions in Section 8 above.

10.4.2 ***Industrial Water Efficiency Program***

Please see Attachment A-2 for more information on subcontractor activities associated with this program.

10.4.3 ***Lake Arrowhead Water Conservation Program***

Please see Attachment A-3 for more information on this proposed program.

10.4.4 ***Green Schools/Green Campus w/ Water Efficiency***

The Alliance to Save Energy is the subcontractor for this program. Please see Attachment A-4 for more information on subcontractor activities for this program.

10.5 ***Quality Assurance and Evaluation Activities***

Statewide Coordination of Work

Since three electric utilities are developing pilot programs and program research efforts, it is clear that the evaluation, measurement and verification (EM&V) work in SCE's pilot must be closely coordinated with that of SDG&E and PG&E, to avoid duplication and assure optimal coverage of all the issues that should be addressed. This can be accomplished either by doing the EM&V work on a statewide study basis or by coordinating the planning of the work so that all issues are appropriately covered, with each utility retaining the flexibility to cover issues of particular concern to it. Because of the multiplicity of types of programs and of EM&V activities required, it

is clear that it will be necessary to contract for the services of multiple research and measurement organizations. However, the utilities are exploring the wisdom of jointly contracting with one organization to oversee and coordinate all of the work.

Establishment of an Advisory Panel

The working group that has provided a forum for the development of these pilots has already been very useful in raising issues that need to be considered in the EM&V component. To assure that such input continues to be provided, a statewide advisory panel or research working group should be established. With good participation, such a panel will assure that the pilot M&E work builds fully on the information already gathered and benefits from the expertise of people who have already studied this issue. This research must build on studies conducted by the CPUC, the California Energy Commission, California utilities and water agencies, and other entities. An advisory panel can also assure that the issues of greatest concern and uncertainty are appropriately addressed. SCE proposes that the three utilities be directed to establish an advisory panel to provide substantial input on overall research design, specific issues to be addressed, and research methods.

Members of this advisory panel should be chosen for their expertise in the fields of water efficiency, hydrology, water delivery, energy efficiency, and program evaluation. This panel would include representatives with these types of expertise from the three electric utilities, the major water partners, the CPUC, the CEC, and other energy/water experts as needed.

Objectives of the EM&V Component of the Pilot Program

The primary purpose of this pilot is to gather sufficient information to determine whether some water usage reduction programs save sufficient embedded energy at a cost that justifies their becoming a mainstream part of future energy efficiency program portfolios. Consequently, five objectives of the evaluation, measurement and verification component of the pilot are:

To form a strong foundation for accurately estimating the value of energy savings achievable from water-saving programs, for use in future program planning;

To assess the annual energy savings and peak load reductions derived from the pilot program initiatives and the lifecycle costs, benefits, and cost-effectiveness of these programs;

To identify what water efficiency program structures and operational processes have worked well, what can be improved, and what doesn't work.

To develop preliminary protocols for the measurement and valuation of indirect energy savings and peak load reductions derived from water-saving programs; and

To identify next steps in data collection, analysis, and development of measurement and valuation protocols, to guide future work.

It is important that the EM&V work help to further develop methodologies for accurately identifying the precise sources and load shapes of the electricity savings derived from reducing water usage in a variety of water end uses and geographic locations. State policy on longer-term funding sources for water/energy efficiency programs and peak demand reduction programs needs to take this information into account.

Data Collection and Analysis Methods

Objective 1 requires the develop of methodologies and preliminary estimates of the technical potential for embedded energy savings achievable from water usage reduction measures. This will require previous experience in developing estimates of energy efficiency and/or water efficiency potential, including some familiarity with the data sources that can be used to develop these estimates.

Data collection for Objective 2, estimating the energy savings and peak load reductions of the pilot programs, will require literature review to identify available data sources, collection of data available from water/wastewater agencies and energy utilities, and data collection at both participating water end use sites and water source/processing sites. Needed water agency and energy utility data will include end use customer water usage and data on location, amount, timing, and cost of energy usage required for water supply or processing, and costs of the pilot programs. Significant engineering data collection and analysis will likely be necessary, including substantial water flow and energy usage measurement and monitoring at both end use and water system sites.

Objective 3 requires development of program theories for each of the pilot programs, including end uses, goals, rationale, strategies, delivery channels and tactics, outcomes, and expected

impact. These may be developed by the utilities or an EM&V contractor. Building from these, process evaluation of the pilot programs can be conducted. Review of strong existing evaluations of other water conservation programs will provide a basis for comparison of the pilot programs with other good programs. This work should be carried out by entities experienced in process evaluation of energy and/or water efficiency programs.

The development of draft impact evaluation and cost-effectiveness analysis protocols (Objective 4) requires expertise in energy and water program impact analysis methods and in cost-benefit analysis. It will involve selective review of previous water usage, water efficiency, water cost, energy efficiency, and embedded energy efficiency studies, plus the studies being conducted in this pilot.

Both the impact evaluation (Objective 2) and protocol development work can contribute to Objective 5 by identifying future data collection, analyses, and methodology development activities that need to be carried out in order to provide more reliable energy/peak load savings estimates and cost-effectiveness data.

10.5.1 *Expected Number/Percent of Inspections (planned percent of projects)*

The Pilot will adopt a rigorous inspection plan that will ensure that itemized measures are installed and operational and the program activities are conducted appropriately. The proposed program strategies, with the exception of the Lake Arrowhead Water Conservation offering, are tied directly with SCE's current energy efficiency programs. The proposed pilot strategies will follow the same program inspection protocols as are in place for the corresponding energy efficiency program. SCE will work with LACSD to ensure the appropriate oversight and inspections occur within the Lake Arrowhead Water Conservation offering.

10.6 Marketing Activities

SCE will investigate ways to leverage the current Flex Your Power campaign to incorporate water efficiency and conservation messaging to the general public. However, most of the marketing efforts to support the proposed Pilot will be focused on local efforts targeted to specific customer groups. These Marketing activities will occur in the following programs as follows:

10.6.1 *Low Income Direct Install High Efficiency Toilet Program*

Marketing efforts will consist of identifying eligible low income households. SCE will leverage the current LIEE contractors for this purpose. SCE will also work with water agencies and existing local government partnerships with large low income populations to perform outreach to these customers. For example, the Central Basin Municipal Water District, where a significant portion of the population may be considered disadvantaged, offers multiple delivery channels and access points to reach these customers.

10.6.2 *Industrial Water Efficiency Program*

Marketing will occur through several channels for this program. The contractor MWDOC secures with the pilot funding will market the program in coordination with MWD and SCE. SCE will also utilize its customer account representatives promote the program along with SCE's Industrial Energy Efficiency Program. Please see Attachment A-2 for more information on marketing activities associated with this program.

10.6.3 *Express Water Efficiency Program*

Marketing for this program will occur through the established delivery channels already in place for the Express Efficiency component of SCE's Business Incentives and Services energy efficiency program. These channels include SCE's customer representatives and marketing activities already underway for Express Efficiency.

10.6.4 *Lake Arrowhead Water Conservation Program*

Marketing for this program will be provided by SCE's partner in this program, the Lake Arrowhead Community Services District. If necessary to increase participation, SCE may provide marketing support. Please see Attachment A-3 for more information on this proposed program.

10.6.5 *Green Schools/Green Campus w/ Water Efficiency*

Marketing for this program will be provided through SCE's subcontractor for this program, The Alliance to Save Energy. Please see Attachment A-4 for more information on marketing activities for this program.

Attachment A-2

Municipal Water District of Orange County

Industrial Process Water Use Reduction Program

The program provides local industries with water use efficiency recommendations and financial incentives to implement process changes. Customer assistance is a critical component of the program and is necessary to ensure industries implement water saving recommendations. The Municipal Water District of Orange County (MWDOC) retained a Consultant to conduct marketing, on site surveys and provide technical support to industrial customers in the following sectors:

- Food Processors
- Textile Manufactures
- Electronics Manufactures
- Metal Plating Companies

The anticipated water savings for this project totals 246 acre-feet per year, or 1,723 acre-feet over the assigned seven-year project life. Therefore, the cost of water saved through implementation of this project is $475 per acre-foot.

Program Description

MWDOC received a grant through the 2004 Water Use Efficiency Program from the California Department of Water Resources (DWR). For the authorized funding, MWDOC is implementing an Industrial Process Water Use Reduction Program to assist qualified local industrial customers with identification and implementation of operating modifications in order to reduce process water use, thus reducing flows to wastewater treatment plants. The targeted program participants are in the following high water use industrial sectors: food processors, textile manufacturers, electronics manufacturers, and metal plating companies.

The Orange County Sanitation District (OCSD) and South Orange County Wastewater Authority (SOCWA) compiled a list of 106 of their permitted discharges in the four targeted sectors. This list is the basis of program marketing.

MWDOC recognizes that process change will only occur if a customer supports the selected retrofit. For this reason, the program will include two levels of surveys: the Focused Survey and the Comprehensive Survey. Up to 50 industrial water customers will receive Focused Surveys and of these, up to 12 will go on to receive a full Comprehensive Survey.

The Focused Surveys will consist of screening audits to identify major water uses and potential water saving measures. Following completion of the Focused Surveys, more detailed Comprehensive Surveys will be conducted for up to 12 industrial water customers that express a strong interest in implementing water saving improvements. The Comprehensive Surveys will include on-site inspections and flow measurements to develop preliminary engineering designs and cost estimates for recommended water saving improvements.

A separate Survey Report is prepared for each of the industrial customers for which a Focused or Comprehensive Survey is conducted. The reports summarize survey results and include recommended retrofits, upgrades, and changes to operating practices that will result in significant water savings. Estimated costs, savings and payback information are also included along with "next steps" on how to implement the recommended improvements. The report content is customized to the specific industrial sector, process and site, as well as the level of survey conducted. Incentive payments will be offered to companies successfully implementing long-term process improvements.

Surveys began in November 2007, and the first reports are expected to be delivered to customers within two weeks of the survey date.

Financial Incentives

Financial incentives are available to qualified industrial companies to implement the water saving improvements recommended in the Comprehensive Survey Reports. The incentives are comprised of funding from the Metropolitan Water District of Southern California (MWD) and California Department of Water Resources (DWR) grant funds.

MWDOC's Industrial Process Water Use Reduction Program will use the framework and follow the guidelines developed by MWD for its Industrial Process Improvements (IPI) Program.

The IPI program offers financial assistance to industries to encourage investment in water-saving process improvements.

Based on project cost and water savings, MWD will pay the lesser of:

$3.00 per 1,000 gallons of actual water saved for a one (1) year monitoring period (equivalent to $195 per acre-foot for five (5) years; or

Fifty (50) percent of the project's water-related process improvement costs; or

Buy down of project cost to reduce the simple pay-back period to two (2) years (project cost minus twice the estimated annual water and wastewater savings).

In addition to the MWD provided incentive, MWDOC will offer Comprehensive Survey participants a supplemental incentive. The MWDOC program supplements MWD's $195 per acre-foot with an additional $55 per acre-foot (or $1.37 per 1,000 gallons saved) to offer $250. Payment is made in two steps. The first payment is made upon verification of equipment installation and startup/operation of the project. Final payment will be made after a 12-month monitoring period of water saved.

Program Partnership

This program is made possible through a partnership of State, regional and local agencies. The California Department of Water Resources is providing a Proposition 50 Water Use Efficiency Grant. At the regional level, MWD will provide Conservation Credits Program funds through their Industrial Process Improvement Program; the Orange County Sanitation District and the South Orange County Wastewater Authority will provide technical assistance and help with program marketing and MWDOC will provide overall project administration. At the local level, retail water agencies and cities in Orange County will provide marketing assistance and water consumption data.

Southern California Edison and the Water – Energy Pilot

SCE is proposing to provide funding sufficient for MWDOC to expand the size and reach of the program by hiring a second Consultant to deliver the program to additional market sectors.

- The expansion will offer Comprehensive surveys to other industrial sectors that may include:
- Paper manufacturers/processors

- Commercial laundries
- Petroleum Extraction
- Pharmaceutical
- Hospitals
- Other sectors are that currently being researched

Since MWDOC will continue to provide in-kind services and Metropolitan will continue to offer financial incentives for process changes to save water, funding support from SCE will provide technical assistance to identify water saving opportunities through technical audits, propose process water use modifications via a complete set of recommendations, and conduct cost benefit analysis. The purpose of the Comprehensive Survey is to provide participating sites with a technical report with sufficient information for the site to make a decision to proceed with process modifications. These Comprehensive Surveys and reports have an estimated cost of $10,000 to $20,000 each. Approximately ten of these surveys can be completed in a twelve month period.

It is anticipated that an expansion of this project could produce similar water savings of 100 acre-feet per year, or 700 acre-feet over the assigned seven-year project life. Due to data limitations for forecasting, this estimate does not include hospitals.

Attachment A-3

Lake Arrowhead Water Conservation Partnership

Indoor/Outdoor Retrofit Program

The Lake Arrowhead Community Services District (District or LACSD) would like to partner with the SCE Water Energy Efficiency Pilot program in an Indoor/Outdoor Retrofit Program. The indoor portion of the program would apply to Lake Arrowhead, California homes built prior to 1992 which presents a potential market of approximately 6,500 homes. These homes are most likely to have older fixtures that are predominantly inefficient in both water use and energy use. The outdoor portion of the program would apply to the homes which use approximately 1/3 of the District's annual water supply, presenting a potential market of approximately 1,000 homes. Retrofitting those homes would provide a substantial water and energy savings.

The following retrofits would be included in the program:

<u>Indoor</u>

Retrofit 5 gallons per flush toilets with efficient 1.3 gallons per flush toilets with a lifetime savings of 0.76 AF per toilet (22.5 year lifetime)

Retrofit older shower heads from 4.5 gpm to 2.0 gpm with a lifetime savings of 0.24 AF per showerhead (5 year lifetime)

Retrofit with high efficiency clothes washer machine resulting in a lifetime savings of 0.314 acre feet per machine (14 year lifetime)

Retrofit sink aerators with new water saving aerators

Install ET/Smart Controllers offering approximately 28 percent water savings (10 year lifetime)

Retrofit sprinkler hardware with estimated water savings of 5 to 10 percent (5-year lifetime)

For the indoor portion of the program, the District will target full-time residents of homes built prior to 1992. For the outdoor portion of the program, the District will target all homes with outdoor irrigation systems. The dual public outreach campaign will include, but not be limited to, direct mail, advertisements, newsletter articles, billing inserts and website information. Individuals

may also contact the District, based on media exposure of the program, and request that their houses be retrofitted.

The District will contract with a qualified vendor to oversee program coordination, quality control checking, and post-installation inspections. Participating residents will receive complete reimbursement for all of the retrofit equipment offered (except the high efficiency clothes washer; the rebate is limited to $200 for this appliance) upon verification by the program contractor that the equipment has been installed. Participating residents may either pay for installation of the equipment or install the equipment themselves. This option will allow a choice between having the District install the equipment at a cost to the resident of up to $700 per house or to complete the installation of the indoor retrofit components themselves, provided they agree to an inspection by District personnel. All outdoor retrofit components will be installed by the District's vendor.

The District plans on creating a long-term certification program as an incentive to homeowners. Any home that is completely retrofitted will be designated as a "Lake Arrowhead Water Star, sponsored by the LACSD and Southern California Edison", which could have an impact on and potentially increase the home's market value. The District is also investigating the possibility of offering preferential rates to homes that are designated as a "Lake Arrowhead Water Star, sponsored by the LACSD and Southern California Edison"

The purpose of SCE funding is to effectively reduce the amount of electricity required to pump water from Northern California to the Southern California mountain area of Lake Arrowhead by reducing the total quantity of acre-feet required to be pumped. It will also aid in the conservation efforts that are imperative to this area. This funding will allow the District to implement the Retrofit Program on a more aggressive scale, thereby realizing the increase in energy and water savings in a timelier manner.

Indoor Retrofits

Total indoor equipment cost for the program per retrofitted home will be $508.70 per household, based on 2 toilets, 2 showers, 3 sink aerators, and 1 clothes washing machine.

Indoor = $508.70 per household

2 toilets @ $150 per toilet = $300.00

2 shower heads @ $2.85 each = $5.70

3 sink aerators @ $1.00 each = $3.00

1 clothes washer @ $700 each = $200.00

Additionally, clothes washer machines are more energy efficient, resulting in 506 kWh directly saved per full time household per year.

Outdoor Retrofits

Total outdoor equipment cost for the program per retrofitted home will be $520 per household, based on 1 enviro-transpiration controller, 1 shutoff hose nozzle, and 8 high efficiency sprinkler head replacements.

Outdoor = $520 per household

1 ET controller addition = $400

1 Shutoff Hose Nozzle = $8.00

8 sprinkler heads @ $14.00 each = $112.00

The District estimates that water use for outdoor irrigation is approximately 1,000 acre feet per year. It is also estimated that approximately 1,000 homes are the primary consumers of that water.

In 2003, the District conducted the ET Controller Pilot Program. The purpose of the program was to field test, under local conditions, the effectiveness, reliability and potential irrigation water savings that could result from the District-wide implementation of ET Controller technology. Sixty ET controllers (43 residential and 17 commercial) were installed and achieved an average of 28 percent water savings.

Based on that study, the District estimates that 280 acre fee per year will be saved if 1,000 homes with irrigation systems are retrofit with ET controllers. Given the lifetime of ET controllers, that equates to a lifetime savings of more than 2,000 acre feet.

The savings from retrofitting sprinkler hardware is not well established, but estimated in the 5-10 percent of outdoor water usage (Vickers, *Handbook of Water Use and Conservation*). That

represents approximately 50 acre feet of water saved each year by retrofitting 1,000 homes with irrigation systems, which is another 250 acre feet over the lifetime of the sprinkler hardware.

Embedded Energy Savings

The projected energy savings of the project are based on 2004 energy costs compiled by the Crestline-Lake Arrowhead Water Agency (CLAWA). These figures represent only the kWh savings for processing and pumping the water locally. This data only includes the cost of getting water from Lake Silverwood to CLAWA and does not include a more accurate overall kWh savings from the Bay-Delta area, to Devil Canyon Power Plant, and locally within the District's distribution system.

The kWh per AF savings from Lake Silverwood to the District are estimated at an average of 2,439 kWh per AF.

This does not include the savings to be realized in pumping the water from the Bay-Delta to Lake Silverwood nor the savings to be realized within the District's Distribution system.

The District estimates 165 kWh per AF is currently used for its distribution system (17 pump stations).

Attachment A-4

Energy and Water Efficiency Pilot Program – Green Schools

Southern California Edison

Program Objective

SCE proposes to build on its existing Green Schools and Green Campus Programs to develop and implement a pilot program to demonstrate and measure the benefits of educating students and their families, and other residential households, about water and energy efficiency activities through schools. This initiative would incorporate lessons learned by the Alliance's Watergy Program, which the Alliance has operated for 10 years internationally to achieve energy savings through water efficiency, and work in close coordination with the Metropolitan Water District (MWD) and their member agencies in Southern California Edison's (SCE) territory.

Summary Pilot Program strategy

The pilot program entails two major activities:

First, it will educate students, their parents, and the community about water efficiency as part of the Green Schools and Green Campus Programs. This will include utilizing students in schools to educate their parents and the public about the benefits of water efficiency. Outreach to home and garden stores will also be included.

Second, a retrofit component will consist of implementation of shower heads, toilets, and other water conservation measures in the schools and residences of the students. This will include utilizing the current Green School Program to do direct installation of popular water conservation measures in schools. The Direct Installation of these measures will be funded through the pilot program and standard MWD rebates. Water efficiency measures will be finalized in coordination with MWD and SCE. This will allow the pilot program to have some specific sites where measures are installed – thus resulting in more accurate measurement and evaluation studies.

The key strategy will be to include water efficiency in a majority of the components of the current Green Schools Program, and to integrate water efficiency into the Green Campus Program. These activities will be closely coordinated with MWD in the SCE service territory.

Program Timing

July, 2007 through June, 2008 (12 months)

Pilot Program Activities

1: Incorporating Water into the Green Schools and Green Campus Programs

The Green Schools Program educates students K-12 about energy and the link between energy and the environment. It is a natural addition to add water into this activity, incorporating water efficiency into instruction and involving students in identifying water waste and developing solutions that increase water efficiency. The program will develop or provide instructional materials that are standards-based for math, science and language arts, not simply correlated to the California Standards of learning; this resource will help ensure that teachers will be able to use these lessons as part of their normal instructional time and processes. Examples of potential activities include:

School Water Audits – Train students to conduct water audits of schools and campuses, including:

Faucets -- students can measure the amount of water leaking per unit time in the leaking faucets to add up the water waste

Toilets – students will learn to test the school toilets for leaks and do so at home as well; they will compare water saving toilets and standard toilets to understand the potential savings

Home Water Audits – students can conduct home audits and make recommendations to parents for replacements and repairs.

Landscaping – students can plant small xeriscape gardens at school or visit a xeriscape garden in their community. They can conduct an inventory of low-water-use plants in their home or neighborhood gardens.

The program will incorporate water efficiency into the following Green Schools activities for 10-12 schools already participating in Green Schools:

Add one dedicated teacher to water efficiency activities at each participating school – Green Schools team at each school consist of 1-3 teachers and a custodian. In order to maintain the focus on energy while adding a water efficiency component, one teacher will be added to each

participating school team. This teacher will be part of the school team and supported by the Program.

Provide Instructional Materials – The Program will conduct a survey of water efficiency lessons available and make the best of those available to participating teachers. All materials will be standards-based. In addition, teachers will be encouraged to develop and submit their own lesson plans that include benefits of water conservation.

Add Water to Green Schools Professional Development Workshops -- The Program will add a water component to its professional development workshops. These workshops will train and prepare school teams consisting of teachers and custodians in K-12 schools to educate students about water and energy and the connection between water/energy efficiency and the environment, and to involve students in activities that will save water in their school facilities. Activities will include communicating energy and water efficiency goals and objectives jointly to the participating schools. Each school team will incorporate water into their five-strand plans. The five strands are 1) integrating water into instruction, 2) taking action to save water in schools, 3) involving the whole school, 4) taking the message home, and 5) involving custodians. This will result in the professional workshops being more comprehensive for the participating school districts.

School Site Support Visits – Program staff will visit schools monthly to support schools' water and energy savings activities. The visits to the participating schools will include communication of information about water efficiency, and schools will be encouraged to participate in the various energy and water efficiency efforts. Monthly visits will be more comprehensive and involve more teachers in order to support both energy and water activities.

School Team Stipends – An additional stipend will be paid to the extra water-focused team member from each participating Green School.

Mid- and End-of-year Meetings – At the Mid-year Meeting, school teams will share success stories from their fall water and energy education activities, and will plan their activities for the spring semester. The Program will use this opportunity to reinforce the water message and provide new resources and information about water efficiency. The End-of-year Meeting will

celebrate successes and recognize achievements as well as set the stage for the following year's activities.

School Energy Audit Training – The training and audit components of the Program's Student Energy Auditor Training (SEAT) will be modified to incorporate water efficiency measures. The training will include teaching students about the benefits of water efficiency and methods to look for common retrofits. Auditor training will prepare students to look for and analyze water conservation opportunities. Student team will actually conduct a water and energy audit of part of their school and develop recommendations for efficiency improvements, which will be presented to the school board or other administrative audience.

Home Water Efficiency activities – Students will take their water efficiency learning home to their families through lessons in which students and parents conduct a water audit of their home. Water conservation information, brochures or flyers that can be distributed to the community by the students. Tie water conservation into our community outreach effort with museum/library displays. Financial support for student organizations, like environmental clubs, to take on some school/community awareness projects. Joint energy and water efficiency presentations by students in meetings and events where parents are present.

Recognition Program – the Program, in conjunction with SCE, MWD and other involved water utilities, will design a recognition program for students and schools that do an exceptional job at integrating water efficiency activities into their schools and at home.

Shower Head Exchange – The Program will leverage our current CFL exchange program to facilitate the distribution of water-efficient shower heads, faucet aerators and other low-cost, self-install residential measures. The Green Schools CFL exchange was a tremendous success with schools and provided SCE with "hard savings" far exceeding the original goals.

Partnering with Retailers to Generate and Meet Demand for Water Conserving Products -- Students (participants in the Green Schools and Green Campus Programs) will work with area retailers to educate customers about the benefits of water-efficient devices and encourage the selection of these models. Examples of target retailers are Sears, Home Depot, Lowe's, Wal-

Mart, Ace Hardware and True Value. To prepare for this, The Program Team (including college interns) will research area retailers to see what water conserving devices currently appear in their inventory—such as low-flow showerheads, low-flush toilets, toilet displacement tank bank bags, faucet aerators, front loading washing machines, and hot water recirculation pumps. We will then work with the companies to introduce them to the water efficiency campaign the students are involved with and discuss ways the students can promote the benefits of water conserving products to their customers. This might include items that are new to their current line of water-using products. By casting this as a student activity or campaign, we predict that retailers will be more open to this effort to educate their customers.

For example, students from the Green Schools program (with adult supervision) could staff water conservation help desks at various stores to help draw attention to the water conserving opportunities being offered. The desks will be supplied with succinct, colorful brochures on water conservation created by the Team.

Partnering with Nurseries to Increase the Sale of Xeriscape Plants – This component is similar to that for the home supply retailers but instead the Team will target those area nurseries that offer a wide selection of xeriscape plants. We will discuss the goals of the program with them and identify stores that are willing to work with us to raise awareness of this product line. For example, on the weekends an information desk can be staffed by both Green School students, who will help draw attention to the desk, as well as a nursery staff member. The Program will develop, if necessary, or use existing brochures providing names, photos and basic information on drought tolerant plants that do well in the area.

Energy Green Campus Program

The Green Campus Program, operating in a selection of University of California (UC) and California State University (CSU) campuses during the 2006-2007 academic year, has demonstrated that college students can greatly influence energy use on campuses and have a great potential to do the same with water efficiency.

The Program will incorporate water efficiency into the following Green Campus activities for UC Santa Barbara, CSU San Bernardino, and Cal Poly Pomona:

Campus Water Efficiency – With the training, support and supervision provided by the Program, paid student interns have an enormous potential to reduce water waste on campus, through collaborations with campus energy and facility managers. Spray nozzle and waterless urinals are among new technologies that student involvement can help put on a fast-track. The Green Campus Program can also add water-conserving behaviors to the energy-conserving behaviors that the Green Campus Program promotes, in particular reducing water waste in showers and sinks in campus resident halls. Students on each of the Save Energy Green Campuses in SCE territory are already in place, and the relationships and procedures that conserve energy on campus will facilitate water efficiency as well.

College Interns Educating the Residential Community – In addition to water savings on campus, the Green Campus interns can play an important role in educating the residential community around their campuses about water saving opportunities and facilitate their purchase of water-efficient appliances and their water-conserving habits. As described above under the Retailers and Nurseries section, college interns can play two important roles. First, students can become involved in the community outreach component of the pilot directly, by conducting the inventory of water-efficient products in stores and nurseries, identifying the water efficient products and plant that are available in different stores. They can also be an important part of the team that works with retailers, coordinating working closely with the Program staff, by helping conduct, they can also be they can be actively involved in educating customers about water-efficient choices. Secondly, they can help K-12 students educate their communities about water efficiency, again through retailers and also by providing support to students performing water audits of small businesses. Having college students mentor K-12 students directly, with appropriate adult supervision, will increase the cache of the activity to the younger students and is a good use of program resources.

2: Retrofit Component

The Program will provide retrofit services if desired by SCE, to replace inefficient toilets and other measures in the residential, school, and possibly the college campus market.

Direct Implementation of Toilets and Other Water Conservation Measures – The pilot program will primarily target direct installation of 300 toilets in the participating schools. Other water conservation measures including waterless urinals will also be considered. These toilets will be retrofitted at no cost to the school. Incentives for the water efficient toilets from MWD and other water agencies will be leveraged to reduce the cost of installation of these toilets. Other popular water saving measures may be considered for this component. This will allow the pilot program to have some specific sites where measures are installed – thus resulting in more accurate measurement and evaluation studies.

Budget for Retrofit Component

On the retrofit component, we anticipate being able to work with 30 schools and replacing 10 toilets each, for a total of 300 total toilets. A tentative budget for retrofits assumes the following:

Installed cost per toilet: $280.

MWD rebate per toilet: $165.

SCE cost per toilet $115.

Total implementation budget for 300 toilets is $34,500. SCE cost per unit is estimated and may vary.

Attachment B

Energy Savings Forecast

Attachment B
Table B-1
Proposed SCE Water Efficiency Pilot Budget and Energy Savings

Program Strategy	SCE 2007-2008 Budget $	Water Savings (MG)	Embedded kWh Savings	$/kWh
Low Income Direct Install HET	1,692,600	Up to 138.55	Up to 414,542	4.08
Industrial Water Efficiency	308,000	33	98,736	3.12
Express Water Conservation	133,000	57	140,644	0.95
Lake Arrowhead Water Conservation[1]	308,000	42	367,374	0.84
Green Schools/Green Campus Water Efficiency[2]	282,000	4	11,968	6.85
EM&V Set-aside	703,400	n/a	n/a	-
Totals	$3,427,000	Up to 274.55 MG	Up to 1,033,264 kWh	3.12

Notes:
[1] Embedded energy for Lake Arrowhead includes an extra 2,400 kWh/AF (7,200 kWh/MG) due to lift from Silverwood reservoir.
[2] $/kWh for HETs only; education funding omitted from calculation since no kWh is claimed for this component.

Attachment B
Table B-2
Proposed Water Efficiency Pilot Budget – SCE and Water Partner

Program Strategy	**SCE 2007-2008 Budget $**	**Partner 2007-2008 Budget[3] $**	**Total Budget $**
Low Income Direct Install HET	Up to 1,692,600	Up to 2,150,000	Up to 3,842,600
Industrial Water Efficiency	308,000	144,210	452,210
Express Water Conservation	133,000	190,000	323,000
Lake Arrowhead Water Conservation	308,000	249,600	557,600
Green Schools/Green Campus Water Efficiency	282,000	49,500	331,500
EM&V Set-aside	703,400	-	703.400
Totals	Up to $3,427,000	Up to $2,783,310	Up to $6,210,310

Attachment C

Detailed Summary Pilot Budget

Attachment C

Southern California Edison
2007-2008 – Proposed Water Efficiency Pilot Budget - Detail

Program Name	Proposed Pilot Budget	Total Administrative Budget	Marketing/ Advertising/ Outreach Budget	Direct Implementation Budget	EMV
Low Income Direct Install HETs	Up to $1,692,600	Up to $194,000	Up to $111,100	Up to $1,387,500	$ -
Industrial Process Water Use Reduction	$308,000	$48,000	$60,000	$200,000	$ -
Express Water Efficiency	$133,000	$43,400	$89,600	$ -	$ -
Lake Arrowhead Water Conservation	$308,000	$32,900	$15,100	$260,000	$ -
Green Schools Water Efficiency	$282,000	$32,200	$14,800	$235,000	$ -
EMV Set Aside	$703,400	$ -	$ -	$ -	$703,400
SCE Total	Up to $3,427,000	Up to $350,500	Up to $290,600	Up to $2,082,500	$703,400

Attachment D

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF GENE E. RODRIGUES

Q. Please state your name and business address for the record.

A. My name is Gene E. Rodrigues, and my business address is 6042 N. Irwindale Avenue, Irwindale, CA 91702.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Director of Energy Efficiency for SCE. In that capacity, I have direct oversight of SCE's portfolio of energy efficiency programs, low-income energy efficiency programs, the California Alternate Rates for Energy (CARE) program, the self generation incentives program, and the measurement & evaluation and regulatory support functions for these areas.

Q. Briefly describe your educational and professional background.

A. I received a Bachelor of Science degree in Education from Northern Arizona University in 1980 and a Juris Doctor degree from the University of California, Hastings College of Law in 1988. Before coming to SCE, I taught high school in Arizona and practiced law with a civil litigation firm in Los Angeles. In 1990, I joined SCE's regulatory law department, where I provided legal support for SCE's energy efficiency programs, among other things. Since moving to the business side of SCE, I have held various positions within the Customer Service Business Unit, managing energy efficiency policy, operations and regulatory functions. My current position is Director of Energy Efficiency. I have previously practiced law and testified before the Commission.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor Sections I and II of Exhibit SCE-1, entitled *Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008*, as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

1 Q. Insofar as this material is factual in nature, do you believe it to be correct?

2 A. Yes, I do.

3 Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

4 A. Yes, it does.

5 Q. Does this conclude your qualifications and prepared testimony?

6 A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF JOHN F. NALL

Q. Please state your name and business address for the record.

A. My name is John F. Nall, and my business address is 6042 N. Irwindale Avenue, Irwindale, CA 91702.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Manager of Residential Energy Efficiency and Low Income Programs for SCE. My responsibilities include management and administration of energy audit, rebate, lighting, refrigerator recycling, Low-Income Energy Efficiency, the California Alternate Rates for Energy (CARE), and Cool Center programs.

Q. Briefly describe your educational and professional background.

A. I graduated from Ball State University in 1970, with a Bachelor of Science in Education. I also received an MFA degree from Indiana University in 1977. Prior to working at SCE, I held energy efficiency program management positions with the California State Department of Community Services – formerly California State Office of Economic Opportunity and Development – and Foothill Area Community Services, in Pasadena.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Section III of Exhibit SCE-1, entitled *Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008,* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

1 Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best
2 judgment?
3 A. Yes, it does.
4 Q. Does this conclude your qualifications and prepared testimony?
5 A. Yes, it does

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF DAVID M. BRUDER

Q. Please state your name and business address for the record.

A. My name is David M. Bruder, and my business address is 6042 N. Irwindale Avenue, Irwindale, CA 91702.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am presently the Manager of Non-Residential Energy Efficiency Programs for SCE. My responsibilities include management and administration of SCE's portfolio of energy efficiency programs for non-residential customers.

Q. Briefly describe your educational and professional background.

A. I graduated from Cal Poly San Luis Obispo in 1982, with a Bachelor of Science in Environmental Engineering.

I am a licensed mechanical engineer with over 20 years of experience in analysis and design of energy systems for commercial and industrial facilities.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Section III of Exhibit SCE-1, entitled *Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008*, as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

1 A. Yes, it does.

2 Q. Does this conclude your qualifications and prepared testimony?

3 A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF MARIAN V. BROWN

Q. Please state your name and business address for the record.

A. My name is Marian V. Brown, and my business address is 6040 N. Irwindale Ave, Irwindale, CA 91702.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am the manager of Measurement and Evaluation. My primary responsibilities are planning, supervising staff, and supervising projects involving measurement, market assessment, and evaluation of energy efficiency, low-income, and demand response programs.

Q. Briefly describe your educational and professional background.

A. I received a Doctor of Philosophy (Ph.D.) degree in Economics from Stanford University in 1979 and a Bachelor of Arts (B.A.) degree in Economics from Pomona College in 1968. Prior to joining SCE in 1986, I was an Assistant Professor of Economics at Pomona College from 1977 to 1986, a Visiting Scholar to the Social Security Administration in 1984-1985, and a Senior Research Analyst at the National Bureau of Economic Research--West from 1975-1977.

I have been SCE's witness for program measurement and evaluation issues in energy efficiency and demand response proceedings since the early 1990s. I am SCE's representative to the California DSM Measurement Advisory Committee (CADMAC) and the California Measurement Advisory Council (CALMAC) and chair both groups in some years, in rotation with the other two utilities. I am a life member and past president of the Association of Energy Services Professionals.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Sections IV of Exhibit SCE-1, entitled *Supplemental Testimony of Southern California Edison Company Supporting Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007- 2008* , as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF THOMAS CALABRO

Q. Please state your name and business address for the record.

A. My name is Thomas Calabro, and my business address is 2244 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I the Director of Finance for the Customer Service Business Unit and I have responsibility for budgeting, payroll/administration, financial analysis, internal controls, and technology for the business unit.

Q. Briefly describe your educational and professional background.

A. I graduated from the University of California, Irvine in 1980 with a Bachelor of Science degree in Biology. I have a Masters of Science in Public Health degree in Epidemiology from UCLA, received in 1982. My experience prior to joint Edison includes two years as an analyst at the RAND Corporation. I participated in the 1988 General Rate Case as a consultant from 1984 through 1986. Since joining Edison in 1986, I have held the positions of Revenue Requirement Analyst, Health Care Systems Analyst, Property Accounting Analyst, Capital Recovery Supervisor and Manager as part of the Property Accounting Department, Manager in Accounting Systems, Corporate Budgets, Strategy & Business Planning and Regulatory Compliance prior to assuming my present position in 2006.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor Section V of Exhibit SCE-1, entitled *Supplemental Testimony of Southern California Edison Company Supporting*

Application for Approval of Embedded Energy Efficiency Water Pilot Program for 2007-2008, as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

Attachment E

Cost Effectiveness Calculations and Answers to the April 2007 ACR

Cost Effectiveness Calculations and Answers to the April 2007 ACR

This Attachment to the SCE's Supplemental Testimony contains SCE's response to questions A-K, pages 16 – 17 in Section I of the April 23, 2007 ACR. It also contains notes related to SCE's concurrently served cost effectiveness calculations.

I. Answers to 2007 ACR Questions A-K

A. Identify, by measure name, all of the measures to be included in the program

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for all measures to be included in SCE's proposed pilot strategies. In addition, please see notes at end of this section regarding measure-level and program-level inputs.

B. Measure target sector

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for the targeted customer sector for each measure included in SCE's proposed pilot strategies.

C. Measure water savings by gallons per day

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for water savings in gallons per day for each measure included in SCE's proposed pilot strategies.

D. Measure cost

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for measure costs for each measure included in SCE's proposed pilot strategies.

E. Measure life

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for measure life for each measure included in SCE's proposed pilot strategies.

F. Estimate of net-to-gross ratio indicating the fraction of participants not expected to be free riders

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for the net-to-gross ratio for each measure included in SCE's proposed pilot strategies.

G. Administrative costs for each measure

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for administrative costs for each measure included in SCE's proposed pilot strategies.

H. Partner dollar contributions for each measure for each category and any restrictions or conditions attached to these financial contributions

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for partner contributions by measure for each of SCE's proposed pilot strategies. Total partner contribution for the Low Income HET Direct Install program will depend on total water agency participation; not expected to be finalized until August 2007.

I. Expected geographic distribution of measure installs

Answer: Low Income HET Direct Install Program: Various Low Income areas throughout SCE territory. Specific geographic distribution of measure implementations will depend on water agency participation; not expected to be finalized until August 2007. Central Basin Municipal Water District (CBMWD) expected to be the first official participant.

Industrial Water Efficiency Program: Within MWDOC territory (North and Central Orange County).

Express Water Efficiency Program: Throughout SCE territory.

Lake Arrowhead Water Conservation Partnership: Lake Arrowhead Community Services District service territory.

Green Campus/Green Schools w/ Water Efficiency Program: Various Low Income areas throughout SCE territory.

J. Identification of third party implementers planned for each program and any contracts these third parties currently have with the IOUs

Answer: Low Income HET Direct Install Program: Vendor(s) to be managed by SCE. SCE will leverage existing Low Income Energy Efficiency contractors to identify candidate households for direct installation of HETs, and will procure one or more plumbing contractors to perform the direct installation of HETs. This solicitation process will begin as soon as this program strategy is approved by the Commission.

Industrial Water Efficiency Program: Vendor(s) to be procured and managed by MWDOC.

Express Water Efficiency Program: No third party vendor anticipated.

Lake Arrowhead Water Conservation Partnership: Vendor(s) to be procured and managed by Lake Arrowhead Community Services District.

Green Campus/Green Schools w/ Water Efficiency Program: Vendor (Alliance to Save Energy) to be managed by SCE. SCE has existing contract with this vendor for the Green Campus/Green Schools program; a change order will be used to expand funding and scope on this contract to incorporate water efficiency educational outreach and HET replacement efforts.

K. Description of how participant funds will collected and used in off-setting program costs, and which specific costs will be offset

Answer: Please see SCE's Water-Energy Cost Effectiveness Calculator for treatment of participant funds for measure included in SCE's proposed pilot strategies.

II. Notes on Cost Effectiveness Calculations

SCE is concurrently serving its cost effectiveness calculations, an excel spreadsheet titled Attachment E – Cost Calculations Water Measures.

Measure-level inputs:

General notes: Default measures and associated values were used wherever possible. Default measures and inputs not used in the proposed program strategies were deleted for clarity. Default measures and inputs used in the proposed program strategies remain highlighted beige. Changes to default measure inputs and new measures are highlighted yellow. Program headings are highlighted green, and are provided on the Measure definition tab to identify those measures associated with each proposed program strategy.

Low Income HET Direct Install Program: Reference savings for HET measure provided by MWD. See MWD board letter for supporting documentation.

Industrial Water Efficiency Program: Reference savings based on total expected savings for program; forecast provided by MWDOC. The Water-Energy Cost Effectiveness Calculator only directly accommodates deemed savings measures. This program strategy will employ project-specific calculated measures; modeling in the calculator required the creation of a generic "Industrial Process Enhancement" measure with a Reference savings equal to the entire program forecast.

Express Water Efficiency Program: Reference savings for PH Controller and WBIC measures provided by MWD. See MWD board letter for supporting documentation. The WBIC measure assumes 5 acres per installation.

Lake Arrowhead Water Conservation Partnership: Reference savings for HET measure provided by MWD. See MWD board letter for supporting documentation. Default savings assumptions provided with the Water-Energy Cost Effectiveness Calculator used for all other water-saving measures. A non-resource installation measure was included to capture installation costs for participants. This was done because the water saving measures are intended to be installed as a package.

Green Campus/Green Schools w/ Water Efficiency Program: Default savings assumptions used.

Program-level inputs:

General notes: Difficulties were encountered with the Total Program Budget calculation on the Program Analysis tab. In some cases the partner contribution was not corrected subtracted out of the IOU costs. The work-around employed was to modify the formula as necessary for each program to yield the correct results. This work-around was also performed on the Program Summary tab. TRC calculations at both the program level and the portfolio level do not include non-resource costs such as any educational components or the EM&V set-aside. EM&V was omitted for the following reasons:

1) The amount of EM&V being done for this program, as is often the case for pilot programs, is far more than for a normal energy efficiency program. It is not appropriate to charge the full costs to the program in order to determine the program's cost-effectiveness, because the cost for a pilot is abnormally high. This high cost addresses a number of one-time issues that will not be repeated in later years.

2) Furthermore, pilot programs, precisely because they're first time trials, are not as cost-effective as the program can be expected to become. It does not make sense to burden pilot programs with EM&V costs at this early stage. The first hurdle is to demonstrate what cost-effectiveness they can achieve simply on a program cost basis.

3) Jeff Hirsch informed us that the EM&V funding will be treated as a pass-through that will not affect the TRC even if it were included.

Low Income HET Direct Install Program: The total maximum expected participation by MWD's member agencies was used in the Program analysis. Actual participation may be lower, and will not be known until August 2007 or later.

Industrial Water Efficiency Program: Because this program will used calculated savings rather than deemed, the measure associated with this program has a Reference savings equal to the entire program forecast. Therefore, only one unit was projected to occur.

Express Water Efficiency Program: No program-level input notes.

Lake Arrowhead Water Conservation Partnership: 1000 homes are intended to be retrofitted via this strategy; quantities of each measure are given in Attachment A-4 of the Testimony, and used to determine the number of units shown on the Program Analysis tab.

Green Campus/Green Schools w/ Water Efficiency Program: Only costs associated with the resource portion of this program are included in the Water-Energy Cost Effectiveness Calculator. Program funding intended for the educational outreach component was omitted from Water-Energy Cost Effectiveness Calculator in order to keep these funds out of the TRC calculation. This is consistent with the methodology used for traditional energy efficiency programs.

Attachment F

Evaluation, Measurement and Verification Plan

Evaluation, Measurement, and Verification (EM&V) Plan
For Water-Embedded Energy Pilot Programs

Summary

With the assistance of EM&V consultants knowledgeable in both the water and energy arenas, the utilities have developed a detailed EM&V plan that coordinates across similar program types and responds to information requests identified in the April 23, 2007 Assigned Commissioner Ruling. The first section of the plan provides an overview of the types of studies to be done:

- Water savings studies
- Embedded energy studies
- Process evaluation studies

Separate sections then describe each type of proposed study.

Appendix A provides a reference table depicting the budgeted studies and the proposed pilot programs by utility.

Appendix B provides a useful cross reference table which identifies (in some detail) which constituent studies address one or more of the following evaluation objectives:

- the pilot program objectives listed in the Assigned Commissioner Ruling;
- the desired specific descriptions of study characteristics;
- the intervenors' questions listed in the Ruling; and
- the utilities' questions on the technical, economic, and programmatic potential of water-embedded energy programs.

Appendix C provides a detailed description for each study. The study descriptions are organized by how they are to be implemented (statewide; then by individual utility).

I. <u>Approach</u>

The Evaluation, Measurement, and Verification (EM&V) Plan contains a systematic strategy for evaluating the various impacts of the proposed California investor-owned utilities' Water-Embedded Energy Pilot Programs.

The plan includes a series of impact evaluation studies. These are designed to develop answers to the questions of (1) how much water is saved or could be saved (market potential) and (2) how much energy is embedded in the saved water. Water savings can be estimated i) retrospectively, ii) prospectively, and/or iii) to determine the impact at peak, mid, and off-peak periods (ex-post, ex-ante, and/or load shaping, respectively). The amount of energy embedded can be estimated in total, and/or assessed in accordance with an allocation of upstream/downstream energy savings.

The plan also includes a series of process evaluation studies. These focus on verifying and analyzing the program delivery effectiveness and potential improvements in delivery implementation.

Therefore, much of the evaluation plan (and its utility-specific subcomponents) is discussed in terms of the three key approaches to the analyses:

- Water savings studies
- Embedded energy studies
- Process evaluation studies

In order to assist in simplifying the rather extensive cross-referencing of pilot programs and evaluation approaches, a flexible grid structure has been constructed and incorporated within this evaluation plan; see Appendix A. It contains a grid that maps Pilot Programs to proposed water, energy, and process studies as well as their budgets, and can be used to consider reallocating monies among the respective studies. Appendix B follows a similar approach to mapping the studies this time in relation to the research questions posed by the various key stakeholders (i.e., the CPUC ALJ, Assigned Commissioner, intervenors, and the utilities noted in the ACR, dated April 23, 2007). Appendix C to the plan provides the detailed description of each study,

organized first by statewide efforts, and then by specific utility. The study descriptions are organized by the questions asked in the ACR, dated April 23, 2007[22].

II. Water Savings Impact Evaluation

A. Overview of Water Savings Estimation Methodologies

Water conservation programs can potentially save water and energy. In order to verify that water conservation programs do in fact produce their intended savings, evaluations designed to look at both the water and energy impacts are appropriate. There are several approaches to estimating savings, as briefly summarized:

- Engineering "Estimates" are assumed savings values, not measurements of savings. Engineering estimates cannot detect changes in human behavior. The degree of implementation difficulty is low. This method, also termed a "stipulation", is referred to in the International Performance Measurement and Verification Protocols (IPMVP) as M&V Option A. In a nutshell, Option A requires some measurement, but allows other major parameters to be stipulated.
- End-Use Studies are high resolution, data-intensive measurements. Because of the cost of conducting end-use studies, they usually involve limited sample sizes (across customers and time) and are subject to internal and external threats relative to their validity. Their degree of implementation difficulty is moderate. This method is referred to in IPMVP as M&V Option B.
- Statistical Impact Evaluations combine customer-level meter readings drawn from billing systems with weather data in multivariate statistical intervention models. Such evaluations are the most reliable way to estimate robust treatment effects and obtain valid statistical inference. The degree of implementation difficulty is moderately high. This method is referred to in IPMVP as M&V Option C.
- System-Wide Intervention Analysis requires an isolated system, with a sufficiently long and stable history, and pre-intervention predictability. Low resolution is likely for individual interventions, but can demonstrate overall aggregate effects. The degree of implementation difficulty is relatively high. If compared to utility energy bills (which incorporate both direct and indirect costs), system-wide analysis can show a systemic connection between reduced water deliveries and energy requirements.

[22] DGX/hl2 4/23/2007

B. Water Savings Achieved by Pilot Programs—Proposed Impact Evaluations

This section summarizes the proposed water impact evaluations while also noting the foundational work that has previously been done in these areas. In general, stipulated values will be used only in those cases where excellent previous measurement studies have been done, and the results can be documented to be clearly transferable to the Pilot programs[23]. Thus, any stipulated values will be based on previous measurements done in other studies.

Direct In-Line Metering of Commercial/Industrial Measures (End-Use Studies):

- Because customer water demand in the commercial/industrial sector varies greatly across customers, direct metering has often been used to establish a baseline measure of water use and the subsequent change in use produced by efficiency improvements. The measurement approaches and methods used for water use efficiency improvements are analogous to those used for energy[24]. This impact evaluation would target Commercial, Industrial, and Institutional (CII) customers and related applications of greatest potential/uncertainty. CII end use studies have been developed for PG&E Commercial and Industrial Pilot Programs (Commercial Food Service, Food Processing, Hospitality Sector Laundries, and Winery Processes); the SCE Industrial Process Water Use Reduction (Audits) and Express Water Efficiency (PH Controllers and Commercial ET Controllers) Programs; and the SDG&E Large Customer Water Audits Program.

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[23] The standard reference in the water industry to field tested stipulations is the *California Urban Water Conservation Council BMP Cost and Savings Study: A Guide to the Data and Methods for Cost Effectiveness Analysis of Urban Water Conservation Best Management Practices*, March 2005. http://www.doe2.com/download/Water-Energy/CUWCC_BMPCostsSavingsStudy.pdf

[24] East Bay MUD has been working on developing efficiency standards for new customers that provide comprehensive documentation of efficiency standards and stipulations for process improvements. The Metropolitan Water District of Southern California has also collected data on experiences with CII efficiency programs.

Customer Bills, Weather Data, and Statistical Methods (Statistical Impact Studies):

- Low Income High Efficiency Toilet (HET) Impact Evaluations. Though stipulations exist for ultra low flow (ULF) toilets, these estimates do not directly *measure* the HET savings. The one existing statistical impact evaluation of a low income ULF Toilet program[25] established higher water savings than in average income areas due to a higher number of persons per toilet. For these two reasons, this EM&V plan proposes statistical impact evaluations of the low income HET pilot programs. Customer satisfaction will also be measured in this evaluation. The impact evaluation targets the SCE Low Income Direct Install HE Toilet Replacement Program, SCE Green Schools/Campuses Program with HE Toilets, PG&E Low Income Direct Install HE Toilet Replacement Program, and the Southern California Gas Low Income Multifamily HE Toilet Replacement Program.

- Weather Based Irrigation Controllers (WBIC) and Landscape Efficiency Impact Evaluations. Impact evaluation results exist for early weather-based controller programs that included both average water use reduction and seasonal load shape reductions (see the "The Residential Runoff Reduction Study," Municipal Water District of Orange County and Irvine Ranch Water District, July 2004.) The study was performed on a program that used only one type of irrigation controller and an early implementation of that controller technology at that. Thus, a separate impact evaluation is warranted for the newer irrigation controllers being proposed. This impact evaluation would assess the SDG&E Landscape Management Efficiency Improvements Program and the SCE Express Water Efficiency Program (ET Controllers).

III. Embedded Energy-Water Evaluations

A. Overview of Energy—Water Cost-Benefit Perspectives

This evaluation plan proposes that the embedded energy issues be partitioned into three conceptually distinct areas of questioning:

Question Area 1: Embedded Energy – Societal Perspective

- What are the energy savings associated with each gallon of saved water in various locations? This answers the question of which water use efficiency (WUE) programs

[25] The large scale evaluation of ULF toilet replacement in Los Angeles and Santa Monica, as implemented by the Mothers of East Los Angeles, identified a per toilet savings of 45 gallons per day in low income single family houses, as compared to 21.6 gallons per day per ULF toilet in generic rebate applications. See Appendix D of *Ultra Low Flush Toilet Programs: Evaluation of Program Outcomes and Water Savings*, A report for the Metropolitan Water District of Southern California, July 1995.

in which locations produce sufficient energy savings to be worthwhile for society to implement.[26] The timing and load shape of the water savings can also determine the magnitude and value of energy savings.

Question Area 2: Allocation of Avoided Energy Costs

- To whom should the various components of total energy savings be attributed? Clearly the location, magnitude, and timing of energy savings will affect the answer to this question.
- Should customer benefits from avoided energy costs, embedded in their water bills, be included in any cost-effectiveness calculations?

Question Area 3: Information Needed to Inform Decision-Making

- What information is required for informed decision-making in terms of energy utility co-funding of water efficiency programs?

Each of the proposed Embedded Energy-Water Evaluations contributes to answering these questions in different ways.

B. Proposed Embedded Energy-Water Evaluations

The embedded energy-water evaluations that address the areas of inquiry noted above can be summarized as follows:

End-use Studies looking at Energy and Water Load Profiles of Water Efficiency Measures

- The load profiles associated with water use efficiency measures are a required input into energy calculators. This evaluation would extend the approach taken by the "second generation" calculator (see below) by using data from the current Proposition 50 California End Use Study occurring at 10 sites. It would also provide more spatially accurate decrements to the water demand load shape and associated decrement to the energy load requirement (SDG&E, SoCalGas, PG&E, and SCE applicability). If feasible, this work should coordinate with the state-wide Prop-50 study, funded in the most recent round, and to be conducted by Lawrence Berkeley National Laboratories. This joint evaluation would be sponsored by all participants in the Water Embedded-Energy Pilot Programs.

[26] Incomplete accounting understates the resource value of water use efficiency. Integrated resource planning of water, wastewater and energy must be performed from *society's* perspective and answer the question, "What mix of water and energy efficiency measures will create the greatest return on the combined ratepayer investment?" (*California's Water-Energy Relationship,* p.135, CEC 2005)

Assessments of Emerging Technologies to Improve Water System Efficiency

- This is a pilot study to investigate emerging technologies in water system operating efficiencies—specifically in monitoring and telecommunications. The energy utility tasked with this work (i.e., PG&E) would offer incentives to water agencies to test a promising technology or technologies. Technologies to be investigated would include integration of water flow and energy monitoring in the Supervisory Control and Data Acquisition (SCADA) systems to detect water losses; integration of customer metering and SCADA to improve water distribution and energy efficiency; and a coupling of SCADA with modeling to optimize pumping efficiency. This evaluation would focus on PG&E's Emerging Technologies to Improve Water System Efficiency Program.

Analysis of Water-Energy Efficiency Measures in an Isolated Service Area (System-wide Intervention Analysis)

- Lake Arrowhead offers a unique study site of high embedded-energy water use, distinct and large pressure differentials, and a relatively isolated service area. It will host the Lake Arrowhead Residential Indoor/Outdoor Water Use Pilot Program. The local water district has compiled both aggregate water use data and disaggregated customer water demand data going back to 1996. This study would involve analysis of treatment effects using both customer-level data and system-wide water use before, during and following a period of intensive water use efficiency retrofits. These system-wide changes in water use would be compared to system-wide changes in utility energy use. This analysis would target the SCE Residential Retrofits in Lake Arrowhead.

Embedded Energy Calculator (Policy Model)

The CPUC has approved an Embedded Energy Development Cost Effectiveness Calculator (as developed by DRRC). The methodology incorporated in the current calculator contains an interpretation of cost-effectiveness that excludes much of the energy required to convey water (specifically any conveyance outside the jurisdiction of the implementing IOU), as well as customer benefits (such as reduced embedded energy costs within the water bill), cross-IOU benefits, and spill-over and market transformation effects (net-to-gross ratios potentially greater than one). Though the current calculator does carry the limitations of input-output style "kilowatt-to-million gallon" conversion scalars, it does retain the strength of transparency.

These apparent shortcomings may be addressed through a review of several ongoing research projects looking at various aspects of water-energy relationships. This work should not be construed as primary research. Instead, it would collect the output of several ongoing research projects (Energy-water research, Avoided Cost of Water Supply Models developed state-wide that require definition of on-margin supply utilization, and Integrated Water Management studies). This study would focus on the implication of these results for the determination of cost-effectiveness from a customer perspective, a narrow single energy utility perspective, multiple energy perspectives, multiple water and energy utility perspectives, a statewide economic perspective, and an inclusive societal perspective. By defining the allocation of benefits, this type of calculator can inform cost-sharing agreements and partnership possibilities.

This EM&V study proposes to develop the next generation "Calculator" that is guided by the objectives set forth in a ruling dated February 16, 2007, by the assigned ALJ Steven Weissman and Commissioner Dian M. Grueneich:

1. Reduce energy consumption related to water use in a manner that should prove to be cost-effective for all of the customers of the sponsoring energy utilities;
2. Create a methodology for calculating cost-effectiveness and evaluating water-derived energy efficiency programs;
3. Determine if, in fact, it is cost-effective to save energy through programs that focus on cold water;
4. Better understand how energy is used in the California water system;
5. Test a diverse set of water energy programs and measures, with particular emphasis on new technologies and low-income

customers;

6. Better understand what programs and measures are likely to save water and energy;

7. Provide the basis for meaningful ex-post project assessment;

8. Stimulate new partnerships; and

9. Better understand the potential benefits of pursuing each of the strategies identified in the October 16, 2006 ruling:

a. Conserving water;

b. Switching to less energy-intensive water sources; and

c. Increasing the energy efficiency of current water delivery.

These objectives describe a broader concept of cost-effectiveness: one taken across all customers of sponsoring energy utilities, one that is inclusive of water and energy, one that addresses low income customers (a social objective not driven by cost-effectiveness), and one that stimulates new partnerships.

This EM&V study proposes a next generation embedded energy calculator that can inform the alternative policy choices that need to be made by the CPUC and other stakeholders. Central to the effective implementation of this project is elicitation of input from public agency stakeholders—the California PUC, CEC, and others who have policy stakes in the accuracy of benefit and cost depictions. This joint evaluation would be sponsored by all participants in the Water Embedded-Energy Pilot Programs.

IV. Process Evaluation and Market Analysis—Verification and Prospective Effectiveness

A. Objectives of the Process Evaluation and Market Analysis Efforts

The process evaluation and market analysis efforts are intended to:

- Provide a market assessment by selected measure, and determine the following:
  - Is this a high opportunity measure for water/energy savings?
  - Is the technology/service new-to-market or established?
  - What is the existing saturation of the measure?
  - What is the measure's market potential?
- For specific programs, identify the indicators of effectiveness, including a comparison of program assumptions versus actual performance.
- Provide assessments by pilot program analyzing its market outreach, response rate, incentive, delivery mechanism, customer requirements for participation, and remaining opportunity.
- Provide recommendations for improvement and constructive guidance regarding the implementation of the pilot programs.
- Assess the overall levels of performance and success of the pilot programs.

B. Program Selection

The Process Evaluation also seeks to provide guidance on how to select and design pilots/programs to maximize embedded energy savings from water conservation. The pilot programs being pursued provide what are seen to be instructive cases because they were not necessarily selected based on their expected high water embedded energy savings. Rather, the selected programs were chosen because they met some of the following four criteria:

1) Ability to quickly implement
2) Targeting of low income customers
3) Contributing to the variety of measures being piloted
4) Stimulating partnerships between water agencies and California's investor-owned utilities

C. Proposed Baseline Studies and market Analysis: Prospective Water Savings

Extrapolating the estimated water savings from the evaluated historical participants to potential participants will potentially be driven by pulling data from the impact evaluations. Many of the questions in Appendix B (as drawn from the ACR) require an understanding of the complete customer market. The cost effectiveness experienced in relation to implemented programs often depends on how well targeted the marketing of the efficiency measures is managed. Baseline studies and market analyses are key ingredients in the estimation of prospective water-energy savings. The proposed impact evaluations can be used in conjunction with the process evaluations to provide baseline studies that will be useful for market analyses (SDG&E, SoCalGas, PG&E, and SCE applicability).

D. Proposed Process Evaluation Studies: Research Questions

Basic Program Description:

Program Name	***Program Description***
Program Rationale	***Measure(s)***
Program Goals	***Market Sector***
Implementer	***Delivery Method***

1. Did the measure installation occur? Is the measure still installed?
2. Is the measure new or an established technology?
3. Is the measure commercially available?
4. What is the estimated useful life of the measure?
5. What are the major market barriers?
6. What is the market potential of the measure?
7. Was the program local, per utility or more regional in nature?
8. Was the program a partnership?
9. Does the program exist? If so, did additional energy efficiency funds generate greater participation?
10. Is the value of the measure understood by the participant? Are they satisfied with the product? Are there any performance issues?
11. Was the intervention upstream, downstream or midstream?
12. What were the customer costs?
13. Was the pilot program's delivery method effective at achieving water savings for the lowest costs; i.e., direct installation vs. rebates/incentives?
14. Was it necessary to provide direct installation?
15. Was the incentive enough to move the market?
16. Did the pilot program target homes or buildings with higher than average water bills and/or costs, geographic areas known to contain inefficient housing or building stock, hard-to-reach markets such as multi family, or low income households? Was the pilot program successful at reaching one or all of these?
17. Was the marketing method successful at reaching customers and obtaining participation (with a reasonable response rate)? What is the penetration or saturation rate?
18. Is the participation process simple and easy to understand?

19. Was the technical assistance effective and sufficient?

20. If the pilot program involved direct installation of measures, were installation standards adhered to? Were the maximum water savings achieved?

21. If the pilot program was designed around providing an incentive, did the subsequent installation adhere to any standards? Were the maximum water savings achieved?

22. Can various ways to claim water and energy savings for customer actions taken as a result of pilot program interventions be identified (i.e. audits, education, etc.)?

23. What measures have the most promising opportunity?
    - Highest water savings
    - Highest energy savings
    - Largest potential
    - Least costs

APPENDIX A:

PROPOSED EVALUATION, MEASUREMENT, & VERIFICATION STUDIES

This Appendix provides a grid that aligns the individual utilities' Pilot Programs with the proposed EM&V studies.

See the accompanying excel file.

APPENDIX B:

APPENDIX B: CROSS REFERENCE OF EVALUATION PLANS AND QUESTIONS BEING ANSWERED

This Appendix provides a grid that aligns the proposed EM&V studies and the questions identified by the key stakeholders (i.e., the ALJ and Assigned Commissioner, intervenors, and the utilities).

See the accompanying excel file.

APPENDIX C

INDIVIDUAL STUDY PLANS AND BUDGETS

PART I

STATEWIDE STUDY PLANS

Water Study

High Efficiency Toilets

Statistical Impact Evaluation of the

SCE Low Income Direct Install HE Toilet Replacement Program,

SCE Green Schools/Campuses Program with HE Toilets,

PG&E Low Income Direct Install HE Toilet Replacement Program, and

SoCalGas Low Income Multifamily HE Toilet Replacement Program

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions about the amount, timing, and variability of water savings derived from the installation of high efficiency toilets.
- Prior research has established robust savings estimates for ULFTs in general residential settings, but only a limited number of studies have evaluated savings at low income multifamily residences. There is some evidence supporting the hypothesis that higher savings can be achieved in low income areas due to a higher prevalence of high flow toilets (older housing stock), lower remodel rate, and higher population density.

B. Number of Studies Proposed:

- This summary covers one statistical impact evaluation for the proposed coordinated Statewide HE Toilet Program that includes SoCalGas, SCE, and PG&E. For SCE, this study would include the both their Low Income HE Toilet Direct Install Program and their Green Schools/Campuses Program. For PG&E, the evaluation would include both their Low Income Direct Install HE Replacement Program and Single Family Direct Install HE Toilet Replacement Program. For SoCalGas, the evaluation would include their Low Income Multifamily HE Toilet Replacement Program.

C. Estimated Budget:

- $246,000

D. Estimated Start and Completion Date:

- Start: January 2008.
- Completion: December 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction. One important topic to discuss early in the project is the strata over which results will be generated: by utility, by city, by region, by program type, etc. With consensus on this topic, the sampling plan can be designed to collect data strategically to ensure statistical tests in each strata cell can be performed with adequate statistical power.
- Data Assessment, Collection and Preparation. Particular attention will be focused on assuring data integrity by validating water use and by, for example, calculating actual days in the billing period rather than relying on assumptions. Billing system data can vary considerably, so it is important to acquire all available documentation.
- Statistical Modeling and Exploratory Data Analysis
- Draft Results. Prepare a technical memo that includes the draft results from the statistical models and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- Customer billing data will include individual meter readings for a sample of residential customers over a period of three or more years. Variables to include: water volume billed, meter reading date, customer type or class, and water rate category.
- Weather records will be collected either from NOAA weather stations or from agency weather stations if the time series goes back far enough. Often weather data are readily available back to the 1940s which is long enough to establish reliable climate estimates.
- Water price time series data will be collected from the water agencies involved, including price by rate category and historical changes over time covering at least the period for which water billing records are examined.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

The study design includes the following elements:

- Savings Estimation Method. Statistical Impact Evaluation using scientific sampling and a regression approach.
- Data. Customer billing data, weather records, and price time series.
- Sample Design. Pair-matched control and treatment groups; stratification and sample size targets to achieve adequate statistical power within the study budget.
- Monitoring Duration and Schedule. Water billing system data for 3 or more years, depending on availability. Time series including periods before and after treatment.
- Approach to Evaluate and Minimize Bias. Randomization, pair-matched treatment and control methods.

B. Description and Role of Paper Studies:

- This study has an integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability.

C. Participant Water Data:

- This study will collect data in keeping with the water agency's billing period—typically one month intervals. An historical period of three or more years encompassing when the measure is installed will be collected depending on the availability of billing records at the participating water agencies.
- Potential Savings. The water agencies will provide a definition of the entire target market—identifying the number of unreached potential residential and low-income customers and potential savings--based on the population of customers defined in their customer billing system. The EM&V implementer will develop an estimate of potential water savings by combining estimated achieved conservation with the definition of potential customers.

D. Water Agency Energy Use Data: [See Energy Studies.]

Water Study

Weather-Based Irrigation Controllers and Landscape Efficiency

Statistical Impact Evaluation of the

SDG&E Landscape Management Efficiency Improvements Program and

SCE Express Water Efficiency Program (ET Controllers)

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions about the amount, timing, and variability of water savings derived from the installation of weather-based irrigation controllers (WBIC) and landscape efficiency measures.
- Prior research has established savings estimates for WBICs in carefully structured programs. The proposed EM&V studies are motivated by the need to examine: 1) savings with various weather-based controllers on the market, 2) savings with and without sprinkler upgrades, and 3) the potential for coincident peaking problems.

B. Number of Studies Proposed:

- This summary covers one proposed statistical impact evaluation for weather-based irrigation controllers in both the SDG&E Landscape Management Efficiency Improvements Program and the part of the SCE Express Water Efficiency Program for ET Controllers.

C. Estimated Budget:

- $70,000 (see below).

D. Estimated Start and Completion Date:

- Start: March 2008.
- Completion: December 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction. The early meetings can be used to make decisions about project resources such as in which service areas to collect data and which controllers/type of controllers to evaluate.
- Data Assessment, Collection and Preparation. To the extent such data already exist, the statistical analysis can benefit from site characteristics such as irrigated areas and household residents.
- Statistical Modeling and Exploratory Data Analysis. One important focus of the statistical analysis will be the seasonal pattern of water use and savings in an effort to pinpoint peak usage as well as peak periods of conservation savings.
- Draft Results. Prepare a technical memo that includes the draft results from the statistical models and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- Customer billing data will include individual meter readings for a sample of residential customers over a period of three or more years. Variables to include: water volume billed, meter reading date, customer type or class, and water rate category.
- Weather records will be collected either from NOAA weather stations or from agency weather stations if the time series goes back far enough. Often weather data are readily available back to the 1940s which is long enough to establish reliable climate estimates.
- Water price time series data will be collected from the water agencies involved, including price by rate category and historical changes over time covering at least the period for which water billing records are examined.
- Customer irrigation characteristics data may be available at some agencies for some customers, including irrigated areas.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

The study design includes the following elements:

- Savings Estimation Method. Statistical Impact Evaluation using scientific sampling and a regression approach.
- Data. Customer billing data, weather records, and price time series.
- Sample Design. Pair-matched control and treatment groups; stratification and sample size targets to achieve adequate statistical power within the study budget.

- Monitoring Duration and Schedule. Water billing system data for 3 or more years, depending on availability. Time series including periods before and after treatment.
- Approach to Evaluate and Minimize Bias. Randomization, pair-matched treatment and control methods.

B. Description and Role of Paper Studies:

- This study has in integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability.

C. Participant Water Data:

- This study will collect data at the interval of the water agency billing period—typically one month intervals. An historical period of three or more years encompassing when the measure is installed will be collected depending on the availability of billing records at the participating water agencies.

D. Water Agency Energy Use Data: [See Energy Studies.]

Energy-Water Study

Load Profile

Load Profile of Water Efficiency Measures

I. Description of Study

The load profiles associated with water use efficiency measures are a required input into energy calculators. This evaluation would extend the approach taken by the "second generation" calculator (see accompanying study) by using data from the current Proposition 50 California End Use Study sites, currently in place at 10 locations. It would also provide more spatially accurate decrements to the water demand load shape and associated decrements to the energy load requirement (SDG&E, SoCalGas, PG&E, and SCE applicability). If feasible, this work should coordinate with the state-wide Prop-50 study, funded in the most recent round, and to be conducted by Lawrence Berkeley National Laboratories.

A. Goals of the Study:

- The primary goal of this study is to utilize water and energy load profile data to estimate the energy load profile impact from water efficiency measures.
- The study will provide spatially and temporally delineated estimates of load profiles.
- The study is designed to leverage the existing data sources to focus study resources on assessing the water and energy load profiles of water use efficiency measures.

B. Number of Studies Proposed:

- The study proposed in this summary is one study that is applicable to any of the Pilot Programs that generate profile data at some temporal or spatial dimension (SDG&E, SCE, SoCalGas and/or PG&E).

C. Estimated Budget:

- $419,300

D. Estimated Start and Completion Date:

- Start: No later than December 2007.
- Completion: December 2008.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Assess existing data sources, especially data from the current Prop 50 California End Use Study occurring at 10 sites, and data resultant from the water studies proposed in this EM&V Plan. Particular effort will be focused on collecting and summarizing data that show the profile of water use in temporal and spatial detail, and for multiple levels of the water supply system, both upstream and downstream when relevant.
- Apply Next Generation Embedded Energy Calculator. Utilize the embedded energy calculator with the existing data sources to develop water and energy load profiles. Prepare a technical memo that includes the draft calculator method, data, and examples. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise. The report will include detailed information about data sources, summaries, and explanation of the data's potential use and availability. The data archive will be a resource for future research, not just a repository of work completed for this study.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project archive with all reports, methods, data and other resources utilized.

F. Data Sources and Collection:

This project does not involve primary data collection. Rather it relies on methods and data in the following existing or ongoing research efforts:

- Prop 50 California End Use Study occurring at 10 sites.
- Data from water studies proposed in this EM&V Plan, especially direct in-line metering studies with detailed load data.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

- This study does not have control and treatment groups per se.

B. Description and Role of Paper Studies:

- This study will analyze the spatial and temporal dimensions of water energy load profiles.

C. Participant Water Data:

- This study takes as inputs water data and results developed in existing and ongoing research efforts.

D. Water Agency Energy Use Data: [See Energy Studies.]

- This study takes as inputs energy data developed in existing and ongoing research efforts.

Process Studies

Process Evaluation Studies of the Commercial and Industrial Pilot Programs (PG&E, SDG&E, and SCE), HE Toilet Replacement Programs (PG&E, SoCalGas, and SCE) Weather-Based Irrigation Controller Programs (SDG&E and SCE) Residential Indoor/Outdoor for Lake Arrowhead (SCE), and General Marketing and Joint Marketing and Outreach Programs (SDG&E, SoCalGas)

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions that compare the quantitative and qualitative goals versus the actual performance for the included programs.

B. Number of Studies Proposed:

This summary covers studies of five program categories. Utilities will participate in one to four of the study categories as follows:

- Commercial and Industrial Pilot Programs (PG&E, SDG&E, and SCE),
- HE Toilet Replacement Programs (PG&E, SoCalGas, and SCE)
- Weather-Based Irrigation Controller Programs (SDG&E and SCE)
- Residential Indoor/Outdoor for Lake Arrowhead (SCE), and
- General Marketing and Joint Marketing and Outreach Programs (SDG&E, SoCalGas)

C. Estimated Budget:

- $153,100

D. Estimated Start and Completion Date:

- Start: March 2008.
- Completion: June 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Baseline/Market Assessment: The first part of the process evaluation will be an assessment of the current market potential for the Pilot Program measures or measure mix in the targeted market (i.e. market potential for high efficiency toilets in the multi-family low income market).
- In-depth Interviews: The primary activity of each process evaluation will be in-depth interviews with program staff, water agency staff, program participants, and other stakeholders such as installation contractors, product retailers, distributors and manufacturers. The interview protocol shall be developed once the theory and logic are documented. The interview questions shall contain both open-ended and close-ended questions and shall attempt to examine the effectiveness of the program delivery method, marketing strategy and the program processes.
- Program Material Review: The process evaluation will also include a review of all program materials for effectiveness. This includes marketing literature, training curriculum and procedures manuals.
- Progress Report Review: The results of progress reports, both quantitative and narrative, will be used in the process evaluation to measure performance over time and allow for the possible comparison to similar programs.
- Customer Satisfaction Survey: Lastly, participants will be surveyed to obtain their perception of the program including overall satisfaction with the product(s) and the program processes.
- Draft Results. Prepare a technical memo that includes the draft results from the statistical models and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive. Details of the planned deliverables are as follows:

<u>Program Description.</u> One page description of the pilot program including the program rationale. The rational or theory will include a logic model to help explain the purpose of key program activities, demonstrate how the program strategies mitigate market barriers, and document what metrics are used to measure program progress and success. Also

include a flow chart of operational processes that includes the theory and logic model (which market actors were impacted and how). Program details include:

1. Status: New or existing
2. Measure(s): i.e., high efficiency toilets
3. Target Market: Single family, multi-family, commercial, institutional, industrial
4. Market Actors Targeted: Upstream, midstream, downstream
5. Delivery Method: Rebate, direct installation, education
6. Program Budget: Total budget including any water agency funding
7. IOU Territory Served: Name of IOU territories where Pilot Program was implemented.
8. Water Agency(s) Territory Served: Could be multiple agencies
9. Partners: Could be IOUs, water agencies, wastewater agencies
10. Implementer(s): Implementation company and their subcontractors

F. Data Sources and Collection:

- Interviews, program description materials, program performance tracking and management reports (internal and external), and customer satisfaction surveys.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

Unlike the impact evaluations that estimate savings in the program treatment groups compared to controls, the process evaluation studies look at the programmatic effectiveness and processes.

B. Description and Role of Paper Studies:

- This study has an important role in determining the process factors that lead to programmatic success or failure (not just technical success or failure) and the ability to duplicate such programs elsewhere.

C. Participant Water Data:

- The study will collect interview summaries as well as program information. In addition, customer satisfaction survey data will be collected.

D. Water Agency Energy Use Data: [See Energy Studies.]

Energy-Water Study

Embedded Energy Calculator to Inform Policy Choices

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to propose a next generation embedded energy calculator that can inform the alternative policy choices that need to be made by the CPUC and the State. This evaluation should not be construed as primary research. Instead, it would utilize the output of several completed ongoing research projects, as well as results from the water studies conducted as part of this EM&V plan.
- The focus of this study is on the implication of energy savings results for the determination of cost-effectiveness. How can the embedded energy savings estimates be used to understand the cost-effectiveness from a customer perspective, a narrow single energy utility perspective, multiple energy utility perspectives, multiple water *and* energy utility perspectives, a statewide economic perspective, and a societal perspective. By defining the allocation of benefits from these perspectives, this type of calculator can inform cost-sharing agreements and partnership possibilities.
- The study will briefly summarize existing embedded energy calculators and evaluate their ability to produce information needed for policy decisions with emphasis on the objectives set forth in a ruling dated February 16, 2007, by the assigned ALJ Steven Weissman and Commissioner Dian M. Grueneich as outlined in the April 23, 2007 ACR.

B. Number of Studies Proposed:

- The study's scope is applicable to most of the Pilot Programs; however, the utilities may propose the selection of one utility to manage the study to allow the focus and continuity needed for its completion, and to include its Pilot Programs. The study will have subparts that cover embedded energy, allocation of energy avoided costs, and information needed to inform decisions (SDG&E, SCE, SoCalGas or PG&E applicability).

C. Estimated Budget:

- $139,800

D. Estimated Start and Completion Date:

- Start: January 2008
- Completion: December 2008

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Solicit input and active involvement of key stakeholders from the CPUC and CEC as well as other interested parties.
- Assess existing calculators and methods for their relevance to policy decisions. Summarize and document the assessment. Several existing methods that have been developed for water planning are particularly relevant to this study: 1) The California Urban Water Conservation Council has developed a method and calculator model to estimate the direct utility avoided cost of water use efficiency. Of particular interest to this study is the inclusion of the marginal avoided costs and associated on-margin probabilities. The existing CEC embedded energy calculator uses an average rate of energy-intensity of water used. Although some water utilities may indeed have marginal supply costs near their average costs, this is not typical in urban areas with growing demand. Using the average avoided costs is not only incorrect from a methodological point of view, but it could lead to materially incorrect results. 2) Two regional water recycling planning efforts relied on an Evaluation Decision Model (EDM) that evaluated multiple perspectives of analysis needed for policy decisions. The EDM developed for the Bay Area Regional Water Recycling Program (BARWRP, 1998) and the Southern California Comprehensive Water Reclamation and Reuse Study (SCCWRRS 2000) calculated costs and benefits from the perspectives of utilities, customers, the region and society to reflect dimensions of the policy decisions involved.
- Define the proposed calculator outputs reflecting both a perspective on the analysis as well as what outputs are needed for policy decision-making. Clearly define “where we want to go” with the calculator.
- Draft Next Generation Embedded Energy Calculator. Propose how the outputs from the relevant existing research can be used to determine cost effectiveness from the various perspectives. Prepare a technical memo that includes the draft calculator method, data, and examples. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project archive with all reports, methods, data and other resources utilized.

F. Data Sources and Collection:

This project does not involve primary data collection. Rather it relies on methods and data in the following existing or ongoing research efforts:

- PUC IOU-Embedded Energy Development Cost Effectiveness Calculator (DRRC). This method contains an interpretation of cost-effectiveness that excludes much of the energy

required to convey water (specifically any conveyance outside the jurisdiction of the implementing IOU, customer benefits (reduced embedded energy bill within the water bill), cross-IOU benefits, spill-over and market transformation effects (net-to-gross rations potentially greater than one).

- "Water Supply Related Electricity Demand in California," CEC, December 2006.
- California Energy Commission (CEC) Integrated Energy Policy Report 2005 (IEPR 2005).
- "California's Water-Energy Relationship," CEC, November 2005.
- "Refining Estimates of Water-Related Energy Use in California," CEC, December 2006.
- "The California Evaluation Framework," Prepared for the California Public Utilities Commission and the Project Advisory Group, June 2004.
- "Water Utility Direct Avoided Costs From Water Use Efficiency," Prepared for The California Urban Water Conservation Council, January 2006.
- Southern California Comprehensive Water Reclamation and Reuse Study: Phase II, "Short Term Implementation Plan," January 2000 (prepared for the U.S. Bureau of Reclamation, California Department of Water Resources, Central Basin and West Basin Municipal Water Districts, City of Los Angeles, Metropolitan Water District of Southern California, City of San Diego, San Diego County Water Authority, Santa Ana Watershed Project Authority, and the South Orange County Reclamation Authority).
- "BARWRP Decision Model to Evaluate Water Recycling Investments: A Handbook," April 1998 (prepared for the Bay Area Regional Water Recycling Program).

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

- This study does not have control and treatment groups.

B. Description and Role of Paper Studies:

- This study serves as an integrating platform for developing the method needed to demonstrate the embedded energy savings from water use efficiency.

C. Participant Water Data:

- This study takes as inputs water data and results developed in existing and ongoing research efforts.

D. Water Agency Energy Use Data: [See Energy Studies.]

- This study takes as inputs energy data developed in existing and ongoing research efforts.

PART II

PACIFIC GAS & ELECTRIC

WATER PILOT PROGRAMS EVALUATION PLANS

Water Study

Commercial and Industrial Programs

End-Use Impact Evaluation of the

PG&E Commercial and Industrial Pilot Programs (Commercial Food Service, Food Processing, Hospitality Sector Laundries, and Winery Processes)

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions about the amount, timing, and variability of water savings derived from the water surveys and associated conservation measures in a set of specific commercial and industrial customers: commercial food service, food processing, hospitality sector laundries, and winery processes.
- Prior research has established savings estimates associated with these various processes using largely engineering calculations. A common procedure is to estimate savings at the time of water survey, but it is unusual to verify savings later with metering or other field measurements. This study will emphasize pre- and post-intervention measurements and detail the resultant savings profile through the working day.
- Provide comprehensive documentation of efficiency standards and stipulations for process improvements considered. This impact evaluation would target processes with water and energy savings potential that are uncertain due to lack of evaluation data.

B. Number of Studies Proposed:

- This summary covers one of three proposed end-use study impact evaluations for commercial and industrial processes (SDG&E, SCE, and PG&E).

C. Estimated Budget:

- $123,000.

D. Estimated Start and Completion Date:

- Start: January 2008.
- Completion: December 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Site and technology assessment and selection. Sites and technologies should be selected with feasibility and accessibility in mind, but also the ability to extrapolate results to other sites or service areas. Can we understand more about an industry's water use and savings potential from the study?
- Data Collection, Preparation, Analysis
- Draft Results. Prepare a technical memo that includes the draft results from the direct in-line metering and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- This project involves primary data collection by metering commercial and industrial processes and measuring their water consumption before and after the conservation intervention. Metering will include water and may include wastewater flow depending on the process.
- Depending on the process, it may be necessary to collect auxiliary data sources to understand the operating environment during the study period. Examples might include ambient temperature, humidity, measures of economic activity (sales in the food business, etc.), and/or water and wastewater rates.
- Regarding site selection, it may be instructive to assess customer billing data to determine overall water use and the potential for savings.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

Because this study necessarily involves direct on-site measurements, the Hawthorne Effect and its concomitant bias are difficult to avoid, if not inevitable. However, it is possible to structure the study design to minimize this threat to internal validity and to mitigate bias in the results:

The study design includes the following elements:

- Site selection (Sampling). The site selection process should involve factors such as the potential to show savings, the similarity of the process to others in the industry, and cooperative customers. This “strategic sampling” plan has the virtues that it can be tailored to the project goals and can be made transparent to allow clear interpretation of results.
- Data collection. Instrumentation must be of adequate accuracy to measure process variations. Recording intervals must be adequate to capture process cycles including daily, weekly, or monthly depending on production and business patterns.
- Monitoring Duration and Schedule. Depending on the process and production patterns, metering may take place over a period of days, weeks, or months (e.g. food production batch run, winery process at harvest season). Time series will include periods before and after treatment.
- Approach to Evaluate and Minimize Bias. To the extent that human behavior affects savings of the process in question, efforts will be made to: a) make the measurement unobservable to process operators and/or b) to observe before and after indicators to assess behavior change due to participation in the treatment group. Of course, human behavior is part of the conservation intervention – such as improving controls and operations, the question of human behavior is not controlling for it, but rather maintaining it over time to maintain conservation savings. Although the expense of direct in-line metering makes randomization prohibitive in terms of cost, pair-matched treatment and control methods are feasible.
- Potential Savings. The water agencies will provide a definition of the entire target market for each intervention—identifying the number of unreached potential customers and potential savings--based on the population of customers defined in their customer billing system. The EM&V implementer will develop an estimate of potential water savings by combining estimated achieved conservation with the definition of potential customers.

B. Description and Role of Paper Studies:

- This study has in integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability.

C. Participant Water Data:

- In this study, direct in-line metering has the ability to measure variability and intervals shorter than billing periods (minute, hour, day, week) and for a process alone rather than a billing meter.

D. Water Agency Energy Use Data: [See Energy Studies.]

Energy-Water Study

Emerging Technologies

End-Use Impact Evaluation of the

PG&E Emerging Technologies to Improve Water System Efficiency

I. Description of Study

PG&E will partner with all three water agencies--East Bay (EBMUD), Sonoma Valley (SCWA), and Santa Clara Valley (SCVWD)—to investigate emerging technologies in water system operating efficiency, specifically in monitoring and telecommunications. PG&E proposes to offer incentives to the water agencies to test the most promising technology or technologies, which would be calculated based on energy savings achieved by the pilot. Technologies to be investigated would include integration of water flow and energy monitoring in SCADA to detect water losses, integration of customer metering and SCADA systems to improve water distribution and energy efficiency, and a coupling of SCADA with modeling to optimize pumping efficiency.

A. Goals of the Study:

- The primary goal of this study is to identify and investigate promising emerging technologies in water system operating efficiency based upon energy savings achieved.
- The study will focus on monitoring and telecommunications technologies in order to better detect water losses, to improve water distribution and energy efficiency, and to optimize pumping efficiency.

B. Number of Studies Proposed:

- This summary covers one of the proposed end-use studies (PG&E).

C. Estimated Budget:

- $100,000.

D. Estimated Start and Completion Date:

- Start: March 2008.
- Completion: October 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Site and technology assessment and selection
- Data Collection, Preparation, Analysis
- Draft Results. Prepare a technical memo that includes the draft results from site assessments and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report and final reports of study findings.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- This project involves primary data collection by onsite studies of improved water-energy measurement, modeling, and operations. SCADA data would be collected before and after any technology or operational changes.
- Depending on the process, it may be necessary to collect auxiliary data sources to understand the operating environment during the study period.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

Because this study necessarily involves direct on-site measurements, the pre-intervention energy use will serve as the control. Evaluator will seek to identify and control for any confounding changes in the post-intervention period.

The study design includes the following elements:

- Site selection (Sampling). PG&E is constrained to working with the water agencies in its service territory.
- Data collection. Instrumentation must be of adequate accuracy to measure real time energy variations. Recording intervals must be adequate to diurnal, weekly, or seasonal variations.
- Monitoring Duration and Schedule. As a pilot program, an insufficient amount of information is known about water agency energy variation to predetermine monitoring length. Monitoring will be on a sufficient scale to detect the changes of interest. Time series will include periods before and after treatment.
- Approach to Evaluate and Minimize Bias. The key to avoiding bias is the identification of other confounding changes.
- Potential Savings. At the end of the study, a better understanding will be developed for potential and promising cost-effective changes in energy technologies and operations within the water agencies. The EM&V implementer will develop recommended areas for additional investigation of energy efficiency improvements.

B. Description and Role of Paper Studies:

- This study has a key role in defining energy efficiency potential within three water agencies through the application of newer technology, better monitoring, improved operation, or better modeling.

C. Participant Water Data:

- This study focuses on water agency energy use. Water use data will only be collected to rule out confounding effects.

D. Water Agency Energy Use Data:

- This study will analyze energy use data currently being tracked and/or modeled by water agency SCADA or AMR systems.

PART III

SOUTHERN CALIFORNIA EDISON

WATER PILOT PROGRAMS EVALUATION PLANS

Water Study

Commercial and Industrial Programs

End-Use Impact Evaluation of the SCE Industrial Process Water Use Reduction (Audits) and Express Water Efficiency (PH Controllers and ET Controllers) Programs

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions about the amount, timing, and variability of water savings derived from the water surveys and associated conservation measures in a set of specific commercial and industrial customers: commercial food service, food processing, hospitality sector laundries, winery processes. The study also includes customers with cooling towers.
- Prior research has established savings estimates for these various processes using largely engineering calculations. A common procedure is to estimate savings at the time of the water survey, but it is unusual to verify savings later with metering or other field measurements. This study will emphasize pre- and post-intervention measurements and detail the resultant savings profile through the working day.
- Provide comprehensive documentation of efficiency standards and stipulations for process improvements considered. This impact evaluation would target processes of with water and energy savings potential that are uncertain due to lack of evaluation data.

B. Number of Studies Proposed:

- This summary covers one of three proposed end-use study impact evaluations for commercial and industrial processes (SDG&E, SCE, and PG&E). Regarding the Express Water Efficiency Program (SCE), this study covers only the PH controllers; ET controllers are covered in the water impact study for Weather Based Irrigation Controllers.

C. Estimated Budget:

- $140,000

D. Estimated Start and Completion Date:

- Start: January 2008.
- Completion: August 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Site and technology assessment and selection
- Data Collection, Preparation, Analysis
- Draft Results. Prepare a technical memo that includes the draft results from the direct in-line metering and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- This project involves primary data collection by metering commercial and industrial processes and measuring their water consumption before and after the conservation intervention. Metering will include water and may include wastewater flow depending on the process.
- Depending on the process, it may be necessary to collect auxiliary data sources to understand the operating environment during the study period. Examples might include ambient temperature, humidity, measures of economic activity (sales in the food business, etc.), and/or water and wastewater rates.
- Regarding site selection, it may be instructive to assess customer billing data to determine overall water use and the potential for savings.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

Because this study necessarily involves direct on-site measurements, the Hawthorne Effect and its concomitant bias are difficult to avoid, if not inevitable. However, it is possible to structure the study design to minimize this threat to internal validity and to mitigate bias in the results:

The study design includes the following elements:

- Site selection (Sampling). The site selection process should involve factors such as the potential to show savings, the similarity of the process to others in the industry, and cooperative customers. This “strategic sampling” plan has the virtues that it can be tailored to the project goals and it can be made transparent to allow clear interpretation of results.
- Data collection. Instrumentation must be of adequate accuracy to measure process variations. Recording intervals must be adequate to capture process cycles including daily, weekly, or monthly depending on production and business patterns.
- Monitoring Duration and Schedule. Depending on the process and production patterns, metering may take place over a period of days, weeks, or months (e.g. food production batch run, winery process at harvest season). Time series will include periods before and after treatment.
- Approach to Evaluate and Minimize Bias. To the extent that human behavior affects savings of the process in question, efforts will be made to: a) make the measurement unobservable to process operators and/or b) to observe before and after indicators to assess behavior change due to participation in the treatment group. Of course, human behavior is part of the conservation intervention – such as improving controls and operations. The question of human behavior is not controlling for it, but rather maintaining it over time to maintain conservation savings. Although the expense of direct in-line metering makes randomization prohibitive in terms of cost, pair-matched treatment and control methods are feasible.
- Potential Savings. The water agencies will provide a definition of the entire target market for each intervention—identifying the number of unreached potential customers and potential savings--based on the population of customers defined in their customer billing system. The EM&V implementer will develop an estimate of potential water savings by combining estimated achieved conservation with the definition of potential customers.

B. Description and Role of Paper Studies:

- This study has in integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability.

C. Participant Water Data:

- In this study, direct in-line metering has the ability to measure variability and intervals shorter than billing periods (minute, hour, day, week) and for a process alone rather than a billing meter.

D. Water Agency Energy Use Data: [See Energy Studies.]

Energy - Water Study

System-Wide Interventional Analysis

System-Wide Interventional Analysis of

SCE Residential Retrofits in Lake Arrowhead

I. Description of Study

Lake Arrowhead offers a unique study site of high embedded-energy water use, distinct and large pressure differentials, and a relatively isolated service area. The local water district has compiled both aggregate water use data and disaggregate customer water demand data dating back to 1998. This study will involve analysis of treatment effects using both customer-level data and system wide water-energy use during and following a period of intensive water use efficiency retrofits.

A. Goals of the Study:

The primary goals of the study are to answer the following questions:

- What was the change in water use at sites attributable to participation in the residential indoor/outdoor program, (net water savings)?
- What explains the variation in observed water savings, over time and across different types of customers?
- What effect did system-wide water savings have on energy use by the Water District and Lake Arrowhead customers?
- How do the program benefits stack up against the program costs from customer, utility, and societal perspectives?

B. Number of Studies Proposed:

- This summary covers the one proposed system-wide intervention analysis (SCE).

C. Estimated Budget:

$64,000

D. Estimated Start and Completion Date:

- Start: January 2008.
- Completion: March 2010.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Data Assessment, Collection and Preparation
- Statistical Modeling and Exploratory Data Analysis
- Draft Results. Prepare a technical memo that includes the draft results from the statistical models and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- Customer billing data will include individual meter readings for the entire population of LACSD residential customers from 1998 to end of study period. (This data has already been compiled for the 1998-2006 period by LACSD). Variables to include: water volume billed, meter reading date, customer type or class, and water rate category.
- Weather records will be collected from the Lake Arrowhead Fire Station NOAA weather station for precipitation, maximum air temperature and evapotranspiration.
- Water price time series data will be compiled, including price by rate category and historical changes over time covering at least the period for which water billing records are examined.
- Achieved conservation tracking data (device counts and installation dates) will be collected.
- Energy use data by LACSD will be collected from 1998 to the end of the study period.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

The study design includes the following elements:

- Savings Estimation Method. Statistical Impact Evaluation using scientific sampling and a regression approach.
- Data. Customer billing data, weather records, and price time series.
- Sample Design. Pair-matched control and treatment groups; stratification and sample size targets to achieve adequate statistical power within the study budget.
- Monitoring Duration and Schedule. Water billing system data for 3 or more years, depending on availability. Time series including periods before and after treatment.
- Approach to Evaluate and Minimize Bias. Randomization, pair-matched treatment and control methods.

B. Description and Role of Paper Studies:

- This study has an integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability. Furthermore, it extends the analysis to system-wide water and energy effects

C. Participant Water Data:

- This study will collect data in keeping with the water agency's billing period—typically a one month interval. An historical period of nine years encompassing when the intervention was accomplished will be collected at a customer level as well as aggregate water system data. The aggregate effect of this program, due to its completeness, should be observable if weather variations, other conservation programs, and price effects are well controlled for in a multivariate model.

D. Water Agency Energy Use Data: [See Energy Studies.]

- LACSD will compile energy used data over a comparable historical period.

PART IV

SAN DIEGO GAS & ELECTRIC

WATER PILOT PROGRAMS EVALUATION PLANS

Water Study

Commercial and Industrial Programs

End-Use Impact Evaluation of the

SDG&E Large Customer Water Audits Program

I. Description of Study

A. Goals of the Study:

- The primary goal of this study is to answer questions about the amount, timing, and variability of water savings derived from the water surveys and associated conservation measures in a set of specific commercial and industrial customers: commercial food service, food processing, hospitality sector laundries, and winery processes.
- Prior research has established savings estimates associated with these various processes using largely engineering calculations. A common procedure is to estimate savings at the time of the water survey, but it is unusual to verify savings later with metering or other field measurements. This study will emphasize pre- and post-intervention measurements and detail the resultant savings profile through the working day.
- Provide comprehensive documentation of efficiency standards and stipulations for process improvements considered. This impact evaluation would target processes with water and energy savings potential that are uncertain due to lack of evaluation data.

B. Number of Studies Proposed:

- This summary covers one of three proposed end-use study impact evaluations for commercial and industrial processes (SDG&E, SCE, and PG&E).

C. Estimated Budget:

- $75,000

D. Estimated Start and Completion Date:

- Start: January 2008.
- Completion: December 2009.

E. Scope of Work and Deliverables:

- Meetings and Committee Process: Project Kickoff, periodic conference calls, occasional in-person meetings, and Project Advisory Committee interaction.
- Site and technology assessment and selection
- Data Collection, Preparation, Analysis
- Draft Results. Prepare a technical memo that includes the draft results from the direct in-line metering and documentation of the data and methods used. Submit, discuss committee feedback, and revise.
- Draft and Final Reports. Prepare a draft report written for a target audience, submit, discuss committee feedback, and revise.
- Deliverables include: 1) technical memo, 2) results in tabular and graphic forms, 3) draft and final reports, and 4) project data archive.

F. Data Sources and Collection:

- This project involves primary data collection by metering commercial and industrial processes and measuring their water consumption before and after the conservation intervention. Metering will include water and may include wastewater flow depending on the process.
- Depending on the process, it may be necessary to collect auxiliary data sources to understand the operating environment during the study period. Examples might include ambient temperature, humidity, measures of economic activity (sales in the food business, etc.), and/or water and wastewater rates.
- Regarding site selection, it may be instructive to assess customer billing data to determine overall water use and the potential for savings.

II. Before/After Measurement and Research Design

A. Control and Treatment Groups:

Because this study necessarily involves direct on-site measurements, the Hawthorne Effect and its concomitant bias are difficult to avoid, if not inevitable. However, it is possible to structure the study design to minimize this threat to internal validity and to mitigate bias in the results:

The study design includes the following elements:

- Site selection (Sampling). The site selection process should involve factors such as the potential to show savings, the similarity of the process to others in the industry, and cooperative customers. This “strategic sampling” plan has the virtues that it can be tailored to the project goals and can be made transparent to allow clear interpretation of results.

- Data collection. Instrumentation must be of adequate accuracy to measure process variations. Recording intervals must be adequate to capture process cycles including daily, weekly, or monthly depending on production and business patterns.
- Monitoring Duration and Schedule. Depending on the process and production patterns, metering may take place over a period of days, weeks, or months (e.g. food production batch run, winery process at harvest season). Time series will include periods before and after treatment.
- Approach to Evaluate and Minimize Bias. To the extent that human behavior affects savings of the process in question, efforts will be made to: a) make the measurement unobservable to process operators and/or b) to observe before and after indicators to assess behavior change due to participation in the treatment group. Of course, human behavior is part of the conservation intervention – such as improving controls and operations, the question of human behavior is not controlling for it, but rather maintaining it over time to maintain conservation savings. Although the expense of direct in-line metering makes randomization prohibitive in terms of cost, pair-matched treatment and control methods are feasible.
- Potential Savings. The water agencies will provide a definition of the entire target market for each intervention—identifying the number of unreached potential customers and potential savings--based on the population of customers defined in their customer billing system. The EM&V implementer will develop an estimate of potential water savings by combining estimated achieved conservation with the definition of potential customers.

B. Description and Role of Paper Studies:

- This study has in integral role in proving a treatment effect because it measures the amount of water savings in terms of volume, season, and variability.

C. Participant Water Data:

- In this study, direct in-line metering has the ability to measure variability and intervals shorter than billing periods (minute, hour, day, week) and for a process alone rather than a billing meter.

D. Water Agency Energy Use Data: [See Energy Studies.]

PART V

SOUTHERN CALIFORNIA GAS

WATER PILOT PROGRAMS EVALUATION PLANS

The Southern California Gas Company Low Income Multifamily HE Toilet Replacement Program is part of the Statewide evaluation for HE toilets described above.

The Southern California Gas Company Joint Marketing and Outreach Program is part of the Statewide process evaluation for Joint Marketing described above.

CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Commission's Rules of Practice and Procedure, I have this day served a true copy of SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) SUPPLEMENTAL TESTIMONY SUPPORTING APPLICATION OF EMBEDDED ENERGY EFFICIENCY WATER PILOT PROGRAMS FOR 2007-2008 on all parties identified on the attached service list(s). Service was effected by one or more means indicated below:

Transmitting the copies via e-mail to all parties who have provided an e-mail address. First class mail will be used if electronic service cannot be effectuated.

Executed this **14th day of June, 2007**, at Rosemead, California.

/s/ JENNIFER ALDERETE

Jennifer Alderete
Project Analyst

SOUTHERN CALIFORNIA EDISON COMPANY
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

Attachment E

Southern California Gas Company

A Sempra Energy utility®

SOUTHERN CALIFORNIA EDISON®

An EDISON INTERNATIONAL® Company

Helping the Environment through Energy Efficiency

When you use energy and water wisely, you're not only saving money, you're also helping to conserve precious natural resources. Taking the initiative to reduce your home's energy and water usage can help reduce carbon dioxide (CO_2) emissions while helping California meet its goals of reducing emissions by 20% by the year 2020.

What you can do

Take advantage of the improvements that can be made to your home and double up on your savings through both energy and water conservation. Making your home more energy efficient by participating in Southern California Gas Company's (SoCalGas®) Direct Assistance Program (DAP) or Southern California Edison's (SoCalEdison®) Energy Management Assistance Program (EMA) and taking a few simple steps listed below will not only save you money, but will also contribute to the reduction of green house gases (CO_2) emissions and assist our State's water conservation efforts.

Take these simple steps each day to save both on energy and water at home:

- Take steps to cut water use such as installing faucet aerators, low-flow showerheads, and low-flush toilets. As much as 19% of California's electricity is used to pump, transport and treat water.
- Setting your water heater thermostat at or slightly below the manufacturer's recommendation may prevent scalding and lower your energy costs. Water heating accounts for about 13% of your home energy costs.

- When possible, wash clothes in cold water. About 90% of the energy used in a clothes washer goes to water heating.
- Unplug electronics, battery chargers and other equipment when not in use. Taken together, these small items can use as much power as your refrigerator.
- Make the most of the water you use in landscaping. Water only after the top inch of soil is dry and turn off automatic sprinklers when it's raining. Reducing watering time by 1-3 minutes, or eliminating one scheduled watering day per week can save 15-25 gallons of water per minute.

For more Information

We encourage you to make your home more energy efficient to help save money and the environment. To find out more about other energy efficiency programs and services available, visit us at:
SoCalGas – *socalgas.com/residential/* or call **800-427-2200**
SoCalEdison – *sce.com/RebatesandSavings/* or call **800-736-4777**

SOUTHERN CALIFORNIA GAS COMPANY
1-800-427-2200
www.socalgas.com

SOUTHERN CALIFORNIA EDISON®
1-800-736-4777
www.sce.com

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Southern California Gas Company
A Sempra Energy utility®

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Cómo ayudar al medio ambiente a través de la eficiencia energética

Cuando consume con inteligencia la energía y el agua, no sólo está ahorrando dinero, también está ayudando a conservar valiosísimos recursos naturales. Al tomar la iniciativa de reducir el consumo de energía y agua en su hogar puede ayudar a disminuir las emisiones de dióxido de carbono (CO_2) y a que California alcance sus metas de reducción de emisiones en un 20% para el año 2020.

Qué puede hacer

Aproveche las mejoras que pueden hacerse a su hogar y duplique sus ahorros a través de la conservación tanto de energía como de agua. Hacer su hogar más eficiente en energía participando en el Programa de Asistencia Directa (DAP) de Southern California Gas Company (SoCalGas) o en el Programa de Ayuda para el Consumo Eléctrico (EMA) de Southern California Edison (SoCalEdison) y adoptando las siguientes medidas sencillas no sólo ahorrará dinero, sino también contribuirá a la reducción de emisiones de gases de efecto invernadero (CO_2) y ayudará a los esfuerzos de conservación de agua del Estado.

Tome estas sencillas medidas diariamente para ahorrar tanto energía como agua en el hogar:

- Tome medidas para reducir el consumo de agua instalando aireadores para llaves, cabezales de bajo flujo para regadera e inodoros de baja descarga. Hasta el 19% de la electricidad de California se usa para bombear, transportar y tratar agua.
- Graduar el termostato de su calentador de agua en o ligeramente por debajo de la recomendación del fabricante puede evitar escaldaduras y reducir sus costos de energía. El calentamiento del agua representa cerca del 13% del costo de la energía en su hogar.
- Cuando sea posible, lave la ropa con agua fría. Cerca del 90% de la energía que consume una lavadora de ropa es para calentar el agua.
- Desconecte los aparatos electrónicos, cargadores de pilas y demás equipo cuando no se esté usando. En conjunto, estos pequeños artículos pueden consumir tanta energía como su refrigerador.
- Aproveche al máximo el agua que usa en su jardín. Riegue únicamente cuando la primera pulgada de suelo esté seca y apague los rociadores automáticos cuando esté lloviendo. Al reducir el tiempo de riego de 1 a 3 minutos o al eliminar un día programado de riego a la semana puede ahorrar entre 15 y 25 galones de agua por minuto.

Para más información

Lo exhortamos a que haga su hogar más eficiente en energía para ayudar a ahorrar dinero y conservar el medio ambiente. Para conocer más acerca de otros programas y servicios para la eficiencia energética que están a su disposición, visítenos en SoCalGas – *socalgas.com/sp* o llame al **1-800-342-4545**
SoCalEdison – *sce.com/es/RebatesandSavings/* o llame al **1-800-736-4777**

SOUTHERN CALIFORNIA GAS COMPANY
1-800-342-4545
www.socalgas.com/sp

SOUTHERN CALIFORNIA EDISON®
1-800-736-4777
www.sce.com/es

CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Commission's Rules of Practice and Procedure, I have this day served a true copy of RESPONSE OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) PURSUANT TO THE ASSIGNED COMMISSIONER'S RULING ORDERING LARGE INVESTOR OWNED UTILITIES TO COMPLY WITH PRIOR COMMISSION/COMMISSIONER DIRECTIVES on all parties identified on the attached service list(s). Service was effected by one or more means indicated below:

Transmitting the copies via e-mail to all parties who have provided an e-mail address. First class mail will be used if electronic service cannot be effectuated.

Executed this **1st day of July, 2008**, at Rosemead, California.

/s/ NAPA UTRAPIROMSUK

Napa Utrapiromsuk
Project Analyst
SOUTHERN CALIFORNIA EDISON COMPANY

2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

CPUC Home

CALIFORNIA PUBLIC UTILITIES COMMISSION
Service Lists

PROCEEDING: A0805022 - APPLICATION OF PACIF
FILER: PACIFIC GAS AND ELECTRIC COMPANY
LIST NAME: LIST
LAST CHANGED: JUNE 27, 2008

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Back to Service Lists Index

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