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Witness: Mark F. Gaines

PREPARED DIRECT TESTIMONY

OF

MARK F. GAINES

BEFORE THE PUBLIC UTILIITES COMMISSION
OF THE STATE OF CALIFORNIA

JANUARY 16, 2007

PREPARED DIRECT TESTIMONY OF MARK F. GAINES

Southern California Gas Company

I.
PURPOSE

The purpose of my testimony is to present Southern California Gas Company's ("SoCalGas") proposed energy efficiency/water pilot partnership established with the Metropolitan Water District of Southern California ("MWD"), demonstrate the potential savings associated with the pilot, and support the funding and cost recovery mechanism associated with the pilot.

II.
BACKGROUND

On October 16, 2006 the California Public Utilities Commission ("Commission") issued Assigned Commissioner's Ruling on Process Related to the Consideration of Embedded Energy Savings Related to Water Efficiency ("ACR"). The ACR among other things directed each of the utilities to file applications for one-year jointly-funded pilot partnership programs with one large water provider. The ACR also directed the utilities to work together to develop a common program and funding approach.

Furthermore, the Commission in Decision ("D.") 06-12-038 at page 17 directed the utilities to propose programs that offer benefits to low income customers,

> "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."

SoCalGas' proposed pilot program is a result of its coordination with Pacific Gas & Electric Company ("PG&E"), Southern California Edison ("SCE") and San Diego Gas & Electric Company ("SDG&E") in designing this pilot. In addition, SoCalGas and SCE are partnering with MWD to implement this program and are coordinating to maximize coverage and minimize overlap. Therefore, SoCalGas will be implementing the pilot primarily in municipal electric utility service areas (were SCE does not provide electric service). SoCalGas

has also been participating in an informal group called "Water Energy Partners" the membership of which includes representatives from the utilities, Toward Utility Rate Normalization, Division of Ratepayer Advocates, Natural Resources Defense Council, California Energy Commission ("CEC"), several water agencies including MWD and Commission staff. This group provided a forum to discuss the design of the utilities water pilot partnerships. SoCalGas' proposal also includes a low income customer component.

MWD is a consortium of 26 cities and water districts that provides drinking water to nearly 18 million people in parts of San Diego, Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties. The mission of MWD is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. Metropolitan currently delivers an average of 1.7 billion gallons of water per day to a 5,200 square mile service area.

SoCalGas' partnership with MWD in implementing this pilot program will take advantage of MWD's experience in conservation programs and its relationship with member agencies such as LADWP. In the past 10 years, MWD has invested about $234 million in its conservation programs, saving about 943,000 acre-feet of water. MWD has proven to be a leader in the support of both new technologies as well as the implementation of innovative conservation programs, earning national recognition.

III.
PROPOSED PILOT PROGRAM

SoCalGas and MWD propose a pilot program to be implemented in 2007. The program is designed to complete all project installations within the given year consistent with the Commission's direction for a one-year pilot. This pilot also includes a Low Income Energy Efficiency ("LIEE") component that will be implemented together with SoCalGas' 2007 LIEE program. The implementation components of this pilot include the following:

Low Income Multifamily High Efficiency Toilet Replacement Pilot Program Component

This pilot program would utilize the existing SoCalGas LIEE Program infrastructure, and contractor management expertise, by offering a direct install toilet replacement program for qualifying low income multi-family customers/owners. The direct install approach is designed to encourage property managers/owners to agree to participate in this program and to optimize

the benefits of the toilet replacements. Similar to the LIEE direct install approach, offering turn key services to multi-family property managers/owners increases the probability that existing water inefficient toilets will be replaced. SoCalGas will contract with qualified plumbing contractor(s) with expertise in water measures, specifically in high efficiency toilet replacement.

To optimize the benefits of toilet replacement, a toilet assessment will be completed at the same time as the weatherization measure assessment and qualification visit performed by the LIEE program's existing contractors. If replacement is feasible and can be performed within the scope and cost of the program (exceptions could include damaged flooring at toilet location, non-repairable (high cost) water connections, damaged sewer lines at toilet, etc), a high-efficiency toilet will be installed by the plumbing contractor. Only existing toilets of 3.5 gal/flush or more will qualify for replacement. SoCalGas will manage this component of the pilot. MWD will be responsible for the purchase and storage of the high efficiency toilets.

Lastly, the installation contractor will be required to recycle each toilet, including the fixture, to ensure they are not put back on the market. The partnership projects replacements of up to 3500 high efficiency toilets.

Joint Marketing and Outreach Pilot Program Component

There are numerous other opportunities to leverage existing MWD programs and efforts with SoCalGas programs that can also be done during the pilot. SoCalGas and MWD will work collaboratively to evaluate and determine how best to utilize each others' organizations to create a more effective and efficient marketing effort. Marketing materials will be developed to leverage and communicate these opportunities through the existing SoCalGas account executive organization for commercial/industrial customers. Training sessions and additional materials will be developed accordingly. MWD staff will participate in up to four training sessions. Joint workshops will also be conducted to educate facility managers about water/energy savings opportunities (e.g., cooling towers). Additionally, workshops for equipment dealers that promote water/energy products will be conducted.

In addition to jointly marketing commercial/industrial water and energy rebates, the MWD and SoCalGas plan to coordinate their "mass market" programs. Each entity has existing

programs that are already being coordinated. This component of the pilot program would add additional emphasis to this effort.

Finally, MWD will help coordinate and conduct sessions with member agencies to train and educate them on existing energy efficiency programs that can be used to improve the efficiency of the water delivery system (e.g., high efficiency pumps). More details on the program strategies are described in the Attachment to this testimony.

IV.
FUNDING FLEXIBILITY WITHIN PROGRAM PILOT AND BEYOND THE FUNDING PERIOD

SoCalGas and MWD's proposed pilot components include individual budgets. However, funds may need to be shifted between these strategies within the pilot to address programmatic issues (e.g., limited customer interest, increased number of program contractors to meet greater demand, etc.) that may arise during implementation. Therefore, SoCalGas proposes to have full funding flexibility within the pilot program in order to meet unexpected program implementation challenges that arise from such pilot efforts.

The pilot is designed to complete installations within the given year, and the partnership intends to aggressively implement the proposed pilot immediately following Commission approval and to complete all implementation activities within the 12-month period[1] as envisioned by the ACR. There may, however, be circumstances where there are post-installation activities that must be completed, such as inspections, project verification, contractor payments and reporting, beyond the one-year target. There may also be instances where the customer has signed a contractual agreement with the program partner during the one-year pilot period but does not complete installation until after the program end date. Therefore, SoCalGas seeks clarification that it can utilize pilot funds for these post-implementation activities to satisfy obligations which were incurred prior to the termination of the pilot including completion of committed customer projects yet to be installed.

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

V.
REQUEST FOR AUTHORIZATION TO ENCUMBER FUNDS FOR START-UP ACTIVITIES PRIOR TO COMMISSION APPROVAL OF PILOT WATER PARTNERSHIP

The ACR intends for these pilot programs to be implemented by July 1, 2007 for a one-year implementation cycle.[2] In order for some of the components of this proposal to be implemented in a timely manner and meet the Commission's objectives for this pilot, SoCalGas is requesting that the Commission authorize SoCalGas to spend a portion of the requested budget to be used for start-up activities. Additional administrative activities may have to be undertaken to ensure effective and efficient partnering between SoCalGas and MWD as administrative responsibilities will be shared between them, such as develop program processes to pay incentives to program participants.

Historically, the Commission has approved funding for administrative activities needed to prepare for full program implementation. In D.05-09-043, the Commission recognized that start-up activities would be required to implement on-bill financing in 2006 and therefore allowed carryforwards of 2006 funds into 2005.[3]

Therefore, SoCalGas requests that the Commission approve $25,000 to be spent on start-up activities for this pilot.

VI.
DEMONSTRATION OF PILOT SAVINGS POTENTIAL AND EXPECTED COSTS

The ACR directed that the pilot proposal be designed to maximize embedded energy savings per dollar of program cost (Ordering Paragraph 2). SoCalGas proposes to use the information from the CEC's recent study conducted by Navigant, "Refining Estimates of Water-Related Energy Use in California" (December 2006) to present savings estimates for this pilot. SoCalGas presents the embedded energy savings assumptions for each proposed strategy in the Attachment. It should be recognized that there are embedded therm savings potentially from this partnership but that the CEC's study has not investigated nor developed appropriate therm savings resulting from water conservation efforts. Therefore, based on the available information, SoCalGas believes this conversion factor is reasonable and adequately demonstrates an expected

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[2] *Ibid.*

[3] D.05-09-043 at pages 153-154.

level of embedded energy savings from the proposed pilot. Specifically, SoCalGas will utilize the "millions of gallons per kWh" ("mg/kWh") conversion factor identified for the Southern California region shown in the study to estimate the energy savings benefits of the pilot.

SoCalGas does not believe that the current platform for demonstrating the standard program cost effectiveness, the E3 calculator, will adequately represent the costs and benefits expected from this pilot. The purpose of this pilot is to collect the necessary data to be able to fully demonstrate the cost effectiveness of a future water/energy efficiency program. As directed by the ACR, SoCalGas will provide to the Commission, an embedded dollar of program cost per energy savings (kWh) (as summarized below) in lieu of the traditional Total Resource Cost and Program Administrator Cost test results.

The following table shows that this proposed pilot has a dollar per energy savings per ratio of $0.15/kWh. The total budget used in the calculation is the full cost of the program which includes SoCalGas budget (both program and EM&V) and MWD's contribution. MWD provided the lifecycle millions of gallons ("MG") savings for the different components presented in this application. SoCalGas then multiplied the water savings estimates by the conversion factors in the CEC's study to obtain the gross lifecycle energy savings from the component. A net-to-gross ratio ("NTG") of 0.80 was then applied to the converted energy savings as directed by D.06-12-013.[4]

Projected Budgets by Component	SoCalGas	MWD	Total	Estimated Savings (MG)	Estimated KWH Savings*	Estimated $/KWH
Low Income MF HE Toilet Replacement	$586,407	$577,550	$1,163,957	980	10,209,248	0.11
General Marketing	$100,000	$110,000	$210,000	0	0	0
EM&V	$171,602	$0	$171,602	0	0	0
TOTAL:	**$858,009**	**$687,550**	**$1,545,559**	**0**	**10,209,248**	**0.15**

Notes:
Source of Savings Conversion: Refining Estimates of Water-Related Energy Usage In California, CEC, 2006, Appendix C, page 14.
Toilet Replacement Component utilizes the Indoor Rate: 13,022 kWh/MG
NTG ratio applied is 0.80.

[4] D.06-012-013 at page 15, "Under the Database for Energy Efficient Resources (DEER): 'All existing programs not listed below shall use a default value of 0.8.'"

VII.
PROPOSED PILOT PROGRAM COSTS AND RATE RECOVERY PROPOSAL

The ACR determined that the total cost for these pilot programs would be limited to $10 million statewide (Ordering Paragraph 3). It was also determined that the funding would be separate and apart from the funding established for the 2006-2008 energy efficiency programs. The ACR also directs the utilities to work together to develop a common funding approach. SoCalGas, together with SDG&E, PG&E and SCE, discussed and agreed to a methodology to allocate the $10 million. The utilities agreed to allocate the budget based on the weighted funding of the current 2006-2008 energy efficiency program portfolio budgets approved in D.05-09-043. Therefore, SoCalGas' proposed allocation for its share of the water energy efficiency pilot program is $0.858 million. The table below shows the statewide funding allocation.

Authorized 2006-2008 Energy Efficiency Budgets & Proposed Water Efficiency Budget			
IOU	**2006-2008 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%	$858,009
Total	$1,968,762,439	100%	$10,000,000

SoCalGas proposes to utilize $0.272 million in unspent and uncommitted pre-1998 demand-side management funds recorded in SoCalGas' Conservation Expense Account ("CEA"), which tracks both low-income energy efficiency ("LIEE") and EE programs associated with pre-2006 funding cycles, to fund the non-low income energy efficiency component of the pilot. For low-income related activities, SoCalGas proposes that $0.586 million in unspent LIEE funds from balancing account overcollections be used for the pilot partnership. Upon Commission approval of these funding requests, SoCalGas proposes to transfer the balancing account funds from prior program cycles to the current energy efficiency and LIEE program cycle. The transfer will be recorded as an adjustment from the CEA to the respective Direct

Assistance Program Balancing Account and the Demand-Side Management Balancing Account, both of which track post-2005 program activity. Therefore, there are no rate or revenue impacts associated with SoCalGas' proposal.

MWD will be contribute $687,550 from its own funding sources to pay for administrative and incentive costs for the program as part of their contribution to this pilot.

VIII.
ENERGY EFFICIENCY SAVINGS ACHIEVEMENT

The Ruling's Ordering Paragraph 4 states:

> "While it would be important to count embedded energy savings related to this effort, and to calculate any such savings related to existing programs, the utilities should not seek credit for these savings a part of any rewards or penalties related to the 2006-2008 period. The applications should include proposals for counting the savings for the purpose of understanding program benefits, rather than to affect rewards or penalties."

SoCalGas appreciates the Commission's direction to not count any savings achievement for the purpose of determining rewards or penalties for this program cycle, given the uncertainties related to determining actual energy savings achieved. However, SoCalGas seeks clarification on whether the energy savings achieved by the pilot can be counted towards the Commission's current energy efficiency goals since the directive could be interpreted to not disallow the utilities from counting such energy savings towards the achievement of the current energy efficiency goals adopted in D.04-09-060. SoCalGas believes that the embedded energy savings from this pilot program are real and therefore should be reflected as part of SoCalGas' achievement towards meeting the Commission's cumulative energy savings goals and accounted for in the Commission's next energy savings goal update. SoCalGas proposes that the savings reported from this pilot be based on the measurement activities proposed in Section IX below. This acknowledgement would be consistent with the Commission's desire to provide the state with valuable energy resources towards meeting the stat's Energy Action Plan energy policies.

IX.
PROPOSED EVALUATION, MEASUREMENT AND VERIFICATION ACTIVITIES

SoCalGas recognizes that, although this partnership is at a local level, the implications for embedded energy savings are statewide and therefore the majority of the work must be conducted at a statewide level, either managed by the Commission's Energy Division staff or by the utilities as designated by the Commission. The CEC's study is a reasonable source for preliminary savings estimates. Additional work, however, must be completed to verify the estimates presented in the study that were gathered through review of various work papers and interviews with stakeholders.

The ACR directs the utilities to conduct a planning workshop during the second quarter of 2007 to address, together with 2009-2001 planning issues, a methodology to estimate the magnitude of savings along various localities and review the CEC's study.[5] SoCalGas recommends that from this forum a working group of interested parties (i.e., Commission staff, CEC, energy utilities, water utilities and other intervenors) be created that will be tasked with addressing evaluation, measurement & verification ("EM&V") issues, identifying and prioritizing work, developing study plans, and advising the entity (ies) assigned to conduct the evaluation work.

The primary objective of the EM&V activities should be the development of methodologies to measure and attribute correctly embedded energy savings from water conservation activities that correspond to the load impact parameters required for energy efficiency programs (i.e., energy savings—kWh and therms, demand reductions, load shapes, net-to-gross ratios). EM&V Protocols can then be developed to apply to these types of programs thus offering the opportunity for the energy utilities to include these embedded energy savings towards their energy efficiency goals, and seek credit for these efforts as part of any rewards or penalties in future program years.

In addition to these EM&V activities, SoCalGas proposes to conduct process evaluations to determine effectiveness of the program design, customer response and satisfaction with the program.

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[5] ACR Ordering Paragraph 5.

SoCalGas is requesting a total of $171,602 for the EM&V activities that will be undertaken to evaluate this pilot. This represents the equivalent of 20 percent of SoCalGas' portion of the proposed program budget.

This concludes my testimony.

QUALIFICATIONS

My name is Mark F. Gaines. My business address is 555 West Fifth Street, Los Angeles, CA 90013. I am employed by Southern California Gas Company as Director Customer Programs. My responsibilities include Energy Efficiency and Demand Response program development and implementation for the Sempra Energy Utilities. I have been employed by the Sempra Energy Utilities since 1983.

I have a Bachelor of Science in Civil and Environmental Engineering from the University of California, Irvine, a Masters in Business Administration from the University of California, Los Angeles and am a registered professional engineer in Mechanical Engineering in California. I have previously testified before this Commission.

ATTACHMENT

Southern California Gas Company and Metropolitan Water District Partnership

Energy Efficiency/Water Pilot Program Concept Paper

Energy Efficiency/Water Pilot Program Concept Paper
SoCalGas/MWD Partnership

1. Projected Program Budget

Projected Budgets by Component	SoCalGas	MWD	Total
Low Income MF HE Toilet Replacement	$586,407	$577,550	$1,163,957
General Marketing	$100,000	$110,000	$210,000
EM&V	$171,602	$0	$171,602
TOTAL:	**$858,009**	**$687,550**	**$1,545,559**

*MWD may provide additional funding for incentives as necessary (amount has not been quantified).

2. Projected Program Impacts

SoCalGas provides its lifecycle estimate of energy savings (KWH) in the following section, Program Cost Effectiveness.

3. Program Cost Effectiveness

It should be recognized that there are embedded therm savings potentially from this partnership but that the CEC's study has not investigated nor developed appropriate therm savings resulting from water conservation efforts. Therefore, based on the available information, SoCalGas believes this conversion factor is reasonable and adequately demonstrates an expected level of embedded energy savings from the proposed pilot. Specifically, SoCalGas will utilize the "millions of gallons per kWh" ("mg/kWh") conversion factor identified for the Southern California region shown in the study to estimate the energy savings benefits of the pilot.
SoCalGas does not believe that the current platform for demonstrating the standard program cost effectiveness, the E3 calculator, will adequately represent the costs and benefits expected from this pilot. The purpose of this pilot is to collect the necessary data to be able to fully demonstrate the cost effectiveness of a future water/energy efficiency program. As directed by the ACR, SoCalGas will provide to the Commission, an embedded dollar of program cost per energy savings (kWh) (as summarized below) in lieu of the traditional Total Resource Cost and Program Administrator Cost test results.

The following table shows that this proposed pilot has a dollar per energy savings per ratio of $0.15/kWh. The total budget used in the calculation is the full cost of the program which includes SoCalGas budget (both program and EM&V) and MWD's contribution. MWD provided the lifecycle millions of gallons ("MG") savings for the different components presented in this application. SoCalGas then multiplied the water savings estimates by the conversion factors in the CEC's study to obtain the gross lifecycle energy savings from the component. A net-to-gross

ratio ("NTG") of 0.80 was then applied to the converted energy savings as directed by D.06-12-013.[1]

Projected Budgets by Component	SoCalGas	MWD	Total	Estimated Savings (MG)	Estimated KWH Savings*	Estimated $/KWH
Low Income MF HE Toilet Replacement	$586,407	$577,550	$1,163,957	980	10,209,248	0.11
General Marketing	$100,000	$110,000	$210,000	0	0	0
EM&V	$171,602	$0	$171,602	0	0	0
TOTAL:	**$858,009**	**$687,550**	**$1,545,559**	**0**	**10,209,248**	**0.15**

Notes:
Source of Savings Conversion: Refining Estimates of Water-Related Energy Usage In California, CEC, 2006, Appendix C, page 14.
Toilet Replacement Component utilizes the Indoor Rate: 13,022 kWh/MG
NTG ratio applied is 0.80.

4. Program Descriptors

Market Sector: Cross-cutting (residential & nonresidential)
Program Classification: Local
Program Status: Pilot

The pilot program consists of two program elements:

- Low-Income Multi-family High Efficiency Toilet Replacement Pilot Program Component
  Installation of high efficiency toilets for qualifying low income multi-family customers/owners in municipal electric utility service areas.
- General Commercial/Industrial Marketing Pilot Program Component
  Development of marketing materials and training programs for cross-marketing of both energy efficiency and water conservation programs to SoCalGas and MWD customers.

5. Program Statement

The SoCalGas/MWD Partnership was created in response to the ACR in R.06-04-010 which directed the IOU's to create a partnership with a water provider to implement a jointly-funded pilot program which maximizes embedded energy savings. The purpose of the pilot is to maximize opportunities to capture water-

[1] D.06-012-013 at page 15, "Under the Database for Energy Efficient Resources (DEER): 'All existing programs not listed below shall use a default value of 0.8.'"

related embedded energy savings to inform the planning process for the IOUs' 2009-2011 energy efficiency programs.

6. Program Rationale

SoCalGas' partnership with MWD in implementing this pilot program will take advantage of MWD's experience in conservation programs and its relationship with member agencies such as LADWP. The Metropolitan Water District of Southern California is a consortium of 26 cities and water districts that provides drinking water to nearly 18 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura Counties. MWD currently delivers an average of 1.7 billion gallons of water per day to a 5,200 square mile service area. In the past 10 years, MWD has invested about $234 million in its conservation programs, saving about 943,000 acre-feet of water. MWD has proven to be a leader in the support of both new technologies as well as the implementation of innovative conservation programs, earning national recognition.

MWD has extended its support of water-saving appliances for homes and businesses and provided increased rebates for most of their water saving technologies such as high-efficiency clothes washers, toilets and waterless urinals. A significant jump in participation has been noted with Metropolitan's incentive-based programs since its board of directors approved higher rebate amounts in December 2005. The effort to update appliances with more water-efficient models has also benefited by expanded grant funding. Evidence of this success, among others, can be seen in the replacement program for high-efficiency toilets, which counts more than 10,000 to date. Although a success, the program did not directly target the low income multifamily market segment. The rate of retrofit for this market has been lower than that for the general population, making them an ideal target for this program. Furthermore, the Commission in D.06-12-038 directed the utilities to propose programs that address water conservation for low-income customers.

MWD has had similar successes with water conservation measures in the commercial and industrial market segments. They have rebate programs for nine different items ranging in incentive value from $30 for an upgrade from an ultra-low flush toilet to a high-efficiency model, to $3,120 for installation of an x-ray film processor recirculating system. Utilizing SoCalGas' Account Executive (AE) organization will increase awareness and market penetration for these programs in this market. This pilot is the ideal vehicle to ensure that these additional opportunities are exploited. In addition, cross-marketing of energy efficiency and water conservation programs with mass markets commercial and industrial customers of SoCalGas and MWD will ensure that all opportunities will be taken advantage of as a result of this partnership.

7. Program Outcomes

The SoCalGas/MWD partnership will work toward the following outcomes:

- Encourage the retrofit of high efficiency toilets in the low income multifamily market
- Maximize awareness of SoCalGas and MWD's energy efficiency and water conservation programs, respectively, in the commercial and industrial market.

8. Program Strategy

8.1. Program Strategy Description

8.1.1. Low-Income Multi-family High Efficiency Toilet Replacement Pilot Program Component

SoCalGas' Low Income Energy Efficiency (LIEE) program provides income-qualified residential customers with no-cost energy efficiency weatherization services and energy education. Weatherization measures and energy education are provided to both renters and homeowners and include the installation of ceiling insulation, weather stripping, caulking, low-flow showerheads, water heater blankets, switch and outlet gaskets, faucet aerators, evaporative cooler vent covers, pipe insulation, and building envelope (minor home) repair. This program has never included plumbing activities for cold-water items.

This pilot program component would utilize the existing SoCalGas LIEE Program infrastructure, and contractor management experience, by offering a direct install program in municipal electric utility service areas for qualifying low income multi-family customers/owners. The direct install approach is designed to encourage property managers/owners to agree to participate in this program and to optimize the benefits of the toilet replacements. Similar to the LIEE direct install approach, offering turn key services to multi-family property managers/owners increases the probability that these water inefficient toilets will be replaced. SoCalGas will contract with a qualified plumbing contractor(s) for high efficiency toilet replacement in low income multi-family units. Only existing toilets of 3.5 gal./flush or more will qualify under the program. We will be targeting primarily multi-family units to maximize the results of the pilot program. Single family installations may be considered in instances where the cost structure is similar to multi-family installations.

Southern California Edison (SCE) is also partnering with MWD to implement this program. Therefore, SoCalGas will be implementing this program solely in municipal electric utility service areas (where SCE does not provide electric service) to maximize coverage of the pilot with SCE

and minimize overlap. We will also be coordinating with SCE on program design and implementation.

8.1.2. General Commercial/Industrial Marketing Pilot Program Component
There are numerous other opportunities to leverage existing MWD programs and efforts with SoCalGas programs that can also be done during the Pilot. Neither party wishes to miss out on these as they surface. This effort is intended to evaluate and determine how best to utilize each others' organizations to create a more effective and efficient marketing effort.

8.2.Program Indicators

8.2.1. Low-Income Multi-family High Efficiency Toilet Replacement Pilot Program Component
Installation of toilets will be tracked using the existing LIEE program infrastructure.

8.2.2. General Commercial/Industrial Marketing Pilot Program Component
The primary goal is to maximize awareness of SoCalGas and MWD's energy efficiency and water conservation programs through cross-marketing to SoCalGas and MWD customers.

9. Program Implementation

9.1.Low-Income Multi-family High Efficiency Toilet Replacement Pilot Program Component

This pilot program component would utilize SoCalGas' existing LIEE Program infrastructure, and its capabilities to manage contractors, by offering a direct install program for qualifying low income multi-family customers/owners. MWD, through it source of funding, should be able to cover the purchase of the toilets. SoCalGas will contract with qualified plumbing contractor(s) with expertise in water measures, specifically in high efficiency toilet replacement. Toilet assessment will be completed at the same time as the weatherization enrollment and measure assessment visit performed by the LIEE program's existing outreach contractor network. If replacement is feasible and can be performed within the scope and cost of the program (exceptions could include damaged flooring at toilet location, non-repairable (high cost) water connections, damaged sewer lines at toilet, etc), a high-efficiency toilet will be installed by the plumbing contractor. Only existing toilets of 3.5 gal./flush or more will qualify. SoCalGas will manage the program and work with MWD in evaluation of the pilot. Lastly, the installation contractor will be required to recycle each old toilet to ensure they are not put back on the market.

SoCalGas expects to install up to as many as 3,500 high efficiency toilets in low income multi-family units. The total cost to purchase and install the high-efficiency toilets will be between $265 and $375 per toilet. MWD's share will

be $165 per toilet, therefore, SoCalGas' costs will range between $100 and $210 for each toilet. MWD will additionally fund approximately $50,000 in administrative costs. Water savings for each high-efficiency toilet is 0.28 million gallons of water over the 20-year life of the toilet. The total estimated water savings is 980 million gallons.

9.2. General Commercial/Industrial Marketing Pilot Program Component

SoCalGas AE's have established relationships with commercial and industrial customers and contact them on a regular basis to promote and implement existing energy efficiency programs, provide technical advice and support on energy efficiency matters and other customer service functions, such as responding to billing inquiries, ensuring reliable gas service, etc. In the course of their regular visits to customers, AE's will provide brochures and information on MWD's water conservation programs.

Examples of areas where we would hope to encourage additional involvement from customers in water projects are outlined below and detailed further in Appendix 1:

Device/Program	MWD Incentive	Lifetime Water Savings (AF)
Commercial/Industrial		
High-Efficiency Toilet (HET)	$165	0.61
HET Upgrade/New Construction	$30	0.11
Ultra Low Flush Toilet (ULFT)	$135	0.68
High-Efficiency Urinal (HEU)	$200	1.23
HEU Upgrade/New Construction	$60	0.31
Zero Water Urinal (ZWU)	$400	2.45
ZWU Upgrade/New Construction	$120	0.61
High-Efficiency Clothes Washer	$130	0.93
Pre-Rinse Spray Valves	$60	0.67
Water Brooms	$150	0.46
Connectionless Food Steamers	$485/Compartment	2.50
Cooling Tower Controllers	$625	3.22
PH Cooling Tower Controllers	$1,900	9.72
Steam Sterilizer	$1,900	19.50
X-Ray Recirculation	$3,120	16.00

Marketing materials will be developed to leverage and communicate these opportunities through the existing SoCalGas account executive organization for

commercial/industrial customers. Training sessions and additional materials will be developed accordingly. MWD staff will participate in up to four training sessions. Joint workshops will also be conducted to educate facility managers about water/energy savings opportunities (e.g., cooling towers). Additionally, workshops for equipment dealers that promote water/energy products will be conducted.

In addition to jointly marketing commercial/industrial water and energy rebates, MWD and SoCalGas plan to coordinate "mass market" programs. Each entity has existing programs that are already being coordinated. The Pilot program would add additional emphasis to this effort.

Lastly, MWD will help coordinate and conduct sessions with their member agencies to train and educate them on existing energy efficiency programs that can be used to improve the efficiency of the water delivery system (e.g., high efficiency pumps).

10. Customer Description

- Low income multi-family customers in municipal electric utility service areas, such as LADWP, for high efficiency toilets
- Commercial/Industrial customers in SoCalGas' service territory for cross-marketing of SoCalGas' energy efficiency and MWD's water conservation programs.

11. Customer Interface

- The installation of high efficiency toilets for low income multi family customers would leverage SoCalGas' existing LIEE Program infrastructure. Toilet assessment will be completed at the same time as the weatherization enrollment and weather measure assessment visit performed by the LIEE program's existing outreach contractor. A toilet will be installed if replacement is feasible and can be performed within the scope and cost of the program.
- AE's will promote MWD's water conservation programs as part of their normal visits to commercial and industrial customers.
- Cross-marketing of energy efficiency and water conservation programs through existing marketing efforts at SoCalGas and MWD.

12. Subcontractor Activities

In this pilot program, SoCalGas will contract with qualified plumbing contractors with expertise in water measures, especially high efficiency toilet replacement.

13. Quality Assurance and Evaluation Activities

The primary objective of the EM&V activities should be the development of methodologies to measure and attribute correctly embedded energy savings from water conservation activities that correspond to the load impact parameters required for energy efficiency programs (i.e., energy savings—kWh and therms, demand reductions, load shapes, net-to-gross ratios). EM&V Protocols can then be

developed to apply to these types of programs thus offering the opportunity for the energy utilities to include these embedded energy savings towards their energy efficiency goals, and seek credit for these efforts as part of any rewards or penalties in future program years.

In addition to these EM&V activities, SoCalGas proposes to conduct process evaluations to determine effectiveness of the program design, customer response and satisfaction with the program.

SoCalGas is requesting a total of $171,602 for the EM&V activities that will be undertaken to evaluate this pilot. This represents the equivalent of 20 percent of SoCalGas' portion of the proposed program budget.

14. Marketing Activities

See 9.2 above.

15. CPUC Objective

This pilot program was created in response to the ACR in R.06-04-010 which directed the IOU's to create a partnership with a water provider to implement a jointly-funded pilot program. The purpose of the pilot is to maximize opportunities to capture water-related embedded energy savings to inform the planning process for the IOUs' 2009-2011 energy efficiency programs.

Energy Efficiency/Water Pilot Program Concept Paper
SoCalGas/MWD Partnership

Appendix 1

Laundry Operations:

- Water recovery or ozone systems in large commercial operations to minimize use.
- Large commercial operations should consider installing high recovery water recycle equipment.
- *Water recycling equipment can reduce water use by as much as eighty percent.*

Food Service

Equipment Selection

- Eliminate all water-cooled equipment using once-through cooling.
- Eliminate all water-cooled equipment unless it uses a chilled water or cooling tower loop. This includes icemakers, refrigeration equipment, and ice cream machines.
- Install 1.0 gpm hand-washing faucets.

Food Disposal

- Eliminate garbage disposals and sluice trough systems in favor of garbage cans and strainer baskets that eliminate the need for a pulper system, thus eliminating both water and energy use for disposal.

Dishwashing Equipment

- Ware washers (dishwashers) should use less than 1.2 gallons per rack for fill-and-dump machines and less than 0.9 gallons per rack for all other types of machines. For under-the-counter machines, water use should not exceed 1.0 gallon per rack for high-temperature machines and 1.7 gallons per rack for low temperature machines.
- Install pre-rinse spray valves that use 1.6 gallons per minute or less.
- Ensure that ice cream scoop faucets use no more than 0.5 gallons per minute.
- Power soakers for pots and pans can help reduce cleaning effort, but they consume 80 to 85 gallons per fill and 30kWh per day.

Food Preparation

- Install connectionless steamers that don't need either a water supply or a wastewater drain. Most boilerless steamers are also efficient, but those that have water connection and a drain are not.
- Install ice machines that use no more than 20 gallons per hundred pounds of ice made. Flake ice machines are more water-efficient (12 gal/100 lbs) and should be used where possible. {15%-50% if replacing an air-cooled unit and 85%-95% if water-cooled}
- Provide sufficient refrigerator capacity to minimize thawing of food under running water.

Floor Washing

- Use pressure washing equipment, or self contained spray and vacuum systems similar to carpet cleaners but designed for food service use.

- Waterbroom

Medical Facilities and Laboratories

Large hospitals operate facilities that in large part are similar to hotels with food service. All of the above items applicable to these types of operations should be considered. Medical facilities also have many unique types of equipment that use water. The following is a list of some of the more water-intensive operations and equipment found in these facilities.

Vacuum Pumps

- For medical and dental vacuum pump systems, choose dry vacuum systems to eliminate water use and save energy. This also eliminates the need for the installation and annual inspection of reduced pressure zone backflow preventers.
- Eliminate venturi aspirator vacuum systems by using mechanical dry vacuum equipment.

Sterilizers

- Steam sterilizers are commonly used in hospitals and research laboratories to clean and disinfect surgical equipment, tools and supplies.
- Most sterilizers are used only intermittently; however, potable water is used continuously to flush sterilizer equipment whether or not the unit is in use.
- New retrofit devices are capable of mixing potable water with heated condensate discharge only when the sterilizer is in use, thereby saving significant amounts of water.
- Based on data obtained from several medical facility installations, water savings for a steam sterilizer retrofit are about 1.3 acre-feet per year per unit.
- The retrofit devices have a life expectancy of 15 years and cost $1,900.

Hood Systems

- For laboratory exhaust hoods, use dry systems wherever possible.
- Where exhaust hood scrubber systems are used, adjust flow rates to minimize water use. Incorporate recirculating systems and use alternate sources of water wherever possible.
- Include self-closing valves on fume hood wash down systems
- For special applications such as perchloric acid hoods to limit water use.

Water Filtration Equipment

- The water used in kidney dialysis equipment can be produced by using deionization resins or by a combination of reverse osmosis and deionization.
- Deionization resins are often regenerated off-site by resin supplier/contractors thus eliminating water use at the clinic or hospital.
- These off-site regeneration operations are often more water efficient.
- When reverse osmosis (RO) is used at the medical facility, a reject stream equal to 25% to 60% of the incoming water volume is produced.
- RO equipment that minimizes water rejection is ideal.
- The product water from the RO unit should be able to be stored and used on demand as opposed to some older systems that produce RO water and continually dump the portion that is not used.
- Follow similar considerations for intravenous fluids and other medical fluids that require pharmaceutical grade water.

Equipment Selection

- Use air-cooled medical and laboratory equipment where possible.
- If a cooling water system must be used, use a chiller or a closed loop system such as chilled water or cooling tower water loop instead of a single pass water-cooling system.
- See examples of equipment that might use single pass (once-through) cooling water below.

Examples of Water Cooled Medical and Laboratory Equipment:

- Air Compressors
- Centrifuges
- Diffusion pumps
- Electron Microscopes
- Extractors
- Gas Chromatography/Mass Spec.
- Ion implantation equipment
- Rotary Evaporators/Concentrators
- Spectrometers of all types (FTIR, ICP, etc.)
- Stills
- Turbo Molecular Pumps
- Vacuum Systems
- Water Cooled Optics & Lasers

Film Processing

The use of commercial roll film processing equipment is decreasing, as digital cameras become the standard home and commercial media. In the past, film processing mini labs found in drug, grocery, and department stores used significant volumes of water. Some older equipment is reported to have used as much as 20 gallons of potable water per roll of film developed.

- Almost all new roll film development equipment being installed today uses plumbing-less technology. This new technology reduces chemical use and silver pollution, while reducing the amount of water needed to only a few gallons a day which is added by hand by the attendant.
- Choose "plumbing-less" mini laboratory equipment that does not require a fill line with a reduced pressure zone (RPZ) backflow preventer and drain line.

- Strongly encourage digital technologies that eliminate water use and the discharge of pollutants. However, it should be pointed out that even if the picture is digital, some water will be used if conventional prints of the pictures are produced.

1. Adjust equipment
2. Modify equipment or install water-saving devices
3. Replace with more efficient equipment
4. Reuse or recycle water or use an alternate water source
5. Change to waterless process